```
Met Phe Gly Asn Ala Asp Met Asn Thr Phe Pro Thr Phe Lys Phe Glu
                85                  90                  95


Asp Pro Lys Phe Glu Val Ile Glu Lys Pro Gln Ala
            100                 105


<210> 7093
<211> 108
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1511; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J; "

<220>
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<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit F6; "

<220>
<221> source
<223> /note="Uniprot ID:  P18859; "

<220>
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<223> /note="ENSP ID: ENSP00000382966"

<400> 7093
Met Ile Leu Gln Arg Leu Phe Arg Phe Ser Ser Val Ile Arg Ser Ala
1               5                   10                  15


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


Asn Lys Glu Leu Asp Pro Ile Gln Lys Leu Phe Val Asp Lys Ile Arg
        35                  40                  45


Glu Tyr Lys Ser Lys Arg Gln Thr Ser Gly Gly Pro Val Asp Ala Ser
    50                  55                  60


Ser Glu Tyr Gln Gln Glu Leu Glu Arg Glu Leu Phe Lys Leu Lys Gln
65                  70                  75                  80
```

```
Met Phe Gly Asn Ala Asp Met Asn Thr Phe Pro Thr Phe Lys Phe Glu
                85                  90                  95


Asp Pro Lys Phe Glu Val Ile Glu Lys Pro Gln Ala
            100                 105


<210> 7094
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      complex,
      subunit F6; "

<220>
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<223> /note="ENSP ID: ENSP00000382971"

<400> 7094
Met Ile Leu Gln Arg Leu Phe Arg Phe Ser Ser Val Ile Arg Ser Ala
1               5                  10                  15


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


Asn Lys Glu Leu Asp Pro Ile Gln Lys Leu Phe Val Asp Lys Ile Arg
        35                  40                  45


Glu Tyr Lys Ser Lys Arg Gln Thr Ser Gly Gly Pro Val Asp Ala Ser
    50                  55                  60


Ser Glu Tyr Gln Gln Glu Leu Glu Arg Glu Leu Phe Lys Leu Lys Gln
65                  70                  75                  80


Met Phe Gly Asn Ala Asp Met Asn Thr Phe Pro Thr Phe Lys Phe Glu
                85                  90                  95
```

```
Glu His Phe Ser Gln His Leu Arg Ser Trp Gln Pro Ser Arg Asp Asp
            100                 105                 110


Asp Ile Leu Ile Leu Ser Ser
        115


<210> 7095
<211> 116
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1511; "

<220>
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<220>
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<223> /note="Gene Name:
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      subunit F6; "

<220>
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<223> /note="Uniprot ID:  P18859; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389649"

<400> 7095
Met His Cys Asp Gly Gly Ile Ser Met Ile Leu Gln Arg Leu Phe Arg
1               5                   10                  15


Phe Ser Ser Val Ile Arg Ser Ala Val Ser Val His Leu Arg Arg Asn
            20                  25                  30


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


Lys Leu Phe Val Asp Lys Ile Arg Glu Tyr Lys Ser Lys Arg Gln Thr
    50                  55                  60


Ser Gly Gly Pro Val Asp Ala Ser Ser Glu Tyr Gln Gln Glu Leu Glu
65                  70                  75                  80
```

```
Arg Glu Leu Phe Lys Leu Lys Gln Met Phe Gly Asn Ala Asp Met Asn
                85                  90                  95

Thr Phe Pro Thr Phe Lys Phe Glu Asp Pro Lys Phe Glu Val Ile Glu
            100                 105                 110

Lys Pro Gln Ala
        115


<210> 7096
<211> 103
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1512; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5L; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit G; "

<220>
<221> source
<223> /note="Uniprot ID:  O75964; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000300688"

<400> 7096
Met Ala Gln Phe Val Arg Asn Leu Val Glu Lys Thr Pro Ala Leu Val
1               5                  10                  15

Asn Ala Ala Val Thr Tyr Ser Lys Pro Arg Leu Ala Thr Phe Trp Tyr
            20                  25                  30

Tyr Ala Lys Val Glu Leu Val Pro Pro Thr Pro Ala Glu Ile Pro Arg
        35                  40                  45

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

```
Phe Lys Gln Leu Thr Val Lys Glu Ala Val Leu Asn Gly Leu Val Ala
65                  70                  75                  80


Thr Glu Val Leu Met Trp Phe Tyr Val Gly Glu Ile Ile Gly Lys Arg
                85                  90                  95


Gly Ile Ile Gly Tyr Asp Val
            100


<210> 7097
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP5L; "

<220>
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<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit G; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434865"

<400> 7097
Met Ala Gln Phe Val Arg Asn Leu Val Glu Lys Thr Pro Ala Leu Val
1               5                   10                  15


Asn Ala Ala Val Thr Tyr Ser Lys Pro Arg Leu Ala Thr Phe Trp Tyr
            20                  25                  30


Tyr Ala Lys Val Glu Leu Val Pro Pro Thr Pro Ala Glu Ile Pro Arg
        35                  40                  45


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


Phe Lys Gln Leu Thr Val Lys Lys Lys Ser Ser Thr
65                  70                  75
```

<210> 7098
<211> 100
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP5L2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z4Y8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421076"

<400> 7098
Met Ala Pro Phe Val Arg Asn Leu Val Glu Lys Thr Pro Ala Leu Val
1   5   10   15

Asn Ala Ala Val Thr Tyr Leu Lys Pro Arg Leu Ala Ala Phe Trp Tyr
            20   25   30

Tyr Thr Thr Val Glu Leu Val Pro Pro Thr Pro Ala Glu Ile Pro Arg
        35   40   45

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

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

Thr Glu Val Ser Thr Trp Phe Tyr Val Arg Glu Ile Thr Gly Lys Arg
                85   90   95

Gly Ile Ile Gly
            100

<210> 7099
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1514; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5S; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit s (factor B); "

<220>
<221> source
<223> /note="Uniprot ID: Q99766; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000245448"

<400> 7099
Met Cys Cys Ala Val Ser Glu Gln Arg Leu Thr Cys Ala Asp Gln Met
1   5   10   15

Met Pro Phe Gly Lys Ile Ser Gln Gln Leu Cys Gly Val Lys Lys Leu
            20   25   30

Pro Trp Ser Cys Asp Ser Arg Tyr Phe Trp Gly Trp Leu Asn Ala Val
        35   40   45

Phe Asn Lys Val Asp Tyr Asp Arg Ile Arg Asp Val Gly Pro Asp Arg
    50   55   60

Ala Ala Ser Glu Trp Leu Leu Arg Cys Gly Ala Met Val Arg Tyr His
65   70   75   80

Gly Gln Glu Arg Trp Gln Lys Asp Tyr Asn His Leu Pro Thr Gly Pro
                85   90   95

Leu Asp Lys Tyr Lys Ile Gln Ala Ile Asp Ala Thr Asp Ser Cys Ile
            100   105   110

```
Met Ser Ile Gly Phe Asp His Met Glu Thr Ser Asn Ile Cys Cys
        115                 120                 125


<210> 7100
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit s (factor B); "

<220>
<221> source
<223> /note="Uniprot ID:  Q99766; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000308334"

<400> 7100
Met Cys Cys Ala Val Ser Glu Gln Arg Leu Thr Cys Ala Asp Gln Met
1               5                   10                  15


Met Pro Phe Gly Lys Ile Ser Gln Gln Leu Cys Gly Val Lys Lys Leu
            20                  25                  30


Pro Trp Ser Cys Asp Ser Arg Tyr Phe Trp Gly Trp Leu Asn Ala Val
        35                  40                  45


Phe Asn Lys Val Asp Tyr Asp Arg Ile Arg Asp Val Gly Pro Asp Arg
    50                  55                  60


Ala Ala Ser Glu Trp Leu Leu Arg Cys Gly Ala Met Val Arg Tyr His
65                  70                  75                  80


Gly Gln Glu Arg Trp Gln Lys Asp Tyr Asn His Leu Pro Thr Gly Pro
                85                  90                  95
```

```
Leu Asp Lys Tyr Lys Ile Gln Ala Ile Asp Ala Thr Asp Ser Cys Ile
            100                 105                 110

Met Ser Ile Gly Phe Asp His Met Glu Gly Leu Glu His Val Glu Lys
        115                 120                 125

Ile Arg Leu Cys Lys Cys His Tyr Ile Glu Asp Asp Cys Leu Leu Arg
    130                 135                 140

Leu Ser Gln Leu Glu Asn Leu Gln Lys Thr Ile Leu Glu Met Glu Ile
145                 150                 155                 160

Ile Ser Cys Gly Asn Ile Thr Asp Lys Gly Ile Ile Ala Leu Arg His
                165                 170                 175

Leu Arg Asn Leu Lys Tyr Leu Leu Leu Ser Asp Leu Pro Gly Val Arg
            180                 185                 190

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

Glu Leu Lys Leu Gln Leu Lys
    210                 215


<210> 7101
<211> 266
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1514; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5S; "

<220>
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<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit s (factor B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351258"

<400> 7101
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```
Met Ile Arg Gly Ser Gly Ala Glu Ala Cys Ser Asn Glu Asp Gly Cys
1               5                  10                  15

Ser Glu Lys Gly Met Lys Gly Val Asp Tyr Asp Arg Ile Arg Asp Val
            20                  25                  30

Gly Pro Asp Arg Ala Ala Ser Glu Trp Leu Leu Arg Cys Gly Ala Met
        35                  40                  45

Val Arg Tyr His Gly Gln Glu Arg Trp Gln Lys Asp Tyr Asn His Leu
    50                  55                  60

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

Asp Ser Cys Ile Met Ser Ile Gly Phe Asp His Met Glu Gly Leu Glu
                85                  90                  95

His Val Glu Lys Ile Arg Leu Cys Lys Cys His Tyr Ile Glu Asp Asp
            100                 105                 110

Cys Leu Leu Arg Leu Ser Gln Leu Glu Asn Leu Gln Lys Thr Ile Leu
        115                 120                 125

Glu Met Glu Ile Ile Ser Cys Gly Asn Ile Thr Asp Lys Gly Ile Ile
    130                 135                 140

Ala Leu Arg His Leu Arg Asn Leu Lys Tyr Leu Leu Leu Ser Asp Leu
145                 150                 155                 160

Pro Gly Ala Gly Asn Pro Gly Pro Cys Val Ala Ser Gly Ser Ser Arg
                165                 170                 175

Thr Arg Ala Pro Leu Gly Phe Arg Glu Arg Gly Leu Gln Glu Thr Asp
            180                 185                 190

Val Pro Gly Ala Leu Val Asp Arg Ser Tyr Asp Leu Ser Pro Ser Ala
        195                 200                 205

Gly Met Arg Met Leu Glu Leu Lys Ala Thr Thr Ala Ile Leu Lys Ser
    210                 215                 220

Arg Phe Gln Leu Ser Val Pro Gly Gly Ser Leu Leu Phe Lys Gln Ser
```

225 230 235 240

Pro Val Gly His Ser Ser Ile Ser Phe Trp Pro Tyr Lys Ala Ile Leu
245 250 255

Arg Gln Ser Arg Ala Gly Asp Asn Gln Glu
260 265

<210> 7102
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1514; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5S; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit s (factor B); "

<220>
<221> source
<223> /note="Uniprot ID: Q99766; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389246"

<400> 7102
Met Cys Cys Ala Val Ser Glu Gln Arg Leu Thr Cys Ala Asp Gln Met
1 5 10 15

Met Pro Phe Gly Lys Ile Ser Gln Gln Leu Cys Gly Val Lys Lys Leu
20 25 30

Pro Trp Ser Cys Asp Ser Arg Tyr Phe Trp Gly Trp Leu Asn Ala Val
35 40 45

Phe Asn Lys Val Asp Tyr Asp Arg Ile Arg Asp Val Gly Pro Asp Arg
50 55 60

Ala Ala Ser Glu Trp Leu Leu Arg Cys Gly Ala Met Val Arg Tyr His

65 70 75 80

Gly Gln Glu Arg Trp Gln Lys Asp Tyr Asn His Leu Pro Thr Gly Pro
85 90 95

Leu Asp Lys Tyr Lys Ile Gln Ala Ile Asp Ala Thr Asp Ser Cys Ile
100 105 110

Met Ser Ile Gly Phe Asp His Met Gly Asn Tyr Pro Ile Val Leu Leu
115 120 125

Ile Glu Asn Ala Asp Asp Leu Gln
130 135

<210> 7103
<211> 14
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1514; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5S; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit s (factor B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451583"

<400> 7103
Met Cys Cys Ala Val Ser Glu Gln Arg Leu Thr Cys Ala Gly
1 5 10

<210> 7104
<211> 1278
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1515; "

<220>
<221> source
<223> /note="Gene Symbol: AGTPBP1; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding
prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338512"

<400> 7104
Met Arg Thr Gly Ser Ala Ala Ser Ser Ala Ala Ala Ala Ala Ala Ala
1 5 10 15

Ala Ala Ala Ser Ala Ser Pro Ala Thr Gly Val Cys Met Lys Thr Pro
20 25 30

Gly Gly Gly Arg Arg Gly Ile Arg Arg Asp Pro Gly Ala Glu Pro Gly
35 40 45

Ala Ala Ala Leu Arg Gly Pro Arg Gln Arg Pro Ile Leu Ser Arg Leu
50 55 60

Thr Asn Asn Ser Arg Ile Val Gly Leu Leu Ala Gln Leu Glu Lys Ile
65 70 75 80

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

Ile Leu His Leu Ala Gln Ser Gln Glu Lys Thr Arg Arg Glu Met Thr
100 105 110

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

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

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

Gly Gly Ser Gln Ile Leu Leu Gln Leu Leu Met Asn Ala Ser Lys Glu
165 170 175

```
Ser Pro Pro His Glu Asp Leu Met Val Gln Ile His Ser Ile Leu Ala
            180                 185                 190

Lys Ile Gly Pro Lys Asp Lys Lys Phe Gly Val Lys Ala Arg Ile Asn
        195                 200                 205

Gly Ala Leu Asn Ile Thr Leu Asn Leu Val Lys Gln Asn Leu Gln Asn
    210                 215                 220

His Arg Leu Val Leu Pro Cys Leu Gln Leu Leu Arg Val Tyr Ser Ala
225                 230                 235                 240

Asn Ser Val Asn Ser Val Ser Leu Gly Lys Asn Gly Val Val Glu Leu
                245                 250                 255

Met Phe Lys Ile Ile Gly Pro Phe Ser Lys Lys Asn Ser Ser Leu Ile
            260                 265                 270

Lys Val Ala Leu Asp Thr Leu Ala Ala Leu Leu Lys Ser Lys Thr Asn
        275                 280                 285

Ala Arg Arg Ala Val Asp Arg Gly Tyr Val Gln Val Leu Leu Thr Ile
    290                 295                 300

Tyr Val Asp Trp His Arg His Asp Asn Arg His Arg Asn Met Leu Ile
305                 310                 315                 320

Arg Lys Gly Ile Leu Gln Ser Leu Lys Ser Val Thr Asn Ile Lys Leu
                325                 330                 335

Gly Arg Lys Ala Phe Ile Asp Ala Asn Gly Met Lys Ile Leu Tyr Asn
            340                 345                 350

Thr Ser Gln Glu Cys Leu Ala Val Arg Thr Leu Asp Pro Leu Val Asn
        355                 360                 365

Thr Ser Ser Leu Ile Met Arg Lys Cys Phe Pro Lys Asn Arg Leu Pro
    370                 375                 380

Leu Pro Thr Ile Lys Ser Ser Phe His Phe Gln Leu Pro Val Ile Pro
385                 390                 395                 400
```

Val Thr Gly Pro Val Ala Gln Leu Tyr Ser Leu Pro Pro Glu Val Asp
405 410 415

Asp Val Val Asp Glu Ser Asp Asp Asn Asp Asp Ile Asp Val Glu Ala
420 425 430

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

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

Gly Arg Thr Ile Glu Asp Leu Lys Met Tyr Glu His Leu Phe Pro Glu
465 470 475 480

Leu Val Asp Asp Phe Gln Asp Tyr Asp Leu Ile Ser Lys Glu Pro Lys
485 490 495

Pro Phe Val Phe Glu Gly Lys Val Arg Gly Pro Ile Val Val Pro Thr
500 505 510

Ala Gly Glu Glu Thr Ser Gly Asn Ser Gly Asn Leu Arg Lys Val Val
515 520 525

Met Lys Glu Asn Ile Ser Ser Lys Gly Asp Glu Gly Glu Lys Lys Ser
530 535 540

Thr Phe Met Asp Leu Ala Lys Glu Asp Ile Lys Asp Asn Asp Arg Thr
545 550 555 560

Leu Gln Gln Gln Pro Gly Asp Gln Asn Arg Thr Ile Ser Ser Val His
565 570 575

Gly Leu Asn Asn Asp Ile Val Lys Ala Leu Asp Arg Ile Thr Leu Gln
580 585 590

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

Asp Cys Ser Leu Pro Leu Thr Val Leu Thr Cys Ala Lys Ala Cys Pro
610 615 620

```
His Met Ala Thr Cys Gly Asn Val Leu Phe Glu Gly Arg Thr Val Gln
625                 630                 635                 640

Leu Gly Lys Leu Cys Cys Thr Gly Val Glu Thr Glu Asp Asp Glu Asp
                645                 650                 655

Thr Glu Ser Asn Ser Ser Val Glu Gln Ala Ser Val Glu Val Pro Asp
            660                 665                 670

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

Thr Lys Ser Val Pro Glu Tyr Ser Glu Val Ala Tyr Pro Asp Tyr Phe
    690                 695                 700

Gly His Ile Pro Pro Pro Phe Lys Glu Pro Ile Leu Glu Arg Pro Tyr
705                 710                 715                 720

Gly Val Gln Arg Thr Lys Ile Ala Gln Asp Ile Glu Arg Leu Ile His
                725                 730                 735

Gln Ser Asp Ile Ile Asp Arg Val Val Tyr Asp Leu Asp Asn Pro Asn
            740                 745                 750

Tyr Thr Ile Pro Glu Glu Gly Asp Ile Leu Lys Phe Asn Ser Lys Phe
        755                 760                 765

Glu Ser Gly Asn Leu Arg Lys Val Ile Gln Ile Arg Lys Asn Glu Tyr
    770                 775                 780

Asp Leu Ile Leu Asn Ser Asp Ile Asn Ser Asn His Tyr His Gln Trp
785                 790                 795                 800

Phe Tyr Phe Glu Val Ser Gly Met Arg Pro Gly Val Ala Tyr Arg Phe
                805                 810                 815

Asn Ile Ile Asn Cys Glu Lys Ser Asn Ser Gln Phe Asn Tyr Gly Met
            820                 825                 830

Gln Pro Leu Met Tyr Ser Val Gln Glu Ala Leu Asn Ala Arg Pro Trp
        835                 840                 845

Trp Ile Arg Met Gly Thr Asp Ile Cys Tyr Tyr Lys Asn His Phe Ser
```

```
    850                 855                 860

Arg Ser Ser Val Ala Ala Gly Gly Gln Lys Gly Lys Ser Tyr Tyr Thr
865                 870                 875                 880

Ile Thr Phe Thr Val Asn Phe Pro His Lys Asp Asp Val Cys Tyr Phe
                885                 890                 895

Ala Tyr His Tyr Pro Tyr Thr Tyr Ser Thr Leu Gln Met His Leu Gln
            900                 905                 910

Lys Leu Glu Ser Ala His Asn Pro Gln Gln Ile Tyr Phe Arg Lys Asp
        915                 920                 925

Val Leu Cys Glu Thr Leu Ser Gly Asn Ser Cys Pro Leu Val Thr Ile
    930                 935                 940

Thr Ala Met Pro Glu Ser Asn Tyr Tyr Glu His Ile Cys His Phe Arg
945                 950                 955                 960

Asn Arg Pro Tyr Val Phe Leu Ser Ala Arg Val His Pro Gly Glu Thr
                965                 970                 975

Asn Ala Ser Trp Val Met Lys Gly Thr Leu Glu Tyr Leu Met Ser Asn
            980                 985                 990

Asn Pro Thr Ala Gln Ser Leu Arg  Glu Ser Tyr Ile Phe  Lys Ile
Val
        995                 1000                1005

Pro Met  Leu Asn Pro Asp Gly  Val Ile Asn Gly Asn  His Arg Cys
    1010                1015                1020

Ser Leu  Ser Gly Glu Asp Leu  Asn Arg Gln Trp Gln  Ser Pro Ser
    1025                1030                1035

Pro Asp  Leu His Pro Thr Ile  Tyr His Ala Lys Gly  Leu Leu Gln
    1040                1045                1050

Tyr Leu  Ala Ala Val Lys Arg  Leu Pro Leu Val Tyr  Cys Asp Tyr
    1055                1060                1065

His Gly  His Ser Arg Lys Lys  Asn Val Phe Met Tyr  Gly Cys Ser
```

1070 1075 1080

Ile Lys Glu Thr Val Trp His Thr Asn Asp Asn Ala Thr Ser Cys
1085 1090 1095

Asp Val Val Glu Asp Thr Gly Tyr Arg Thr Leu Pro Lys Ile Leu
1100 1105 1110

Ser His Ile Ala Pro Ala Phe Cys Met Ser Ser Cys Ser Phe Val
1115 1120 1125

Val Glu Lys Ser Lys Glu Ser Thr Ala Arg Val Val Val Trp Arg
1130 1135 1140

Glu Ile Gly Val Gln Arg Ser Tyr Thr Met Glu Ser Thr Leu Cys
1145 1150 1155

Gly Cys Asp Gln Gly Lys Tyr Lys Gly Leu Gln Ile Gly Thr Arg
1160 1165 1170

Glu Leu Glu Glu Met Gly Ala Lys Phe Cys Val Gly Leu Leu Arg
1175 1180 1185

Leu Lys Arg Leu Thr Ser Pro Leu Glu Tyr Asn Leu Pro Ser Ser
1190 1195 1200

Leu Leu Asp Phe Glu Asn Asp Leu Ile Glu Ser Ser Cys Lys Val
1205 1210 1215

Thr Ser Pro Thr Thr Tyr Val Leu Asp Glu Asp Glu Pro Arg Phe
1220 1225 1230

Leu Glu Glu Val Asp Tyr Ser Ala Glu Ser Asn Asp Glu Leu Asp
1235 1240 1245

Ile Glu Leu Ala Glu Asn Val Gly Asp Tyr Glu Pro Ser Ala Gln
1250 1255 1260

Glu Glu Val Leu Ser Asp Ser Glu Leu Ser Arg Thr Tyr Leu Pro
1265 1270 1275

<210> 7105
<211> 1226

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1515; "

<220>
<221> source
<223> /note="Gene Symbol: AGTPBP1; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding
prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPW5; "

<220>
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<223> /note="ENSP ID: ENSP00000349592"

<400> 7105

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Met Ser Lys Leu Lys Val Ile Pro Glu Lys Ser Leu Thr Asn Asn Ser
1               5                  10                  15

Arg Ile Val Gly Leu Leu Ala Gln Leu Glu Lys Ile Asn Ala Glu Pro
            20                  25                  30

Ser Glu Ser Asp Thr Ala Arg Tyr Val Thr Ser Lys Ile Leu His Leu
        35                  40                  45

Ala Gln Ser Gln Glu Lys Thr Arg Arg Glu Met Thr Ala Lys Gly Ser
    50                  55                  60

Thr Gly Met Glu Ile Leu Leu Ser Thr Leu Glu Asn Thr Lys Asp Leu
65                  70                  75                  80

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

Gly Gly Gly Arg Arg Val Ser Phe Leu Val Thr Lys Gly Gly Ser Gln
            100                 105                 110

Ile Leu Leu Gln Leu Leu Met Asn Ala Ser Lys Glu Ser Pro Pro His
        115                 120                 125
```

```
Glu Asp Leu Met Val Gln Ile His Ser Ile Leu Ala Lys Ile Gly Pro
    130                 135                 140

Lys Asp Lys Lys Phe Gly Val Lys Ala Arg Ile Asn Gly Ala Leu Asn
145                 150                 155                 160

Ile Thr Leu Asn Leu Val Lys Gln Asn Leu Gln Asn His Arg Leu Val
                165                 170                 175

Leu Pro Cys Leu Gln Leu Leu Arg Val Tyr Ser Ala Asn Ser Val Asn
            180                 185                 190

Ser Val Ser Leu Gly Lys Asn Gly Val Val Glu Leu Met Phe Lys Ile
        195                 200                 205

Ile Gly Pro Phe Ser Lys Lys Asn Ser Ser Leu Ile Lys Val Ala Leu
    210                 215                 220

Asp Thr Leu Ala Ala Leu Leu Lys Ser Lys Thr Asn Ala Arg Arg Ala
225                 230                 235                 240

Val Asp Arg Gly Tyr Val Gln Val Leu Leu Thr Ile Tyr Val Asp Trp
                245                 250                 255

His Arg His Asp Asn Arg His Arg Asn Met Leu Ile Arg Lys Gly Ile
            260                 265                 270

Leu Gln Ser Leu Lys Ser Val Thr Asn Ile Lys Leu Gly Arg Lys Ala
        275                 280                 285

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

Cys Leu Ala Val Arg Thr Leu Asp Pro Leu Val Asn Thr Ser Ser Leu
305                 310                 315                 320

Ile Met Arg Lys Cys Phe Pro Lys Asn Arg Leu Pro Leu Pro Thr Ile
                325                 330                 335

Lys Ser Ser Phe His Phe Gln Leu Pro Val Ile Pro Val Thr Gly Pro
            340                 345                 350
```

```
Val Ala Gln Leu Tyr Ser Leu Pro Pro Glu Val Asp Asp Val Val Asp
        355                 360                 365

Glu Ser Asp Asp Asn Asp Asp Ile Asp Val Glu Ala Glu Asn Glu Thr
    370                 375                 380

Glu Asn Glu Asp Asp Leu Asp Gln Asn Phe Lys Asn Asp Asp Ile Glu
385                 390                 395                 400

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

Glu Asp Leu Lys Met Tyr Glu His Leu Phe Pro Glu Leu Val Asp Asp
            420                 425                 430

Phe Gln Asp Tyr Asp Leu Ile Ser Lys Glu Pro Lys Pro Phe Val Phe
        435                 440                 445

Glu Gly Lys Val Arg Gly Pro Ile Val Val Pro Thr Ala Gly Glu Glu
    450                 455                 460

Thr Ser Gly Asn Ser Gly Asn Leu Arg Lys Val Val Met Lys Glu Asn
465                 470                 475                 480

Ile Ser Ser Lys Gly Asp Glu Gly Glu Lys Lys Ser Thr Phe Met Asp
                485                 490                 495

Leu Ala Lys Glu Asp Ile Lys Asp Asn Asp Arg Thr Leu Gln Gln Gln
            500                 505                 510

Pro Gly Asp Gln Asn Arg Thr Ile Ser Ser Val His Gly Leu Asn Asn
        515                 520                 525

Asp Ile Val Lys Ala Leu Asp Arg Ile Thr Leu Gln Asn Ile Pro Ser
    530                 535                 540

Gln Thr Ala Pro Gly Phe Thr Ala Glu Met Lys Lys Asp Cys Ser Leu
545                 550                 555                 560

Pro Leu Thr Val Leu Thr Cys Ala Lys Ala Cys Pro His Met Ala Thr
                565                 570                 575

Cys Gly Asn Val Leu Phe Glu Gly Arg Thr Val Gln Leu Gly Lys Leu
```

```
            580                 585                 590

Cys Cys Thr Gly Val Glu Thr Glu Asp Asp Glu Asp Thr Glu Ser Asn
        595                 600                 605

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

His Asp Pro Asp Leu Tyr Ile Glu Ile Val Lys Asn Thr Lys Ser Val
625                 630                 635                 640

Pro Glu Tyr Ser Glu Val Ala Tyr Pro Asp Tyr Phe Gly His Ile Pro
                645                 650                 655

Pro Pro Phe Lys Glu Pro Ile Leu Glu Arg Pro Tyr Gly Val Gln Arg
            660                 665                 670

Thr Lys Ile Ala Gln Asp Ile Glu Arg Leu Ile His Gln Ser Asp Ile
        675                 680                 685

Ile Asp Arg Val Val Tyr Asp Leu Asp Asn Pro Asn Tyr Thr Ile Pro
    690                 695                 700

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

Leu Arg Lys Val Ile Gln Ile Arg Lys Asn Glu Tyr Asp Leu Ile Leu
                725                 730                 735

Asn Ser Asp Ile Asn Ser Asn His Tyr His Gln Trp Phe Tyr Phe Glu
            740                 745                 750

Val Ser Gly Met Arg Pro Gly Val Ala Tyr Arg Phe Asn Ile Ile Asn
        755                 760                 765

Cys Glu Lys Ser Asn Ser Gln Phe Asn Tyr Gly Met Gln Pro Leu Met
    770                 775                 780

Tyr Ser Val Gln Glu Ala Leu Asn Ala Arg Pro Trp Trp Ile Arg Met
785                 790                 795                 800

Gly Thr Asp Ile Cys Tyr Tyr Lys Asn His Phe Ser Arg Ser Ser Val
                805                 810                 815
```

```
Ala Ala Gly Gly Gln Lys Gly Lys Ser Tyr Tyr Thr Ile Thr Phe Thr
            820                 825                 830

Val Asn Phe Pro His Lys Asp Asp Val Cys Tyr Phe Ala Tyr His Tyr
        835                 840                 845

Pro Tyr Thr Tyr Ser Thr Leu Gln Met His Leu Gln Lys Leu Glu Ser
    850                 855                 860

Ala His Asn Pro Gln Gln Ile Tyr Phe Arg Lys Asp Val Leu Cys Glu
865                 870                 875                 880

Thr Leu Ser Gly Asn Ser Cys Pro Leu Val Thr Ile Thr Ala Met Pro
                885                 890                 895

Glu Ser Asn Tyr Tyr Glu His Ile Cys His Phe Arg Asn Arg Pro Tyr
            900                 905                 910

Val Phe Leu Ser Ala Arg Val His Pro Gly Glu Thr Asn Ala Ser Trp
        915                 920                 925

Val Met Lys Gly Thr Leu Glu Tyr Leu Met Ser Asn Asn Pro Thr Ala
    930                 935                 940

Gln Ser Leu Arg Glu Ser Tyr Ile Phe Lys Ile Val Pro Met Leu Asn
945                 950                 955                 960

Pro Asp Gly Val Ile Asn Gly Asn His Arg Cys Ser Leu Ser Gly Glu
                965                 970                 975

Asp Leu Asn Arg Gln Trp Gln Ser Pro Ser Pro Asp Leu His Pro Thr
            980                 985                 990

Ile Tyr His Ala Lys Gly Leu Leu  Gln Tyr Leu Ala Ala  Val Lys
Arg
        995                 1000                1005

Leu Pro  Leu Val Tyr Cys Asp  Tyr His Gly His Ser  Arg Lys Lys
    1010                1015                1020

Asn Val  Phe Met Tyr Gly Cys  Ser Ile Lys Glu Thr  Val Trp His
    1025                1030                1035
```

```
Thr Asn  Asp Asn Ala Thr Ser  Cys Asp Val Val Glu  Asp Thr Gly
    1040                1045                1050

Tyr Arg  Thr Leu Pro Lys Ile  Leu Ser His Ile Ala  Pro Ala Phe
    1055                1060                1065

Cys Met  Ser Ser Cys Ser Phe  Val Val Glu Lys Ser  Lys Glu Ser
    1070                1075                1080

Thr Ala  Arg Val Val Val Trp  Arg Glu Ile Gly Val  Gln Arg Ser
    1085                1090                1095

Tyr Thr  Met Glu Ser Thr Leu  Cys Gly Cys Asp Gln  Gly Lys Tyr
    1100                1105                1110

Lys Gly  Leu Gln Ile Gly Thr  Arg Glu Leu Glu Glu  Met Gly Ala
    1115                1120                1125

Lys Phe  Cys Val Gly Leu Leu  Arg Leu Lys Arg Leu  Thr Ser Pro
    1130                1135                1140

Leu Glu  Tyr Asn Leu Pro Ser  Ser Leu Leu Asp Phe  Glu Asn Asp
    1145                1150                1155

Leu Ile  Glu Ser Ser Cys Lys  Val Thr Ser Pro Thr  Thr Tyr Val
    1160                1165                1170

Leu Asp  Glu Asp Glu Pro Arg  Phe Leu Glu Glu Val  Asp Tyr Ser
    1175                1180                1185

Ala Glu  Ser Asn Asp Glu Leu  Asp Ile Glu Leu Ala  Glu Asn Val
    1190                1195                1200

Gly Asp  Tyr Glu Pro Ser Ala  Gln Glu Glu Val Leu  Ser Asp Ser
    1205                1210                1215

Glu Leu  Ser Arg Thr Tyr Leu  Pro
    1220                1225
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<210> 7106
<211> 1186
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<213> Homo sapiens

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prt 1; "

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<400> 7106

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Met Ser Lys Leu Lys Val Ile Pro Glu Lys Ser Leu Thr Asn Asn Ser
1               5                  10                  15


Arg Ile Val Gly Leu Leu Ala Gln Leu Glu Lys Ile Asn Ala Glu Pro
            20                  25                  30


Ser Glu Ser Asp Thr Ala Arg Tyr Val Thr Ser Lys Ile Leu His Leu
        35                  40                  45


Ala Gln Ser Gln Glu Lys Thr Arg Arg Glu Met Thr Ala Lys Gly Ser
    50                  55                  60


Thr Gly Met Glu Ile Leu Leu Ser Thr Leu Glu Asn Thr Lys Asp Leu
65                  70                  75                  80


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


Gly Gly Gly Arg Arg Val Ser Phe Leu Val Thr Lys Gly Gly Ser Gln
            100                 105                 110


Ile Leu Leu Gln Leu Leu Met Asn Ala Ser Lys Glu Ser Pro Pro His
        115                 120                 125
```

```
Glu Asp Leu Met Val Gln Ile His Ser Ile Leu Ala Lys Ile Gly Pro
    130                 135                 140

Lys Asp Lys Lys Phe Gly Val Lys Ala Arg Ile Asn Gly Ala Leu Asn
145                 150                 155                 160

Ile Thr Leu Asn Leu Val Lys Gln Asn Leu Gln Asn His Arg Leu Val
                165                 170                 175

Leu Pro Cys Leu Gln Leu Leu Arg Val Tyr Ser Ala Asn Ser Val Asn
            180                 185                 190

Ser Val Ser Leu Gly Lys Asn Gly Val Val Glu Leu Met Phe Lys Ile
        195                 200                 205

Ile Gly Pro Phe Ser Lys Lys Asn Ser Ser Leu Ile Lys Val Ala Leu
    210                 215                 220

Asp Thr Leu Ala Ala Leu Leu Lys Ser Lys Thr Asn Ala Arg Arg Ala
225                 230                 235                 240

Val Asp Arg Gly Tyr Val Gln Val Leu Leu Thr Ile Tyr Val Asp Trp
                245                 250                 255

His Arg His Asp Asn Arg His Arg Asn Met Leu Ile Arg Lys Gly Ile
            260                 265                 270

Leu Gln Ser Leu Lys Ser Val Thr Asn Ile Lys Leu Gly Arg Lys Ala
        275                 280                 285

Phe Ile Asp Ala Asn Gly Met Lys Ile Leu Tyr Asn Thr Ser Gln Leu
    290                 295                 300

Pro Val Ile Pro Val Thr Gly Pro Val Ala Gln Leu Tyr Ser Leu Pro
305                 310                 315                 320

Pro Glu Val Asp Asp Val Val Asp Glu Ser Asp Asp Asn Asp Asp Ile
                325                 330                 335

Asp Val Glu Ala Glu Asn Glu Thr Glu Asn Glu Asp Asp Leu Asp Gln
            340                 345                 350

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

```
        355                 360                 365

Gln Gln Glu Pro Gly Arg Thr Ile Glu Asp Leu Lys Met Tyr Glu His
    370                 375                 380

Leu Phe Pro Glu Leu Val Asp Asp Phe Gln Asp Tyr Asp Leu Ile Ser
385                 390                 395                 400

Lys Glu Pro Lys Pro Phe Val Phe Glu Gly Lys Val Arg Gly Pro Ile
                405                 410                 415

Val Val Pro Thr Ala Gly Glu Glu Thr Ser Gly Asn Ser Gly Asn Leu
            420                 425                 430

Arg Lys Val Val Met Lys Glu Asn Ile Ser Ser Lys Gly Asp Glu Gly
        435                 440                 445

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

Asn Asp Arg Thr Leu Gln Gln Gln Pro Gly Asp Gln Asn Arg Thr Ile
465                 470                 475                 480

Ser Ser Val His Gly Leu Asn Asn Asp Ile Val Lys Ala Leu Asp Arg
                485                 490                 495

Ile Thr Leu Gln Asn Ile Pro Ser Gln Thr Ala Pro Gly Phe Thr Ala
            500                 505                 510

Glu Met Lys Lys Asp Cys Ser Leu Pro Leu Thr Val Leu Thr Cys Ala
        515                 520                 525

Lys Ala Cys Pro His Met Ala Thr Cys Gly Asn Val Leu Phe Glu Gly
    530                 535                 540

Arg Thr Val Gln Leu Gly Lys Leu Cys Cys Thr Gly Val Glu Thr Glu
545                 550                 555                 560

Asp Asp Glu Asp Thr Glu Ser Asn Ser Ser Val Glu Gln Ala Ser Val
                565                 570                 575

Glu Val Pro Asp Gly Pro Thr Leu His Asp Pro Asp Leu Tyr Ile Glu
            580                 585                 590
```

Ile Val Lys Asn Thr Lys Ser Val Pro Glu Tyr Ser Glu Val Ala Tyr
595 600 605

Pro Asp Tyr Phe Gly His Ile Pro Pro Pro Phe Lys Glu Pro Ile Leu
610 615 620

Glu Arg Pro Tyr Gly Val Gln Arg Thr Lys Ile Ala Gln Asp Ile Glu
625 630 635 640

Arg Leu Ile His Gln Ser Asp Ile Ile Asp Arg Val Val Tyr Asp Leu
645 650 655

Asp Asn Pro Asn Tyr Thr Ile Pro Glu Glu Gly Asp Ile Leu Lys Phe
660 665 670

Asn Ser Lys Phe Glu Ser Gly Asn Leu Arg Lys Val Ile Gln Ile Arg
675 680 685

Lys Asn Glu Tyr Asp Leu Ile Leu Asn Ser Asp Ile Asn Ser Asn His
690 695 700

Tyr His Gln Trp Phe Tyr Phe Glu Val Ser Gly Met Arg Pro Gly Val
705 710 715 720

Ala Tyr Arg Phe Asn Ile Ile Asn Cys Glu Lys Ser Asn Ser Gln Phe
725 730 735

Asn Tyr Gly Met Gln Pro Leu Met Tyr Ser Val Gln Glu Ala Leu Asn
740 745 750

Ala Arg Pro Trp Trp Ile Arg Met Gly Thr Asp Ile Cys Tyr Tyr Lys
755 760 765

Asn His Phe Ser Arg Ser Ser Val Ala Ala Gly Gly Gln Lys Gly Lys
770 775 780

Ser Tyr Tyr Thr Ile Thr Phe Thr Val Asn Phe Pro His Lys Asp Asp
785 790 795 800

Val Cys Tyr Phe Ala Tyr His Tyr Pro Tyr Thr Tyr Ser Thr Leu Gln
805 810 815

```
Met His Leu Gln Lys Leu Glu Ser Ala His Asn Pro Gln Gln Ile Tyr
            820                 825                 830

Phe Arg Lys Asp Val Leu Cys Glu Thr Leu Ser Gly Asn Ser Cys Pro
        835                 840                 845

Leu Val Thr Ile Thr Ala Met Pro Glu Ser Asn Tyr Tyr Glu His Ile
    850                 855                 860

Cys His Phe Arg Asn Arg Pro Tyr Val Phe Leu Ser Ala Arg Val His
865                 870                 875                 880

Pro Gly Glu Thr Asn Ala Ser Trp Val Met Lys Gly Thr Leu Glu Tyr
                885                 890                 895

Leu Met Ser Asn Asn Pro Thr Ala Gln Ser Leu Arg Glu Ser Tyr Ile
            900                 905                 910

Phe Lys Ile Val Pro Met Leu Asn Pro Asp Gly Val Ile Asn Gly Asn
        915                 920                 925

His Arg Cys Ser Leu Ser Gly Glu Asp Leu Asn Arg Gln Trp Gln Ser
    930                 935                 940

Pro Ser Pro Asp Leu His Pro Thr Ile Tyr His Ala Lys Gly Leu Leu
945                 950                 955                 960

Gln Tyr Leu Ala Ala Val Lys Arg Leu Pro Leu Val Tyr Cys Asp Tyr
                965                 970                 975

His Gly His Ser Arg Lys Lys Asn Val Phe Met Tyr Gly Cys Ser Ile
            980                 985                 990

Lys Glu Thr Val Trp His Thr Asn  Asp Asn Ala Thr Ser  Cys Asp
Val
        995                 1000                1005

Val Glu  Asp Thr Gly Tyr Arg  Thr Leu Pro Lys Ile  Leu Ser His
    1010                1015                1020

Ile Ala  Pro Ala Phe Cys Met  Ser Ser Cys Ser Phe  Val Val Glu
    1025                1030                1035
```

```
Lys Ser  Lys Glu Ser Thr Ala  Arg Val Val Val Trp  Arg Glu Ile
    1040                1045                1050

Gly Val  Gln Arg Ser Tyr Thr  Met Glu Ser Thr Leu  Cys Gly Cys
    1055                1060                1065

Asp Gln  Gly Lys Tyr Lys Gly  Leu Gln Ile Gly Thr  Arg Glu Leu
    1070                1075                1080

Glu Glu  Met Gly Ala Lys Phe  Cys Val Gly Leu Leu  Arg Leu Lys
    1085                1090                1095

Arg Leu  Thr Ser Pro Leu Glu  Tyr Asn Leu Pro Ser  Ser Leu Leu
    1100                1105                1110

Asp Phe  Glu Asn Asp Leu Ile  Glu Ser Ser Cys Lys  Val Thr Ser
    1115                1120                1125

Pro Thr  Thr Tyr Val Leu Asp  Glu Asp Glu Pro Arg  Phe Leu Glu
    1130                1135                1140

Glu Val  Asp Tyr Ser Ala Glu  Ser Asn Asp Glu Leu  Asp Ile Glu
    1145                1150                1155

Leu Ala  Glu Asn Val Gly Asp  Tyr Glu Pro Ser Ala  Gln Glu Glu
    1160                1165                1170

Val Leu  Ser Asp Ser Glu Leu  Ser Arg Thr Tyr Leu  Pro
    1175                1180                1185


<210> 7107
<211> 1238
<212> PRT
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ATP/GTP binding
prt 1; "

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<400> 7107

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Met Arg Thr Gly Ser Ala Ala Ser Ser Ala Ala Ala Ala Ala Ala Ala
1               5                  10                  15

Ala Ala Ala Ser Ala Ser Pro Ala Thr Gly Val Cys Met Lys Thr Pro
            20                  25                  30

Gly Gly Gly Arg Arg Gly Ile Arg Arg Asp Pro Gly Ala Glu Pro Gly
        35                  40                  45

Ala Ala Ala Leu Arg Gly Pro Arg Gln Arg Pro Ile Leu Ser Arg Leu
    50                  55                  60

Thr Asn Asn Ser Arg Ile Val Gly Leu Leu Ala Gln Leu Glu Lys Ile
65                  70                  75                  80

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

Ile Leu His Leu Ala Gln Ser Gln Glu Lys Thr Arg Arg Glu Met Thr
            100                 105                 110

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

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

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

Gly Gly Ser Gln Ile Leu Leu Gln Leu Leu Met Asn Ala Ser Lys Glu
                165                 170                 175

Ser Pro Pro His Glu Asp Leu Met Val Gln Ile His Ser Ile Leu Ala
```

```
            180                 185                 190

Lys Ile Gly Pro Lys Asp Lys Lys Phe Gly Val Lys Ala Arg Ile Asn
        195                 200                 205

Gly Ala Leu Asn Ile Thr Leu Asn Leu Val Lys Gln Asn Leu Gln Asn
    210                 215                 220

His Arg Leu Val Leu Pro Cys Leu Gln Leu Leu Arg Val Tyr Ser Ala
225                 230                 235                 240

Asn Ser Val Asn Ser Val Ser Leu Gly Lys Asn Gly Val Val Glu Leu
                245                 250                 255

Met Phe Lys Ile Ile Gly Pro Phe Ser Lys Lys Asn Ser Ser Leu Ile
            260                 265                 270

Lys Val Ala Leu Asp Thr Leu Ala Ala Leu Leu Lys Ser Lys Thr Asn
        275                 280                 285

Ala Arg Arg Ala Val Asp Arg Gly Tyr Val Gln Val Leu Leu Thr Ile
    290                 295                 300

Tyr Val Asp Trp His Arg His Asp Asn Arg His Arg Asn Met Leu Ile
305                 310                 315                 320

Arg Lys Gly Ile Leu Gln Ser Leu Lys Ser Val Thr Asn Ile Lys Leu
                325                 330                 335

Gly Arg Lys Ala Phe Ile Asp Ala Asn Gly Met Lys Ile Leu Tyr Asn
            340                 345                 350

Thr Ser Gln Leu Pro Val Ile Pro Val Thr Gly Pro Val Ala Gln Leu
        355                 360                 365

Tyr Ser Leu Pro Pro Glu Val Asp Asp Val Val Asp Glu Ser Asp Asp
    370                 375                 380

Asn Asp Asp Ile Asp Val Glu Ala Glu Asn Glu Thr Glu Asn Glu Asp
385                 390                 395                 400

Asp Leu Asp Gln Asn Phe Lys Asn Asp Asp Ile Glu Thr Asp Ile Asn
                405                 410                 415
```

```
Lys Leu Lys Pro Gln Gln Glu Pro Gly Arg Thr Ile Glu Asp Leu Lys
            420                 425                 430

Met Tyr Glu His Leu Phe Pro Glu Leu Val Asp Asp Phe Gln Asp Tyr
        435                 440                 445

Asp Leu Ile Ser Lys Glu Pro Lys Pro Phe Val Phe Glu Gly Lys Val
    450                 455                 460

Arg Gly Pro Ile Val Val Pro Thr Ala Gly Glu Glu Thr Ser Gly Asn
465                 470                 475                 480

Ser Gly Asn Leu Arg Lys Val Val Met Lys Glu Asn Ile Ser Ser Lys
                485                 490                 495

Gly Asp Glu Gly Glu Lys Lys Ser Thr Phe Met Asp Leu Ala Lys Glu
            500                 505                 510

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

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

Ala Leu Asp Arg Ile Thr Leu Gln Asn Ile Pro Ser Gln Thr Ala Pro
545                 550                 555                 560

Gly Phe Thr Ala Glu Met Lys Lys Asp Cys Ser Leu Pro Leu Thr Val
                565                 570                 575

Leu Thr Cys Ala Lys Ala Cys Pro His Met Ala Thr Cys Gly Asn Val
            580                 585                 590

Leu Phe Glu Gly Arg Thr Val Gln Leu Gly Lys Leu Cys Cys Thr Gly
        595                 600                 605

Val Glu Thr Glu Asp Asp Glu Asp Thr Glu Ser Asn Ser Ser Val Glu
    610                 615                 620

Gln Ala Ser Val Glu Val Pro Asp Gly Pro Thr Leu His Asp Pro Asp
625                 630                 635                 640
```

```
Leu Tyr Ile Glu Ile Val Lys Asn Thr Lys Ser Val Pro Glu Tyr Ser
                645                 650                 655

Glu Val Ala Tyr Pro Asp Tyr Phe Gly His Ile Pro Pro Pro Phe Lys
            660                 665                 670

Glu Pro Ile Leu Glu Arg Pro Tyr Gly Val Gln Arg Thr Lys Ile Ala
        675                 680                 685

Gln Asp Ile Glu Arg Leu Ile His Gln Ser Asp Ile Ile Asp Arg Val
    690                 695                 700

Val Tyr Asp Leu Asp Asn Pro Asn Tyr Thr Ile Pro Glu Glu Gly Asp
705                 710                 715                 720

Ile Leu Lys Phe Asn Ser Lys Phe Glu Ser Gly Asn Leu Arg Lys Val
                725                 730                 735

Ile Gln Ile Arg Lys Asn Glu Tyr Asp Leu Ile Leu Asn Ser Asp Ile
            740                 745                 750

Asn Ser Asn His Tyr His Gln Trp Phe Tyr Phe Glu Val Ser Gly Met
        755                 760                 765

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

Asn Ser Gln Phe Asn Tyr Gly Met Gln Pro Leu Met Tyr Ser Val Gln
785                 790                 795                 800

Glu Ala Leu Asn Ala Arg Pro Trp Trp Ile Arg Met Gly Thr Asp Ile
                805                 810                 815

Cys Tyr Tyr Lys Asn His Phe Ser Arg Ser Ser Val Ala Ala Gly Gly
            820                 825                 830

Gln Lys Gly Lys Ser Tyr Tyr Thr Ile Thr Phe Thr Val Asn Phe Pro
        835                 840                 845

His Lys Asp Asp Val Cys Tyr Phe Ala Tyr His Tyr Pro Tyr Thr Tyr
    850                 855                 860
```

```
Ser Thr Leu Gln Met His Leu Gln Lys Leu Glu Ser Ala His Asn Pro
865                 870                 875                 880

Gln Gln Ile Tyr Phe Arg Lys Asp Val Leu Cys Glu Thr Leu Ser Gly
                885                 890                 895

Asn Ser Cys Pro Leu Val Thr Ile Thr Ala Met Pro Glu Ser Asn Tyr
            900                 905                 910

Tyr Glu His Ile Cys His Phe Arg Asn Arg Pro Tyr Val Phe Leu Ser
        915                 920                 925

Ala Arg Val His Pro Gly Glu Thr Asn Ala Ser Trp Val Met Lys Gly
    930                 935                 940

Thr Leu Glu Tyr Leu Met Ser Asn Asn Pro Thr Ala Gln Ser Leu Arg
945                 950                 955                 960

Glu Ser Tyr Ile Phe Lys Ile Val Pro Met Leu Asn Pro Asp Gly Val
                965                 970                 975

Ile Asn Gly Asn His Arg Cys Ser Leu Ser Gly Glu Asp Leu Asn Arg
            980                 985                 990

Gln Trp Gln Ser Pro Ser Pro Asp  Leu His Pro Thr Ile  Tyr His
Ala
        995                 1000                1005

Lys Gly  Leu Leu Gln Tyr Leu  Ala Ala Val Lys Arg  Leu Pro Leu
    1010                1015                1020

Val Tyr  Cys Asp Tyr His Gly  His Ser Arg Lys Lys  Asn Val Phe
    1025                1030                1035

Met Tyr  Gly Cys Ser Ile Lys  Glu Thr Val Trp His  Thr Asn Asp
    1040                1045                1050

Asn Ala  Thr Ser Cys Asp Val  Val Glu Asp Thr Gly  Tyr Arg Thr
    1055                1060                1065

Leu Pro  Lys Ile Leu Ser His  Ile Ala Pro Ala Phe  Cys Met Ser
    1070                1075                1080
```

```
Ser Cys  Ser Phe Val Val Glu  Lys Ser Lys Glu Ser  Thr Ala Arg
    1085                1090                1095

Val Val  Val Trp Arg Glu Ile  Gly Val Gln Arg Ser  Tyr Thr Met
    1100                1105                1110

Glu Ser  Thr Leu Cys Gly Cys  Asp Gln Gly Lys Tyr  Lys Gly Leu
    1115                1120                1125

Gln Ile  Gly Thr Arg Glu Leu  Glu Glu Met Gly Ala  Lys Phe Cys
    1130                1135                1140

Val Gly  Leu Leu Arg Leu Lys  Arg Leu Thr Ser Pro  Leu Glu Tyr
    1145                1150                1155

Asn Leu  Pro Ser Ser Leu Leu  Asp Phe Glu Asn Asp  Leu Ile Glu
    1160                1165                1170

Ser Ser  Cys Lys Val Thr Ser  Pro Thr Thr Tyr Val  Leu Asp Glu
    1175                1180                1185

Asp Glu  Pro Arg Phe Leu Glu  Glu Val Asp Tyr Ser  Ala Glu Ser
    1190                1195                1200

Asn Asp  Glu Leu Asp Ile Glu  Leu Ala Glu Asn Val  Gly Asp Tyr
    1205                1210                1215

Glu Pro  Ser Ala Gln Glu Glu  Val Leu Ser Asp Ser  Glu Leu Ser
    1220                1225                1230

Arg Thr  Tyr Leu Pro
    1235


<210> 7108
<211> 1032
<212> PRT
<213> Homo sapiens

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

Arg Leu Leu Ala Lys Val Gly Leu Arg Asp Lys Lys Ile Gly Arg Lys
35 40 45

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

Asn Leu Ser His Gly Gln Asn Leu Leu His Cys Leu Trp Ala Leu Arg
65 70 75 80

Val Phe Ala Ser Ser Val Ser Met Gly Ala Met Leu Gly Ile Asn Gly
85 90 95

Ala Met Glu Leu Leu Phe Lys Val Ile Thr Pro Tyr Thr Arg Lys Arg
100 105 110

Thr Gln Ala Ile Arg Ala Ala Thr Glu Val Leu Ala Ala Leu Leu Lys
115 120 125

Ser Lys Ser Asn Gly Arg Arg Ala Val Asn Arg Gly Tyr Val Thr Ser
130 135 140

Leu Leu Gly Leu His Gln Asp Trp His Ser His Asp Thr Ala Asn Ala
145 150 155 160

Tyr Val Gln Ile Arg Arg Gly Leu Leu Leu Cys Leu Arg His Ile Ala
165 170 175

Ala Leu Arg Ser Gly Arg Glu Ala Phe Leu Ala Ala Gln Gly Met Glu
180 185 190

```
Ile Leu Phe Ser Thr Thr Gln Asn Cys Leu Asp Asp Lys Ser Met Glu
        195                 200                 205

Pro Val Ile Ser Val Val Leu Gln Ile Leu Arg Gln Cys Tyr Pro Thr
    210                 215                 220

Ser Pro Leu Pro Leu Val Thr Ala Ser Ser Ala Tyr Ala Phe Pro Val
225                 230                 235                 240

Pro Gly Cys Ile Thr Thr Glu Pro Pro His Asp Leu Pro Glu Glu Asp
                245                 250                 255

Phe Glu Asp Asp Gly Asp Asp Glu Val Asp Lys Asp Ser Asp Thr Glu
            260                 265                 270

Asp Gly Lys Val Glu Asp Asp Asp Leu Glu Thr Asp Val Asn Lys Leu
        275                 280                 285

Ser Ser Lys Pro Gly Leu Asp Arg Pro Glu Glu Glu Leu Met Gln Tyr
    290                 295                 300

Glu Val Met Cys Leu Glu Leu Ser Tyr Ser Phe Glu Glu Leu Gln Ser
305                 310                 315                 320

Lys Leu Gly Asp Asp Leu Asn Ser Glu Lys Thr Gln Tyr Ala Asn His
                325                 330                 335

His His Ile Pro Ala Ala Ala Ser Ser Lys Gln His Cys Tyr Ser Lys
            340                 345                 350

Asp Gln Ser Ser Cys Gly Gln Glu Arg Glu Tyr Ala Val Gln Thr Ser
        355                 360                 365

Leu Leu Cys Arg Val Lys Thr Gly Arg Ser Thr Val His Leu Gly Ser
    370                 375                 380

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

Leu Arg Arg Asp Ser Ser Glu Ser Glu Ile Pro Asp Ile Gln Ala Ser
                405                 410                 415
```

```
Pro Lys Ala Asp Ala Trp Asp Val Asp Ala Ile Phe Cys Pro Arg Met
            420                 425                 430

Ser Ala Ser Phe Ser Asn Ser Thr Arg Thr Arg Glu Val Val Lys Val
        435                 440                 445

Ile Asp Lys Leu Leu Gln Thr His Leu Lys Arg Val Pro Phe His Asp
    450                 455                 460

Pro Tyr Leu Tyr Met Ala Lys Ala Arg Arg Thr Ser Ser Val Val Asp
465                 470                 475                 480

Phe Lys Met Met Ala Phe Pro Asp Val Trp Gly His Cys Pro Pro Pro
                485                 490                 495

Thr Thr Gln Pro Met Leu Glu Arg Lys Cys Gly Val Gln Arg Ile Arg
            500                 505                 510

Ile Phe Glu Asp Ile Arg Arg Leu Ile Gln Pro Ser Asp Val Ile Asn
        515                 520                 525

Lys Val Val Phe Ser Leu Asp Glu Pro Trp Pro Leu Gln Asp Asn Ala
    530                 535                 540

Ser Asn Cys Leu Arg Phe Phe Ser Lys Phe Glu Ser Gly Asn Leu Arg
545                 550                 555                 560

Lys Ala Ile Gln Val Arg Glu Phe Glu Tyr Asp Leu Leu Val Asn Ala
                565                 570                 575

Asp Val Asn Ser Thr Gln His Gln Gln Trp Phe Tyr Phe Lys Val Ser
            580                 585                 590

Gly Met Gln Ala Ala Ile Pro Tyr His Phe Asn Ile Ile Asn Cys Glu
        595                 600                 605

Lys Pro Asn Ser Gln Phe Asn Tyr Gly Met Gln Pro Thr Leu Tyr Ser
    610                 615                 620

Val Lys Glu Ala Leu Leu Gly Lys Pro Thr Trp Ile Arg Thr Gly His
625                 630                 635                 640

Glu Ile Cys Tyr Tyr Lys Asn His Tyr Arg Gln Ser Thr Ala Val Ala
```

645 650 655

Gly Gly Ala Ser Gly Lys Cys Tyr Tyr Thr Leu Thr Phe Ala Val Thr
660 665 670

Phe Pro His Ser Glu Asp Val Cys Tyr Leu Ala Tyr His Tyr Pro Tyr
675 680 685

Thr Tyr Thr Ala Leu Met Thr His Leu Asp Ile Leu Glu Lys Ser Val
690 695 700

Asn Leu Lys Glu Val Tyr Phe Arg Gln Asp Val Leu Cys Gln Thr Leu
705 710 715 720

Gly Gly Asn Pro Cys Pro Leu Val Thr Ile Thr Ala Met Pro Glu Ser
725 730 735

Asn Ser Asp Glu His Leu Glu Gln Phe Arg His Arg Pro Tyr Gln Val
740 745 750

Ile Thr Ala Arg Val His Pro Gly Glu Ser Asn Ala Ser Trp Val Met
755 760 765

Lys Gly Thr Leu Glu Phe Leu Val Ser Ser Asp Pro Val Ala Arg Leu
770 775 780

Leu Arg Glu Asn Phe Ile Phe Lys Ile Ile Pro Met Leu Asn Pro Asp
785 790 795 800

Gly Val Ile Asn Gly Asn His Arg Cys Ser Leu Ser Gly Glu Asp Leu
805 810 815

Asn Arg Gln Trp Leu Ser Pro Ser Ala His Leu Gln Pro Thr Ile Tyr
820 825 830

His Ala Lys Gly Leu Leu Tyr His Leu Ser Ser Ile Gly Arg Ser Pro
835 840 845

Val Val Phe Cys Asp Phe His Gly His Ser Gln Lys Lys Asn Val Phe
850 855 860

Leu Tyr Gly Cys Ser Ile Lys Glu Thr Leu Trp Gln Ala Ala Cys Thr
865 870 875 880

```
Val Gly Thr Ser Thr Ile Leu Glu Glu Val Asn Tyr Arg Thr Leu Pro
                885                 890                 895

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

Phe Leu Val Glu Lys Ser Arg Ala Ser Thr Ala Arg Val Val Val Trp
        915                 920                 925

Arg Glu Met Gly Val Ser Arg Ser Tyr Thr Met Glu Ser Ser Tyr Cys
    930                 935                 940

Gly Cys Asn Gln Gly Pro Tyr Gln Cys Thr Gln Arg Leu Leu Glu Arg
945                 950                 955                 960

Thr Lys Asn Glu Arg Ala His Pro Val Asp Gly Leu Gln Gly Leu Gln
                965                 970                 975

Phe Gly Thr Arg Glu Leu Glu Glu Met Gly Ala Met Phe Cys Leu Gly
            980                 985                 990

Leu Leu Ile Leu Glu Leu Lys Ser  Ala Ser Cys Ser His  Gln Leu
Leu
        995                 1000                1005

Ala Gln  Ala Ala Thr Leu Leu  Ser Ala Glu Glu Asp  Ala Leu Asp
    1010                1015                1020

Gln His  Leu Gln Arg Asp Ala  Pro Lys
    1025                1030


<210> 7109
<211> 1066
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<221> source
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<220>
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<220>
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<400> 7109

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Met Ile Ser Lys Gly Gly Ser Glu Ala Leu Leu Gln Thr Leu Val Asp
1               5                  10                  15

Thr Ala Arg Thr Ala Pro Pro Asp Tyr Asp Ile Leu Leu Pro Leu Phe
            20                  25                  30

Arg Leu Leu Ala Lys Val Gly Leu Arg Asp Lys Lys Ile Gly Arg Lys
        35                  40                  45

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

Asn Leu Ser His Gly Gln Asn Leu Leu His Cys Leu Trp Ala Leu Arg
65                  70                  75                  80

Val Phe Ala Ser Ser Val Ser Met Gly Ala Met Leu Gly Ile Asn Gly
                85                  90                  95

Ala Met Glu Leu Leu Phe Lys Val Ile Thr Pro Tyr Thr Arg Lys Arg
            100                 105                 110

Thr Gln Ala Ile Arg Ala Ala Thr Glu Val Leu Ala Ala Leu Leu Lys
        115                 120                 125

Ser Lys Ser Asn Gly Arg Arg Ala Val Asn Arg Gly Tyr Val Thr Ser
    130                 135                 140

Leu Leu Gly Leu His Gln Asp Trp His Ser His Asp Thr Ala Asn Ala
145                 150                 155                 160

Tyr Val Gln Ile Arg Arg Gly Leu Leu Leu Cys Leu Arg His Ile Ala
                165                 170                 175
```

```
Ala Leu Arg Ser Gly Arg Glu Ala Phe Leu Ala Ala Gln Gly Met Glu
            180                 185                 190

Ile Leu Phe Ser Thr Thr Gln Asn Cys Leu Asp Asp Lys Ser Met Glu
        195                 200                 205

Pro Val Ile Ser Val Val Leu Gln Ile Leu Arg Gln Cys Tyr Pro Thr
    210                 215                 220

Ser Pro Leu Pro Leu Val Thr Ala Ser Ser Ala Tyr Ala Phe Pro Val
225                 230                 235                 240

Pro Gly Cys Ile Thr Thr Glu Pro Pro His Asp Leu Pro Glu Glu Asp
                245                 250                 255

Phe Glu Asp Asp Gly Asp Asp Glu Val Asp Lys Asp Ser Asp Thr Glu
            260                 265                 270

Asp Gly Lys Val Glu Asp Asp Asp Leu Glu Thr Asp Val Asn Lys Leu
        275                 280                 285

Ser Ser Lys Pro Gly Leu Asp Arg Pro Glu Glu Glu Leu Met Gln Tyr
    290                 295                 300

Glu Val Met Cys Leu Glu Leu Ser Tyr Ser Phe Glu Glu Leu Gln Ser
305                 310                 315                 320

Lys Leu Gly Asp Asp Leu Asn Ser Glu Lys Thr Gln Tyr Ala Asn His
                325                 330                 335

His His Ile Pro Ala Ala Ala Ser Ser Lys Gln His Cys Tyr Ser Lys
            340                 345                 350

Asp Gln Ser Ser Cys Gly Gln Glu Arg Glu Tyr Ala Val Gln Thr Ser
        355                 360                 365

Leu Leu Cys Arg Val Lys Thr Gly Arg Ser Thr Val His Leu Gly Ser
    370                 375                 380

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

Leu Arg Arg Asp Ser Ser Glu Ser Glu Ile Pro Asp Ile Gln Ala Ser
```

```
                405                 410                 415

Pro Lys Ala Asp Ala Trp Asp Val Asp Ala Ile Phe Cys Pro Arg Met
            420                 425                 430

Ser Ala Ser Phe Ser Asn Ser Thr Arg Thr Arg Glu Val Val Lys Val
        435                 440                 445

Ile Asp Lys Leu Leu Gln Thr His Leu Lys Arg Val Pro Phe His Asp
    450                 455                 460

Pro Tyr Leu Tyr Met Ala Lys Ala Arg Arg Thr Ser Ser Val Val Asp
465                 470                 475                 480

Phe Lys Met Met Ala Phe Pro Asp Val Trp Gly His Cys Pro Pro Pro
                485                 490                 495

Thr Thr Gln Pro Met Leu Glu Arg Lys Cys Gly Val Gln Arg Ile Arg
            500                 505                 510

Ile Phe Glu Asp Ile Arg Arg Leu Ile Gln Pro Ser Asp Val Ile Asn
        515                 520                 525

Lys Val Val Phe Ser Leu Asp Glu Pro Trp Pro Leu Gln Asp Asn Ala
    530                 535                 540

Ser Asn Cys Leu Arg Phe Phe Ser Lys Phe Glu Ser Gly Asn Leu Arg
545                 550                 555                 560

Lys Ala Ile Gln Val Arg Glu Phe Glu Tyr Asp Leu Leu Val Asn Ala
                565                 570                 575

Asp Val Asn Ser Thr Gln His Gln Gln Trp Phe Tyr Phe Lys Val Ser
            580                 585                 590

Gly Met Gln Ala Ala Ile Pro Tyr His Phe Asn Ile Ile Asn Cys Glu
        595                 600                 605

Lys Pro Asn Ser Gln Phe Asn Tyr Gly Met Gln Pro Thr Leu Tyr Ser
    610                 615                 620

Val Lys Glu Ala Leu Leu Gly Lys Pro Thr Trp Ile Arg Thr Gly His
625                 630                 635                 640
```

```
Glu Ile Cys Tyr Tyr Lys Asn His Tyr Arg Gln Ser Thr Ala Val Ala
                645                 650                 655

Gly Gly Ala Ser Gly Lys Cys Tyr Tyr Thr Leu Thr Phe Ala Val Thr
            660                 665                 670

Phe Pro His Ser Glu Asp Val Cys Tyr Leu Ala Tyr His Tyr Pro Tyr
        675                 680                 685

Thr Tyr Thr Ala Leu Met Thr His Leu Asp Ile Leu Glu Lys Ser Val
    690                 695                 700

Asn Leu Lys Glu Val Tyr Phe Arg Gln Asp Val Leu Cys Gln Thr Leu
705                 710                 715                 720

Gly Gly Asn Pro Cys Pro Leu Val Thr Ile Thr Ala Met Pro Glu Ser
                725                 730                 735

Asn Ser Asp Glu His Leu Glu Gln Phe Arg His Arg Pro Tyr Gln Val
            740                 745                 750

Ile Thr Ala Arg Val His Pro Gly Glu Ser Asn Ala Ser Trp Val Met
        755                 760                 765

Lys Gly Thr Leu Glu Phe Leu Val Ser Ser Asp Pro Val Ala Arg Leu
    770                 775                 780

Leu Arg Glu Asn Phe Ile Phe Lys Ile Ile Pro Met Leu Asn Pro Asp
785                 790                 795                 800

Gly Val Ile Asn Gly Asn His Arg Cys Ser Leu Ser Gly Glu Asp Leu
                805                 810                 815

Asn Arg Gln Trp Leu Ser Pro Ser Ala His Leu Gln Pro Thr Ile Tyr
            820                 825                 830

His Ala Lys Gly Leu Leu Tyr His Leu Ser Ser Ile Gly Arg Ser Pro
        835                 840                 845

Val Val Phe Cys Asp Phe His Gly His Ser Gln Lys Lys Asn Val Phe
    850                 855                 860
```

```
Leu Tyr Gly Cys Ser Ile Lys Glu Thr Leu Trp Gln Ala Ala Cys Thr
865                 870                 875                 880

Val Gly Thr Ser Thr Ile Leu Glu Glu Val Asn Tyr Arg Thr Leu Pro
                885                 890                 895

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

Phe Leu Val Glu Lys Ser Arg Ala Ser Thr Ala Arg Val Val Val Trp
        915                 920                 925

Arg Glu Met Gly Val Ser Arg Ser Tyr Thr Met Glu Ser Ser Tyr Cys
    930                 935                 940

Gly Cys Asn Gln Gly Pro Tyr Gln Cys Thr Gln Arg Leu Leu Glu Arg
945                 950                 955                 960

Thr Lys Asn Glu Arg Ala His Pro Val Asp Gly Leu Gln Gly Leu Gln
                965                 970                 975

Phe Gly Thr Arg Glu Leu Glu Glu Met Gly Ala Met Phe Cys Leu Gly
            980                 985                 990

Leu Leu Ile Leu Glu Leu Lys Ser  Ala Ser Cys Ser His  Gln Leu
Leu
        995                 1000                1005

Ala Gln  Ala Ala Thr Leu Leu  Ser Ala Glu Glu Asp  Ala Leu Asp
    1010                1015                1020

Gln His  Leu Gln Arg Leu Lys  Ser Ser Asn Phe Leu  Pro Lys His
    1025                1030                1035

Ile Trp  Phe Ala Tyr His Phe  Phe Ala Ile Thr Asn  Phe Phe Lys
    1040                1045                1050

Met Asn  Leu Leu Leu His Val  Ser Pro Val Cys Asp  Thr
    1055                1060                1065
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<210> 7110
<211> 904
<212> PRT

<213> Homo sapiens

<220>
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<221> source
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<220>
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<223> /note="Gene Name:
ATP/GTP binding prt-like 2; "

<220>
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<400> 7110

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Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1               5                  10                  15

Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
            20                  25                  30

Ala Gln Arg Gly Ser Leu Pro Asn Ser Ala Thr His Gln His Val Arg
        35                  40                  45

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

Asp Leu Ile Pro Asp Thr Leu Gln Lys Glu Lys Leu Leu Trp Pro Ile
65                  70                  75                  80

Ser Leu Ser Ser Ala Val His Arg Gln Ile Glu Ala Ile Asn Arg Asp
                85                  90                  95

Phe His Ser Cys Leu Gly Trp Met Gln Trp Arg Gly Leu Ser Ser Leu
            100                 105                 110

Gln Pro Pro Pro Pro Arg Phe Lys Asp Ser Pro Ala Ser Ala Phe Arg
        115                 120                 125

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

Ser Arg Gln Leu Leu Tyr Asp Glu Leu Asp Glu Val Asn Pro Arg Leu
```

145 150 155 160

Arg Glu Pro Gln Glu Leu Phe Ser Ile Leu Ser Thr Lys Arg Pro Leu
165 170 175

Gln Ala Pro Arg Trp Pro Ile Glu Cys Glu Val Ile Lys Glu Asn Ile
180 185 190

His His Ile Glu Trp Ala Pro Pro Gln Pro Glu Tyr Phe Tyr Gln Pro
195 200 205

Lys Gly Asn Glu Lys Val Pro Glu Ile Val Gly Glu Lys Lys Gly Thr
210 215 220

Val Val Tyr Gln Leu Asp Ser Val Pro Ile Glu Gly Ser Tyr Phe Thr
225 230 235 240

Ser Ser Arg Val Gly Gly Lys Arg Gly Ile Val Lys Glu Leu Ala Val
245 250 255

Thr Leu Gln Gly Pro Glu Asp Asn Thr Leu Leu Phe Glu Ser Arg Phe
260 265 270

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

Glu Leu Thr Leu Arg Thr Asp Leu Tyr Thr Asn Lys His Thr Gln Trp
290 295 300

Phe Tyr Phe Arg Val Gln Asn Thr Arg Lys Asp Ala Thr Tyr Arg Phe
305 310 315 320

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

Lys Pro Leu Leu Tyr Ser Gln Leu Asp Ala Asn Thr Arg Asn Ile Gly
340 345 350

Trp Arg Arg Glu Gly Asn Glu Ile Lys Tyr Tyr Lys Asn Asn Thr Asp
355 360 365

Asp Gly Gln Gln Pro Phe Tyr Cys Leu Thr Trp Thr Ile Gln Phe Pro
370 375 380

```
Tyr Asp Gln Asp Thr Cys Phe Phe Ala His Phe Tyr Pro Tyr Thr Tyr
385                 390                 395                 400

Thr Asp Leu Gln Cys Tyr Leu Leu Ser Val Ala Asn Asn Pro Ile Gln
                405                 410                 415

Ser Gln Phe Cys Lys Leu Gln Thr Leu Cys Arg Ser Leu Ala Gly Asn
            420                 425                 430

Thr Val Tyr Leu Leu Thr Ile Thr Asn Pro Ser Gln Thr Pro Gln Glu
        435                 440                 445

Ala Ala Ala Lys Lys Ala Val Val Leu Ser Ala Arg Val His Pro Gly
    450                 455                 460

Glu Ser Asn Gly Ser Trp Val Met Lys Gly Phe Leu Asp Phe Ile Leu
465                 470                 475                 480

Ser Asn Ser Pro Asp Ala Gln Leu Leu Arg Asp Ile Phe Val Phe Lys
                485                 490                 495

Val Leu Pro Met Leu Asn Pro Asp Gly Val Ile Val Gly Asn Tyr Arg
            500                 505                 510

Cys Ser Leu Ala Gly Arg Asp Leu Asn Arg His Tyr Lys Thr Ile Leu
        515                 520                 525

Lys Glu Ser Phe Pro Cys Ile Trp Tyr Thr Arg Asn Met Ile Lys Arg
    530                 535                 540

Leu Leu Glu Glu Arg Glu Val Leu Leu Tyr Cys Asp Phe His Gly His
545                 550                 555                 560

Ser Arg Lys Asn Asn Ile Phe Leu Tyr Gly Cys Asn Asn Asn Asn Arg
                565                 570                 575

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

Ala Pro Asp Lys Phe Ser Phe His Ser Cys Asn Phe Lys Val Gln Lys
        595                 600                 605
```

```
Cys Lys Glu Gly Thr Gly Arg Val Val Met Trp Arg Met Gly Ile Leu
    610                 615                 620

Asn Ser Tyr Thr Met Glu Ser Thr Phe Gly Gly Ser Thr Leu Gly Asn
625                 630                 635                 640

Lys Arg Asp Thr His Phe Thr Ile Glu Asp Leu Lys Ser Leu Gly Tyr
                645                 650                 655

His Val Cys Asp Thr Leu Leu Asp Phe Cys Asp Pro Asp Gln Met Lys
            660                 665                 670

Phe Thr Gln Cys Leu Ala Glu Leu Lys Glu Leu Leu Arg Gln Glu Ile
        675                 680                 685

His Lys Lys Phe His Glu Leu Gly Gln Asp Val Asp Leu Glu Gly Ser
    690                 695                 700

Trp Ser Asp Ile Ser Leu Ser Asp Ile Glu Ser Arg Asn Ser Thr Ser
705                 710                 715                 720

Gly Ser Asp Ser Ser Leu Ser Asp Gly Leu Pro Val His Leu Ala Asn
                725                 730                 735

Ile Ala Asp Glu Leu Thr Gln Lys Lys Lys Met Phe Lys Lys Lys Lys
            740                 745                 750

Lys Lys Ser Leu Gln Thr Arg Lys Gln Arg Asn Glu Gln Tyr Gln Lys
        755                 760                 765

Lys Asn Leu Met Gln Lys Leu Lys Leu Thr Glu Asp Thr Ser Glu Lys
    770                 775                 780

Ala Gly Phe Ala Ser Thr Leu Gln Lys Gln Pro Thr Phe Phe Lys Asn
785                 790                 795                 800

Ser Glu Asn Ser Ser Phe Leu Pro Met Lys Asn Glu Asn Pro Arg Leu
                805                 810                 815

Asn Glu Thr Asn Leu Asn Arg Arg Asp Lys Asp Thr Pro Leu Asp Pro
            820                 825                 830
```

Ser Met Ala Thr Leu Ile Leu Pro Lys Asn Lys Gly Arg Met Gln Asn
        835   840   845

Lys Lys Pro Gly Phe Thr Val Ser Cys Ser Pro Lys Arg Thr Ile Asn
    850   855   860

Ser Ser Gln Glu Pro Ala Pro Gly Met Lys Pro Asn Trp Pro Arg Ser
865   870   875   880

Arg Tyr Pro Ala Thr Lys Arg Gly Cys Ala Ala Met Ala Ala Tyr Pro
                885   890   895

Ser Leu His Ile Tyr Thr Tyr Pro
            900

<210> 7111
<211> 32
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000431835"

<400> 7111
Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1   5   10   15

Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
            20   25   30

<210> 7112
<211> 126
<212> PRT
<213> Homo sapiens

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ATP/GTP binding prt-like 2; "

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<223> /note="ENSP ID: ENSP00000431912"

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

<400> 7112

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

<210> 7113
<211> 61

<212> PRT
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<220>
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ATP/GTP binding prt-like 2; "

<220>
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<400> 7113
Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1 5 10 15

Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
20 25 30

Gly Ser Arg Ser Val Thr Gln Ala Gly Gly Gln Trp Pro Pro His Pro
35 40 45

Arg Leu Lys Gln Pro Ser Gln Pro Leu Ala Ile Ile Phe
50 55 60

<210> 7114
<211> 148
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000432264"

<400> 7114
Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys Ala Gln Arg Gly
1 5 10 15

Ser Leu Pro Asn Ser Ala Thr His Gln His Val Arg Lys Asn Asn Pro
20 25 30

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

Asp Thr Leu Gln Lys Glu Lys Leu Leu Trp Pro Ile Ser Leu Ser Ser
50 55 60

Ala Val His Arg Gln Ile Glu Ala Ile Asn Arg Asp Ser His Met Leu
65 70 75 80

Ser Leu Pro His Leu Arg Ser Arg Gln Leu Leu Tyr Asp Glu Leu Asp
85 90 95

Glu Val Asn Pro Arg Leu Arg Glu Pro Gln Glu Leu Phe Ser Ile Leu
100 105 110

Ser Thr Lys Arg Pro Leu Gln Ala Pro Arg Trp Pro Ile Glu Cys Glu
115 120 125

Val Ile Lys Glu Asn Ile His His Ile Glu Trp Ala Pro Pro Gln Pro
130 135 140

Glu Tyr Phe Tyr
145

<210> 7115
<211> 902
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<400> 7115

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Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1               5                  10                  15

Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
            20                  25                  30

Ala Gln Arg Gly Ser Leu Pro Asn Ser Ala Thr His Gln His Val Arg
        35                  40                  45

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

Asp Leu Ile Pro Asp Thr Leu Gln Lys Glu Lys Leu Leu Trp Pro Ile
65                  70                  75                  80

Ser Leu Ser Ser Ala Val His Arg Gln Ile Glu Ala Ile Asn Arg Asp
                85                  90                  95

Phe His Ser Cys Leu Gly Trp Met Gln Trp Arg Gly Leu Ser Ser Leu
            100                 105                 110

Gln Pro Pro Pro Pro Arg Phe Lys Asp Ser Pro Ala Ser Ala Phe Arg
        115                 120                 125

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

Ser Arg Gln Leu Leu Tyr Asp Glu Leu Asp Glu Val Asn Pro Arg Leu
145                 150                 155                 160

Arg Glu Pro Gln Glu Leu Phe Ser Ile Leu Ser Thr Lys Arg Pro Leu
                165                 170                 175
```

```
Gln Ala Pro Arg Trp Pro Ile Glu Cys Glu Val Ile Lys Glu Asn Ile
            180                 185                 190

His His Ile Glu Trp Ala Pro Pro Gln Pro Glu Tyr Phe Tyr Gln Pro
        195                 200                 205

Lys Gly Asn Glu Lys Val Pro Glu Ile Val Gly Glu Lys Lys Gly Thr
    210                 215                 220

Val Val Tyr Gln Leu Asp Ser Val Pro Ile Glu Gly Ser Tyr Phe Thr
225                 230                 235                 240

Ser Ser Arg Val Gly Gly Lys Arg Gly Ile Val Lys Glu Leu Ala Val
                245                 250                 255

Thr Leu Gln Gly Pro Glu Asp Asn Thr Leu Leu Phe Glu Ser Arg Phe
            260                 265                 270

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

Glu Leu Thr Leu Arg Thr Asp Leu Tyr Thr Asn Lys His Thr Gln Trp
    290                 295                 300

Phe Tyr Phe Arg Val Gln Asn Thr Arg Lys Asp Ala Thr Tyr Arg Phe
305                 310                 315                 320

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

Lys Pro Leu Leu Tyr Ser Gln Leu Asp Ala Asn Thr Arg Asn Ile Gly
            340                 345                 350

Trp Arg Arg Glu Gly Asn Glu Ile Lys Tyr Tyr Lys Asn Asn Thr Asp
        355                 360                 365

Asp Gly Gln Gln Pro Phe Tyr Cys Leu Thr Trp Thr Ile Gln Phe Pro
    370                 375                 380

Tyr Asp Gln Asp Thr Cys Phe Phe Ala His Phe Tyr Pro Tyr Thr Tyr
385                 390                 395                 400

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

```
                405                 410                 415

Ser Gln Phe Cys Lys Leu Gln Thr Leu Cys Arg Ser Leu Ala Gly Asn
            420                 425                 430

Thr Val Tyr Leu Leu Thr Ile Thr Asn Pro Ser Gln Thr Pro Gln Glu
        435                 440                 445

Ala Ala Ala Lys Lys Ala Val Val Leu Ser Ala Arg Val His Pro Gly
    450                 455                 460

Glu Ser Asn Gly Ser Trp Val Met Lys Gly Phe Leu Asp Phe Ile Leu
465                 470                 475                 480

Ser Asn Ser Pro Asp Ala Gln Leu Leu Arg Asp Ile Phe Val Phe Lys
                485                 490                 495

Val Leu Pro Met Leu Asn Pro Asp Gly Val Ile Val Gly Asn Tyr Arg
            500                 505                 510

Cys Ser Leu Ala Gly Arg Asp Leu Asn Arg His Tyr Lys Thr Ile Leu
        515                 520                 525

Lys Glu Ser Phe Pro Cys Ile Trp Tyr Thr Arg Asn Met Ile Lys Arg
    530                 535                 540

Leu Leu Glu Glu Arg Glu Val Leu Leu Tyr Cys Asp Phe His Gly His
545                 550                 555                 560

Ser Arg Lys Asn Asn Ile Phe Leu Tyr Gly Cys Asn Asn Asn Asn Arg
                565                 570                 575

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

Ala Pro Asp Lys Phe Ser Phe His Ser Cys Asn Phe Lys Val Gln Lys
        595                 600                 605

Cys Lys Glu Gly Thr Gly Arg Val Val Met Trp Arg Met Gly Ile Leu
    610                 615                 620

Asn Ser Tyr Thr Met Glu Ser Thr Phe Gly Gly Ser Thr Leu Gly Asn
625                 630                 635                 640
```

Lys Arg Asp Thr His Phe Thr Ile Glu Asp Leu Lys Ser Leu Gly Tyr
645 650 655

His Val Cys Asp Thr Leu Leu Asp Phe Cys Asp Pro Asp Gln Met Lys
660 665 670

Phe Thr Gln Cys Leu Ala Glu Leu Lys Glu Leu Leu Arg Gln Glu Ile
675 680 685

His Lys Lys Phe His Glu Leu Gly Gln Asp Val Asp Leu Glu Gly Ser
690 695 700

Trp Ser Asp Ile Ser Leu Ser Asp Ile Glu Ser Ser Thr Ser Gly Ser
705 710 715 720

Asp Ser Ser Leu Ser Asp Gly Leu Pro Val His Leu Ala Asn Ile Ala
725 730 735

Asp Glu Leu Thr Gln Lys Lys Lys Met Phe Lys Lys Lys Lys Lys Lys
740 745 750

Ser Leu Gln Thr Arg Lys Gln Arg Asn Glu Gln Tyr Gln Lys Lys Asn
755 760 765

Leu Met Gln Lys Leu Lys Leu Thr Glu Asp Thr Ser Glu Lys Ala Gly
770 775 780

Phe Ala Ser Thr Leu Gln Lys Gln Pro Thr Phe Phe Lys Asn Ser Glu
785 790 795 800

Asn Ser Ser Phe Leu Pro Met Lys Asn Glu Asn Pro Arg Leu Asn Glu
805 810 815

Thr Asn Leu Asn Arg Arg Asp Lys Asp Thr Pro Leu Asp Pro Ser Met
820 825 830

Ala Thr Leu Ile Leu Pro Lys Asn Lys Gly Arg Met Gln Asn Lys Lys
835 840 845

Pro Gly Phe Thr Val Ser Cys Ser Pro Lys Arg Thr Ile Asn Ser Ser
850 855 860

```
Gln Glu Pro Ala Pro Gly Met Lys Pro Asn Trp Pro Arg Ser Arg Tyr
865                 870                 875                 880


Pro Ala Thr Lys Arg Gly Cys Ala Ala Met Ala Ala Tyr Pro Ser Leu
                885                 890                 895


His Ile Tyr Thr Tyr Pro
            900


<210> 7116
<211> 331
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1517; "

<220>
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<220>
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<223> /note="Gene Name:
      ATP/GTP binding prt-like 2; "

<220>
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<400> 7116
Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1               5                   10                  15


Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
            20                  25                  30


Ala Gln Arg Gly Ser Leu Pro Asn Ser Ala Thr His Gln His Val Arg
        35                  40                  45


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


Asp Leu Ile Pro Asp Thr Leu Gln Lys Glu Lys Leu Leu Tyr Ser His
65                  70                  75                  80


Met Leu Ser Leu Pro His Leu Arg Ser Arg Gln Leu Leu Tyr Asp Glu
```

```
                85                  90                  95

Leu Asp Glu Val Asn Pro Arg Leu Arg Glu Pro Gln Glu Leu Phe Ser
            100                 105                 110

Ile Leu Ser Thr Lys Arg Pro Leu Gln Ala Pro Arg Trp Pro Ile Glu
        115                 120                 125

Cys Glu Val Ile Lys Glu Asn Ile His His Ile Glu Trp Ala Pro Pro
    130                 135                 140

Gln Pro Glu Tyr Phe Tyr Gln Pro Lys Gly Asn Glu Lys Val Pro Glu
145                 150                 155                 160

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

Pro Ile Glu Gly Ser Tyr Phe Thr Ser Ser Arg Val Gly Gly Lys Arg
            180                 185                 190

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

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

Val Arg Val Asp Thr Tyr Glu Tyr Glu Leu Thr Leu Arg Thr Asp Leu
225                 230                 235                 240

Tyr Thr Asn Lys His Thr Gln Trp Phe Tyr Phe Arg Val Gln Asn Thr
                245                 250                 255

Arg Lys Asp Ala Thr Tyr Arg Phe Thr Ile Val Asn Leu Leu Lys Pro
            260                 265                 270

Lys Ser Leu Tyr Thr Val Gly Met Lys Pro Leu Leu Tyr Ser Gln Leu
        275                 280                 285

Asp Ala Asn Thr Arg Asn Ile Gly Trp Arg Arg Glu Gly Asn Glu Ile
    290                 295                 300

Lys Tyr Tyr Lys Asn Asn Thr Asp Asp Gly Gln Gln Pro Phe Tyr Cys
305                 310                 315                 320
```

Leu Thr Trp Thr Ile Gln Phe Pro Tyr Asp Gln
325 330

<210> 7117
<211> 95
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATP/GTP binding prt-like 2; "

<220>
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<400> 7117
Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1 5 10 15

Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
20 25 30

Ala Gln Arg Gly Ser Leu Pro Asn Ser Ala Thr His Gln His Val Arg
35 40 45

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

Asp Leu Ile Pro Asp Thr Leu Gln Lys Glu Lys Leu Leu Trp Pro Ile
65 70 75 80

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

<210> 7118
<211> 824
<212> PRT
<213> Homo sapiens

<220>
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ATP/GTP binding prt-like 2; "

<220>
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<223> /note="ENSP ID: ENSP00000436630"

<400> 7118

```
Met Phe Pro Ala Leu Glu Thr His Leu Lys Gln Thr Ile Pro Asp Pro
1               5                  10                  15

Tyr Glu Asp Phe Met Tyr Arg His Leu Gln Tyr Tyr Gly Tyr Phe Lys
            20                  25                  30

Ala Gln Arg Gly Ser Leu Pro Asn Ser Ala Thr His Gln His Val Arg
        35                  40                  45

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

Asp Leu Ile Pro Asp Thr Leu Gln Lys Glu Lys Leu Leu Trp Pro Ile
65                  70                  75                  80

Ser Leu Ser Ser Ala Val His Arg Gln Ile Glu Ala Ile Asn Arg Asp
                85                  90                  95

Ser His Met Leu Ser Leu Pro His Leu Arg Ser Arg Gln Leu Leu Tyr
            100                 105                 110

Asp Glu Leu Asp Glu Val Asn Pro Arg Leu Arg Glu Pro Gln Glu Leu
        115                 120                 125

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

Ile Glu Cys Glu Val Ile Lys Glu Asn Ile His His Ile Glu Trp Ala
145                 150                 155                 160
```

```
Pro Pro Gln Pro Glu Tyr Phe Tyr Gln Pro Lys Gly Asn Glu Lys Val
                165                 170                 175

Pro Glu Ile Val Gly Glu Lys Lys Gly Thr Val Val Tyr Gln Leu Asp
            180                 185                 190

Ser Val Pro Ile Glu Gly Ser Tyr Phe Thr Ser Ser Arg Val Gly Gly
        195                 200                 205

Lys Arg Gly Ile Val Lys Glu Leu Ala Val Thr Leu Gln Gly Pro Glu
    210                 215                 220

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

Lys Ala Val Arg Val Asp Thr Tyr Glu Tyr Glu Leu Thr Leu Arg Thr
                245                 250                 255

Asp Leu Tyr Thr Asn Lys His Thr Gln Trp Phe Tyr Phe Arg Val Gln
            260                 265                 270

Asn Thr Arg Lys Asp Ala Thr Tyr Arg Phe Thr Ile Val Asn Leu Leu
        275                 280                 285

Lys Pro Lys Ser Leu Tyr Thr Val Gly Met Lys Pro Leu Leu Tyr Ser
    290                 295                 300

Gln Leu Asp Ala Asn Thr Arg Asn Ile Gly Trp Arg Arg Glu Gly Asn
305                 310                 315                 320

Glu Ile Lys Tyr Tyr Lys Asn Asn Thr Asp Asp Gly Gln Gln Pro Phe
                325                 330                 335

Tyr Cys Leu Thr Trp Thr Ile Gln Phe Pro Tyr Asp Gln Asp Thr Cys
            340                 345                 350

Phe Phe Ala His Phe Tyr Pro Tyr Thr Tyr Thr Asp Leu Gln Cys Tyr
        355                 360                 365

Leu Leu Ser Val Ala Asn Asn Pro Ile Gln Ser Gln Phe Cys Lys Leu
    370                 375                 380
```

```
Gln Thr Leu Cys Arg Ser Leu Ala Gly Asn Thr Val Tyr Leu Leu Thr
385                 390                 395                 400

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

Val Val Leu Ser Ala Arg Val His Pro Gly Glu Ser Asn Gly Ser Trp
            420                 425                 430

Val Met Lys Gly Phe Leu Asp Phe Ile Leu Ser Asn Ser Pro Asp Ala
        435                 440                 445

Gln Leu Leu Arg Asp Ile Phe Val Phe Lys Val Leu Pro Met Leu Asn
    450                 455                 460

Pro Asp Gly Val Ile Val Gly Asn Tyr Arg Cys Ser Leu Ala Gly Arg
465                 470                 475                 480

Asp Leu Asn Arg His Tyr Lys Thr Ile Leu Lys Glu Ser Phe Pro Cys
                485                 490                 495

Ile Trp Tyr Thr Arg Asn Met Ile Lys Arg Leu Leu Glu Glu Arg Glu
            500                 505                 510

Val Leu Leu Tyr Cys Asp Phe His Gly His Ser Arg Lys Asn Asn Ile
        515                 520                 525

Phe Leu Tyr Gly Cys Asn Asn Asn Asn Arg Lys Tyr Trp Leu His Glu
    530                 535                 540

Arg Val Phe Pro Leu Met Leu Cys Lys Asn Ala Pro Asp Lys Phe Ser
545                 550                 555                 560

Phe His Ser Cys Asn Phe Lys Val Gln Lys Cys Lys Glu Gly Thr Gly
                565                 570                 575

Arg Val Val Met Trp Arg Met Gly Ile Leu Asn Ser Tyr Thr Met Glu
            580                 585                 590

Ser Thr Phe Gly Gly Ser Thr Leu Gly Asn Lys Arg Asp Thr His Phe
        595                 600                 605
```

```
Thr Ile Glu Asp Leu Lys Ser Leu Gly Tyr His Val Cys Asp Thr Leu
    610                 615                 620

Leu Asp Phe Cys Asp Pro Asp Gln Met Lys Phe Thr Gln Cys Leu Ala
625                 630                 635                 640

Glu Leu Lys Glu Leu Leu Arg Gln Glu Ile His Lys Lys Phe His Glu
                645                 650                 655

Leu Gly Gln Asp Val Asp Leu Glu Gly Ser Trp Ser Asp Ile Ser Leu
            660                 665                 670

Ser Asp Ile Glu Ser Ser Thr Ser Gly Ser Asp Ser Ser Leu Ser Asp
        675                 680                 685

Gly Leu Pro Val His Leu Ala Asn Ile Ala Asp Glu Leu Thr Gln Lys
    690                 695                 700

Lys Lys Met Phe Lys Lys Lys Lys Lys Lys Ser Leu Gln Thr Arg Lys
705                 710                 715                 720

Gln Arg Asn Glu Gln Tyr Gln Lys Lys Asn Leu Met Gln Lys Leu Lys
                725                 730                 735

Leu Thr Glu Asp Thr Ser Glu Lys Ala Gly Phe Ala Ser Thr Leu Gln
            740                 745                 750

Lys Gln Pro Thr Phe Phe Lys Asn Ser Glu Asn Ser Ser Phe Leu Pro
        755                 760                 765

Met Lys Asn Glu Asn Pro Arg Leu Asn Glu Val Val Phe Leu Phe Leu
    770                 775                 780

Thr Leu Cys His Thr Asp Ser Leu Thr Ser Arg Ile Ser Thr Ser Leu
785                 790                 795                 800

Pro Gln Cys Asp Lys Cys Asn Ser His Leu Arg Tyr Pro Asn Leu Thr
                805                 810                 815

Val Pro Leu Gly Ala Arg Lys His
            820
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<210> 7119

<211> 621
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ATP/GTP binding prt-like 3; "

<220>
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<223> /note="Uniprot ID: Q8NEM8; "

<220>
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<223> /note="ENSP ID: ENSP00000275763"

<400> 7119

Met	Ser	Glu	Asp	Ser	Glu	Lys	Glu	Asp	Tyr	Ser	Asp	Arg	Thr	Ile	Ser
1				5				10					15		

Asp	Glu	Asp	Glu	Ser	Asp	Glu	Asp	Met	Phe	Met	Lys	Phe	Val	Ser	Glu
			20					25					30		

Asp	Leu	His	Arg	Cys	Ala	Leu	Leu	Thr	Ala	Asp	Ser	Phe	Gly	Asp	Pro
		35					40					45			

Phe	Phe	Pro	Arg	Thr	Thr	Gln	Ile	Leu	Leu	Glu	Tyr	Gln	Leu	Gly	Arg
	50					55					60				

Trp	Val	Pro	Arg	Leu	Arg	Glu	Pro	Arg	Asp	Leu	Tyr	Gly	Val	Ser	Ser
65					70					75					80

Ser	Gly	Pro	Leu	Ser	Pro	Thr	Arg	Trp	Pro	Tyr	His	Cys	Glu	Val	Ile
				85					90					95	

Asp	Glu	Lys	Val	Gln	His	Ile	Asp	Trp	Thr	Pro	Ser	Cys	Pro	Glu	Pro
			100					105					110		

Val	Tyr	Ile	Pro	Thr	Gly	Leu	Glu	Thr	Glu	Pro	Leu	Tyr	Pro	Asp	Ser
		115					120					125			

```
Lys Glu Ala Thr Val Val Tyr Leu Ala Glu Asp Ala Tyr Lys Glu Pro
    130                 135                 140

Cys Phe Val Tyr Ser Arg Val Gly Gly Asn Arg Thr Pro Leu Lys Gln
145                 150                 155                 160

Pro Val Asp Tyr Arg Asp Asn Thr Leu Met Phe Glu Ala Arg Phe Glu
                165                 170                 175

Ser Gly Asn Leu Gln Lys Val Val Lys Val Ala Glu Tyr Glu Tyr Gln
            180                 185                 190

Leu Thr Val Arg Pro Asp Leu Phe Thr Asn Lys His Thr Gln Trp Tyr
        195                 200                 205

Tyr Phe Gln Val Thr Asn Met Arg Ala Gly Ile Val Tyr Arg Phe Thr
    210                 215                 220

Ile Val Asn Phe Thr Lys Pro Ala Ser Leu Tyr Ser Arg Gly Met Arg
225                 230                 235                 240

Pro Leu Phe Tyr Ser Glu Lys Glu Ala Lys Ala His His Ile Gly Trp
                245                 250                 255

Gln Arg Ile Gly Asp Gln Ile Lys Tyr Tyr Arg Asn Asn Pro Gly Gln
            260                 265                 270

Asp Gly Arg His Tyr Phe Ser Leu Thr Trp Thr Phe Gln Phe Pro His
        275                 280                 285

Asn Lys Asp Thr Cys Tyr Phe Ala His Cys Tyr Pro Tyr Thr Tyr Thr
    290                 295                 300

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

Lys Phe Cys Lys Ile Arg Val Leu Cys His Thr Leu Ala Arg Asn Met
                325                 330                 335

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

```
Lys Arg Lys Ala Val Ile Leu Thr Ala Arg Val His Pro Gly Glu Thr
        355                 360                 365

Asn Ser Ser Trp Ile Met Lys Gly Phe Leu Asp Tyr Ile Leu Gly Asn
    370                 375                 380

Ser Ser Asp Ala Gln Leu Leu Arg Asp Thr Phe Val Phe Lys Val Val
385                 390                 395                 400

Pro Met Leu Asn Pro Asp Gly Val Ile Val Gly Asn Tyr Arg Cys Ser
                405                 410                 415

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

Ser Phe Pro Ser Val Trp Tyr Thr Arg Asn Met Val His Arg Leu Met
        435                 440                 445

Glu Lys Arg Glu Val Ile Leu Tyr Cys Asp Leu His Gly His Ser Arg
    450                 455                 460

Lys Glu Asn Ile Phe Met Tyr Gly Cys Asp Gly Ser Asp Arg Ser Lys
465                 470                 475                 480

Thr Leu Tyr Leu Gln Gln Arg Ile Phe Pro Leu Met Leu Ser Lys Asn
                485                 490                 495

Cys Pro Asp Lys Phe Ser Phe Ser Ala Cys Lys Phe Asn Val Gln Lys
            500                 505                 510

Ser Lys Glu Gly Thr Gly Arg Val Val Met Trp Lys Met Gly Ile Arg
        515                 520                 525

Asn Ser Phe Thr Met Glu Ala Thr Phe Cys Gly Ser Thr Leu Gly Asn
    530                 535                 540

Lys Arg Gly Thr His Phe Ser Thr Lys Asp Leu Glu Ser Met Gly Tyr
545                 550                 555                 560

His Phe Cys Asp Ser Leu Leu Asp Tyr Cys Asp Pro Asp Arg Thr Lys
                565                 570                 575

Tyr Tyr Arg Cys Leu Lys Glu Leu Glu Glu Met Glu Arg His Ile Thr
```

```
            580                 585                 590

Leu Glu Lys Val Phe Glu Asp Ser Asp Thr Pro Val Ile Asp Ile Thr
        595                 600                 605

Leu Asp Val Glu Ser Arg Glu Leu Thr Phe Leu Leu Arg
    610                 615                 620


<210> 7120
<211> 920
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AGBL3; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q8NEM8; "

<220>
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<400> 7120
Met Ser Glu Asp Ser Glu Lys Glu Asp Tyr Ser Asp Arg Thr Ile Ser
1               5                   10                  15

Asp Glu Asp Glu Ser Asp Glu Asp Met Phe Met Lys Phe Val Ser Glu
            20                  25                  30

Asp Leu His Arg Cys Ala Leu Leu Thr Ala Asp Ser Phe Gly Asp Pro
        35                  40                  45

Phe Phe Pro Arg Thr Thr Gln Ile Leu Leu Glu Tyr Gln Leu Gly Arg
    50                  55                  60

Trp Val Pro Arg Leu Arg Glu Pro Arg Asp Leu Tyr Gly Val Ser Ser
65                  70                  75                  80
```

```
Ser Gly Pro Leu Ser Pro Thr Arg Trp Pro Tyr His Cys Glu Val Ile
                85                  90                  95

Asp Glu Lys Val Gln His Ile Asp Trp Thr Pro Ser Cys Pro Glu Pro
            100                 105                 110

Val Tyr Ile Pro Thr Gly Leu Glu Thr Glu Pro Leu Tyr Pro Asp Ser
        115                 120                 125

Lys Glu Ala Thr Val Val Tyr Leu Ala Glu Asp Ala Tyr Lys Glu Pro
    130                 135                 140

Cys Phe Val Tyr Ser Arg Val Gly Gly Asn Arg Thr Pro Leu Lys Gln
145                 150                 155                 160

Pro Val Asp Tyr Arg Asp Asn Thr Leu Met Phe Glu Ala Arg Phe Glu
                165                 170                 175

Ser Gly Asn Leu Gln Lys Val Val Lys Val Ala Glu Tyr Glu Tyr Gln
            180                 185                 190

Leu Thr Val Arg Pro Asp Leu Phe Thr Asn Lys His Thr Gln Trp Tyr
        195                 200                 205

Tyr Phe Gln Val Thr Asn Met Arg Ala Gly Ile Val Tyr Arg Phe Thr
    210                 215                 220

Ile Val Asn Phe Thr Lys Pro Ala Ser Leu Tyr Ser Arg Gly Met Arg
225                 230                 235                 240

Pro Leu Phe Tyr Ser Glu Lys Glu Ala Lys Ala His His Ile Gly Trp
                245                 250                 255

Gln Arg Ile Gly Asp Gln Ile Lys Tyr Tyr Arg Asn Asn Pro Gly Gln
            260                 265                 270

Asp Gly Arg His Tyr Phe Ser Leu Thr Trp Thr Phe Gln Phe Pro His
        275                 280                 285

Asn Lys Asp Thr Cys Tyr Phe Ala His Cys Tyr Pro Tyr Thr Tyr Thr
    290                 295                 300
```

```
Asn Leu Gln Glu Tyr Leu Ser Gly Ile Asn Asn Asp Pro Val Arg Ser
305                 310                 315                 320

Lys Phe Cys Lys Ile Arg Val Leu Cys His Thr Leu Ala Arg Asn Met
                325                 330                 335

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

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

Asn Ser Ser Trp Ile Met Lys Gly Phe Leu Asp Tyr Ile Leu Gly Asn
    370                 375                 380

Ser Ser Asp Ala Gln Leu Leu Arg Asp Thr Phe Val Phe Lys Val Val
385                 390                 395                 400

Pro Met Leu Asn Pro Asp Gly Val Ile Val Gly Asn Tyr Arg Cys Ser
                405                 410                 415

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

Ser Phe Pro Ser Val Trp Tyr Thr Arg Asn Met Val His Arg Leu Met
        435                 440                 445

Glu Lys Arg Glu Val Ile Leu Tyr Cys Asp Leu His Gly His Ser Arg
    450                 455                 460

Lys Glu Asn Ile Phe Met Tyr Gly Cys Asp Gly Ser Asp Arg Ser Lys
465                 470                 475                 480

Thr Leu Tyr Leu Gln Gln Arg Ile Phe Pro Leu Met Leu Ser Lys Asn
                485                 490                 495

Cys Pro Asp Lys Phe Ser Phe Ser Ala Cys Lys Phe Asn Val Gln Lys
            500                 505                 510

Ser Lys Glu Gly Thr Gly Arg Val Val Met Trp Lys Met Gly Ile Arg
        515                 520                 525

Asn Ser Phe Thr Met Glu Ala Thr Phe Cys Gly Ser Thr Leu Gly Asn
```

```
    530                 535                 540

Lys Arg Gly Thr His Phe Ser Thr Lys Asp Leu Glu Ser Met Gly Tyr
545                 550                 555                 560

His Phe Cys Asp Ser Leu Leu Asp Tyr Cys Asp Pro Asp Arg Thr Lys
                565                 570                 575

Tyr Tyr Arg Cys Leu Lys Glu Leu Glu Glu Met Glu Arg His Ile Thr
            580                 585                 590

Leu Glu Lys Val Phe Glu Asp Ser Asp Thr Pro Val Ile Asp Ile Thr
        595                 600                 605

Leu Asp Val Glu Ser Ser Ser Arg Gly Ser Asp Ser Ser Glu Ser Ile
    610                 615                 620

Asp Ser Leu Thr Tyr Leu Leu Lys Leu Thr Ser Gln Lys Lys His Leu
625                 630                 635                 640

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

Arg Gly Gln Glu Val Tyr Asp Arg Gly His Leu Leu Gln Arg His Thr
            660                 665                 670

Gln Ser Asn Ser Asp Val Lys Asp Thr Arg Pro Asn Glu Pro Asp Asp
        675                 680                 685

Tyr Met Val Asp Tyr Phe Arg Arg Gln Leu Pro Asn Gln Gly Leu Asp
    690                 695                 700

Leu His His Asn Leu Lys Ser Lys Ile Lys Glu Cys Ile Ser Phe Gln
705                 710                 715                 720

Ser Lys Lys Thr Gly Ile Asn Trp Thr Asp Asp Glu Lys Arg Ser Tyr
                725                 730                 735

Lys Asp Lys Gly Ile Val Gln Thr Gln Glu Ile Leu Gln Tyr Leu Leu
            740                 745                 750

Pro Ile Val His Ser Thr Lys Asn Met Gln Thr Thr Gln Ile Lys Gln
        755                 760                 765
```

```
Leu Phe Asn Pro Arg Thr Asn Phe Gln Ile Gln His Gln Leu Asn Pro
    770                 775                 780

Ala Thr Cys Arg Asn Ile Lys Lys Tyr Ser Thr Ser Trp Thr Ala Pro
785                 790                 795                 800

Arg Asn His Pro Phe Val Ile Gln Gly Asp Val Met Ala Asn Ser Ser
                805                 810                 815

Glu Trp Val Gln Ser Lys Pro His Arg Ser Leu Glu Ser Leu Ser Pro
            820                 825                 830

Leu Lys Gly Pro Lys Lys Asn Lys His Ser Gln Ile Trp Ala Ile Lys
        835                 840                 845

Asn Glu Asp Ile Lys Pro Leu Ser Ser Lys Trp Glu Thr Ala Ser Ser
    850                 855                 860

Ser Phe Gly Met Asp Ala Asn Val Leu Lys Tyr Lys Ser Leu Gln Ala
865                 870                 875                 880

Glu Glu Thr Asn Gln Gln Ser Ser Lys His Thr Ala Leu His Leu Thr
                885                 890                 895

Lys Asn Lys Asp Glu Gln Ala Asn Lys Asn Asp Gly Gln Pro Thr Leu
            900                 905                 910

Tyr Leu Lys Phe Gln Arg Glu Ser
        915                 920


<210> 7121
<211> 704
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1518; "

<220>
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<223> /note="Gene Symbol: AGBL3; "

<220>
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<223> /note="Gene Name:
ATP/GTP binding prt-like 3; "

<220>
<221> source
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<400> 7121

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Met Ser Glu Asp Ser Glu Lys Glu Asp Tyr Ser Asp Arg Thr Ile Ser
1               5                  10                  15

Asp Glu Asp Glu Ser Asp Glu Asp Met Phe Met Lys Phe Val Ser Glu
            20                  25                  30

Asp Leu His Arg Cys Ala Leu Leu Thr Ala Asp Ser Phe Gly Asp Pro
        35                  40                  45

Phe Phe Pro Arg Thr Thr Gln Ile Leu Leu Glu Tyr Gln Leu Gly Arg
    50                  55                  60

Trp Val Pro Arg Leu Arg Glu Pro Arg Asp Leu Tyr Gly Val Ser Ser
65                  70                  75                  80

Ser Gly Pro Leu Ser Pro Thr Arg Trp Pro Tyr His Cys Glu Val Ile
                85                  90                  95

Asp Glu Lys Val Gln His Ile Asp Trp Thr Pro Ser Cys Pro Glu Pro
            100                 105                 110

Val Tyr Ile Pro Thr Gly Leu Glu Thr Glu Pro Leu Tyr Pro Asp Ser
        115                 120                 125

Lys Glu Ala Thr Val Val Tyr Leu Ala Glu Asp Ala Tyr Lys Glu Pro
    130                 135                 140

Cys Phe Val Tyr Ser Arg Val Gly Gly Asn Arg Thr Pro Leu Lys Gln
145                 150                 155                 160

Pro Val Asp Tyr Arg Asp Asn Thr Leu Met Phe Glu Ala Arg Phe Glu
                165                 170                 175

Ser Gly Asn Leu Gln Lys Val Val Lys Val Ala Glu Tyr Glu Tyr Gln
            180                 185                 190

Leu Thr Val Arg Pro Asp Leu Phe Thr Asn Lys His Thr Gln Trp Tyr
```

```
        195                 200                 205

Tyr Phe Gln Val Thr Asn Met Arg Ala Gly Ile Val Tyr Arg Phe Thr
    210                 215                 220

Ile Val Asn Phe Thr Lys Pro Ala Ser Leu Tyr Ser Arg Gly Met Arg
225                 230                 235                 240

Pro Leu Phe Tyr Ser Glu Lys Glu Ala Lys Ala His His Ile Gly Trp
                245                 250                 255

Gln Arg Ile Gly Asp Gln Ile Lys Tyr Tyr Arg Asn Asn Pro Gly Gln
            260                 265                 270

Asp Gly Arg His Tyr Phe Ser Leu Thr Trp Thr Phe Gln Phe Pro His
        275                 280                 285

Asn Lys Asp Thr Cys Tyr Phe Ala His Cys Tyr Pro Tyr Thr Tyr Thr
    290                 295                 300

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

Lys Phe Cys Lys Ile Arg Val Leu Cys His Thr Leu Ala Arg Asn Met
                325                 330                 335

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

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

Asn Ser Ser Trp Ile Met Lys Gly Phe Leu Asp Tyr Ile Leu Gly Asn
    370                 375                 380

Ser Ser Asp Ala Gln Leu Leu Arg Asp Thr Phe Val Phe Lys Val Val
385                 390                 395                 400

Pro Met Leu Asn Pro Asp Gly Val Ile Val Gly Asn Tyr Arg Cys Ser
                405                 410                 415

Leu Ala Gly Arg Asp Leu Asn Arg Asn Tyr Thr Ser Leu Leu Lys Glu
            420                 425                 430
```

```
Ser Phe Pro Ser Val Trp Tyr Thr Arg Asn Met Val His Arg Leu Met
        435                 440                 445

Glu Lys Arg Glu Val Ile Leu Tyr Cys Asp Leu His Gly His Ser Arg
    450                 455                 460

Lys Glu Asn Ile Phe Met Tyr Gly Cys Asp Gly Ser Asp Arg Ser Lys
465                 470                 475                 480

Thr Leu Tyr Leu Gln Gln Arg Ile Phe Pro Leu Met Leu Ser Lys Asn
                485                 490                 495

Cys Pro Asp Lys Phe Ser Phe Ser Ala Cys Lys Phe Asn Val Gln Lys
            500                 505                 510

Ser Lys Glu Gly Thr Gly Arg Val Val Met Trp Lys Met Gly Ile Arg
        515                 520                 525

Asn Ser Phe Thr Met Glu Ala Thr Phe Cys Gly Ser Thr Leu Gly Asn
    530                 535                 540

Lys Arg Gly Thr His Phe Ser Thr Lys Asp Leu Glu Ser Met Gly Tyr
545                 550                 555                 560

His Phe Cys Asp Ser Leu Leu Asp Tyr Cys Asp Pro Asp Arg Thr Lys
                565                 570                 575

Tyr Tyr Arg Cys Leu Lys Glu Leu Glu Glu Met Glu Arg His Ile Thr
            580                 585                 590

Leu Glu Lys Val Phe Glu Asp Ser Asp Thr Pro Val Ile Asp Ile Thr
        595                 600                 605

Leu Asp Val Glu Ser Ser Ser Arg Gly Ser Asp Ser Ser Glu Ser Ile
    610                 615                 620

Asp Ser Leu Thr Tyr Leu Leu Lys Leu Thr Ser Gln Lys Lys His Leu
625                 630                 635                 640

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

Arg Gly Gln Glu Val Tyr Asp Arg Gly His Leu Leu Gln Arg His Thr
660 665 670

Gln Ser Asn Ser Asp Val Lys Asp Thr Arg Pro Asn Glu Pro Asp Asp
675 680 685

Tyr Met Val Asp Tyr Phe Arg Arg Gln Leu Pro Asn Gln Gly Leu Val
690 695 700

<210> 7122
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1518; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL3; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding prt-like 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412700"

<400> 7122
Met Ser Glu Asp Ser Glu Lys Glu Asp Tyr Ser Asp Arg Thr Ile Ser
1 5 10 15

Asp Glu Asp Glu Ser Asp Glu Asp Met Phe Met Lys Phe Val Ser Glu
20 25 30

Asp Leu His Arg Cys Ala Leu Leu Thr Asp Trp Thr Pro Ser Cys Pro
35 40 45

Glu Pro Val Tyr Ile Pro Thr Gly Leu Glu Thr Glu Pro Leu Tyr Pro
50 55 60

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

Ile Met Thr His Val Ala Val Lys Tyr Asn Leu Val Leu

85 90

<210> 7123
<211> 292
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1519; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL4; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding prt-like 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335516"

<400> 7123
Asp Asn Leu Arg Glu Gly Ala Glu Gln Lys Val Val Phe Ile Thr Gly
1 5 10 15

Arg Val His Pro Gly Glu Thr Pro Ser Ser Phe Val Cys Gln Gly Ile
20 25 30

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

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

Leu Gly Asn Tyr Arg Cys Ser Leu Met Gly Phe Asp Leu Asn Arg His
65 70 75 80

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

Gln Leu Ile Val Gln Met Tyr Asn Asp Pro Lys Thr Ser Leu Glu Phe
100 105 110

Tyr Ile Asp Ile His Ala His Ser Thr Met Met Asn Gly Phe Met Tyr
115 120 125

```
Gly Asn Ile Phe Glu Asp Glu Glu Arg Phe Gln Arg Gln Ala Ile Phe
    130                 135                 140

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

Ser Phe Asn Arg Asp Ala Val Lys Ala Gly Thr Gly Arg Arg Phe Leu
                165                 170                 175

Gly Gly Leu Leu Asp His Thr Ser Tyr Cys Tyr Thr Leu Glu Val Ser
            180                 185                 190

Phe Tyr Ser Tyr Ile Ile Ser Gly Thr Thr Ala Ala Val Pro Tyr Thr
        195                 200                 205

Glu Glu Ala Tyr Met Lys Leu Gly Arg Asn Val Ala Arg Thr Phe Leu
    210                 215                 220

Asp Tyr Tyr Arg Leu Asn Pro Val Val Glu Lys Val Ala Ile Pro Met
225                 230                 235                 240

Pro Arg Leu Arg Asn Lys Glu Ile Glu Val Gln Arg Arg Lys Glu Lys
                245                 250                 255

Ser Pro Pro Tyr Lys His Pro Leu Leu Arg Gly Pro Ala Ser Asn Tyr
            260                 265                 270

Pro Asn Ser Lys Gly Asp Lys Lys Ser Ser Val Asn His Lys Asp Pro
        275                 280                 285

Ser Thr Pro Phe
    290


<210> 7124
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1519; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL4; "
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<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding prt-like 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360902"

<400> 7124
Met Ala Glu Gly Ser Gln Ser Ala Pro Glu Ala Gly Asn Asp Met Gly
1 5 10 15

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

Thr Gly Tyr Cys Gly Gln Pro Lys Lys Gly His Leu Ile Phe Asp Ala
35 40 45

Cys Phe Glu Ser Gly Asn Leu Gly Arg Val Asp Gln Val Ser Glu Phe
50 55 60

Glu Tyr Asp Leu Phe Ile Arg Pro Asp Thr Cys Asn Pro Arg Phe Arg
65 70 75 80

Val Trp Phe Asn Phe Thr Val Glu Asn Val Lys Glu Ser Gln Arg Val
85 90 95

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

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

Leu Pro Pro Lys Asn Val Tyr Tyr Tyr Arg Cys Pro Asp His Arg Lys
130 135 140

Asn Tyr Val Met Ser Phe Ala Phe Cys Phe Asp Arg Glu Glu Asp Ile
145 150 155 160

Tyr Gln Phe Ala Tyr Cys Tyr Pro Tyr Thr Tyr Thr Arg Phe Gln His
165 170 175

Tyr Leu Asp Ser Leu Gln Lys Arg Asn Met Asp Tyr Phe Phe Arg Glu
180 185 190

```
Gln Leu Gly Gln Ser Val Gln Gln Arg Lys Leu Asp Leu Leu Thr Ile
        195                 200                 205


Thr Ser Pro Ala Gly Arg Trp Ser Trp
    210                 215


<210> 7125
<211> 320
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1519; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP/GTP binding prt-like 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360904"

<400> 7125
Met Ala Glu Gly Ser Gln Ser Ala Pro Glu Ala Gly Asn Asp Met Gly
1               5                   10                  15


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


Thr Gly Tyr Cys Gly Gln Pro Lys Lys Gly His Leu Ile Phe Asp Ala
        35                  40                  45


Cys Phe Glu Ser Gly Asn Leu Gly Arg Val Asp Gln Val Ser Glu Phe
    50                  55                  60


Glu Tyr Asp Leu Phe Ile Arg Pro Asp Thr Cys Asn Pro Arg Phe Arg
65                  70                  75                  80


Val Trp Phe Asn Phe Thr Val Glu Asn Val Lys Glu Ser Gln Arg Val
                85                  90                  95
```

```
Ile Phe Asn Ile Val Asn Phe Ser Lys Thr Lys Ser Leu Tyr Arg Asp
            100                 105                 110

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

Leu Pro Pro Lys Asn Val Tyr Tyr Tyr Arg Cys Pro Asp His Arg Lys
    130                 135                 140

Asn Tyr Val Met Ser Phe Ala Phe Cys Phe Asp Arg Glu Glu Asp Ile
145                 150                 155                 160

Tyr Gln Phe Ala Tyr Cys Tyr Pro Tyr Thr Tyr Thr Arg Phe Gln His
                165                 170                 175

Tyr Leu Asp Ser Leu Gln Lys Arg Asn Met Asp Tyr Phe Phe Arg Glu
            180                 185                 190

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

Thr Ser Pro Asp Asn Leu Arg Glu Gly Ala Glu Gln Lys Val Val Phe
    210                 215                 220

Ile Thr Gly Arg Val His Pro Gly Glu Thr Pro Ser Ser Phe Val Cys
225                 230                 235                 240

Gln Gly Ile Ile Asp Phe Leu Val Ser Gln His Pro Ile Ala Cys Val
                245                 250                 255

Leu Arg Glu Tyr Leu Val Phe Lys Ile Ala Pro Met Leu Asn Pro Asp
            260                 265                 270

Gly Val Tyr Leu Gly Asn Tyr Arg Cys Ser Leu Met Gly Phe Asp Leu
        275                 280                 285

Asn Arg His Trp Leu Asp Pro Ser Pro Trp Val His Pro Thr Leu His
    290                 295                 300

Gly Val Lys Gln Leu Ile Val Gln Met Tyr Asn Asp Pro Val Ser Asn
305                 310                 315                 320
```

<210> 7126

<211> 503
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1519; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL4; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding prt-like 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VU57; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360905"

<400> 7126

Met	Ala	Glu	Gly	Ser	Gln	Ser	Ala	Pro	Glu	Ala	Gly	Asn	Asp	Met	Gly
1				5					10						15

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

Thr	Gly	Tyr	Cys	Gly	Gln	Pro	Lys	Lys	Gly	His	Leu	Ile	Phe	Asp	Ala
		35					40					45			

Cys	Phe	Glu	Ser	Gly	Asn	Leu	Gly	Arg	Val	Asp	Gln	Val	Ser	Glu	Phe
	50					55					60				

Glu	Tyr	Asp	Leu	Phe	Ile	Arg	Pro	Asp	Thr	Cys	Asn	Pro	Arg	Phe	Arg
65				70					75						80

Val	Trp	Phe	Asn	Phe	Thr	Val	Glu	Asn	Val	Lys	Glu	Ser	Gln	Arg	Val
				85					90					95	

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

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

```
Leu Pro Pro Lys Asn Val Tyr Tyr Tyr Arg Cys Pro Asp His Arg Lys
    130                 135                 140

Asn Tyr Val Met Ser Phe Ala Phe Cys Phe Asp Arg Glu Glu Asp Ile
145                 150                 155                 160

Tyr Gln Phe Ala Tyr Cys Tyr Pro Tyr Thr Tyr Thr Arg Phe Gln His
                165                 170                 175

Tyr Leu Asp Ser Leu Gln Lys Arg Asn Met Asp Tyr Phe Phe Arg Glu
            180                 185                 190

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

Thr Ser Pro Asp Asn Leu Arg Glu Gly Ala Glu Gln Lys Val Val Phe
    210                 215                 220

Ile Thr Gly Arg Val His Pro Gly Glu Thr Pro Ser Ser Phe Val Cys
225                 230                 235                 240

Gln Gly Ile Ile Asp Phe Leu Val Ser Gln His Pro Ile Ala Cys Val
                245                 250                 255

Leu Arg Glu Tyr Leu Val Phe Lys Ile Ala Pro Met Leu Asn Pro Asp
            260                 265                 270

Gly Val Tyr Leu Gly Asn Tyr Arg Cys Ser Leu Met Gly Phe Asp Leu
        275                 280                 285

Asn Arg His Trp Leu Asp Pro Ser Pro Trp Val His Pro Thr Leu His
    290                 295                 300

Gly Val Lys Gln Leu Ile Val Gln Met Tyr Asn Asp Pro Lys Thr Ser
305                 310                 315                 320

Leu Glu Phe Tyr Ile Asp Ile His Ala His Ser Thr Met Met Asn Gly
                325                 330                 335

Phe Met Tyr Gly Asn Ile Phe Glu Asp Glu Glu Arg Phe Gln Arg Gln
            340                 345                 350
```

```
Ala Ile Phe Pro Lys Leu Leu Cys Gln Asn Ala Glu Asp Phe Ser Tyr
        355                 360                 365

Ser Ser Thr Ser Phe Asn Arg Asp Ala Val Lys Ala Gly Thr Gly Arg
    370                 375                 380

Arg Phe Leu Gly Gly Leu Leu Asp His Thr Ser Tyr Cys Tyr Thr Leu
385                 390                 395                 400

Glu Val Ser Phe Tyr Ser Tyr Ile Ile Ser Gly Thr Thr Ala Ala Val
                405                 410                 415

Pro Tyr Thr Glu Glu Ala Tyr Met Lys Leu Gly Arg Asn Val Ala Arg
            420                 425                 430

Thr Phe Leu Asp Tyr Tyr Arg Leu Asn Pro Val Val Glu Lys Val Ala
        435                 440                 445

Ile Pro Met Pro Arg Leu Arg Asn Lys Glu Ile Glu Val Gln Arg Arg
    450                 455                 460

Lys Glu Lys Ser Pro Pro Tyr Lys His Pro Leu Leu Arg Gly Pro Ala
465                 470                 475                 480

Ser Asn Tyr Pro Asn Ser Lys Gly Asp Lys Lys Ser Ser Val Asn His
                485                 490                 495

Lys Asp Pro Ser Thr Pro Phe
            500
```

<210> 7127
<211> 299
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1519; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL4; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding prt-like 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401622"

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

<400> 7127
Xaa Arg Glu Glu Asp Ile Tyr Gln Phe Ala Tyr Cys Tyr Pro Tyr Thr
1 5 10 15

Tyr Thr Arg Phe Gln His Tyr Leu Asp Ser Leu Gln Lys Arg Asn Met
20 25 30

Asp Tyr Phe Phe Arg Glu Gln Leu Gly Gln Ser Val Gln Gln Arg Lys
35 40 45

Leu Asp Leu Leu Thr Ile Thr Ser Pro Asp Asn Leu Arg Glu Gly Ala
50 55 60

Glu Gln Lys Val Val Phe Ile Thr Gly Arg Val His Pro Gly Glu Thr
65 70 75 80

Pro Ser Ser Phe Val Cys Gln Gly Ile Ile Asp Phe Leu Val Ser Gln
85 90 95

His Pro Ile Ala Cys Val Leu Arg Glu Tyr Leu Val Phe Lys Ile Ala
100 105 110

Pro Met Leu Asn Pro Asp Gly Val Tyr Leu Gly Asn Tyr Arg Cys Ser
115 120 125

Leu Met Gly Phe Asp Leu Asn Arg His Trp Leu Asp Pro Ser Pro Trp
130 135 140

Val His Pro Thr Leu His Gly Val Lys Gln Leu Ile Val Gln Met Tyr
145 150 155 160

Asn Asp Pro Lys Thr Ser Leu Glu Phe Tyr Ile Asp Ile His Ala His
165 170 175

Ser Thr Met Met Asn Gly Phe Met Tyr Gly Asn Ile Phe Glu Asp Glu

```
            180                 185                 190

Glu Arg Phe Gln Arg Gln Ala Ile Phe Pro Lys Leu Leu Cys Gln Asn
        195                 200                 205

Ala Glu Asp Phe Ser Tyr Ser Ser Thr Ser Phe Asn Arg Asp Ala Val
    210                 215                 220

Lys Ala Gly Thr Gly Arg Arg Phe Leu Gly Gly Leu Leu Asp His Thr
225                 230                 235                 240

Ser Tyr Cys Tyr Thr Leu Glu Val Ser Phe Tyr Ser Tyr Ile Ile Ser
                245                 250                 255

Gly Thr Thr Ala Ala Val Pro Tyr Thr Glu Glu Ala Cys Ile Leu Ser
            260                 265                 270

Pro His Pro Ala Leu Gly Gln Pro Ser Ser Ser Arg Glu Tyr Pro Ser
        275                 280                 285

Leu Thr Gly Gln Glu Leu Gly Pro Gln Leu Arg
    290                 295


<210> 7128
<211> 717
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1520; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP/GTP binding prt-like 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NDL9; "

<220>
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<223> /note="ENSP ID: ENSP00000323681"
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<400> 7128
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
1 5 10 15

Gly Asn Leu Ala His Val Glu Lys Val Glu Ser Leu Ser Ser Asp Gly
20 25 30

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

Ser Pro Asp Tyr Glu Phe Asn Val Trp Thr Arg Pro Asp Cys Ala Glu
50 55 60

Thr Glu Phe Glu Asn Gly Asn Arg Ser Trp Phe Tyr Phe Ser Val Arg
65 70 75 80

Gly Gly Met Pro Gly Lys Leu Ile Lys Ile Asn Ile Met Asn Met Asn
85 90 95

Lys Gln Ser Lys Leu Tyr Ser Gln Gly Met Ala Pro Phe Val Arg Thr
100 105 110

Leu Pro Thr Arg Pro Arg Trp Glu Arg Ile Arg Asp Arg Pro Thr Phe
115 120 125

Glu Met Thr Glu Thr Gln Phe Val Leu Ser Phe Val His Arg Phe Val
130 135 140

Glu Gly Arg Gly Ala Thr Thr Phe Phe Ala Phe Cys Tyr Pro Phe Ser
145 150 155 160

Tyr Ser Asp Cys Gln Glu Leu Leu Asn Gln Leu Asp Gln Arg Phe Pro
165 170 175

Glu Asn His Pro Thr His Ser Ser Pro Leu Asp Thr Ile Tyr Tyr His
180 185 190

Arg Glu Leu Leu Cys Tyr Ser Leu Asp Gly Leu Arg Val Asp Leu Leu
195 200 205

Thr Ile Thr Ser Cys His Gly Leu Arg Glu Asp Arg Glu Pro Arg Leu
210 215 220

```
Glu Gln Leu Phe Pro Asp Thr Ser Thr Pro Arg Pro Phe Arg Phe Ala
225                 230                 235                 240

Gly Lys Arg Ile Phe Phe Leu Ser Ser Arg Val His Pro Gly Glu Thr
                245                 250                 255

Pro Ser Ser Phe Val Phe Asn Gly Phe Leu Asp Phe Ile Leu Arg Pro
            260                 265                 270

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

Ile Pro Met Leu Asn Pro Asp Gly Val Val Arg Gly His Tyr Arg Thr
    290                 295                 300

Asp Ser Arg Gly Val Asn Leu Asn Arg Gln Tyr Leu Lys Pro Asp Ala
305                 310                 315                 320

Val Leu His Pro Ala Ile Tyr Gly Ala Lys Ala Val Leu Leu Tyr His
                325                 330                 335

His Val His Ser Arg Leu Asn Ser Gln Ser Ser Ser Glu His Gln Pro
            340                 345                 350

Ser Ser Cys Leu Pro Pro Asp Ala Pro Val Ser Asp Leu Glu Lys Ala
        355                 360                 365

Asn Asn Leu Gln Asn Glu Ala Gln Cys Gly His Ser Ala Asp Arg His
    370                 375                 380

Asn Ala Glu Ala Trp Lys Gln Thr Glu Pro Ala Glu Gln Lys Leu Asn
385                 390                 395                 400

Ser Val Trp Ile Met Pro Gln Gln Ser Ala Gly Leu Glu Glu Ser Ala
                405                 410                 415

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

Leu His Gly His Ala Ser Lys Arg Gly Cys Phe Met Tyr Gly Asn Ser
        435                 440                 445

Phe Ser Asp Glu Ser Thr Gln Val Glu Asn Met Leu Tyr Pro Lys Leu
```

```
    450                 455                 460

Ile Ser Leu Asn Ser Ala His Phe Asp Phe Gln Gly Cys Asn Phe Ser
465                 470                 475                 480

Glu Lys Asn Met Tyr Ala Arg Asp Arg Arg Asp Gly Gln Ser Lys Glu
                485                 490                 495

Gly Ser Gly Arg Val Ala Ile Tyr Lys Ala Ser Gly Ile Ile His Ser
            500                 505                 510

Tyr Thr Leu Glu Cys Asn Tyr Asn Thr Gly Arg Ser Val Asn Ser Ile
        515                 520                 525

Pro Ala Ala Cys His Asp Asn Gly Arg Ala Ser Pro Pro Pro Pro Pro
    530                 535                 540

Ala Phe Pro Ser Arg Tyr Thr Val Glu Leu Phe Glu Gln Val Gly Arg
545                 550                 555                 560

Ala Met Ala Ile Ala Ala Leu Asp Met Ala Glu Cys Asn Pro Trp Pro
                565                 570                 575

Arg Ile Val Leu Ser Glu His Ser Ser Leu Thr Asn Leu Arg Ala Trp
            580                 585                 590

Met Leu Lys His Val Arg Asn Ser Arg Gly Leu Ser Ser Thr Leu Asn
        595                 600                 605

Val Gly Val Asn Lys Lys Arg Gly Leu Arg Thr Pro Pro Lys Ser His
    610                 615                 620

Asn Gly Leu Pro Val Ser Cys Ser Glu Asn Thr Leu Ser Arg Ala Arg
625                 630                 635                 640

Ser Phe Ser Thr Gly Thr Ser Ala Gly Gly Ser Ser Ser Ser Gln Gln
                645                 650                 655

Asn Ser Pro Gln Met Lys Asn Ser Pro Ser Phe Pro Phe His Gly Ser
            660                 665                 670

Arg Pro Ala Gly Leu Pro Gly Leu Gly Ser Ser Thr Gln Lys Val Thr
        675                 680                 685
```

```
His Arg Val Leu Gly Pro Val Arg Gly Lys Pro Val Trp Glu Pro Leu
    690                 695                 700

Gln His Val Phe Gly Cys Leu Gly His Cys Trp Gly Lys
705                 710                 715
```

<210> 7129
<211> 886
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1520; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL5; "

<220>
<221> source
<223> /note="Gene Name:
ATP/GTP binding prt-like 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NDL9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353249"

<400> 7129

```
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
1               5                   10                  15

Gly Asn Leu Ala His Val Glu Lys Val Glu Ser Leu Ser Ser Asp Gly
            20                  25                  30

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

Ser Pro Asp Tyr Glu Phe Asn Val Trp Thr Arg Pro Asp Cys Ala Glu
    50                  55                  60

Thr Glu Phe Glu Asn Gly Asn Arg Ser Trp Phe Tyr Phe Ser Val Arg
65                  70                  75                  80
```

```
Gly Gly Met Pro Gly Lys Leu Ile Lys Ile Asn Ile Met Asn Met Asn
                85                  90                  95

Lys Gln Ser Lys Leu Tyr Ser Gln Gly Met Ala Pro Phe Val Arg Thr
            100                 105                 110

Leu Pro Thr Arg Pro Arg Trp Glu Arg Ile Arg Asp Arg Pro Thr Phe
        115                 120                 125

Glu Met Thr Glu Thr Gln Phe Val Leu Ser Phe Val His Arg Phe Val
    130                 135                 140

Glu Gly Arg Gly Ala Thr Thr Phe Phe Ala Phe Cys Tyr Pro Phe Ser
145                 150                 155                 160

Tyr Ser Asp Cys Gln Glu Leu Leu Asn Gln Leu Asp Gln Arg Phe Pro
                165                 170                 175

Glu Asn His Pro Thr His Ser Ser Pro Leu Asp Thr Ile Tyr Tyr His
            180                 185                 190

Arg Glu Leu Leu Cys Tyr Ser Leu Asp Gly Leu Arg Val Asp Leu Leu
        195                 200                 205

Thr Ile Thr Ser Cys His Gly Leu Arg Glu Asp Arg Glu Pro Arg Leu
    210                 215                 220

Glu Gln Leu Phe Pro Asp Thr Ser Thr Pro Arg Pro Phe Arg Phe Ala
225                 230                 235                 240

Gly Lys Arg Ile Phe Phe Leu Ser Ser Arg Val His Pro Gly Glu Thr
                245                 250                 255

Pro Ser Ser Phe Val Phe Asn Gly Phe Leu Asp Phe Ile Leu Arg Pro
            260                 265                 270

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

Ile Pro Met Leu Asn Pro Asp Gly Val Val Arg Gly His Tyr Arg Thr
    290                 295                 300

Asp Ser Arg Gly Val Asn Leu Asn Arg Gln Tyr Leu Lys Pro Asp Ala
```

305 310 315 320

Val Leu His Pro Ala Ile Tyr Gly Ala Lys Ala Val Leu Leu Tyr His
325 330 335

His Val His Ser Arg Leu Asn Ser Gln Ser Ser Ser Glu His Gln Pro
340 345 350

Ser Ser Cys Leu Pro Pro Asp Ala Pro Val Ser Asp Leu Glu Lys Ala
355 360 365

Asn Asn Leu Gln Asn Glu Ala Gln Cys Gly His Ser Ala Asp Arg His
370 375 380

Asn Ala Glu Ala Trp Lys Gln Thr Glu Pro Ala Glu Gln Lys Leu Asn
385 390 395 400

Ser Val Trp Ile Met Pro Gln Gln Ser Ala Gly Leu Glu Glu Ser Ala
405 410 415

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

Leu His Gly His Ala Ser Lys Arg Gly Cys Phe Met Tyr Gly Asn Ser
435 440 445

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

Ile Ser Leu Asn Ser Ala His Phe Asp Phe Gln Gly Cys Asn Phe Ser
465 470 475 480

Glu Lys Asn Met Tyr Ala Arg Asp Arg Arg Asp Gly Gln Ser Lys Glu
485 490 495

Gly Ser Gly Arg Val Ala Ile Tyr Lys Ala Ser Gly Ile Ile His Ser
500 505 510

Tyr Thr Leu Glu Cys Asn Tyr Asn Thr Gly Arg Ser Val Asn Ser Ile
515 520 525

Pro Ala Ala Cys His Asp Asn Gly Arg Ala Ser Pro Pro Pro Pro Pro
530 535 540

```
Ala Phe Pro Ser Arg Tyr Thr Val Glu Leu Phe Glu Gln Val Gly Arg
545                 550                 555                 560

Ala Met Ala Ile Ala Ala Leu Asp Met Ala Glu Cys Asn Pro Trp Pro
                565                 570                 575

Arg Ile Val Leu Ser Glu His Ser Ser Leu Thr Asn Leu Arg Ala Trp
            580                 585                 590

Met Leu Lys His Val Arg Asn Ser Arg Gly Leu Ser Ser Thr Leu Asn
        595                 600                 605

Val Gly Val Asn Lys Lys Arg Gly Leu Arg Thr Pro Pro Lys Ser His
    610                 615                 620

Asn Gly Leu Pro Val Ser Cys Ser Glu Asn Thr Leu Ser Arg Ala Arg
625                 630                 635                 640

Ser Phe Ser Thr Gly Thr Ser Ala Gly Gly Ser Ser Ser Ser Gln Gln
                645                 650                 655

Asn Ser Pro Gln Met Lys Asn Ser Pro Ser Phe Pro Phe His Gly Ser
            660                 665                 670

Arg Pro Ala Gly Leu Pro Gly Leu Gly Ser Ser Thr Gln Lys Val Thr
        675                 680                 685

His Arg Val Leu Gly Pro Val Arg Glu Pro Arg Ser Gln Asp Arg Arg
    690                 695                 700

Arg Gln Gln Gln Pro Leu Asn His Arg Pro Ala Gly Ser Leu Ala Pro
705                 710                 715                 720

Ser Pro Ala Pro Thr Ser Ser Gly Pro Ala Ser Ser His Lys Leu Gly
                725                 730                 735

Ser Cys Leu Leu Pro Asp Ser Phe Asn Ile Pro Gly Ser Ser Cys Ser
            740                 745                 750

Leu Leu Ser Ser Gly Asp Lys Pro Glu Ala Val Met Val Ile Gly Lys
        755                 760                 765
```

```
Gly Leu Leu Gly Thr Gly Ala Arg Met Pro Cys Ile Lys Thr Arg Leu
    770                 775                 780

Gln Ala Arg Pro Arg Leu Gly Arg Gly Ser Pro Pro Thr Arg Arg Gly
785                 790                 795                 800

Met Lys Gly Ser Ser Gly Pro Thr Ser Pro Thr Pro Arg Thr Arg Glu
                805                 810                 815

Ser Ser Glu Leu Glu Leu Gly Ser Cys Ser Ala Thr Pro Gly Leu Pro
            820                 825                 830

Gln Ala Arg Pro Pro Arg Pro Arg Ser Ala Pro Ala Phe Ser Pro Ile
        835                 840                 845

Ser Cys Ser Leu Ser Asp Ser Pro Ser Trp Asn Cys Tyr Ser Arg Gly
    850                 855                 860

Pro Leu Gly Gln Pro Glu Val Cys Phe Val Pro Lys Ser Pro Pro Leu
865                 870                 875                 880

Thr Val Ser Pro Arg Val
                885


<210> 7130
<211> 157
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1520; "

<220>
<221> source
<223> /note="Gene Symbol: AGBL5; "

<220>
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<223> /note="Gene Name:
      ATP/GTP binding prt-like 5; "

<220>
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<223> /note="ENSP ID: ENSP00000394730"

<400> 7130
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
```

1 5 10 15

Gly Asn Leu Ala His Val Glu Lys Val Glu Ser Leu Ser Ser Asp Gly
20 25 30

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

Ser Pro Asp Tyr Glu Phe Asn Val Trp Thr Arg Pro Asp Cys Ala Glu
50 55 60

Thr Glu Phe Glu Asn Gly Asn Arg Ser Trp Phe Tyr Phe Ser Val Arg
65 70 75 80

Gly Gly Met Pro Gly Lys Leu Ile Lys Ile Asn Ile Met Asn Met Asn
85 90 95

Lys Gln Ser Lys Leu Tyr Ser Gln Gly Met Ala Pro Phe Val Arg Thr
100 105 110

Leu Pro Thr Arg Pro Arg Trp Glu Arg Ile Arg Asp Arg Pro Thr Phe
115 120 125

Glu Met Thr Glu Thr Gln Phe Val Leu Ser Phe Val His Arg Phe Val
130 135 140

Glu Gly Arg Gly Ala Thr Thr Phe Phe Ala Phe Cys Tyr
145 150 155

<210> 7131
<211> 65
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATP/GTP binding prt-like 5; "

<220>
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<223> /note="ENSP ID: ENSP00000395266"

<400> 7131
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
1   5   10   15

Gly Asn Leu Ala His Val Glu Lys Val Glu Ser Leu Ser Ser Asp Gly
            20   25   30

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

Ser Pro Asp Tyr Glu Phe Asn Val Trp Thr Arg Pro Asp Cys Ala Glu
    50   55   60

Thr
65

<210> 7132
<211> 25
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000395721"

<400> 7132
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
1   5   10   15

Gly Asn Leu Ala His Val Glu Lys Val
            20   25

<210> 7133

<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ATP/GTP binding prt-like 5; "

<220>
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<223> /note="ENSP ID: ENSP00000400905"

<400> 7133

Ser	Ser	Ser	Ser	Gln	Gln	Asn	Ser	Pro	Gln	Met	Lys	Asn	Ser	Pro	Ser
1				5				10					15		

Phe	Pro	Phe	His	Gly	Ser	Arg	Pro	Ala	Gly	Leu	Pro	Gly	Leu	Gly	Ser
			20					25					30		

Ser	Thr	Gln	Lys	Val	Thr	His	Arg	Val	Leu	Gly	Pro	Val	Arg	Glu	Pro
		35					40					45			

Arg	Ser	Gln	Asp	Arg	Arg	Arg	Gln	Gln	Gln	Pro	Leu	Asn	His	Arg	Pro
	50					55					60				

Ala	Gly	Ser	Leu	Ala	Pro	Ser	Pro	Ala	Pro	Thr	Ser	Ser	Gly	Pro	Ala
65					70					75					80

Ser	Ser	His	Lys	Leu	Gly	Ser	Cys	Leu	Leu	Pro	Asp	Ser	Phe	Asn	Ile
				85					90					95	

Pro	Gly	Leu	Tyr	Pro	Leu	Pro	Leu	Lys	Ser	Gly	Phe	Ala	Ser	Leu	Leu
			100					105					110		

His	Gly	Gln	Ala	Arg	Phe	Phe	Lys	Pro	Ser	Trp	Glu	Thr	Arg	Gly	Ile
		115					120					125			

Thr	Tyr	Pro	Leu	Gly	Ile	Leu	Asn	Leu
	130				135		

<210> 7134
<211> 66
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: AGBL5; "

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<223> /note="Gene Name:
ATP/GTP binding prt-like 5; "

<220>
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<223> /note="ENSP ID: ENSP00000407584"

<400> 7134
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
1 5 10 15

Gly Asn Leu Ala His Val Glu Lys Val Glu Ser Leu Ser Ser Asp Gly
20 25 30

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

Ser Pro Asp Tyr Glu Phe Asn Val Trp Thr Arg Pro Asp Cys Ala Glu
50 55 60

Thr Glu
65

<210> 7135
<211> 816
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AGBL5; "

<220>
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<223> /note="Gene Name:
ATP/GTP binding prt-like 5; "

<220>
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<223> /note="Uniprot ID: Q8NDL9; "

<220>
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<223> /note="ENSP ID: ENSP00000433830"

<400> 7135
Met Glu Leu Arg Cys Gly Gly Leu Leu Phe Ser Ser Arg Phe Asp Ser
1 5 10 15

Gly Asn Leu Ala His Val Glu Lys Val Glu Ser Leu Ser Ser Asp Gly
20 25 30

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

Ser Pro Asp Tyr Glu Phe Asn Val Trp Thr Arg Pro Asp Cys Ala Glu
50 55 60

Thr Glu Phe Glu Asn Gly Asn Arg Ser Trp Phe Tyr Phe Ser Val Arg
65 70 75 80

Gly Gly Met Pro Gly Lys Leu Ile Lys Ile Asn Ile Met Asn Met Asn
85 90 95

Lys Gln Ser Lys Leu Tyr Ser Gln Gly Met Ala Pro Phe Val Arg Thr
100 105 110

Leu Pro Thr Arg Pro Arg Trp Glu Arg Ile Arg Asp Arg Pro Thr Phe
115 120 125

Glu Met Thr Glu Thr Gln Phe Val Leu Ser Phe Val His Arg Phe Val
130 135 140

Glu Gly Arg Gly Ala Thr Thr Phe Phe Ala Phe Cys Tyr Pro Phe Ser
145 150 155 160

Tyr Ser Asp Cys Gln Glu Leu Leu Asn Gln Leu Asp Gln Arg Phe Pro
165 170 175

```
Glu Asn His Pro Thr His Ser Ser Pro Leu Asp Thr Ile Tyr Tyr His
            180                 185                 190

Arg Glu Leu Leu Cys Tyr Ser Leu Asp Gly Leu Arg Val Asp Leu Leu
        195                 200                 205

Thr Ile Thr Ser Cys His Gly Leu Arg Glu Asp Arg Glu Pro Arg Leu
    210                 215                 220

Glu Gln Leu Phe Pro Asp Thr Ser Thr Pro Arg Pro Phe Arg Phe Ala
225                 230                 235                 240

Gly Lys Arg Ile Phe Phe Leu Ser Ser Arg Val His Pro Gly Glu Thr
                245                 250                 255

Pro Ser Ser Phe Val Phe Asn Gly Phe Leu Asp Phe Ile Leu Arg Pro
            260                 265                 270

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

Ile Pro Met Leu Asn Pro Asp Gly Val Val Arg Gly His Tyr Arg Thr
    290                 295                 300

Asp Ser Arg Gly Val Asn Leu Asn Arg Gln Tyr Leu Lys Pro Asp Ala
305                 310                 315                 320

Val Leu His Pro Ala Ile Tyr Gly Ala Lys Ala Val Leu Leu Tyr His
                325                 330                 335

His Val His Ser Arg Leu Asn Ser Gln Ser Ser Ser Glu His Gln Pro
            340                 345                 350

Ser Ser Cys Leu Pro Pro Asp Ala Pro Val Ser Asp Leu Glu Lys Ala
        355                 360                 365

Asn Asn Leu Gln Asn Glu Ala Gln Cys Gly His Ser Ala Asp Arg His
    370                 375                 380

Asn Ala Glu Ala Trp Lys Gln Thr Glu Pro Ala Glu Gln Lys Leu Asn
385                 390                 395                 400
```

```
Ser Val Trp Ile Met Pro Gln Gln Ser Ala Gly Leu Glu Glu Ser Ala
                405                 410                 415

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

Leu His Gly His Ala Ser Lys Arg Gly Cys Phe Met Tyr Gly Asn Ser
        435                 440                 445

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

Ile Ser Leu Asn Ser Ala His Phe Asp Phe Gln Gly Cys Asn Phe Ser
465                 470                 475                 480

Glu Lys Asn Met Tyr Ala Arg Asp Arg Arg Asp Gly Gln Ser Lys Glu
                485                 490                 495

Gly Ser Gly Arg Val Ala Ile Tyr Lys Ala Ser Gly Ile Ile His Ser
            500                 505                 510

Tyr Thr Leu Glu Cys Asn Tyr Asn Thr Gly Arg Ser Val Asn Ser Ile
        515                 520                 525

Pro Ala Ala Cys His Asp Asn Gly Arg Ala Ser Pro Pro Pro Pro Pro
    530                 535                 540

Ala Phe Pro Ser Arg Tyr Thr Val Glu Leu Phe Glu Gln Val Gly Arg
545                 550                 555                 560

Ala Met Ala Ile Ala Ala Leu Asp Met Ala Glu Cys Asn Pro Trp Pro
                565                 570                 575

Arg Ile Val Leu Ser Glu His Ser Ser Leu Thr Asn Leu Arg Ala Trp
            580                 585                 590

Met Leu Lys His Val Arg Asn Ser Arg Gly Leu Ser Ser Thr Leu Asn
        595                 600                 605

Val Gly Val Asn Lys Lys Arg Gly Leu Arg Thr Pro Pro Lys Ser His
    610                 615                 620

Asn Gly Leu Pro Val Ser Cys Ser Glu Asn Thr Leu Ser Arg Ala Arg
```

625 630 635 640

Ser Phe Ser Thr Gly Thr Ser Ala Gly Gly Ser Ser Ser Ser Gln Gln
645 650 655

Asn Ser Pro Gln Met Lys Asn Ser Pro Ser Phe Pro Phe His Gly Ser
660 665 670

Arg Pro Ala Gly Leu Pro Gly Leu Gly Ser Ser Thr Gln Lys Val Thr
675 680 685

His Arg Val Leu Gly Pro Val Arg Glu Pro Arg Ser Gln Asp Arg Arg
690 695 700

Arg Gln Gln Gln Pro Leu Asn His Arg Pro Ala Gly Ser Leu Ala Pro
705 710 715 720

Ser Pro Ala Pro Thr Ser Ser Gly Pro Ala Ser Ser His Lys Leu Gly
725 730 735

Ser Cys Leu Leu Pro Asp Ser Phe Asn Ile Pro Gly Ser Ser Cys Ser
740 745 750

Leu Leu Ser Ser Gly Asp Lys Pro Glu Ala Val Met Val Ile Gly Lys
755 760 765

Gly Leu Leu Gly Thr Gly Ala Arg Met Pro Cys Ile Lys Thr Arg Leu
770 775 780

Gln Thr Cys Pro Arg Arg Val Ser Ala Arg Arg Gly Pro Gly Phe Pro
785 790 795 800

Arg Leu Gly Pro Gly Trp Ala Gly Ala His Arg Arg Leu Ala Glu Gly
805 810 815

<210> 7136
<211> 749
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1521; "

<220>

<221> source
<223> /note="Gene Symbol: ATP5J2-PTCD1; "

<220>
<221> source
<223> /note="Gene Name:
ATP5J2-PTCD1 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400168"

<400> 7136

```
Met Ala Ser Val Val Pro Val Lys Asp Lys Lys Leu Leu Glu Val Lys
1               5                  10                  15

Leu Gly Glu Leu Pro Ser Trp Ile Leu Met Arg Asp Phe Ser Pro Ser
            20                  25                  30

Gly Ile Phe Gly Ala Phe Gln Arg Gly Pro Gly Gly Thr Gly Lys Pro
        35                  40                  45

Glu Met Asp Phe Val Arg Leu Ala Arg Leu Phe Ala Arg Ala Arg Pro
    50                  55                  60

Met Gly Leu Phe Ile Leu Gln His Leu Asp Pro Cys Arg Ala Arg Trp
65                  70                  75                  80

Ala Gly Gly Arg Glu Gly Leu Met Arg Pro Met Trp Ala Pro Phe Ser
                85                  90                  95

Ser Ser Ser Ser Gln Leu Pro Leu Gly Gln Glu Arg Gln Glu Asn Thr
            100                 105                 110

Gly Ser Leu Gly Ser Asp Pro Ser His Ser Asn Ser Thr Ala Thr Gln
        115                 120                 125

Glu Glu Asp Glu Glu Glu Glu Glu Ser Phe Gly Thr Leu Ser Asp Lys
    130                 135                 140

Tyr Ser Ser Arg Arg Leu Phe Arg Lys Ser Ala Ala Gln Phe His Asn
145                 150                 155                 160

Leu Arg Phe Gly Glu Arg Arg Asp Glu Gln Met Glu Pro Glu Pro Lys
                165                 170                 175
```

```
Leu Trp Arg Gly Arg Arg Asn Thr Pro Tyr Trp Tyr Phe Leu Gln Cys
            180                 185                 190

Lys His Leu Ile Lys Glu Gly Lys Leu Val Glu Ala Leu Asp Leu Phe
        195                 200                 205

Glu Arg Gln Met Leu Lys Glu Glu Arg Leu Gln Pro Met Glu Ser Asn
    210                 215                 220

Tyr Thr Val Leu Ile Gly Gly Cys Gly Arg Val Gly Tyr Leu Lys Lys
225                 230                 235                 240

Ala Phe Asn Leu Tyr Asn Gln Met Lys Lys Arg Asp Leu Glu Pro Ser
                245                 250                 255

Asp Ala Thr Tyr Thr Ala Leu Phe Asn Val Cys Ala Glu Ser Pro Trp
            260                 265                 270

Lys Asp Ser Ala Leu Gln Ser Ala Leu Lys Leu Arg Gln Gln Leu Gln
        275                 280                 285

Ala Lys Asn Phe Glu Leu Asn Leu Lys Thr Tyr His Ala Leu Leu Lys
    290                 295                 300

Met Ala Ala Lys Cys Ala Asp Leu Arg Met Cys Leu Asp Val Phe Lys
305                 310                 315                 320

Glu Ile Ile His Lys Gly His Val Val Thr Glu Glu Thr Phe Ser Phe
                325                 330                 335

Leu Leu Met Gly Cys Ile Gln Asp Lys Lys Thr Gly Phe Arg Tyr Ala
            340                 345                 350

Leu Gln Val Trp Arg Leu Met Leu Ser Leu Gly Leu Gln Pro Ser Arg
        355                 360                 365

Asp Ser Tyr Asn Leu Leu Leu Val Ala Ala Arg Asp Cys Gly Leu Gly
    370                 375                 380

Asp Pro Gln Val Ala Ser Glu Leu Leu Leu Lys Pro Arg Glu Glu Ala
385                 390                 395                 400

Thr Val Leu Gln Pro Pro Val Ser Arg Gln Arg Pro Arg Arg Thr Ala
```

```
                405                 410                 415

Gln Ala Lys Ala Gly Asn Leu Met Ser Ala Met Leu His Val Glu Ala
            420                 425                 430

Leu Glu Arg Gln Leu Phe Leu Glu Pro Ser Gln Ala Leu Gly Pro Pro
        435                 440                 445

Glu Pro Pro Glu Ala Arg Val Pro Gly Lys Ala Gln Pro Glu Val Asp
    450                 455                 460

Thr Lys Ala Glu Pro Ser His Thr Ala Ala Leu Thr Ala Val Ala Leu
465                 470                 475                 480

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

Val Pro Pro Thr Val Val Ser Phe Gly Thr Val Thr Thr Pro Ala Asp
            500                 505                 510

Arg Leu Ala Leu Ile Gly Gly Leu Glu Gly Phe Leu Ser Lys Met Ala
        515                 520                 525

Glu His Arg Gln Gln Pro Asp Ile Arg Thr Leu Thr Leu Leu Ala Glu
    530                 535                 540

Val Val Glu Ser Gly Ser Pro Ala Glu Ser Leu Leu Leu Ala Leu Leu
545                 550                 555                 560

Asp Glu His Gln Val Glu Ala Asp Leu Thr Phe Phe Asn Thr Leu Val
                565                 570                 575

Arg Lys Lys Ser Lys Leu Gly Asp Leu Glu Gly Ala Lys Ala Leu Leu
            580                 585                 590

Pro Val Leu Ala Lys Arg Gly Leu Val Pro Asn Leu Gln Thr Phe Cys
        595                 600                 605

Asn Leu Ala Ile Gly Cys His Arg Pro Lys Asp Gly Leu Gln Leu Leu
    610                 615                 620

Thr Asp Met Lys Lys Ser Gln Val Thr Pro Asn Thr His Ile Tyr Ser
625                 630                 635                 640
```

```
Ala Leu Ile Asn Ala Ala Ile Arg Lys Leu Asn Tyr Thr Tyr Leu Ile
                645                 650                 655

Ser Ile Leu Lys Asp Met Lys Gln Asn Arg Val Pro Val Asn Glu Val
            660                 665                 670

Val Ile Arg Gln Leu Glu Phe Ala Ala Gln Tyr Pro Pro Thr Phe Asp
        675                 680                 685

Arg Tyr Gln Gly Lys Asn Thr Tyr Leu Glu Lys Ile Asp Gly Phe Arg
    690                 695                 700

Ala Tyr Tyr Lys Gln Trp Leu Thr Val Met Pro Ala Glu Glu Thr Pro
705                 710                 715                 720

His Pro Trp Gln Lys Phe Arg Thr Lys Pro Gln Gly Asp Gln Asp Thr
                725                 730                 735

Gly Lys Glu Ala Asp Asp Gly Cys Ala Leu Gly Gly Arg
            740                 745
```

<210> 7137
<211> 54
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATP5J2-PTCD1 readthrough; "

<220>
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<223> /note="ENSP ID: ENSP00000416954"

<400> 7137

```
Met Ala Ser Val Val Pro Val Lys Asp Lys Lys Leu Leu Glu Val Lys
1               5                  10                  15
```

```
Leu Gly Glu Leu Pro Ser Trp Ile Leu Met Arg Asp Phe Ser Pro Ser
            20                  25                  30

Gly Ile Phe Gly Ala Phe Gln Arg Gly Tyr Gly Gln Ala Ala Ser Val
        35                  40                  45

Glu Gly Ala Tyr Arg Leu
    50


<210> 7138
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1522; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5SL; "

<220>
<221> source
<223> /note="Gene Name:
      ATP5S-like; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NW81; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000221943"

<400> 7138
Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1               5                   10                  15

Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
            20                  25                  30

Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
        35                  40                  45

Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
    50                  55                  60

Tyr Lys Val His Glu Lys Asn Arg Ser Tyr Thr Trp Leu Glu Lys Gln
65                  70                  75                  80
```

```
His Gly Pro Tyr Gly Ala Gly Ala Phe Phe Ile Leu Lys Gln Gly Gly
                85                  90                  95

Ala Val Lys Phe Arg Asp Lys Glu Trp Ile Arg Pro Asp Lys Tyr Gly
            100                 105                 110

His Phe Ser Gln Glu Phe Trp Asn Phe Cys Glu Val Pro Val Glu Ala
        115                 120                 125

Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr Glu Gly Leu Asp Asn Leu
    130                 135                 140

Leu Arg Leu Lys Glu Leu Gln Ser Leu Ser Leu Gln Arg Cys Cys His
145                 150                 155                 160

Val Asp Asp Trp Cys Leu Ser Arg Leu Tyr Pro Leu Ala Asp Ser Leu
                165                 170                 175

Gln Glu Leu Ser Leu Ala Gly Cys Pro Arg Ile Ser Glu Arg Gly Leu
            180                 185                 190

Ala Cys Leu His His Leu Gln Asn Leu Arg Arg Leu Asp Ile Ser Asp
        195                 200                 205

Leu Pro Ala Val Ser Asn Pro Gly Leu Thr Gln Ile Leu Val Glu Glu
    210                 215                 220

Met Leu Pro Asn Cys Glu Val Val Gly Val Asp Trp Ala Glu Gly Leu
225                 230                 235                 240

Lys Ser Gly Pro Glu Glu Gln Pro Arg Asp Thr Ala Ser Pro Val Pro
                245                 250                 255

Ala
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<210> 7139
<211> 191
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1522; "

<220>
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<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000301183"

<400> 7139

```
Met Trp Asp Leu Val Leu Glu Asp Arg Arg Met Asn Ser Leu Arg Leu
1               5                  10                  15

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

Ala Ala Val Ala Pro Glu Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu
        35                  40                  45

Gln Phe Leu Thr Asn Tyr Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr
    50                  55                  60

Leu Leu Gln Arg Glu Met Tyr Lys Val His Glu Lys Asn Arg Ser Tyr
65                  70                  75                  80

Thr Trp Leu Glu Lys Gln His Gly Pro Tyr Gly Ala Gly Ala Phe Phe
                85                  90                  95

Ile Leu Lys Gln Gly Gly Ala Val Lys Phe Arg Asp Lys Glu Trp Ile
            100                 105                 110

Arg Pro Asp Lys Tyr Gly His Phe Ser Gln Glu Phe Trp Asn Phe Cys
        115                 120                 125

Glu Val Pro Val Glu Ala Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr
    130                 135                 140

Glu Gly Leu Asp Asn Leu Arg Thr Ser Ala Gly Trp Thr Ser Arg Thr
```

145 150 155 160

Ser Leu Pro Cys Pro Thr Leu Ala Ser Leu Arg Tyr Trp Trp Arg Arg
165 170 175

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

<210> 7140
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1522; "

<220>
<221> source
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<220>
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ATP5S-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NW81; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397413"

<400> 7140
Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1 5 10 15

Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
20 25 30

Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
35 40 45

Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
50 55 60

Tyr Lys Val His Glu Lys Asn Arg Phe Arg Asp Lys Glu Trp Ile Arg
65 70 75 80

```
Pro Asp Lys Tyr Gly His Phe Ser Gln Glu Phe Trp Asn Phe Cys Glu
                85                  90                  95

Val Pro Val Glu Ala Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr Glu
            100                 105                 110

Gly Leu Asp Asn Leu Arg Thr Ser Ala Gly Trp Thr Ser Arg Thr Ser
        115                 120                 125

Leu Pro Cys Pro Thr Leu Ala Ser Leu Arg Tyr Trp Trp Arg Arg Cys
    130                 135                 140

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


<210> 7141
<211> 263
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP5SL; "

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q9NW81; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403910"

<400> 7141
Met Trp Asp Leu Val Leu Glu Asp Arg Arg Met Asn Ser Leu Arg Leu
1               5                   10                  15

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

Ala Ala Val Ala Pro Glu Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu
```

```
        35                  40                  45

Gln Phe Leu Thr Asn Tyr Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr
    50                  55                  60

Leu Leu Gln Arg Glu Met Tyr Lys Val His Glu Lys Asn Arg Ser Tyr
65                  70                  75                  80

Thr Trp Leu Glu Lys Gln His Gly Pro Tyr Gly Ala Gly Ala Phe Phe
                85                  90                  95

Ile Leu Lys Gln Gly Gly Ala Val Lys Phe Arg Asp Lys Glu Trp Ile
            100                 105                 110

Arg Pro Asp Lys Tyr Gly His Phe Ser Gln Glu Phe Trp Asn Phe Cys
        115                 120                 125

Glu Val Pro Val Glu Ala Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr
    130                 135                 140

Glu Gly Leu Asp Asn Leu Leu Arg Leu Lys Glu Leu Gln Ser Leu Ser
145                 150                 155                 160

Leu Gln Arg Cys Cys His Val Asp Asp Trp Cys Leu Ser Arg Leu Tyr
                165                 170                 175

Pro Leu Ala Asp Ser Leu Gln Glu Leu Ser Leu Ala Gly Cys Pro Arg
            180                 185                 190

Ile Ser Glu Arg Gly Leu Ala Cys Leu His His Leu Gln Asn Leu Arg
        195                 200                 205

Arg Leu Asp Ile Ser Asp Leu Pro Ala Val Ser Asn Pro Gly Leu Thr
    210                 215                 220

Gln Ile Leu Val Glu Glu Met Leu Pro Asn Cys Glu Val Val Gly Val
225                 230                 235                 240

Asp Trp Ala Glu Gly Leu Lys Ser Gly Pro Glu Glu Gln Pro Arg Asp
                245                 250                 255

Thr Ala Ser Pro Val Pro Ala
            260
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<210> 7142
<211> 176
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1522; "

<220>
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<223> /note="Gene Symbol: ATP5SL; "

<220>
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<223> /note="Gene Name:
ATP5S-like; "

<220>
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<223> /note="ENSP ID: ENSP00000464907"

<400> 7142
Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1 5 10 15

Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
20 25 30

Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
35 40 45

Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
50 55 60

Tyr Lys Ile Leu His Leu Ala Gly Glu Ala Thr Trp Ser Ile Arg Arg
65 70 75 80

Arg Phe Arg Asp Lys Glu Trp Ile Arg Pro Asp Lys Tyr Gly His Phe
85 90 95

Ser Gln Glu Phe Trp Asn Phe Cys Glu Val Pro Val Glu Ala Val Asp
100 105 110

Ala Gly Asp Cys Asp Ile Asn Tyr Glu Gly Leu Asp Asn Leu Leu Arg
115 120 125

```
Leu Lys Glu Leu Gln Ser Leu Ser Leu Gln Arg Cys Cys His Val Asp
    130                 135                 140

Asp Trp Cys Leu Ser Arg Leu Tyr Pro Leu Ala Asp Ser Leu Gln Glu
145                 150                 155                 160

Leu Ser Leu Ala Gly Cys Pro Arg Ile Ser Glu Arg Gly Leu Ala Cys
                165                 170                 175


<210> 7143
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q9NW81; "

<220>
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<223> /note="ENSP ID: ENSP00000466485"

<400> 7143
Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1               5                   10                  15

Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
            20                  25                  30

Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
        35                  40                  45

Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
    50                  55                  60

Tyr Lys Val His Glu Lys Asn Arg Ser Tyr Thr Trp Leu Glu Lys Gln
65                  70                  75                  80
```

```
His Gly Pro Tyr Gly Ala Gly Ala Phe Phe Ile Leu Lys Gln Gly Gly
                85                  90                  95

Ala Val Lys Phe Arg Asp Lys Glu Trp Ile Arg Pro Asp Lys Tyr Gly
            100                 105                 110

His Phe Ser Gln Glu Phe Trp Asn Phe Cys Glu Val Pro Val Glu Ala
        115                 120                 125

Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr Glu Gly Leu Asp Asn Leu
    130                 135                 140

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

Leu Ala Ser Leu Arg Tyr Trp Trp Arg Arg Cys Cys Pro Ile Ala Arg
                165                 170                 175

Leu Trp Glu Ser Thr Gly Leu Arg Ala
            180                 185


<210> 7144
<211> 230
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q9NW81; "

<220>
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<223> /note="ENSP ID: ENSP00000467205"

<400> 7144
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Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1               5                   10                  15

Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
            20                  25                  30

Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
        35                  40                  45

Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
    50                  55                  60

Tyr Lys Val His Glu Lys Asn Arg Phe Arg Asp Lys Glu Trp Ile Arg
65                  70                  75                  80

Pro Asp Lys Tyr Gly His Phe Ser Gln Glu Phe Trp Asn Phe Cys Glu
                85                  90                  95

Val Pro Val Glu Ala Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr Glu
            100                 105                 110

Gly Leu Asp Asn Leu Leu Arg Leu Lys Glu Leu Gln Ser Leu Ser Leu
        115                 120                 125

Gln Arg Cys Cys His Val Asp Asp Trp Cys Leu Ser Arg Leu Tyr Pro
    130                 135                 140

Leu Ala Asp Ser Leu Gln Glu Leu Ser Leu Ala Gly Cys Pro Arg Ile
145                 150                 155                 160

Ser Glu Arg Gly Leu Ala Cys Leu His His Leu Gln Asn Leu Arg Arg
                165                 170                 175

Leu Asp Ile Ser Asp Leu Pro Ala Val Ser Asn Pro Gly Leu Thr Gln
            180                 185                 190

Ile Leu Val Glu Glu Met Leu Pro Asn Cys Glu Val Val Gly Val Asp
        195                 200                 205

Trp Ala Glu Gly Leu Lys Ser Gly Pro Glu Glu Gln Pro Arg Asp Thr
    210                 215                 220

Ala Ser Pro Val Pro Ala
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225 230

<210> 7145
<211> 178
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ATP5S-like; "

<220>
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<223> /note="ENSP ID: ENSP00000468059"

<400> 7145
Met Trp Asp Leu Val Leu Glu Asp Arg Arg Met Asn Ser Leu Arg Leu
1 5 10 15

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

Ala Ala Val Ala Pro Glu Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu
35 40 45

Gln Phe Leu Thr Asn Tyr Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr
50 55 60

Leu Leu Gln Arg Glu Met Tyr Lys Val His Glu Lys Asn Arg Phe Arg
65 70 75 80

Asp Lys Glu Trp Ile Arg Pro Asp Lys Tyr Gly His Phe Ser Gln Glu
85 90 95

Phe Trp Asn Phe Cys Glu Val Pro Val Glu Ala Val Asp Ala Gly Asp
100 105 110

Cys Asp Ile Asn Tyr Glu Gly Leu Asp Asn Leu Leu Arg Leu Lys Glu
115 120 125

```
Leu Gln Ser Leu Ser Leu Gln Arg Cys Cys His Val Asp Asp Trp Cys
    130                 135                 140

Leu Ser Arg Leu Tyr Pro Leu Ala Asp Ser Leu Gln Glu Leu Ser Leu
145                 150                 155                 160

Ala Gly Cys Pro Arg Ile Ser Glu Arg Gly Leu Ala Cys Leu His His
                165                 170                 175

Leu Gln
```

<210> 7146
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1522; "

<220>
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<223> /note="Gene Symbol: ATP5SL; "

<220>
<221> source
<223> /note="Gene Name:
ATP5S-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468796"

<400> 7146

```
Met Trp Asn Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val
1               5                   10                  15

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

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

Arg Glu Met Tyr Lys Val His Glu Lys Asn Arg Ser Tyr Thr Trp Leu
    50                  55                  60

Glu Lys Gln His Gly Pro Tyr Gly Ala Gly Ala Phe Phe Ile Leu Lys
```

65 70 75 80

Gln Gly Gly Ala Val Lys Phe Arg Asp Lys Glu Trp Ile Arg Pro Asp
85 90 95

Lys Tyr Gly His Phe
100

<210> 7147
<211> 22
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1522; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5SL; "

<220>
<221> source
<223> /note="Gene Name:
ATP5S-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468966"

<400> 7147
Met Trp Asp Leu Val Leu Glu Asp Arg Arg Met Asn Val Ser Arg Gln
1 5 10 15

Gly Val Asp Gln Ala Arg
20

<210> 7148
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1522; "

<220>
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<223> /note="Gene Symbol: ATP5SL; "

<220>
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<223> /note="Gene Name:
ATP5S-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470444"

<400> 7148
Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1 5 10 15

Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
20 25 30

Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
35 40 45

Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
50 55 60

Tyr Lys Val His Glu Lys Asn Arg Phe Arg Asp Lys Glu Trp Ile Arg
65 70 75 80

Pro Asp Lys Tyr Gly His Phe Ser Gln Glu Phe Trp Asn Phe Cys Glu
85 90 95

Val Pro Val Glu Ala Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr Glu
100 105 110

Gly Leu Asp Asn Leu Leu Arg Leu Lys Glu Leu Gln Ser Leu Ser Leu
115 120 125

Gln Arg Cys Cys His Val Asp Asp Trp Cys Leu Ser Arg Leu Tyr Pro
130 135 140

Leu Ala Asp Ser Leu Gln Glu Leu Ser Leu Ala Gly Cys Pro Arg Ile
145 150 155 160

Ser Glu Arg Gly Leu Ala Cys Leu His His Leu Gln
165 170

<210> 7149
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1522; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5SL; "

<220>
<221> source
<223> /note="Gene Name:
ATP5S-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470684"

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

<400> 7149

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Xaa Tyr Gly Ala Gly Ala Phe Phe Ile Leu Lys Gln Gly Gly Ala Val
1               5                   10                  15

Lys Phe Arg Asp Lys Glu Trp Ile Arg Pro Asp Lys Tyr Gly His Phe
            20                  25                  30

Ser Gln Glu Phe Trp Asn Phe Cys Glu Val Pro Val Glu Ala Val Asp
        35                  40                  45

Ala Gly Asp Cys Asp Ile Asn Tyr Glu Gly Leu Asp Asn Leu Leu Arg
    50                  55                  60

Leu Lys Glu Leu Gln Ser Leu Ser Leu Gln Arg Cys Cys His Val Asp
65                  70                  75                  80

Asp Trp Cys Leu Ser Arg Leu Tyr Pro Leu Ala Asp Ser Leu Gln Glu
                85                  90                  95

Leu Ser Leu Ala Gly Cys Pro Arg Ile Ser Glu Arg Gly Leu Ala Cys
            100                 105                 110

Leu His His Leu Gln Asn Leu Arg Arg Leu Asp Ile Ser Asp Leu Pro
        115                 120                 125

Ala Val Ser Asn Pro Gly Leu Thr Gln Ile Leu Val Glu Glu Met Leu
```

```
    130                 135                 140

Pro Asn Cys Glu Gly Pro
145                 150


<210> 7150
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1522; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5SL; "

<220>
<221> source
<223> /note="Gene Name:
      ATP5S-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000471068"

<400> 7150
Met Ala Ala Pro Trp Ala Ser Leu Arg Leu Val Ala Pro Met Trp Asn
1               5                   10                  15


Gly Arg Ile Arg Gly Ile His Arg Leu Gly Ala Ala Val Ala Pro Glu
            20                  25                  30


Gly Asn Gln Lys Lys Lys Arg Thr Ile Leu Gln Phe Leu Thr Asn Tyr
        35                  40                  45


Phe Tyr Asp Val Glu Ala Leu Arg Asp Tyr Leu Leu Gln Arg Glu Met
    50                  55                  60


Tyr Lys Val His Glu Lys Asn Arg Phe Arg Asp Lys Glu Trp Ile Arg
65                  70                  75                  80


Pro Asp Lys Tyr Gly His Phe Ser Gln Glu Phe Trp Asn Phe Cys Glu
                85                  90                  95


Val Pro Val Glu Ala Val Asp Ala Gly Asp Cys Asp Ile Asn Tyr Glu
            100                 105                 110
```

Gly Leu Asp Asn Leu Leu Lys Thr Val
115 120

<210> 7151
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1523; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1G2-DDX39B; "

<220>
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<223> /note="Gene Name:
ATP6V1G2-DDX39B readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365356"

<400> 7151
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
20 25 30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
35 40 45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Thr Gly Ile
50 55 60

Phe Gln Arg Gln Ala Trp Ser Ala Arg Ile Cys Ile Thr Ala Glu Gly
65 70 75 80

Pro Val Ser Gly Pro Leu Arg Leu Arg Ser Cys Ser Gln Glu Gly Gly
85 90 95

Arg Leu Glu

<210> 7152

<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1523; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1G2-DDX39B; "

<220>
<221> source
<223> /note="Gene Name:
ATP6V1G2-DDX39B readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420191"

<400> 7152
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
20 25 30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
35 40 45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Thr Gly Ile
50 55 60

Phe Gln Arg Gln Ala Trp Ser Ala Arg Ile Cys Ile Thr Ala Glu Gly
65 70 75 80

Pro Val Ser Gly Pro Leu Arg Leu Arg Ser Cys Ser Gln Glu Gly Gly
85 90 95

Arg Leu Glu

<210> 7153
<211> 361
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1524; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NBU5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339016"

<400> 7153

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Met Val His Ala Glu Ala Phe Ser Arg Pro Leu Ser Arg Asn Glu Val
1               5                  10                  15

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

Thr Ile Lys Trp Met Val Asp Ala Ile Asp Pro Thr Arg Lys Gln Lys
        35                  40                  45

Val Glu Ala Gln Lys Gln Ala Glu Lys Leu Met Lys Gln Ile Gly Val
    50                  55                  60

Lys Asn Val Lys Leu Ser Glu Tyr Glu Met Ser Ile Ala Ala His Leu
65                  70                  75                  80

Val Asp Pro Leu Asn Met His Val Thr Trp Ser Asp Ile Ala Gly Leu
                85                  90                  95

Asp Asp Val Ile Thr Asp Leu Lys Asp Thr Val Ile Leu Pro Ile Lys
            100                 105                 110

Lys Lys His Leu Phe Glu Asn Ser Arg Leu Leu Gln Pro Pro Lys Gly
        115                 120                 125

Val Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Thr Leu Ile Ala Lys
    130                 135                 140
```

Ala Thr Ala Lys Glu Ala Gly Cys Arg Phe Ile Asn Leu Gln Pro Ser
145 150 155 160

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

Val Phe Ser Leu Ala Ile Lys Leu Gln Pro Ser Ile Ile Phe Ile Asp
180 185 190

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

Thr Ala Met Met Lys Ala Gln Phe Met Ser Leu Trp Asp Gly Leu Asp
210 215 220

Thr Asp His Ser Cys Gln Val Ile Val Met Gly Ala Thr Asn Arg Pro
225 230 235 240

Gln Asp Leu Asp Ser Ala Ile Met Arg Arg Met Pro Thr Arg Phe His
245 250 255

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

Leu Lys Asn Glu Asn Val Asp Arg His Val Asp Leu Leu Glu Val Ala
275 280 285

Gln Glu Thr Asp Gly Phe Ser Gly Ser Asp Leu Lys Glu Met Cys Arg
290 295 300

Asp Ala Ala Leu Leu Cys Val Arg Glu Tyr Val Asn Ser Thr Ser Glu
305 310 315 320

Glu Ser His Asp Glu Asp Glu Ile Arg Pro Val Gln Gln Gln Asp Leu
325 330 335

His Arg Ala Ile Glu Lys Met Lys Lys Ser Lys Asp Ala Ala Phe Gln
340 345 350

Asn Val Leu Thr His Val Cys Leu Asp
355 360

<210> 7154

<211> 361
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1524; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 1; "

<220>
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<223> /note="Uniprot ID: Q8NBU5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339017"

<400> 7154

```
Met Val His Ala Glu Ala Phe Ser Arg Pro Leu Ser Arg Asn Glu Val
1               5                   10                  15

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

Thr Ile Lys Trp Met Val Asp Ala Ile Asp Pro Thr Arg Lys Gln Lys
        35                  40                  45

Val Glu Ala Gln Lys Gln Ala Glu Lys Leu Met Lys Gln Ile Gly Val
    50                  55                  60

Lys Asn Val Lys Leu Ser Glu Tyr Glu Met Ser Ile Ala Ala His Leu
65                  70                  75                  80

Val Asp Pro Leu Asn Met His Val Thr Trp Ser Asp Ile Ala Gly Leu
                85                  90                  95

Asp Asp Val Ile Thr Asp Leu Lys Asp Thr Val Ile Leu Pro Ile Lys
            100                 105                 110

Lys Lys His Leu Phe Glu Asn Ser Arg Leu Leu Gln Pro Pro Lys Gly
        115                 120                 125
```

```
Val Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Thr Leu Ile Ala Lys
    130                 135                 140

Ala Thr Ala Lys Glu Ala Gly Cys Arg Phe Ile Asn Leu Gln Pro Ser
145                 150                 155                 160

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

Val Phe Ser Leu Ala Ile Lys Leu Gln Pro Ser Ile Ile Phe Ile Asp
            180                 185                 190

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

Thr Ala Met Met Lys Ala Gln Phe Met Ser Leu Trp Asp Gly Leu Asp
    210                 215                 220

Thr Asp His Ser Cys Gln Val Ile Val Met Gly Ala Thr Asn Arg Pro
225                 230                 235                 240

Gln Asp Leu Asp Ser Ala Ile Met Arg Arg Met Pro Thr Arg Phe His
                245                 250                 255

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

Leu Lys Asn Glu Asn Val Asp Arg His Val Asp Leu Leu Glu Val Ala
        275                 280                 285

Gln Glu Thr Asp Gly Phe Ser Gly Ser Asp Leu Lys Glu Met Cys Arg
    290                 295                 300

Asp Ala Ala Leu Leu Cys Val Arg Glu Tyr Val Asn Ser Thr Ser Glu
305                 310                 315                 320

Glu Ser His Asp Glu Asp Glu Ile Arg Pro Val Gln Gln Gln Asp Leu
                325                 330                 335

His Arg Ala Ile Glu Lys Met Lys Lys Ser Lys Asp Ala Ala Phe Gln
            340                 345                 350
```

```
Asn Val Leu Thr His Val Cys Leu Asp
        355                 360


<210> 7155
<211> 361
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1524; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase family, AAA
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489353"

<400> 7155
Met Val His Ala Glu Ala Phe Ser Arg Pro Leu Ser Arg Asn Glu Val
1               5                  10                  15


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


Thr Ile Lys Trp Met Val Asp Ala Ile Asp Pro Thr Arg Lys Gln Lys
        35                  40                  45


Val Glu Ala Gln Lys Gln Ala Glu Lys Leu Met Lys Gln Ile Gly Val
    50                  55                  60


Lys Asn Val Lys Leu Ser Glu Tyr Glu Met Ser Ile Ala Ala His Leu
65                  70                  75                  80


Val Asp Pro Leu Asn Met His Val Thr Trp Ser Asp Ile Ala Gly Leu
                85                  90                  95


Asp Asp Val Ile Thr Asp Leu Lys Asp Thr Val Ile Leu Pro Ile Lys
            100                 105                 110
```

```
Lys Lys His Leu Phe Glu Asn Ser Arg Leu Leu Gln Pro Pro Lys Gly
        115                 120                 125

Val Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Thr Leu Ile Ala Lys
    130                 135                 140

Ala Thr Ala Lys Glu Ala Gly Cys Arg Phe Ile Asn Leu Gln Pro Ser
145                 150                 155                 160

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

Val Phe Ser Leu Ala Ile Lys Leu Gln Pro Ser Ile Ile Phe Ile Asp
            180                 185                 190

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

Thr Ala Met Met Lys Ala Gln Phe Met Ser Leu Trp Asp Gly Leu Asp
    210                 215                 220

Thr Asp His Ser Cys Gln Val Ile Val Met Gly Ala Thr Asn Arg Pro
225                 230                 235                 240

Gln Asp Leu Asp Ser Ala Ile Met Arg Arg Met Pro Thr Arg Phe His
                245                 250                 255

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

Leu Lys Asn Glu Asn Val Asp Arg His Val Asp Leu Leu Glu Val Ala
        275                 280                 285

Gln Glu Thr Asp Gly Phe Ser Gly Ser Asp Leu Lys Glu Met Cys Arg
    290                 295                 300

Asp Ala Ala Leu Leu Cys Val Arg Glu Tyr Val Asn Ser Thr Ser Glu
305                 310                 315                 320

Glu Ser His Asp Glu Asp Glu Ile Arg Pro Val Gln Gln Gln Asp Leu
                325                 330                 335

His Arg Ala Ile Glu Lys Met Lys Lys Ser Lys Asp Ala Ala Phe Gln
```

340 345 350

Asn Val Leu Thr His Val Cys Leu Asp
355 360

<210> 7156
<211> 361
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1524; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489455"

<400> 7156
Met Val His Ala Glu Ala Phe Ser Arg Pro Leu Ser Arg Asn Glu Val
1 5 10 15

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

Thr Ile Lys Trp Met Val Asp Ala Ile Asp Pro Thr Arg Lys Gln Lys
35 40 45

Val Glu Ala Gln Lys Gln Ala Glu Lys Leu Met Lys Gln Ile Gly Val
50 55 60

Lys Asn Val Lys Leu Ser Glu Tyr Glu Met Ser Ile Ala Ala His Leu
65 70 75 80

Val Asp Pro Leu Asn Met His Val Thr Trp Ser Asp Ile Ala Gly Leu
85 90 95

Asp Asp Val Ile Thr Asp Leu Lys Asp Thr Val Ile Leu Pro Ile Lys
100 105 110

```
Lys Lys His Leu Phe Glu Asn Ser Arg Leu Leu Gln Pro Pro Lys Gly
        115                 120                 125

Val Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Thr Leu Ile Ala Lys
    130                 135                 140

Ala Thr Ala Lys Glu Ala Gly Cys Arg Phe Ile Asn Leu Gln Pro Ser
145                 150                 155                 160

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

Val Phe Ser Leu Ala Ile Lys Leu Gln Pro Ser Ile Ile Phe Ile Asp
            180                 185                 190

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

Thr Ala Met Met Lys Ala Gln Phe Met Ser Leu Trp Asp Gly Leu Asp
    210                 215                 220

Thr Asp His Ser Cys Gln Val Ile Val Met Gly Ala Thr Asn Arg Pro
225                 230                 235                 240

Gln Asp Leu Asp Ser Ala Ile Met Arg Arg Met Pro Thr Arg Phe His
                245                 250                 255

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

Leu Lys Asn Glu Asn Val Asp Arg His Val Asp Leu Leu Glu Val Ala
        275                 280                 285

Gln Glu Thr Asp Gly Phe Ser Gly Ser Asp Leu Lys Glu Met Cys Arg
    290                 295                 300

Asp Ala Ala Leu Leu Cys Val Arg Glu Tyr Val Asn Ser Thr Ser Glu
305                 310                 315                 320

Glu Ser His Asp Glu Asp Glu Ile Arg Pro Val Gln Gln Gln Asp Leu
                325                 330                 335
```

```
His Arg Ala Ile Glu Lys Met Lys Lys Ser Lys Asp Ala Ala Phe Gln
            340                 345                 350


Asn Val Leu Thr His Val Cys Leu Asp
        355                 360


<210> 7157
<211> 1390
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1525; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2; "

<220>
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<223> /note="Gene Name:
      ATPase family, AAA
      domain containing 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6PL18; "

<220>
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<223> /note="ENSP ID: ENSP00000287394"

<400> 7157
Met Val Val Leu Arg Ser Ser Leu Glu Leu His Asn His Ser Ala Ala
1               5                   10                  15


Ser Ala Thr Gly Ser Leu Asp Leu Ser Ser Asp Phe Leu Ser Leu Glu
            20                  25                  30


His Ile Gly Arg Arg Arg Leu Arg Ser Ala Gly Ala Ala Gln Lys Lys
        35                  40                  45


Pro Ala Ala Thr Thr Ala Lys Ala Gly Asp Gly Ser Ser Val Lys Glu
    50                  55                  60


Val Glu Thr Tyr His Arg Thr Arg Ala Leu Arg Ser Leu Arg Lys Asp
65                  70                  75                  80
```

```
Ala Gln Asn Ser Ser Asp Ser Ser Phe Glu Lys Asn Val Glu Ile Thr
                85                  90                  95

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

Gln Ala Asp Lys Lys Lys Glu Glu His Arg Glu Asp Lys Val Ile Pro
        115                 120                 125

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

Leu His Glu Asp Asn Gly Asp Val Glu Val Arg Arg Ser Cys Arg Ile
145                 150                 155                 160

Arg Ser Arg Tyr Ser Gly Val Asn Gln Ser Met Leu Phe Asp Lys Leu
                165                 170                 175

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

Lys Met Arg Arg Gln Arg Met Arg Glu Leu Glu Asp Leu Gly Val Phe
        195                 200                 205

Asn Glu Thr Glu Glu Ser Asn Leu Asn Met Tyr Thr Arg Gly Lys Gln
    210                 215                 220

Lys Asp Ile Gln Arg Thr Asp Glu Glu Thr Thr Asp Asn Gln Glu Gly
225                 230                 235                 240

Ser Val Glu Ser Ser Glu Glu Gly Glu Asp Gln Glu His Glu Asp Asp
                245                 250                 255

Gly Glu Asp Glu Asp Asp Glu Asp Asp Asp Asp Asp Asp Asp Asp Asp
            260                 265                 270

Asp Asp Asp Asp Asp Glu Asp Asp Glu Asp Glu Glu Asp Gly Glu Glu
        275                 280                 285

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

Tyr Gln Ala Pro Leu Glu Lys Pro Arg His Gln Arg Lys Pro Asn Ile
```

```
305                 310                 315                 320

Phe Tyr Ser Gly Pro Ala Ser Pro Ala Arg Pro Arg Tyr Arg Leu Ser
                325                 330                 335

Ser Ala Gly Pro Arg Ser Pro Tyr Cys Lys Arg Met Asn Arg Arg Arg
            340                 345                 350

His Ala Ile His Ser Ser Asp Ser Thr Ser Ser Ser Ser Ser Glu Asp
        355                 360                 365

Glu Gln His Phe Glu Arg Arg Arg Lys Arg Ser Arg Asn Arg Ala Ile
    370                 375                 380

Asn Arg Cys Leu Pro Leu Asn Phe Arg Lys Asp Glu Leu Lys Gly Ile
385                 390                 395                 400

Tyr Lys Asp Arg Met Lys Ile Gly Ala Ser Leu Ala Asp Val Asp Pro
                405                 410                 415

Met Gln Leu Asp Ser Ser Val Arg Phe Asp Ser Val Gly Gly Leu Ser
            420                 425                 430

Asn His Ile Ala Ala Leu Lys Glu Met Val Val Phe Pro Leu Leu Tyr
        435                 440                 445

Pro Glu Val Phe Glu Lys Phe Lys Ile Gln Pro Pro Arg Gly Cys Leu
    450                 455                 460

Phe Tyr Gly Pro Pro Gly Thr Gly Lys Thr Leu Val Ala Arg Ala Leu
465                 470                 475                 480

Ala Asn Glu Cys Ser Gln Gly Asp Lys Arg Val Ala Phe Phe Met Arg
                485                 490                 495

Lys Gly Ala Asp Cys Leu Ser Lys Trp Val Gly Glu Ser Glu Arg Gln
            500                 505                 510

Leu Arg Leu Leu Phe Asp Gln Ala Tyr Gln Met Arg Pro Ser Ile Ile
        515                 520                 525

Phe Phe Asp Glu Ile Asp Gly Leu Ala Pro Val Arg Ser Ser Arg Gln
    530                 535                 540
```

```
Asp Gln Ile His Ser Ser Ile Val Ser Thr Leu Leu Ala Leu Met Asp
545                 550                 555                 560

Gly Leu Asp Ser Arg Gly Glu Ile Val Val Ile Gly Ala Thr Asn Arg
                565                 570                 575

Leu Asp Ser Ile Asp Pro Ala Leu Arg Arg Pro Gly Arg Phe Asp Arg
            580                 585                 590

Glu Phe Leu Phe Ser Leu Pro Asp Lys Glu Ala Arg Lys Glu Ile Leu
        595                 600                 605

Lys Ile His Thr Arg Asp Trp Asn Pro Lys Pro Leu Asp Thr Phe Leu
    610                 615                 620

Glu Glu Leu Ala Glu Asn Cys Val Gly Tyr Cys Gly Ala Asp Ile Lys
625                 630                 635                 640

Ser Ile Cys Ala Glu Ala Ala Leu Cys Ala Leu Arg Arg Arg Tyr Pro
                645                 650                 655

Gln Ile Tyr Thr Thr Ser Glu Lys Leu Gln Leu Asp Leu Ser Ser Ile
            660                 665                 670

Asn Ile Ser Ala Lys Asp Phe Glu Val Ala Met Gln Lys Met Ile Pro
        675                 680                 685

Ala Ser Gln Arg Ala Val Thr Ser Pro Gly Gln Ala Leu Ser Thr Val
    690                 695                 700

Val Lys Pro Leu Leu Gln Asn Thr Val Asp Lys Ile Leu Glu Ala Leu
705                 710                 715                 720

Gln Arg Val Phe Pro His Ala Glu Phe Arg Thr Asn Lys Thr Leu Asp
                725                 730                 735

Ser Asp Ile Ser Cys Pro Leu Leu Glu Ser Asp Leu Ala Tyr Ser Asp
            740                 745                 750

Asp Asp Val Pro Ser Val Tyr Glu Asn Gly Leu Ser Gln Lys Ser Ser
        755                 760                 765
```

```
His Lys Ala Lys Asp Asn Phe Asn Phe Leu His Leu Asn Arg Asn Ala
    770                 775                 780

Cys Tyr Gln Pro Met Ser Phe Arg Pro Arg Ile Leu Ile Val Gly Glu
785                 790                 795                 800

Pro Gly Phe Gly Gln Gly Ser His Leu Ala Pro Ala Val Ile His Ala
                805                 810                 815

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

Val Ser Thr Thr Ser Pro Glu Glu Thr Cys Ala Gln Val Ile Arg Glu
        835                 840                 845

Ala Lys Arg Thr Ala Pro Ser Ile Val Tyr Val Pro His Ile His Val
    850                 855                 860

Trp Trp Glu Ile Val Gly Pro Thr Leu Lys Ala Thr Phe Thr Thr Leu
865                 870                 875                 880

Leu Gln Asn Ile Pro Ser Phe Ala Pro Val Leu Leu Leu Ala Thr Ser
                885                 890                 895

Asp Lys Pro His Ser Ala Leu Pro Glu Glu Val Gln Glu Leu Phe Ile
            900                 905                 910

Arg Asp Tyr Gly Glu Ile Phe Asn Val Gln Leu Pro Asp Lys Glu Glu
        915                 920                 925

Arg Thr Lys Phe Phe Glu Asp Leu Ile Leu Lys Gln Ala Ala Lys Pro
    930                 935                 940

Pro Ile Ser Lys Lys Lys Ala Val Leu Gln Ala Leu Glu Val Leu Pro
945                 950                 955                 960

Val Ala Pro Pro Pro Glu Pro Arg Ser Leu Thr Ala Glu Glu Val Lys
                965                 970                 975

Arg Leu Glu Glu Gln Glu Glu Asp Thr Phe Arg Glu Leu Arg Ile Phe
            980                 985                 990
```

```
Leu Arg Asn Val Thr His Arg Leu  Ala Ile Asp Lys Arg  Phe Arg
Val
        995                 1000                1005

Phe Thr  Lys Pro Val Asp Pro  Asp Glu Val Pro Asp  Tyr Val Thr
    1010                1015                1020

Val Ile  Lys Gln Pro Met Asp  Leu Ser Ser Val Ile  Ser Lys Ile
    1025                1030                1035

Asp Leu  His Lys Tyr Leu Thr  Val Lys Asp Tyr Leu  Arg Asp Ile
    1040                1045                1050

Asp Leu  Ile Cys Ser Asn Ala  Leu Glu Tyr Asn Pro  Asp Arg Asp
    1055                1060                1065

Pro Gly  Asp Arg Leu Ile Arg  His Arg Ala Cys Ala  Leu Arg Asp
    1070                1075                1080

Thr Ala  Tyr Ala Ile Ile Lys  Glu Glu Leu Asp Glu  Asp Phe Glu
    1085                1090                1095

Gln Leu  Cys Glu Glu Ile Gln  Glu Ser Arg Lys Lys  Arg Gly Cys
    1100                1105                1110

Ser Ser  Ser Lys Tyr Ala Pro  Ser Tyr Tyr His Val  Met Pro Lys
    1115                1120                1125

Gln Asn  Ser Thr Leu Val Gly  Asp Lys Arg Ser Asp  Pro Glu Gln
    1130                1135                1140

Asn Glu  Lys Leu Lys Thr Pro  Ser Thr Pro Val Ala  Cys Ser Thr
    1145                1150                1155

Pro Ala  Gln Leu Lys Arg Lys  Ile Arg Lys Lys Ser  Asn Trp Tyr
    1160                1165                1170

Leu Gly  Thr Ile Lys Lys Arg  Arg Lys Ile Ser Gln  Ala Lys Asp
    1175                1180                1185

Asp Ser  Gln Asn Ala Ile Asp  His Lys Ile Glu Ser  Asp Thr Glu
    1190                1195                1200
```

```
Glu Thr  Gln Asp Thr Ser Val  Asp His Asn Glu Thr  Gly Asn Thr
    1205                 1210                 1215

Gly Glu  Ser Ser Val Glu Glu  Asn Glu Lys Gln Gln  Asn Ala Ser
    1220                 1225                 1230

Glu Ser  Lys Leu Glu Leu Arg  Asn Asn Ser Asn Thr  Cys Asn Ile
    1235                 1240                 1245

Glu Asn  Glu Leu Glu Asp Ser  Arg Lys Thr Thr Ala  Cys Thr Glu
    1250                 1255                 1260

Leu Arg  Asp Lys Ile Ala Cys  Asn Gly Asp Ala Ser  Ser Ser Gln
    1265                 1270                 1275

Ile Ile  His Ile Ser Asp Glu  Asn Glu Gly Lys Glu  Met Cys Val
    1280                 1285                 1290

Leu Arg  Met Thr Arg Ala Arg  Arg Ser Gln Val Glu  Gln Gln Gln
    1295                 1300                 1305

Leu Ile  Thr Val Glu Lys Ala  Leu Ala Ile Leu Ser  Gln Pro Thr
    1310                 1315                 1320

Pro Ser  Leu Val Val Asp His  Glu Arg Leu Lys Asn  Leu Leu Lys
    1325                 1330                 1335

Thr Val  Val Lys Lys Ser Gln  Asn Tyr Asn Ile Phe  Gln Leu Glu
    1340                 1345                 1350

Asn Leu  Tyr Ala Val Ile Ser  Gln Cys Ile Tyr Arg  His Arg Lys
    1355                 1360                 1365

Asp His  Asp Lys Thr Ser Leu  Ile Gln Lys Met Glu  Gln Glu Val
    1370                 1375                 1380

Glu Asn  Phe Ser Cys Ser Arg
    1385                 1390
```

<210> 7158
<211> 708
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1525; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429213"

<400> 7158
Met Gln Lys Met Ile Pro Ala Ser Gln Arg Ala Val Thr Ser Pro Gly
1 5 10 15

Gln Ala Leu Ser Thr Val Val Lys Pro Leu Leu Gln Asn Thr Val Asp
20 25 30

Lys Ile Leu Glu Ala Leu Gln Arg Val Phe Pro His Ala Glu Phe Arg
35 40 45

Thr Asn Lys Thr Leu Asp Ser Asp Ile Ser Cys Pro Leu Leu Glu Ser
50 55 60

Asp Leu Ala Tyr Ser Asp Asp Asp Val Pro Ser Val Tyr Glu Asn Gly
65 70 75 80

Leu Ser Gln Lys Ser Ser His Lys Ala Lys Asp Asn Phe Asn Phe Leu
85 90 95

His Leu Asn Arg Asn Ala Cys Tyr Gln Pro Met Ser Phe Arg Pro Arg
100 105 110

Ile Leu Ile Val Gly Glu Pro Gly Phe Gly Gln Gly Ser His Leu Ala
115 120 125

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

Ile Pro Val Leu Phe Gly Val Ser Thr Thr Ser Pro Glu Glu Thr Cys
145 150 155 160

```
Ala Gln Val Ile Arg Glu Ala Lys Arg Thr Ala Pro Ser Ile Val Tyr
                165                 170                 175

Val Pro His Ile His Val Trp Trp Glu Ile Val Gly Pro Thr Leu Lys
            180                 185                 190

Ala Thr Phe Thr Thr Leu Leu Gln Asn Ile Pro Ser Phe Ala Pro Val
        195                 200                 205

Leu Leu Leu Ala Thr Ser Asp Lys Pro His Ser Ala Leu Pro Glu Glu
    210                 215                 220

Val Gln Glu Leu Phe Ile Arg Asp Tyr Gly Glu Ile Phe Asn Val Gln
225                 230                 235                 240

Leu Pro Asp Lys Glu Glu Arg Thr Lys Phe Phe Glu Asp Leu Ile Leu
                245                 250                 255

Lys Gln Ala Ala Lys Pro Pro Ile Ser Lys Lys Lys Ala Val Leu Gln
            260                 265                 270

Ala Leu Glu Val Leu Pro Val Ala Pro Pro Pro Glu Pro Arg Ser Leu
        275                 280                 285

Thr Ala Glu Glu Val Lys Arg Leu Glu Glu Gln Glu Glu Asp Thr Phe
    290                 295                 300

Arg Glu Leu Arg Ile Phe Leu Arg Asn Val Thr His Arg Leu Ala Ile
305                 310                 315                 320

Asp Lys Arg Phe Arg Val Phe Thr Lys Pro Val Asp Pro Asp Glu Val
                325                 330                 335

Pro Asp Tyr Val Thr Val Ile Lys Gln Pro Met Asp Leu Ser Ser Val
            340                 345                 350

Ile Ser Lys Ile Asp Leu His Lys Tyr Leu Thr Val Lys Asp Tyr Leu
        355                 360                 365

Arg Asp Ile Asp Leu Ile Cys Ser Asn Ala Leu Glu Tyr Asn Pro Asp
    370                 375                 380
```

```
Arg Asp Pro Gly Asp Arg Leu Ile Arg His Arg Ala Cys Ala Leu Arg
385                 390                 395                 400

Asp Thr Ala Tyr Ala Ile Ile Lys Glu Glu Leu Asp Glu Asp Phe Glu
                405                 410                 415

Gln Leu Cys Glu Glu Ile Gln Glu Ser Arg Lys Lys Arg Gly Cys Ser
            420                 425                 430

Ser Ser Lys Tyr Ala Pro Ser Tyr Tyr His Val Met Pro Lys Gln Asn
        435                 440                 445

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

Leu Lys Thr Pro Ser Thr Pro Val Ala Cys Ser Thr Pro Ala Gln Leu
465                 470                 475                 480

Lys Arg Lys Ile Arg Lys Lys Ser Asn Trp Tyr Leu Gly Thr Ile Lys
                485                 490                 495

Lys Arg Arg Lys Ile Ser Gln Ala Lys Asp Asp Ser Gln Asn Ala Ile
            500                 505                 510

Asp His Lys Ile Glu Ser Asp Thr Glu Glu Thr Gln Asp Thr Ser Val
        515                 520                 525

Asp His Asn Glu Thr Gly Asn Thr Gly Glu Ser Ser Val Glu Glu Asn
    530                 535                 540

Glu Lys Gln Gln Asn Ala Ser Glu Ser Lys Leu Glu Leu Arg Asn Asn
545                 550                 555                 560

Ser Asn Thr Cys Asn Ile Glu Asn Glu Leu Glu Asp Ser Arg Lys Thr
                565                 570                 575

Thr Ala Cys Thr Glu Leu Arg Asp Lys Ile Ala Cys Asn Gly Asp Ala
            580                 585                 590

Ser Ser Ser Gln Ile Ile His Ile Ser Asp Glu Asn Glu Gly Lys Glu
        595                 600                 605
```

```
Met Cys Val Leu Arg Met Thr Arg Ala Arg Arg Ser Gln Val Glu Gln
    610                 615                 620

Gln Gln Leu Ile Thr Val Glu Lys Ala Leu Ala Ile Leu Ser Gln Pro
625                 630                 635                 640

Thr Pro Ser Leu Val Val Asp His Glu Arg Leu Lys Asn Leu Leu Lys
                645                 650                 655

Thr Val Val Lys Lys Ser Gln Asn Tyr Asn Ile Phe Gln Leu Glu Asn
            660                 665                 670

Leu Tyr Ala Val Ile Ser Gln Cys Ile Tyr Arg His Arg Lys Asp His
        675                 680                 685

Asp Lys Thr Ser Leu Ile Gln Lys Met Glu Gln Glu Val Glu Asn Phe
    690                 695                 700

Ser Cys Ser Arg
705
```

<210> 7159
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1525; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429331"

<400> 7159

```
Met Val Val Leu Arg Ser Ser Leu Glu Leu His Asn His Ser Ala Ala
1               5                   10                  15

Ser Ala Thr Gly Ser Leu Asp Leu Ser Ser Asp Phe Leu Ser Leu Glu
```

```
            20                  25                  30

His Ile Gly Arg Arg Arg Leu Arg Ser Ala Gly Ala Ala Gln Lys Lys
        35                  40                  45

Pro Ala Ala Thr Thr Ala Lys Ala Gly Ala Val Gly Gln Thr Ala Gly
    50                  55                  60


<210> 7160
<211> 63
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATAD2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase family, AAA
      domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429617"

<400> 7160
Met Val Val Leu Arg Ser Ser Leu Glu Leu His Asn His Ser Ala Ala
1               5                   10                  15

Ser Ala Thr Gly Ser Leu Asp Leu Ser Ser Asp Phe Leu Ser Leu Glu
            20                  25                  30

His Ile Gly Arg Arg Arg Leu Arg Ser Ala Gly Ala Ala Gln Lys Lys
        35                  40                  45

Pro Ala Ala Thr Thr Ala Lys Ala Gly Val Arg Trp Val Ile Ser
    50                  55                  60


<210> 7161
<211> 1458
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1526; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2B; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 2B; "

<220>
<221> source
<223> /note="Uniprot ID: Q9ULI0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000238789"

<400> 7161

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

Pro Gly Pro Gly Pro Gly Pro Gly Ala Gly Ala Glu Pro Gly Ala Thr
            20                  25                  30

Gly Gly Ser Ser His Phe Ile Ser Ser Arg Thr Arg Ser Ser Lys Thr
        35                  40                  45

Arg Ala Ala Ser Cys Pro Ala Ala Lys Ala Gly Gly Ser Gly Gly Ala
    50                  55                  60

Gly Val Thr Leu Asp Glu Ala Arg Lys Val Glu Val Asp Gly Ser Leu
65                  70                  75                  80

Ser Asp Ser His Val Ser Pro Pro Ala Lys Arg Thr Leu Lys Gln Pro
                85                  90                  95

Asp Ser Val Cys Lys Asp Lys Ser Lys Ser Arg Ser Thr Gly Gln Arg
            100                 105                 110

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

Gly Ala Thr Leu Pro Asn Gly His Ser Gly Leu Ser Leu Arg Ser His
    130                 135                 140
```

```
Pro Leu Arg Gly Glu Lys Lys Gly Asp Gly Asp Leu Ser Cys Ile Asn
145                 150                 155                 160

Gly Asp Met Glu Val Arg Lys Ser Cys Arg Ser Arg Lys Asn Arg Phe
                165                 170                 175

Glu Ser Val Asn Gln Ser Leu Leu Phe Asp Gln Leu Val Asn Ser Thr
            180                 185                 190

Ala Glu Ala Val Leu Gln Glu Met Asp Asn Ile Asn Ile Arg Arg Asn
        195                 200                 205

Arg Arg Ser Gly Glu Val Glu Arg Leu Arg Met Trp Thr Asp Thr Glu
    210                 215                 220

Phe Glu Asn Met Asp Met Tyr Ser Arg Val Lys Arg Arg Arg Lys Ser
225                 230                 235                 240

Leu Arg Arg Asn Ser Tyr Gly Ile Gln Asn His His Glu Val Ser Thr
                245                 250                 255

Glu Gly Glu Glu Glu Glu Ser Gln Glu Glu Asp Gly Asp Ile Glu Val
            260                 265                 270

Glu Glu Ala Glu Gly Glu Glu Asn Asp Arg Pro Tyr Asn Leu Arg Gln
        275                 280                 285

Arg Lys Thr Val Asp Arg Tyr Gln Ala Pro Pro Ile Val Pro Ala His
    290                 295                 300

Gln Lys Lys Arg Glu Asn Thr Leu Phe Asp Ile His Arg Ser Pro Ala
305                 310                 315                 320

Arg Arg Ser His Ile Arg Arg Lys Lys His Ala Ile His Ser Ser Asp
                325                 330                 335

Thr Thr Ser Ser Asp Glu Glu Arg Phe Glu Arg Arg Lys Ser Lys Ser
            340                 345                 350

Met Ala Arg Ala Arg Asn Arg Cys Leu Pro Met Asn Phe Arg Ala Glu
        355                 360                 365
```

```
Asp Leu Ala Ser Gly Ile Leu Arg Glu Arg Val Lys Val Gly Ala Ser
    370                 375                 380

Leu Ala Asp Val Asp Pro Met Asn Ile Asp Lys Ser Val Arg Phe Asp
385                 390                 395                 400

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

Val Phe Pro Leu Leu Tyr Pro Glu Ile Phe Glu Lys Phe Lys Ile Gln
            420                 425                 430

Pro Pro Arg Gly Cys Leu Phe Tyr Gly Pro Pro Gly Thr Gly Lys Thr
        435                 440                 445

Leu Val Ala Arg Ala Leu Ala Asn Glu Cys Ser Gln Gly Asp Lys Lys
    450                 455                 460

Val Ala Phe Phe Met Arg Lys Gly Ala Asp Cys Leu Ser Lys Trp Val
465                 470                 475                 480

Gly Glu Ser Glu Arg Gln Leu Arg Leu Leu Phe Asp Gln Ala Tyr Leu
                485                 490                 495

Met Arg Pro Ser Ile Ile Phe Phe Asp Glu Ile Asp Gly Leu Ala Pro
            500                 505                 510

Val Arg Ser Ser Arg Gln Asp Gln Ile His Ser Ser Ile Val Ser Thr
        515                 520                 525

Leu Leu Ala Leu Met Asp Gly Leu Asp Asn Arg Gly Glu Ile Val Val
    530                 535                 540

Ile Gly Ala Thr Asn Arg Leu Asp Ser Ile Asp Pro Ala Leu Arg Arg
545                 550                 555                 560

Pro Gly Arg Phe Asp Arg Glu Phe Leu Phe Asn Leu Pro Asp Gln Lys
                565                 570                 575

Ala Arg Lys His Ile Leu Gln Ile His Thr Arg Asp Trp Asn Pro Lys
            580                 585                 590

Leu Ser Asp Ala Phe Leu Gly Glu Leu Ala Glu Lys Cys Val Gly Tyr
```

595 600 605

Cys Gly Ala Asp Ile Lys Ala Leu Cys Thr Glu Ala Ala Leu Ile Ala
610 615 620

Leu Arg Arg Arg Tyr Pro Gln Ile Tyr Ala Ser Ser His Lys Leu Gln
625 630 635 640

Leu Asp Val Ser Ser Ile Val Leu Ser Ala Gln Asp Phe Tyr His Ala
645 650 655

Met Gln Asn Ile Val Pro Ala Ser Gln Arg Ala Val Met Ser Ser Gly
660 665 670

His Ala Leu Ser Pro Ile Ile Arg Pro Leu Leu Glu Arg Ser Phe Asn
675 680 685

Asn Ile Leu Ala Val Leu Gln Lys Val Phe Pro His Ala Glu Ile Ser
690 695 700

Gln Ser Asp Lys Lys Glu Asp Ile Glu Thr Leu Ile Leu Glu Asp Ser
705 710 715 720

Glu Asp Glu Asn Ala Leu Ser Ile Phe Glu Thr Asn Cys His Ser Gly
725 730 735

Ser Pro Lys Lys Gln Ser Ser Ser Ala Ala Ile His Lys Pro Tyr Leu
740 745 750

His Phe Thr Met Ser Pro Tyr His Gln Pro Thr Ser Tyr Arg Pro Arg
755 760 765

Leu Leu Leu Ser Gly Glu Arg Gly Ser Gly Gln Thr Ser His Leu Ala
770 775 780

Pro Ala Leu Leu His Thr Leu Glu Arg Phe Ser Val His Arg Leu Asp
785 790 795 800

Leu Pro Ala Leu Tyr Ser Val Ser Ala Lys Thr Pro Glu Glu Ser Cys
805 810 815

Ala Gln Ile Phe Arg Glu Ala Arg Arg Thr Val Pro Ser Ile Val Tyr
820 825 830

```
Met Pro His Ile Gly Asp Trp Trp Glu Ala Val Ser Glu Thr Val Arg
        835                 840                 845

Ala Thr Phe Leu Thr Leu Leu Gln Asp Ile Pro Ser Phe Ser Pro Ile
    850                 855                 860

Phe Leu Leu Ser Thr Ser Glu Thr Met Tyr Ser Glu Leu Pro Glu Glu
865                 870                 875                 880

Val Lys Cys Ile Phe Arg Ile Gln Tyr Glu Glu Val Leu Tyr Ile Gln
                885                 890                 895

Arg Pro Ile Glu Glu Asp Arg Arg Lys Phe Phe Gln Glu Leu Ile Leu
            900                 905                 910

Asn Gln Ala Ser Met Ala Pro Pro Arg Arg Lys His Ala Ala Leu Cys
        915                 920                 925

Ala Met Glu Val Leu Pro Leu Ala Leu Pro Ser Pro Pro Arg Gln Leu
    930                 935                 940

Ser Glu Ser Glu Lys Ser Arg Met Glu Asp Gln Glu Glu Asn Thr Leu
945                 950                 955                 960

Arg Glu Leu Arg Leu Phe Leu Arg Asp Val Thr Lys Arg Leu Ala Thr
                965                 970                 975

Asp Lys Arg Phe Asn Ile Phe Ser Lys Pro Val Asp Ile Glu Glu Val
            980                 985                 990

Ser Asp Tyr Leu Glu Val Ile Lys  Glu Pro Met Asp Leu  Ser Thr
Val
        995                 1000                1005

Ile Thr  Lys Ile Asp Lys His  Asn Tyr Leu Thr Ala  Lys Asp Phe
    1010                1015                1020

Leu Lys  Asp Ile Asp Leu Ile  Cys Ser Asn Ala Leu  Glu Tyr Asn
    1025                1030                1035

Pro Asp  Lys Asp Pro Gly Asp  Lys Ile Ile Arg His  Arg Ala Cys
    1040                1045                1050
```

```
Thr Leu  Lys Asp Thr Ala His  Ala Ile Ile Ala Ala  Glu Leu Asp
    1055                1060                1065

Pro Glu  Phe Asn Lys Leu Cys  Glu Glu Ile Lys Glu  Ala Arg Ile
    1070                1075                1080

Lys Arg  Gly Leu Ser Val Thr  Ser Glu Gln Ile Asn  Pro His Ser
    1085                1090                1095

Thr Gly  Ala Arg Lys Thr Glu  Thr Arg Val Glu Glu  Ala Phe Arg
    1100                1105                1110

His Lys  Gln Arg Asn Pro Met  Asp Val Trp His Asn  Ser Ala Asn
    1115                1120                1125

Lys Cys  Ala Phe Arg Val Arg  Arg Lys Ser Arg Arg  Arg Ser Gln
    1130                1135                1140

Trp Gly  Lys Gly Ile Ile Lys  Lys Arg Lys Val Asn  Asn Leu Lys
    1145                1150                1155

Lys Asp  Glu Glu Asp Thr Lys  Phe Ala Asp Tyr Glu  Asn His Thr
    1160                1165                1170

Glu Asp  Arg Lys Leu Leu Glu  Asn Gly Glu Phe Glu  Val Ser Thr
    1175                1180                1185

Asp Cys  His Glu Glu Asn Gly  Glu Glu Thr Gly Asp  Leu Ser Met
    1190                1195                1200

Thr Asn  Asp Glu Ser Ser Cys  Asp Ile Met Asp Leu  Asp Gln Gly
    1205                1210                1215

Gln Arg  Leu Asn Asn Gly Ala  Gly Thr Lys Glu Asn  Phe Ala Ser
    1220                1225                1230

Thr Glu  Glu Glu Ser Ser Asn  Glu Ser Leu Leu Val  Asn Ser Ser
    1235                1240                1245

Ser Ser  Leu Asn Pro Glu Gln  Thr Ser Arg Lys Glu  Thr Phe Leu
    1250                1255                1260
```

```
Lys Gly  Asn Cys Leu Asn Gly  Glu Ala Ser Thr Asp  Ser Phe Glu
    1265                1270                1275

Gly Ile  Pro Val Leu Glu Cys  Gln Asn Gly Lys Leu  Glu Val Val
    1280                1285                1290

Ser Phe  Cys Asp Ser Gly Asp  Lys Cys Ser Ser Glu  Gln Lys Ile
    1295                1300                1305

Leu Leu  Glu Asp Gln Ser Lys  Glu Lys Pro Glu Thr  Ser Thr Glu
    1310                1315                1320

Asn His  Gly Asp Asp Leu Glu  Lys Leu Glu Ala Leu  Glu Cys Ser
    1325                1330                1335

Asn Asn  Glu Lys Leu Glu Pro  Gly Ser Asp Val Glu  Val Lys Asp
    1340                1345                1350

Ala Glu  Leu Asp Lys Glu Gly  Ala Ser Lys Val Lys  Lys Tyr Arg
    1355                1360                1365

Lys Leu  Ile Leu Glu Gln Ala  Lys Thr Thr Ser Leu  Glu Leu Val
    1370                1375                1380

Pro Glu  Glu Pro Ser Glu Pro  Val Pro Pro Leu Ile  Val Asp Arg
    1385                1390                1395

Glu Arg  Leu Lys Lys Leu Leu  Asp Leu Leu Val Asp  Lys Ser Asn
    1400                1405                1410

Asn Leu  Ala Val Asp Gln Leu  Glu Arg Leu Tyr Ser  Leu Leu Ser
    1415                1420                1425

Gln Cys  Ile Tyr Arg His Arg  Lys Asp Tyr Asp Lys  Ser Gln Leu
    1430                1435                1440

Val Glu  Glu Met Glu Arg Thr  Val His Met Phe Glu  Thr Phe Leu
    1445                1450                1455
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<210> 7162
<211> 734
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1526; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2B; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 2B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370412"

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

<400> 7162
Xaa Glu Asp Glu Asn Ala Leu Ser Ile Phe Glu Thr Asn Cys His Ser
1 5 10 15

Gly Ser Pro Lys Lys Gln Ser Ser Ser Ala Ala Ile His Lys Pro Tyr
20 25 30

Leu His Phe Thr Met Ser Pro Tyr His Gln Pro Thr Ser Tyr Arg Pro
35 40 45

Arg Leu Leu Leu Ser Gly Glu Arg Gly Ser Gly Gln Thr Ser His Leu
50 55 60

Ala Pro Ala Leu Leu His Thr Leu Glu Arg Phe Ser Val His Arg Leu
65 70 75 80

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

Cys Ala Gln Ile Phe Arg Glu Ala Arg Arg Thr Val Pro Ser Ile Val
100 105 110

Tyr Met Pro His Ile Gly Asp Trp Trp Glu Ala Val Ser Glu Thr Val
115 120 125

```
Arg Ala Thr Phe Leu Thr Leu Leu Gln Asp Ile Pro Ser Phe Ser Pro
    130                 135                 140

Ile Phe Leu Leu Ser Thr Ser Glu Thr Met Tyr Ser Glu Leu Pro Glu
145                 150                 155                 160

Glu Val Lys Cys Ile Phe Arg Ile Gln Tyr Glu Glu Val Leu Tyr Ile
                165                 170                 175

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

Leu Asn Gln Ala Ser Met Ala Pro Pro Arg Arg Lys His Ala Ala Leu
        195                 200                 205

Cys Ala Met Glu Val Leu Pro Leu Ala Leu Pro Ser Pro Pro Arg Gln
    210                 215                 220

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

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

Thr Asp Lys Arg Phe Asn Ile Phe Ser Lys Pro Val Ser Asp Tyr Leu
            260                 265                 270

Glu Val Ile Lys Glu Pro Met Asp Leu Ser Thr Val Ile Thr Lys Ile
        275                 280                 285

Asp Lys His Asn Tyr Leu Thr Ala Lys Asp Phe Leu Lys Asp Ile Asp
    290                 295                 300

Leu Ile Cys Ser Asn Ala Leu Glu Tyr Asn Pro Asp Lys Asp Pro Gly
305                 310                 315                 320

Asp Lys Ile Ile Arg His Arg Ala Cys Thr Leu Lys Asp Thr Ala His
                325                 330                 335

Ala Ile Ile Ala Ala Glu Leu Asp Pro Glu Phe Asn Lys Leu Cys Glu
            340                 345                 350
```

```
Glu Ile Lys Glu Ala Arg Ile Lys Arg Gly Leu Ser Val Thr Ser Glu
        355                 360                 365

Gln Ile Asn Pro His Ser Thr Gly Ala Arg Lys Thr Glu Thr Arg Val
    370                 375                 380

Glu Glu Ala Phe Arg His Lys Gln Arg Asn Pro Met Asp Val Trp His
385                 390                 395                 400

Asn Ser Ala Asn Lys Cys Ala Phe Arg Val Arg Arg Lys Ser Arg Arg
                405                 410                 415

Arg Ser Gln Trp Gly Lys Gly Ile Ile Lys Lys Arg Lys Val Asn Asn
            420                 425                 430

Leu Lys Lys Asp Glu Glu Asp Thr Lys Phe Ala Asp Tyr Glu Asn His
        435                 440                 445

Thr Glu Asp Arg Lys Leu Leu Glu Asn Gly Glu Phe Glu Val Ser Thr
    450                 455                 460

Asp Cys His Glu Glu Asn Gly Glu Glu Thr Gly Asp Leu Ser Met Thr
465                 470                 475                 480

Asn Asp Glu Ser Ser Cys Asp Ile Met Asp Leu Asp Gln Gly Gln Arg
                485                 490                 495

Leu Asn Asn Gly Ala Gly Thr Lys Glu Asn Phe Ala Ser Thr Glu Glu
            500                 505                 510

Glu Ser Ser Asn Glu Ser Leu Leu Val Asn Ser Ser Ser Ser Leu Asn
        515                 520                 525

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

Asn Gly Glu Ala Ser Thr Asp Ser Phe Glu Gly Ile Pro Val Leu Glu
545                 550                 555                 560

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

Lys Cys Ser Ser Glu Gln Lys Ile Leu Leu Glu Asp Gln Ser Lys Glu
```

```
            580                 585                 590

Lys Pro Glu Thr Ser Thr Glu Asn His Gly Asp Asp Leu Glu Lys Leu
        595                 600                 605

Glu Ala Leu Glu Cys Ser Asn Asn Glu Lys Leu Glu Pro Gly Ser Asp
    610                 615                 620

Val Glu Val Lys Asp Ala Glu Leu Asp Lys Glu Gly Ala Ser Lys Val
625                 630                 635                 640

Lys Lys Tyr Arg Lys Leu Ile Leu Glu Gln Ala Lys Thr Thr Ser Leu
                645                 650                 655

Glu Leu Val Pro Glu Glu Pro Ser Glu Pro Val Pro Pro Leu Ile Val
            660                 665                 670

Asp Arg Glu Arg Leu Lys Lys Leu Leu Asp Leu Leu Val Asp Lys Ser
        675                 680                 685

Asn Asn Leu Ala Val Asp Gln Leu Glu Arg Leu Tyr Ser Leu Leu Ser
    690                 695                 700

Gln Cys Ile Tyr Arg His Arg Lys Asp Tyr Asp Lys Ser Gln Leu Val
705                 710                 715                 720

Glu Glu Met Glu Arg Thr Val His Met Phe Glu Thr Phe Leu
                725                 730
```

<210> 7163
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1526; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2B; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 2B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392764"

<400> 7163
Met Arg Leu Pro Ser Leu Leu Ser Tyr Arg Ala Val Ser Lys Ala Arg
1   5   10   15

Lys His Ile Leu Gln Ile His Thr Arg Asp Trp Asn Pro Lys Leu Ser
            20   25   30

Asp Ala Phe Leu Gly Glu Leu Ala Glu Lys Cys Val Gly Tyr Cys Gly
        35   40   45

Ala Asp Ile Lys Ala Leu Cys Thr Glu Ala Ala Leu Ile Ala Leu Arg
    50   55   60

<210> 7164
<211> 370
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1526; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD2B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase family, AAA
      domain containing 2B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403177"

<400> 7164
Met Val Asn Thr Arg Lys Ser Ser Leu Arg Leu Leu Gly Ser Lys Ser
1   5   10   15

Pro Gly Pro Gly Pro Gly Pro Gly Ala Gly Ala Glu Pro Gly Ala Thr
            20   25   30

Gly Gly Ser Ser His Phe Ile Ser Ser Arg Thr Arg Ser Ser Lys Thr
        35   40   45

```
Arg Ala Ala Ser Cys Pro Ala Ala Lys Ala Gly Gly Ser Gly Gly Ala
    50                  55                  60

Gly Val Thr Leu Asp Glu Ala Arg Lys Val Glu Val Asp Gly Ser Leu
65                  70                  75                  80

Ser Asp Ser His Val Ser Pro Pro Ala Lys Arg Thr Leu Lys Gln Pro
                85                  90                  95

Asp Ser Val Cys Lys Asp Lys Ser Lys Ser Arg Ser Thr Gly Gln Arg
            100                 105                 110

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

Gly Ala Thr Leu Pro Asn Gly His Ser Gly Leu Ser Leu Arg Ser His
    130                 135                 140

Pro Leu Arg Gly Glu Lys Lys Gly Asp Gly Asp Leu Ser Cys Ile Asn
145                 150                 155                 160

Gly Asp Met Glu Val Arg Lys Ser Cys Arg Ser Arg Lys Asn Arg Phe
                165                 170                 175

Glu Ser Val Asn Gln Ser Leu Leu Phe Asp Gln Leu Val Asn Ser Thr
            180                 185                 190

Ala Glu Ala Val Leu Gln Glu Met Asp Asn Ile Asn Ile Arg Arg Asn
        195                 200                 205

Arg Arg Ser Gly Glu Val Glu Arg Leu Arg Met Trp Thr Asp Thr Glu
    210                 215                 220

Phe Glu Asn Met Asp Met Tyr Ser Arg Val Lys Arg Arg Arg Lys Ser
225                 230                 235                 240

Leu Arg Arg Asn Ser Tyr Gly Ile Gln Asn His His Glu Val Ser Thr
                245                 250                 255

Glu Gly Glu Glu Glu Ala Arg Thr Ser Lys Leu Leu Pro Leu Glu Lys
            260                 265                 270
```

```
Ile Ser Ile Glu Ser Gln Glu Glu Asp Gly Asp Ile Glu Val Glu Glu
        275                 280                 285

Ala Glu Gly Glu Glu Asn Asp Arg Pro Tyr Asn Leu Arg Gln Arg Lys
    290                 295                 300

Thr Val Asp Arg Tyr Gln Ala Pro Pro Ile Val Pro Ala His Gln Lys
305                 310                 315                 320

Lys Arg Glu Asn Thr Leu Phe Asp Ile His Arg Ser Pro Ala Arg Arg
                325                 330                 335

Ser His Ile Arg Arg Lys Lys His Ala Ile His Ser Ser Asp Thr Thr
            340                 345                 350

Ser Ser Asp Glu Glu Arg Phe Glu Arg Arg Lys Ser Lys Ser Met Ala
        355                 360                 365

Arg Ala
    370
```

<210> 7165
<211> 572
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1527; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD3A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 3A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339421"

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

<400> 7165
Xaa Gly Ala Leu Ala Leu Ala Ala Pro Arg Arg Cys Arg Gln Pro Leu
1 5 10 15

Pro Gly Arg Asp Cys Ala Pro Gly Ala Pro Pro Ala Gly Ala Val Ser
20 25 30

Arg Ala Gly Arg Ile Gly Leu Phe Pro Ser Pro Val Cys Thr Ser Ala
35 40 45

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

Gln Met Gln Glu Gln Thr Leu Gln Leu Glu Gln Gln Ser Lys Leu Lys
65 70 75 80

Glu Tyr Glu Ala Ala Val Glu Gln Leu Lys Ser Glu Gln Ile Arg Ala
85 90 95

Gln Ala Glu Glu Arg Arg Lys Thr Leu Ser Glu Glu Thr Arg Gln His
100 105 110

Gln Ala Arg Ala Gln Tyr Gln Asp Lys Leu Ala Arg Gln Arg Tyr Glu
115 120 125

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

Gln Glu Glu Ser Val Gln Lys Gln Glu Ala Met Arg Arg Ala Thr Val
145 150 155 160

Glu Arg Glu Met Glu Leu Arg His Lys Asn Glu Met Leu Arg Val Glu
165 170 175

Ala Glu Ala Arg Ala Arg Ala Lys Ala Glu Arg Glu Asn Ala Asp Ile
180 185 190

Ile Arg Glu Gln Ile Arg Leu Lys Ala Ala Glu His Arg Gln Thr Val
195 200 205

Leu Glu Ser Ile Arg Thr Ala Gly Thr Leu Phe Gly Glu Gly Phe Arg
210 215 220

```
Ala Phe Val Thr Asp Trp Asp Lys Val Thr Ala Thr Val Ala Gly Leu
225                 230                 235                 240

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

Ala Gly Arg Phe Ile Glu Ala Arg Leu Gly Lys Pro Ser Leu Val Arg
            260                 265                 270

Glu Thr Ser Arg Ile Thr Val Leu Glu Ala Leu Arg His Pro Ile Gln
        275                 280                 285

Val Ser Arg Arg Leu Leu Ser Arg Pro Gln Asp Ala Leu Glu Gly Val
    290                 295                 300

Val Leu Ser Pro Ser Leu Glu Ala Arg Val Arg Asp Ile Ala Ile Ala
305                 310                 315                 320

Thr Arg Asn Thr Lys Lys Asn Arg Ser Leu Tyr Arg Asn Ile Leu Met
                325                 330                 335

Tyr Gly Pro Pro Gly Thr Gly Lys Thr Leu Phe Ala Lys Lys Leu Ala
            340                 345                 350

Leu His Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly Asp Val Ala
        355                 360                 365

Pro Met Gly Arg Glu Gly Val Thr Ala Met His Lys Leu Phe Asp Trp
    370                 375                 380

Ala Asn Thr Ser Arg Arg Gly Leu Leu Leu Phe Val Asp Glu Ala Asp
385                 390                 395                 400

Ala Phe Leu Arg Lys Arg Ala Thr Glu Lys Ile Ser Glu Asp Leu Arg
                405                 410                 415

Ala Thr Leu Asn Ala Phe Leu Tyr Arg Thr Gly Gln His Ser Asn Lys
            420                 425                 430

Phe Met Leu Val Leu Ala Ser Asn Gln Pro Glu Gln Phe Asp Trp Ala
        435                 440                 445

Ile Asn Asp Arg Ile Asn Glu Met Val His Phe Asp Leu Pro Gly Gln
```

```
    450                 455                 460

Glu Glu Arg Glu Arg Leu Val Arg Met Tyr Phe Asp Lys Tyr Val Leu
465                 470                 475                 480

Lys Pro Ala Thr Glu Gly Lys Gln Arg Leu Lys Leu Ala Gln Phe Asp
                485                 490                 495

Tyr Gly Arg Lys Cys Ser Glu Val Ala Arg Leu Thr Glu Gly Met Ser
            500                 505                 510

Gly Arg Glu Ile Ala Gln Leu Ala Val Ser Trp Gln Ala Thr Ala Tyr
        515                 520                 525

Ala Ser Glu Asp Gly Val Leu Thr Glu Ala Met Met Asp Thr Arg Val
    530                 535                 540

Gln Asp Ala Val Gln Gln His Gln Gln Lys Met Cys Trp Leu Lys Ala
545                 550                 555                 560

Glu Gly Pro Gly Arg Gly Asp Glu Pro Ser Pro Ser
                565                 570
```

<210> 7166
<211> 634
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1527; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD3A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 3A; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NVI7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368030"

<400> 7166
Met Ser Trp Leu Phe Gly Ile Asn Lys Gly Pro Lys Gly Glu Gly Ala
1 5 10 15

Gly Pro Pro Pro Pro Leu Pro Pro Ala Gln Pro Gly Ala Glu Gly Gly
20 25 30

Gly Asp Arg Gly Leu Gly Asp Arg Pro Ala Pro Lys Asp Lys Trp Ser
35 40 45

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

Leu Glu His Ser Arg Tyr Ala Lys Asp Ala Leu Asn Leu Ala Gln Met
65 70 75 80

Gln Glu Gln Thr Leu Gln Leu Glu Gln Gln Ser Lys Leu Lys Met Arg
85 90 95

Leu Glu Ala Leu Ser Leu Leu His Thr Leu Val Trp Ala Trp Ser Leu
100 105 110

Cys Arg Ala Gly Ala Val Gln Thr Gln Glu Arg Leu Ser Gly Ser Ala
115 120 125

Ser Pro Glu Gln Val Pro Ala Gly Glu Cys Cys Ala Leu Gln Glu Tyr
130 135 140

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

Glu Glu Arg Arg Lys Thr Leu Ser Glu Glu Thr Arg Gln His Gln Ala
165 170 175

Arg Ala Gln Tyr Gln Asp Lys Leu Ala Arg Gln Arg Tyr Glu Asp Gln
180 185 190

Leu Lys Gln Gln Gln Leu Leu Asn Glu Glu Asn Leu Arg Lys Gln Glu
195 200 205

Glu Ser Val Gln Lys Gln Glu Ala Met Arg Arg Ala Thr Val Glu Arg
210 215 220

```
Glu Met Glu Leu Arg His Lys Asn Glu Met Leu Arg Val Glu Ala Glu
225                 230                 235                 240

Ala Arg Ala Arg Ala Lys Ala Glu Arg Glu Asn Ala Asp Ile Ile Arg
                245                 250                 255

Glu Gln Ile Arg Leu Lys Ala Ala Glu His Arg Gln Thr Val Leu Glu
            260                 265                 270

Ser Ile Arg Thr Ala Gly Thr Leu Phe Gly Glu Gly Phe Arg Ala Phe
        275                 280                 285

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

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

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

Ser Arg Ile Thr Val Leu Glu Ala Leu Arg His Pro Ile Gln Val Ser
            340                 345                 350

Arg Arg Leu Leu Ser Arg Pro Gln Asp Ala Leu Glu Gly Val Val Leu
        355                 360                 365

Ser Pro Ser Leu Glu Ala Arg Val Arg Asp Ile Ala Ile Ala Thr Arg
    370                 375                 380

Asn Thr Lys Lys Asn Arg Ser Leu Tyr Arg Asn Ile Leu Met Tyr Gly
385                 390                 395                 400

Pro Pro Gly Thr Gly Lys Thr Leu Phe Ala Lys Lys Leu Ala Leu His
                405                 410                 415

Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly Asp Val Ala Pro Met
            420                 425                 430

Gly Arg Glu Gly Val Thr Ala Met His Lys Leu Phe Asp Trp Ala Asn
        435                 440                 445
```

```
Thr Ser Arg Arg Gly Leu Leu Leu Phe Val Asp Glu Ala Asp Ala Phe
    450                 455                 460

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

Leu Asn Ala Phe Leu Tyr Arg Thr Gly Gln His Ser Asn Lys Phe Met
                485                 490                 495

Leu Val Leu Ala Ser Asn Gln Pro Glu Gln Phe Asp Trp Ala Ile Asn
            500                 505                 510

Asp Arg Ile Asn Glu Met Val His Phe Asp Leu Pro Gly Gln Glu Glu
        515                 520                 525

Arg Glu Arg Leu Val Arg Met Tyr Phe Asp Lys Tyr Val Leu Lys Pro
    530                 535                 540

Ala Thr Glu Gly Lys Gln Arg Leu Lys Leu Ala Gln Phe Asp Tyr Gly
545                 550                 555                 560

Arg Lys Cys Ser Glu Val Ala Arg Leu Thr Glu Gly Met Ser Gly Arg
                565                 570                 575

Glu Ile Ala Gln Leu Ala Val Ser Trp Gln Ala Thr Ala Tyr Ala Ser
            580                 585                 590

Glu Asp Gly Val Leu Thr Glu Ala Met Met Asp Thr Arg Val Gln Asp
        595                 600                 605

Ala Val Gln Gln His Gln Gln Lys Met Cys Trp Leu Lys Ala Glu Gly
    610                 615                 620

Pro Gly Arg Gly Asp Glu Pro Ser Pro Ser
625                 630


<210> 7167
<211> 586
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1527; "
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<220>
<221> source
<223> /note="Gene Symbol: ATAD3A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 3A; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NVI7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368031"

<400> 7167
Met Ser Trp Leu Phe Gly Ile Asn Lys Gly Pro Lys Gly Glu Gly Ala
1   5   10   15

Gly Pro Pro Pro Pro Leu Pro Pro Ala Gln Pro Gly Ala Glu Gly Gly
            20   25   30

Gly Asp Arg Gly Leu Gly Asp Arg Pro Ala Pro Lys Asp Lys Trp Ser
        35   40   45

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

Leu Glu His Ser Arg Tyr Ala Lys Asp Ala Leu Asn Leu Ala Gln Met
65   70   75   80

Gln Glu Gln Thr Leu Gln Leu Glu Gln Gln Ser Lys Leu Lys Glu Tyr
                85   90   95

Glu Ala Ala Val Glu Gln Leu Lys Ser Glu Gln Ile Arg Ala Gln Ala
            100   105   110

Glu Glu Arg Arg Lys Thr Leu Ser Glu Glu Thr Arg Gln His Gln Ala
        115   120   125

Arg Ala Gln Tyr Gln Asp Lys Leu Ala Arg Gln Arg Tyr Glu Asp Gln
    130   135   140

Leu Lys Gln Gln Gln Leu Leu Asn Glu Glu Asn Leu Arg Lys Gln Glu
145   150   155   160

```
Glu Ser Val Gln Lys Gln Glu Ala Met Arg Arg Ala Thr Val Glu Arg
                165                 170                 175

Glu Met Glu Leu Arg His Lys Asn Glu Met Leu Arg Val Glu Ala Glu
            180                 185                 190

Ala Arg Ala Arg Ala Lys Ala Glu Arg Glu Asn Ala Asp Ile Ile Arg
        195                 200                 205

Glu Gln Ile Arg Leu Lys Ala Ala Glu His Arg Gln Thr Val Leu Glu
    210                 215                 220

Ser Ile Arg Thr Ala Gly Thr Leu Phe Gly Glu Gly Phe Arg Ala Phe
225                 230                 235                 240

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

Leu Ala Val Gly Val Tyr Ser Ala Lys Asn Ala Thr Leu Val Ala Gly
            260                 265                 270

Arg Phe Ile Glu Ala Arg Leu Gly Lys Pro Ser Leu Val Arg Glu Thr
        275                 280                 285

Ser Arg Ile Thr Val Leu Glu Ala Leu Arg His Pro Ile Gln Val Ser
    290                 295                 300

Arg Arg Leu Leu Ser Arg Pro Gln Asp Ala Leu Glu Gly Val Val Leu
305                 310                 315                 320

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

Asn Thr Lys Lys Asn Arg Ser Leu Tyr Arg Asn Ile Leu Met Tyr Gly
            340                 345                 350

Pro Pro Gly Thr Gly Lys Thr Leu Phe Ala Lys Lys Leu Ala Leu His
        355                 360                 365

Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly Asp Val Ala Pro Met
    370                 375                 380
```

```
Gly Arg Glu Gly Val Thr Ala Met His Lys Leu Phe Asp Trp Ala Asn
385                 390                 395                 400

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

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

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

Leu Val Leu Ala Ser Asn Gln Pro Glu Gln Phe Asp Trp Ala Ile Asn
    450                 455                 460

Asp Arg Ile Asn Glu Met Val His Phe Asp Leu Pro Gly Gln Glu Glu
465                 470                 475                 480

Arg Glu Arg Leu Val Arg Met Tyr Phe Asp Lys Tyr Val Leu Lys Pro
                485                 490                 495

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

Arg Lys Cys Ser Glu Val Ala Arg Leu Thr Glu Gly Met Ser Gly Arg
        515                 520                 525

Glu Ile Ala Gln Leu Ala Val Ser Trp Gln Ala Thr Ala Tyr Ala Ser
    530                 535                 540

Glu Asp Gly Val Leu Thr Glu Ala Met Met Asp Thr Arg Val Gln Asp
545                 550                 555                 560

Ala Val Gln Gln His Gln Gln Lys Met Cys Trp Leu Lys Ala Glu Gly
                565                 570                 575

Pro Gly Arg Gly Asp Glu Pro Ser Pro Ser
            580                 585
```

<210> 7168
<211> 201
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATAD3A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 3A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000383631"

<400> 7168
Lys Leu Ala Leu His Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly
1 5 10 15

Asp Val Ala Pro Met Gly Arg Glu Gly Val Thr Ala Met His Lys Leu
20 25 30

Phe Asp Trp Ala Asn Thr Ser Arg Arg Gly Leu Leu Leu Phe Val Asp
35 40 45

Glu Ala Asp Ala Phe Leu Arg Lys Arg Ala Thr Glu Lys Ile Ser Glu
50 55 60

Asp Leu Arg Ala Thr Leu Asn Ala Phe Leu Tyr Arg Thr Gly Gln His
65 70 75 80

Ser Asn Asn Pro Ser His Val Ser His Gly Gly Ser Ser Pro Ala Gly
85 90 95

Arg Pro Trp Leu Thr Pro Gln Ala Arg Trp Ala Pro Arg Phe Met Leu
100 105 110

Val Leu Ala Ser Asn Gln Pro Glu Gln Phe Asp Trp Ala Ile Asn Asp
115 120 125

Arg Ile Asn Glu Met Val His Phe Asp Leu Pro Gly Gln Glu Glu Arg
130 135 140

Glu Arg Leu Val Arg Met Tyr Phe Asp Lys Tyr Val Leu Lys Pro Ala

```
145                 150                 155                 160

Thr Glu Gly Lys Gln Arg Leu Lys Leu Ala Gln Phe Asp Tyr Gly Arg
                165                 170                 175

Lys Cys Ser Glu Val Ala Arg Leu Thr Glu Gly Met Ser Gly Arg Glu
            180                 185                 190

Ile Ala Gln Leu Ala Val Ser Trp Gln
        195                 200


<210> 7169
<211> 507
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1527; "

<220>
<221> source
<223> /note="Gene Symbol: ATAD3A; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase family, AAA
      domain containing 3A; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NVI7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439290"

<400> 7169
Met Gln Glu Gln Thr Leu Gln Leu Glu Gln Gln Ser Lys Leu Lys Glu
1               5                   10                  15

Tyr Glu Ala Ala Val Glu Gln Leu Lys Ser Glu Gln Ile Arg Ala Gln
            20                  25                  30

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

Ala Arg Ala Gln Tyr Gln Asp Lys Leu Ala Arg Gln Arg Tyr Glu Asp
    50                  55                  60
```

```
Gln Leu Lys Gln Gln Gln Leu Leu Asn Glu Glu Asn Leu Arg Lys Gln
65                  70                  75                  80

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

Arg Glu Met Glu Leu Arg His Lys Asn Glu Met Leu Arg Val Glu Ala
            100                 105                 110

Glu Ala Arg Ala Arg Ala Lys Ala Glu Arg Glu Asn Ala Asp Ile Ile
        115                 120                 125

Arg Glu Gln Ile Arg Leu Lys Ala Ala Glu His Arg Gln Thr Val Leu
    130                 135                 140

Glu Ser Ile Arg Thr Ala Gly Thr Leu Phe Gly Glu Gly Phe Arg Ala
145                 150                 155                 160

Phe Val Thr Asp Trp Asp Lys Val Thr Ala Thr Val Ala Gly Leu Thr
                165                 170                 175

Leu Leu Ala Val Gly Val Tyr Ser Ala Lys Asn Ala Thr Leu Val Ala
            180                 185                 190

Gly Arg Phe Ile Glu Ala Arg Leu Gly Lys Pro Ser Leu Val Arg Glu
        195                 200                 205

Thr Ser Arg Ile Thr Val Leu Glu Ala Leu Arg His Pro Ile Gln Val
    210                 215                 220

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

Leu Ser Pro Ser Leu Glu Ala Arg Val Arg Asp Ile Ala Ile Ala Thr
                245                 250                 255

Arg Asn Thr Lys Lys Asn Arg Ser Leu Tyr Arg Asn Ile Leu Met Tyr
            260                 265                 270

Gly Pro Pro Gly Thr Gly Lys Thr Leu Phe Ala Lys Lys Leu Ala Leu
        275                 280                 285
```

```
His Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly Asp Val Ala Pro
    290                 295                 300

Met Gly Arg Glu Gly Val Thr Ala Met His Lys Leu Phe Asp Trp Ala
305                 310                 315                 320

Asn Thr Ser Arg Arg Gly Leu Leu Leu Phe Val Asp Glu Ala Asp Ala
                325                 330                 335

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

Thr Leu Asn Ala Phe Leu Tyr Arg Thr Gly Gln His Ser Asn Lys Phe
        355                 360                 365

Met Leu Val Leu Ala Ser Asn Gln Pro Glu Gln Phe Asp Trp Ala Ile
    370                 375                 380

Asn Asp Arg Ile Asn Glu Met Val His Phe Asp Leu Pro Gly Gln Glu
385                 390                 395                 400

Glu Arg Glu Arg Leu Val Arg Met Tyr Phe Asp Lys Tyr Val Leu Lys
                405                 410                 415

Pro Ala Thr Glu Gly Lys Gln Arg Leu Lys Leu Ala Gln Phe Asp Tyr
            420                 425                 430

Gly Arg Lys Cys Ser Glu Val Ala Arg Leu Thr Glu Gly Met Ser Gly
        435                 440                 445

Arg Glu Ile Ala Gln Leu Ala Val Ser Trp Gln Ala Thr Ala Tyr Ala
    450                 455                 460

Ser Glu Asp Gly Val Leu Thr Glu Ala Met Met Asp Thr Arg Val Gln
465                 470                 475                 480

Asp Ala Val Gln Gln His Gln Gln Lys Met Cys Trp Leu Lys Ala Glu
                485                 490                 495

Gly Pro Gly Arg Gly Asp Glu Pro Ser Pro Ser
            500                 505
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<210> 7170
<211> 648
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATAD3B; "

<220>
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<223> /note="Gene Name:
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domain containing 3B; "

<220>
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<223> /note="Uniprot ID: Q5T9A4; "

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<400> 7170
Met Ser Trp Leu Phe Gly Val Asn Lys Gly Pro Lys Gly Glu Gly Ala
1   5   10   15

Gly Pro Pro Pro Pro Leu Pro Pro Ala Gln Pro Gly Ala Glu Gly Gly
            20   25   30

Gly Asp Arg Gly Leu Gly Asp Arg Pro Ala Pro Lys Asp Lys Trp Ser
        35   40   45

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

Leu Glu His Ser Arg Tyr Ala Lys Glu Ala Leu Asn Leu Ala Gln Met
65   70   75   80

Gln Glu Gln Thr Leu Gln Leu Glu Gln Gln Ser Lys Leu Lys Glu Tyr
                85   90   95

Glu Ala Ala Val Glu Gln Leu Lys Ser Glu Gln Ile Arg Ala Gln Ala
            100   105   110

Glu Glu Arg Arg Lys Thr Leu Ser Glu Glu Thr Arg Gln His Gln Ala

```
        115                 120                 125

Arg Ala Gln Tyr Gln Asp Lys Leu Ala Arg Gln Arg Tyr Glu Asp Gln
    130                 135                 140

Leu Lys Gln Gln Gln Leu Leu Asn Glu Glu Asn Leu Arg Lys Gln Glu
145                 150                 155                 160

Glu Ser Val Gln Lys Gln Glu Ala Met Arg Arg Ala Thr Val Glu Arg
                165                 170                 175

Glu Met Glu Leu Arg His Lys Asn Glu Met Leu Arg Val Glu Thr Glu
            180                 185                 190

Ala Arg Ala Arg Ala Lys Ala Glu Arg Glu Asn Ala Asp Ile Ile Arg
        195                 200                 205

Glu Gln Ile Arg Leu Lys Ala Ser Glu His Arg Gln Thr Val Leu Glu
    210                 215                 220

Ser Ile Arg Thr Ala Gly Thr Leu Phe Gly Glu Gly Phe Arg Ala Phe
225                 230                 235                 240

Val Thr Asp Arg Asp Lys Val Thr Ala Thr Val Ala Gly Leu Thr Leu
                245                 250                 255

Leu Ala Val Gly Val Tyr Ser Ala Lys Asn Ala Thr Ala Val Thr Gly
            260                 265                 270

Arg Phe Ile Glu Ala Arg Leu Gly Lys Pro Ser Leu Val Arg Glu Thr
        275                 280                 285

Ser Arg Ile Thr Val Leu Glu Ala Leu Arg His Pro Ile Gln Val Ser
    290                 295                 300

Arg Arg Leu Leu Ser Arg Pro Gln Asp Val Leu Glu Gly Val Val Leu
305                 310                 315                 320

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

Asn Thr Lys Lys Asn Arg Gly Leu Tyr Arg His Ile Leu Leu Tyr Gly
            340                 345                 350
```

```
Pro Pro Gly Thr Gly Lys Thr Leu Phe Ala Lys Lys Leu Ala Leu His
        355                 360                 365

Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly Asp Val Ala Pro Met
    370                 375                 380

Gly Arg Glu Gly Val Thr Ala Met His Lys Leu Phe Asp Trp Ala Asn
385                 390                 395                 400

Thr Ser Arg Arg Gly Leu Leu Leu Phe Met Asp Glu Ala Asp Ala Phe
                405                 410                 415

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

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

Leu Val Leu Ala Ser Asn Leu Pro Glu Gln Phe Asp Cys Ala Ile Asn
    450                 455                 460

Ser Arg Ile Asp Val Met Val His Phe Asp Leu Pro Gln Gln Glu Glu
465                 470                 475                 480

Arg Glu Arg Leu Val Arg Leu His Phe Asp Asn Cys Val Leu Lys Pro
                485                 490                 495

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

Arg Lys Cys Ser Glu Val Ala Arg Leu Thr Glu Gly Met Ser Gly Arg
        515                 520                 525

Glu Ile Ala Gln Leu Ala Val Ser Trp Gln Ala Thr Ala Tyr Ala Ser
    530                 535                 540

Lys Asp Gly Val Leu Thr Glu Ala Met Met Asp Ala Cys Val Gln Asp
545                 550                 555                 560

Ala Val Gln Gln Tyr Arg Gln Lys Met Arg Trp Leu Lys Ala Glu Gly
                565                 570                 575
```

```
Pro Gly Arg Gly Val Glu His Pro Leu Ser Gly Val Gln Gly Glu Thr
            580                 585                 590

Leu Thr Ser Trp Ser Leu Ala Thr Asp Pro Ser Tyr Pro Cys Leu Ala
        595                 600                 605

Gly Pro Cys Thr Phe Arg Ile Cys Ser Trp Met Gly Thr Gly Leu Cys
    610                 615                 620

Pro Gly Pro Leu Ser Pro Arg Met Ser Cys Gly Gly Gly Arg Pro Phe
625                 630                 635                 640

Cys Pro Pro Gly His Pro Leu Leu
                645
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<210> 7171
<211> 411
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATAD3C; "

<220>
<221> source
<223> /note="Gene Name:
ATPase family, AAA
domain containing 3C; "

<220>
<221> source
<223> /note="Uniprot ID: Q5T2N8; "

<220>
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<223> /note="ENSP ID: ENSP00000368062"

<400> 7171

```
Met Ser Lys Asp Ala Leu Asn Leu Ala Gln Met Gln Glu Gln Thr Leu
1               5                   10                  15

Gln Leu Glu Gln Gln Ser Lys Leu Lys Gln Leu Val Asn Glu Asp Leu
            20                  25                  30
```

```
Arg Lys Gln Glu Glu Ser Val Gln Lys His His Gln Thr Phe Leu Glu
        35                  40                  45

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

Val Thr Asp Arg Asp Lys Val Thr Ala Thr Val Ala Gly Leu Thr Leu
65                  70                  75                  80

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

Arg Tyr Ile Glu Ala Arg Leu Gly Lys Pro Ser Leu Val Arg Glu Thr
            100                 105                 110

Ser Arg Ile Thr Val Leu Glu Ala Leu Arg His Pro Ile Gln Gln Val
        115                 120                 125

Ser Arg Arg Leu Leu Ser Arg Pro Gln Asp Val Leu Glu Gly Val Val
    130                 135                 140

Leu Ser Pro Ser Leu Glu Ala Arg Val Arg Asp Ile Ala Ile Met Thr
145                 150                 155                 160

Arg Asn Ile Lys Lys Asn Arg Gly Leu Tyr Arg His Ile Leu Leu Tyr
                165                 170                 175

Gly Pro Pro Gly Thr Gly Lys Thr Leu Phe Ala Lys Lys Leu Ala Leu
            180                 185                 190

His Ser Gly Met Asp Tyr Ala Ile Met Thr Gly Gly Asp Val Ala Pro
        195                 200                 205

Met Gly Arg Glu Gly Val Thr Ala Met His Lys Leu Phe Asp Trp Ala
    210                 215                 220

Asn Thr Ser Arg Arg Gly Leu Leu Leu Phe Val Asp Glu Ala Asp Ala
225                 230                 235                 240

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

Thr Leu Asn Ala Phe Leu Tyr Arg Thr Gly Gln His Ser Asn Lys Phe
```

```
            260                 265                 270

Met Leu Ile Leu Ala Ser Cys His Pro Glu Gln Phe Asp Trp Ala Ile
        275                 280                 285

Asn Ala Cys Ile Asp Val Met Val His Phe Asp Leu Pro Gly Gln Glu
    290                 295                 300

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

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

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

Arg Lys Ile Ala Gln Leu Ala Val Ser Trp Gln Ala Thr Ala Tyr Ala
        355                 360                 365

Ser Lys Asp Gly Val Leu Thr Glu Ala Met Met Asp Ala Cys Val Gln
    370                 375                 380

Asp Phe Val Gln Gln His Gln Gln Met Met Arg Trp Leu Lys Gly Glu
385                 390                 395                 400

Arg Pro Gly Pro Glu Asp Glu Gln Pro Ser Ser
                405                 410
```

<210> 7172
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1529; "

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<220>
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<223> /note="Gene Name:
ATPase family, AAA
domain containing 3C; "

<220>
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<400> 7172
Met Ser Lys Asp Ala Leu Asn Leu Ala Gln Met Gln Glu Gln Thr Leu
1   5   10   15

Gln Leu Glu Gln Gln Ser Lys Leu Lys Gln Leu Val Asn Glu Asp Leu
            20   25   30

Arg Lys Gln Glu Glu Ser Val Gln Lys His His Gln Thr Phe Leu Glu
        35   40   45

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

Val Thr Asp Arg Asp Lys Val Thr Ala Thr Gln Val Ser Arg Arg Leu
65   70   75   80

Leu Ser Arg Pro Gln Asp Val Leu Glu Gly Val Val Leu Ser Pro Ser
                85   90   95

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

Lys Asn Arg Gly Leu Tyr Arg His Ile Leu Leu Tyr Gly Pro Pro Gly
        115   120   125

Thr Gly Lys
    130

<210> 7173
<211> 1844
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Name:
ATPase family, AAA
domain containing 5; "

<220>
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<223> /note="Uniprot ID: Q96QE3; "

<220>
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<223> /note="ENSP ID: ENSP00000313171"

<400> 7173

```
Met Val Gly Val Leu Ala Met Ala Ala Ala Ala Pro Pro Pro Val
1               5                  10                  15

Lys Asp Cys Glu Ile Glu Pro Cys Lys Lys Arg Lys Lys Asp Asp Asp
            20                  25                  30

Thr Ser Thr Cys Lys Thr Ile Thr Lys Tyr Leu Ser Pro Leu Gly Lys
        35                  40                  45

Thr Arg Asp Arg Val Phe Ala Pro Pro Lys Pro Ser Asn Ile Leu Asp
    50                  55                  60

Tyr Phe Arg Lys Thr Ser Pro Thr Asn Glu Lys Thr Gln Leu Gly Lys
65                  70                  75                  80

Glu Cys Lys Ile Lys Ser Pro Glu Ser Val Pro Val Asp Ser Asn Lys
                85                  90                  95

Asp Cys Thr Thr Pro Leu Glu Met Phe Ser Asn Val Glu Phe Lys Lys
            100                 105                 110

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

Glu Asn Glu Ala Pro Ile Glu Ile Ser Ser Asp Asp Ser Lys Glu Asp
    130                 135                 140

Tyr Ser Leu Asn Asn Asp Phe Val Glu Ser Ser Thr Ser Val Leu Arg
145                 150                 155                 160

Tyr Lys Lys Gln Val Glu Val Leu Ala Glu Asn Ile Gln Asp Thr Lys
                165                 170                 175
```

```
Ser Gln Pro Asn Thr Met Thr Ser Leu Gln Asn Ser Lys Lys Val Asn
            180                 185                 190

Pro Lys Gln Gly Thr Thr Lys Asn Asp Phe Lys Lys Leu Arg Lys Arg
        195                 200                 205

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

Glu Leu Asn Leu Leu Lys Lys Asp Gly Lys Asp Thr Lys Gln Met Glu
225                 230                 235                 240

Asn Thr Thr Ser His Ala Asn Ser Arg Asp Asn Val Thr Glu Ala Ala
                245                 250                 255

Gln Leu Asn Asp Ser Ile Ile Thr Val Ser Tyr Glu Glu Phe Leu Lys
            260                 265                 270

Ser His Lys Glu Asn Lys Val Glu Glu Ile Pro Asp Ser Thr Met Ser
        275                 280                 285

Ile Cys Val Pro Ser Glu Thr Val Asp Glu Ile Val Lys Ser Gly Tyr
    290                 295                 300

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

Thr Val Thr Val Leu Ala Gln Val His Pro Ile Pro Pro Lys Lys Thr
                325                 330                 335

Gly Lys Ile Pro Arg Ile Phe Leu Lys Gln Lys Gln Phe Glu Met Glu
            340                 345                 350

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

Ser Asn Val Val Ile Gln Glu Glu Glu Leu Glu Leu Ala Val Leu Glu
    370                 375                 380

Ala Gly Ser Ser Glu Ala Val Lys Pro Lys Cys Thr Leu Glu Glu Arg
385                 390                 395                 400

Gln Gln Phe Met Lys Ala Phe Arg Gln Pro Ala Ser Asp Ala Leu Lys
```

405 410 415

Asn Gly Val Lys Lys Ser Ser Asp Lys Gln Lys Asp Leu Asn Glu Lys
420 425 430

Cys Leu Tyr Glu Val Gly Arg Asp Asp Asn Ser Lys Lys Ile Met Glu
435 440 445

Asn Ser Gly Ile Gln Met Val Ser Lys Asn Gly Asn Leu Gln Leu His
450 455 460

Thr Asp Lys Gly Ser Phe Leu Lys Glu Lys Asn Lys Lys Leu Lys Lys
465 470 475 480

Lys Asn Lys Lys Thr Leu Asp Thr Gly Ala Ile Pro Gly Lys Asn Arg
485 490 495

Glu Gly Asn Thr Gln Lys Lys Glu Thr Thr Phe Phe Leu Lys Glu Lys
500 505 510

Gln Tyr Gln Asn Arg Met Ser Leu Arg Gln Arg Lys Thr Glu Phe Phe
515 520 525

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

Ala Asn Asp Asp Leu Leu Lys Val Ser Ser Leu Cys Asn Asn Asn Lys
545 550 555 560

Leu Ser Arg Lys Thr Ser Ile Pro Val Lys Asp Ile Lys Leu Thr Gln
565 570 575

Ser Lys Ala Glu Ser Glu Ala Ser Leu Leu Asn Val Ser Thr Pro Lys
580 585 590

Ser Thr Arg Arg Ser Gly Arg Ile Ser Ser Thr Pro Thr Thr Glu Thr
595 600 605

Ile Arg Gly Ile Asp Ser Asp Asp Val Gln Asp Asn Ser Gln Leu Lys
610 615 620

Ala Ser Thr Gln Lys Ala Ala Asn Leu Ser Glu Lys His Ser Leu Tyr
625 630 635 640

```
Thr Ala Glu Leu Ile Thr Val Pro Phe Asp Ser Glu Ser Pro Ile Arg
                645                 650                 655

Met Lys Phe Thr Arg Ile Ser Thr Pro Lys Lys Ser Lys Lys Lys Ser
            660                 665                 670

Asn Lys Arg Ser Glu Lys Ser Glu Ala Thr Asp Gly Gly Phe Thr Ser
        675                 680                 685

Gln Ile Arg Lys Ala Ser Asn Thr Ser Lys Asn Ile Ser Lys Ala Lys
    690                 695                 700

Gln Leu Ile Glu Lys Ala Lys Ala Leu His Ile Ser Arg Ser Lys Val
705                 710                 715                 720

Thr Glu Glu Ile Ala Ile Pro Leu Arg Arg Ser Ser Arg His Gln Thr
                725                 730                 735

Leu Pro Glu Arg Lys Lys Leu Ser Glu Thr Glu Asp Ser Val Ile Ile
            740                 745                 750

Ile Asp Ser Ser Pro Thr Ala Leu Lys His Pro Glu Lys Asn Gln Lys
        755                 760                 765

Lys Leu Gln Cys Leu Asn Asp Val Leu Gly Lys Lys Leu Asn Thr Ser
    770                 775                 780

Thr Lys Asn Val Pro Gly Lys Met Lys Val Ala Pro Leu Phe Leu Val
785                 790                 795                 800

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

Ser Gln Asp Thr Ser Glu Lys Ser Gln Asp Cys Asp Val Gln Cys Lys
            820                 825                 830

Ala Lys Arg Asp Phe Leu Met Ser Gly Leu Pro Asp Leu Leu Lys Arg
        835                 840                 845

Gln Ile Ala Lys Lys Ala Ala Ala Leu Asp Val Tyr Asn Ala Val Ser
    850                 855                 860
```

```
Thr Ser Phe Gln Arg Val Val His Val Gln Gln Lys Asp Asp Gly Cys
865                 870                 875                 880

Cys Leu Trp His Leu Lys Pro Pro Ser Cys Pro Leu Leu Thr Lys Phe
                885                 890                 895

Lys Glu Leu Asn Thr Lys Val Ile Asp Leu Ser Lys Cys Gly Ile Ala
            900                 905                 910

Leu Gly Glu Phe Ser Thr Leu Asn Ser Lys Leu Lys Ser Gly Asn Ser
        915                 920                 925

Ala Ala Val Phe Met Arg Thr Arg Lys Glu Phe Thr Glu Glu Val Arg
    930                 935                 940

Asn Leu Leu Leu Glu Glu Ile Arg Trp Ser Asn Pro Glu Phe Ser Leu
945                 950                 955                 960

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

Leu Ser Ser Glu Cys His Ser Lys Gln Glu Leu Glu Ala Asp Val Ser
            980                 985                 990

His Lys Glu Thr Lys Arg Lys Leu  Val Glu Ala Glu Asn  Ser Lys
Ser
        995                 1000                1005

Lys Arg  Lys Lys Pro Asn Glu  Tyr Ser Lys Asn Leu  Glu Lys Thr
    1010                1015                1020

Asn Arg  Lys Ser Glu Glu Leu  Ser Lys Arg Asn Asn  Ser Ser Gly
    1025                1030                1035

Ile Lys  Leu Asp Ser Ser Lys  Asp Ser Gly Thr Glu  Asp Met Leu
    1040                1045                1050

Trp Thr  Glu Lys Tyr Gln Pro  Gln Thr Ala Ser Glu  Leu Ile Gly
    1055                1060                1065

Asn Glu  Leu Ala Ile Lys Lys  Leu His Ser Trp Leu  Lys Asp Trp
    1070                1075                1080
```

```
Lys Arg  Arg Ala Glu Leu Glu  Glu Arg Gln Asn Leu  Lys Gly Lys
    1085                1090                1095

Arg Asp  Glu Lys His Glu Asp  Phe Ser Gly Gly Ile  Asp Phe Lys
    1100                1105                1110

Gly Ser  Ser Asp Asp Glu Glu  Glu Ser Arg Leu Cys  Asn Thr Val
    1115                1120                1125

Leu Ile  Thr Gly Pro Thr Gly  Val Gly Lys Thr Ala  Ala Val Tyr
    1130                1135                1140

Ala Cys  Ala Gln Glu Leu Gly  Phe Lys Ile Phe Glu  Val Asn Ala
    1145                1150                1155

Ser Ser  Gln Arg Ser Gly Arg  Gln Ile Leu Ser Gln  Leu Lys Glu
    1160                1165                1170

Ala Thr  Gln Ser His Gln Val  Asp Lys Gln Gly Val  Asn Ser Gln
    1175                1180                1185

Lys Pro  Cys Phe Phe Asn Ser  Tyr Tyr Ile Gly Lys  Ser Pro Lys
    1190                1195                1200

Lys Ile  Ser Ser Pro Lys Lys  Val Val Thr Ser Pro  Arg Lys Val
    1205                1210                1215

Pro Pro  Pro Ser Pro Lys Ser  Ser Gly Pro Lys Arg  Ala Leu Pro
    1220                1225                1230

Pro Lys  Thr Leu Ala Asn Tyr  Phe Lys Val Ser Pro  Lys Pro Lys
    1235                1240                1245

Asn Asn  Glu Glu Ile Gly Met  Leu Leu Glu Asn Asn  Lys Gly Ile
    1250                1255                1260

Lys Asn  Ser Phe Glu Gln Lys  Gln Ile Thr Gln Thr  Lys Ser Thr
    1265                1270                1275

Asn Ala  Thr Asn Ser Asn Val  Lys Asp Val Gly Ala  Glu Glu Pro
    1280                1285                1290
```

```
Ser Arg  Lys Asn Ala Thr Ser  Leu Ile Leu Phe Glu  Glu Val Asp
    1295                1300                1305

Val Ile  Phe Asp Glu Asp Ala  Gly Phe Leu Asn Ala  Ile Lys Thr
    1310                1315                1320

Phe Met  Ala Thr Thr Lys Arg  Pro Val Ile Leu Thr  Thr Ser Asp
    1325                1330                1335

Pro Thr  Phe Ser Leu Met Phe  Asp Gly Cys Phe Glu  Glu Ile Lys
    1340                1345                1350

Phe Ser  Thr Pro Ser Leu Leu  Asn Val Ala Ser Tyr  Leu Gln Met
    1355                1360                1365

Ile Cys  Leu Thr Glu Asn Phe  Arg Thr Asp Val Lys  Asp Phe Val
    1370                1375                1380

Thr Leu  Leu Thr Ala Asn Thr  Cys Asp Ile Arg Lys  Ser Ile Leu
    1385                1390                1395

Tyr Leu  Gln Phe Trp Ile Arg  Ser Gly Gly Gly Val  Leu Glu Glu
    1400                1405                1410

Arg Pro  Leu Thr Leu Tyr Arg  Gly Asn Ser Arg Asn  Val Gln Leu
    1415                1420                1425

Val Cys  Ser Glu His Gly Leu  Asp Asn Lys Ile Tyr  Pro Lys Asn
    1430                1435                1440

Thr Lys  Lys Lys Arg Val Asp  Leu Pro Lys Cys Asp  Ser Gly Cys
    1445                1450                1455

Ala Glu  Thr Leu Phe Gly Leu  Lys Asn Ile Phe Ser  Pro Ser Glu
    1460                1465                1470

Asp Leu  Phe Ser Phe Leu Lys  His Lys Ile Thr Met  Lys Glu Glu
    1475                1480                1485

Trp His  Lys Phe Ile Gln Leu  Leu Thr Glu Phe Gln  Met Arg Asn
    1490                1495                1500

Val Asp  Phe Leu Tyr Ser Asn  Leu Glu Phe Ile Leu  Pro Leu Pro
```

1505 1510 1515

Val Asp Thr Ile Pro Glu Thr Lys Asn Phe Cys Gly Pro Ser Val
1520 1525 1530

Thr Val Asp Ala Ser Ala Ala Thr Lys Ser Met Asn Cys Leu Ala
1535 1540 1545

Arg Lys His Ser Glu Arg Glu Gln Pro Leu Lys Lys Ser Gln Lys
1550 1555 1560

Lys Lys Gln Lys Lys Thr Leu Val Ile Leu Asp Asp Ser Asp Leu
1565 1570 1575

Phe Asp Thr Asp Leu Asp Phe Pro Asp Gln Ser Ile Ser Leu Ser
1580 1585 1590

Ser Val Ser Ser Ser Ser Asn Ala Glu Glu Ser Lys Thr Gly Asp
1595 1600 1605

Glu Glu Ser Lys Ala Arg Asp Lys Gly Asn Asn Pro Glu Thr Lys
1610 1615 1620

Lys Ser Ile Pro Cys Pro Pro Lys Thr Thr Ala Gly Lys Lys Cys
1625 1630 1635

Ser Ala Leu Val Ser His Cys Leu Asn Ser Leu Ser Glu Phe Met
1640 1645 1650

Asp Asn Met Ser Phe Leu Asp Ala Leu Leu Thr Asp Val Arg Glu
1655 1660 1665

Gln Asn Lys Tyr Gly Arg Asn Asp Phe Ser Trp Thr Asn Gly Lys
1670 1675 1680

Val Thr Ser Gly Leu Cys Asp Glu Phe Ser Leu Glu Ser Asn Asp
1685 1690 1695

Gly Trp Thr Ser Gln Ser Ser Gly Glu Leu Lys Ala Ala Ala Glu
1700 1705 1710

Ala Leu Ser Phe Thr Lys Cys Ser Ser Ala Ile Ser Lys Ala Leu
1715 1720 1725

```
Glu Thr  Leu Asn Ser Cys Lys  Lys Leu Gly Arg Asp  Pro Thr Asn
    1730                1735                1740

Asp Leu  Thr Phe Tyr Val Ser  Gln Lys Arg Asn Asn  Val Tyr Phe
    1745                1750                1755

Ser Gln  Ser Ala Ala Asn Leu  Asp Asn Ala Trp Lys  Arg Ile Ser
    1760                1765                1770

Val Ile  Lys Ser Val Phe Ser  Ser Arg Ser Leu Leu  Tyr Val Gly
    1775                1780                1785

Asn Arg  Gln Ala Ser Ile Ile  Glu Tyr Leu Pro Thr  Leu Arg Asn
    1790                1795                1800

Ile Cys  Lys Thr Glu Lys Leu  Lys Glu Gln Gly Lys  Ser Lys Arg
    1805                1810                1815

Arg Phe  Leu His Tyr Phe Glu  Gly Ile His Leu Asp  Ile Pro Lys
    1820                1825                1830

Glu Thr  Val Asn Thr Leu Ala  Ala Asp Phe Pro
    1835                1840


<210> 7174
<211> 1224
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATAD5; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase family, AAA
      domain containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463102"
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<400> 7174

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Met Val Gly Val Leu Ala Met Ala Ala Ala Ala Ala Pro Pro Pro Val
1               5                  10                  15

Lys Asp Cys Glu Ile Glu Pro Cys Lys Lys Arg Lys Lys Asp Asp Asp
            20                  25                  30

Thr Ser Thr Cys Lys Thr Ile Thr Lys Tyr Leu Ser Pro Leu Gly Lys
        35                  40                  45

Thr Arg Asp Arg Val Phe Ala Pro Pro Lys Pro Ser Asn Ile Leu Asp
    50                  55                  60

Tyr Phe Arg Lys Thr Ser Pro Thr Asn Glu Lys Thr Gln Leu Gly Lys
65                  70                  75                  80

Glu Cys Lys Ile Lys Ser Pro Glu Ser Val Pro Val Asp Ser Asn Lys
                85                  90                  95

Asp Cys Thr Thr Pro Leu Glu Met Phe Ser Asn Val Glu Phe Lys Lys
            100                 105                 110

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

Glu Asn Glu Ala Pro Ile Glu Ile Ser Ser Asp Asp Ser Lys Glu Asp
    130                 135                 140

Tyr Ser Leu Asn Asn Asp Phe Val Glu Ser Ser Thr Ser Val Leu Arg
145                 150                 155                 160

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

Ser Gln Pro Asn Thr Met Thr Ser Leu Gln Asn Ser Lys Lys Val Asn
            180                 185                 190

Pro Lys Gln Gly Thr Thr Lys Asn Asp Phe Lys Lys Leu Arg Lys Arg
        195                 200                 205

Lys Cys Arg Asp Val Val Asp Leu Ser Glu Ser Leu Pro Leu Ala Glu
    210                 215                 220
```

```
Glu Leu Asn Leu Leu Lys Lys Asp Gly Lys Asp Thr Lys Gln Met Glu
225                 230                 235                 240

Asn Thr Thr Ser His Ala Asn Ser Arg Asp Asn Val Thr Glu Ala Ala
                245                 250                 255

Gln Leu Asn Asp Ser Ile Ile Thr Val Ser Tyr Glu Glu Phe Leu Lys
            260                 265                 270

Ser His Lys Glu Asn Lys Val Glu Glu Ile Pro Asp Ser Thr Met Ser
        275                 280                 285

Ile Cys Val Pro Ser Glu Thr Val Asp Glu Ile Val Lys Ser Gly Tyr
    290                 295                 300

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

Thr Val Thr Val Leu Ala Gln Val His Pro Ile Pro Pro Lys Lys Thr
                325                 330                 335

Gly Lys Ile Pro Arg Ile Phe Leu Lys Gln Lys Gln Phe Glu Met Glu
            340                 345                 350

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

Ser Asn Val Val Ile Gln Glu Glu Glu Leu Glu Leu Ala Val Leu Glu
    370                 375                 380

Ala Gly Ser Ser Glu Ala Val Lys Pro Lys Cys Thr Leu Glu Glu Arg
385                 390                 395                 400

Gln Gln Phe Met Lys Ala Phe Arg Gln Pro Ala Ser Asp Ala Leu Lys
                405                 410                 415

Asn Gly Val Lys Lys Ser Ser Asp Lys Gln Lys Asp Leu Asn Glu Lys
            420                 425                 430

Cys Leu Tyr Glu Val Gly Arg Asp Asp Asn Ser Lys Lys Ile Met Glu
        435                 440                 445

Asn Ser Gly Ile Gln Met Val Ser Lys Asn Gly Asn Leu Gln Leu His
```

```
    450                 455                 460

Thr Asp Lys Gly Ser Phe Leu Lys Glu Lys Asn Lys Lys Leu Lys Lys
465                 470                 475                 480

Lys Asn Lys Lys Thr Leu Asp Thr Gly Ala Ile Pro Gly Lys Asn Arg
                485                 490                 495

Glu Gly Asn Thr Gln Lys Lys Glu Thr Thr Phe Phe Leu Lys Glu Lys
            500                 505                 510

Gln Tyr Gln Asn Arg Met Ser Leu Arg Gln Arg Lys Thr Glu Phe Phe
        515                 520                 525

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

Ala Asn Asp Asp Leu Leu Lys Val Ser Ser Leu Cys Asn Asn Asn Lys
545                 550                 555                 560

Leu Ser Arg Lys Thr Ser Ile Pro Val Lys Asp Ile Lys Leu Thr Gln
                565                 570                 575

Ser Lys Ala Glu Ser Glu Ala Ser Leu Leu Asn Val Ser Thr Pro Lys
            580                 585                 590

Ser Thr Arg Arg Ser Gly Arg Ile Ser Ser Thr Pro Thr Thr Glu Thr
        595                 600                 605

Ile Arg Gly Ile Asp Ser Asp Asp Val Gln Asp Asn Ser Gln Leu Lys
    610                 615                 620

Ala Ser Thr Gln Lys Ala Ala Asn Leu Ser Glu Lys His Ser Leu Tyr
625                 630                 635                 640

Thr Ala Glu Leu Ile Thr Val Pro Phe Asp Ser Glu Ser Pro Ile Arg
                645                 650                 655

Met Lys Phe Thr Arg Ile Ser Thr Pro Lys Lys Ser Lys Lys Lys Ser
            660                 665                 670

Asn Lys Arg Ser Glu Lys Ser Glu Ala Thr Asp Gly Gly Phe Thr Ser
        675                 680                 685
```

```
Gln Ile Arg Lys Ala Ser Asn Thr Ser Lys Asn Ile Ser Lys Ala Lys
    690                 695                 700

Gln Leu Ile Glu Lys Ala Lys Ala Leu His Ile Ser Arg Ser Lys Val
705                 710                 715                 720

Thr Glu Glu Ile Ala Ile Pro Leu Arg Arg Ser Ser Arg His Gln Thr
                725                 730                 735

Leu Pro Glu Arg Lys Lys Leu Ser Glu Thr Glu Asp Ser Val Ile Ile
            740                 745                 750

Ile Asp Ser Ser Pro Thr Ala Leu Lys His Pro Glu Lys Asn Gln Lys
        755                 760                 765

Lys Leu Gln Cys Leu Asn Asp Val Leu Gly Lys Lys Leu Asn Thr Ser
    770                 775                 780

Thr Lys Asn Val Pro Gly Lys Met Lys Val Ala Pro Leu Phe Leu Val
785                 790                 795                 800

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

Ser Gln Asp Thr Ser Glu Lys Ser Gln Asp Cys Asp Val Gln Cys Lys
            820                 825                 830

Ala Lys Arg Asp Phe Leu Met Ser Gly Leu Pro Asp Leu Leu Lys Arg
        835                 840                 845

Gln Ile Ala Lys Lys Ala Ala Ala Leu Asp Val Tyr Asn Ala Val Ser
    850                 855                 860

Thr Ser Phe Gln Arg Val Val His Val Gln Gln Lys Asp Asp Gly Cys
865                 870                 875                 880

Cys Leu Trp His Leu Lys Pro Pro Ser Cys Pro Leu Leu Thr Lys Phe
                885                 890                 895

Lys Glu Leu Asn Thr Lys Val Ile Asp Leu Ser Lys Cys Gly Ile Ala
            900                 905                 910
```

```
Leu Gly Glu Phe Ser Thr Leu Asn Ser Lys Leu Lys Ser Gly Asn Ser
        915                 920                 925

Ala Ala Val Phe Met Arg Thr Arg Lys Glu Phe Thr Glu Glu Val Arg
    930                 935                 940

Asn Leu Leu Leu Glu Glu Ile Arg Trp Ser Asn Pro Glu Phe Ser Leu
945                 950                 955                 960

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

Leu Ser Ser Glu Cys His Ser Lys Gln Glu Leu Glu Ala Asp Val Ser
            980                 985                 990

His Lys Glu Thr Lys Arg Lys Leu  Val Glu Ala Glu Asn  Ser Lys
Ser
        995                 1000                1005

Lys Arg  Lys Lys Pro Asn Glu  Tyr Ser Lys Asn Leu  Glu Lys Thr
    1010                1015                1020

Asn Arg  Lys Ser Glu Glu Leu  Ser Lys Arg Asn Asn  Ser Ser Gly
    1025                1030                1035

Ile Lys  Leu Asp Ser Ser Lys  Asp Ser Gly Thr Glu  Asp Met Leu
    1040                1045                1050

Trp Thr  Glu Lys Tyr Gln Pro  Gln Thr Ala Ser Glu  Leu Ile Gly
    1055                1060                1065

Asn Glu  Leu Ala Ile Lys Lys  Leu His Ser Trp Leu  Lys Asp Trp
    1070                1075                1080

Lys Arg  Arg Ala Glu Leu Glu  Glu Arg Gln Asn Leu  Lys Gly Lys
    1085                1090                1095

Arg Asp  Glu Lys His Glu Asp  Phe Ser Gly Gly Ile  Asp Phe Lys
    1100                1105                1110

Gly Ser  Ser Asp Asp Glu Glu  Glu Ser Arg Leu Cys  Asn Thr Val
    1115                1120                1125
```

```
Leu Ile  Thr Gly Pro Thr Gly  Val Gly Lys Thr Ala  Ala Val Tyr
    1130                1135                1140

Ala Cys  Ala Gln Glu Leu Gly  Phe Lys Ile Phe Glu  Val Asn Ala
    1145                1150                1155

Ser Ser  Gln Arg Ser Gly Arg  Gln Ile Leu Ser Gln  Leu Lys Glu
    1160                1165                1170

Ala Thr  Gln Ser His Gln Val  Asp Lys Gln Gly Val  Asn Ser Gln
    1175                1180                1185

Lys Pro  Cys Phe Phe Asn Ser  Tyr Tyr Ile Gly Lys  Ser Pro Lys
    1190                1195                1200

Lys Ile  Ser Ser Pro Lys Lys  Val Val Thr Ser Pro  Arg Lys Val
    1205                1210                1215

Pro Pro  Pro Ser Pro Lys
    1220


<210> 7175
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1531; "

<220>
<221> source
<223> /note="Gene Symbol: ATPIF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase inhibitory  factor
      1; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000335203"

<400> 7175
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Met Ala Val Thr Ala Leu Ala Ala Arg Thr Trp Leu Gly Val Trp Gly
1               5                   10                  15

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

Val Asp Arg Gly Ala Gly Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly
        35                  40                  45

Lys Arg Glu Gln Ala Glu Glu Glu Arg Tyr Phe Arg Ala Gln Ser Arg
    50                  55                  60

Glu Gln Leu Ala Ala Leu Lys Lys His His Glu Glu Glu Ile Val His
65                  70                  75                  80

His Lys Lys Glu Ile Glu Arg Leu Gln Lys Glu Ile Glu Arg His Lys
                85                  90                  95

Gln Lys Ile Lys Met Leu Lys His Asp Asp
            100                 105


<210> 7176
<211> 75
<212> PRT
<213> Homo sapiens

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      1; "

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<400> 7176
Met Ala Val Thr Ala Leu Ala Ala Arg Thr Trp Leu Gly Val Trp Gly
1               5                   10                  15

Val Arg Thr Met Gln Ala Arg Gly Phe Gly Ser Asp Gln Ser Glu Asn
```

```
            20                  25                  30

Val Asp Arg Gly Ala Gly Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly
        35                  40                  45

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

Thr Phe Cys Phe Phe Ala Val Glu Ala Val Val
65                  70                  75


<210> 7177
<211> 71
<212> PRT
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      1; "

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000435579"

<400> 7177
Met Ala Val Thr Ala Leu Ala Ala Arg Thr Trp Leu Gly Val Trp Gly
1               5                  10                  15

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

Val Asp Arg Gly Ala Gly Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly
        35                  40                  45

Lys Arg Glu Gln Ala Glu Glu Glu Arg Tyr Phe Arg His Tyr Arg Leu
    50                  55                  60
```

Cys Phe Glu Ile Ser Leu Gly
65 70

<210> 7178
<211> 60
<212> PRT
<213> Homo sapiens

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ATPase inhibitory factor
1; "

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<223> /note="Uniprot ID: Q9UII2; "

<220>
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<223> /note="ENSP ID: ENSP00000437337"

<400> 7178
Met Ala Val Thr Ala Leu Ala Ala Arg Thr Trp Leu Gly Val Trp Gly
1 5 10 15

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

Val Asp Arg Gly Ala Gly Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly
35 40 45

Lys Arg Glu Gln Ala Glu Glu Glu Arg Tyr Phe Arg
50 55 60

<210> 7179
<211> 1086
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1532; "

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<220>
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<223> /note="Gene Name:
ATPase type 13A1; "

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<223> /note="Uniprot ID: Q9HD20; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000291503"

<400> 7179

```
Met Glu Lys Trp Glu Glu Leu Asn Ser His Gln Pro Gly Glu Glu Tyr
1               5                  10                  15

Asp Pro Ser Lys Ala Thr Phe Val Lys Val Val Pro Thr Pro Asn Asn
            20                  25                  30

Gly Ser Thr Glu Leu Val Ala Leu His Arg Asn Glu Gly Glu Asp Gly
        35                  40                  45

Leu Glu Val Leu Ser Phe Glu Phe Gln Lys Ile Lys Tyr Ser Tyr Asp
    50                  55                  60

Ala Leu Glu Lys Lys Gln Phe Leu Pro Val Ala Phe Pro Val Gly Asn
65                  70                  75                  80

Ala Phe Ser Tyr Tyr Gln Ser Asn Arg Gly Phe Gln Glu Asp Ser Glu
                85                  90                  95

Ile Arg Ala Ala Glu Lys Lys Phe Gly Ser Asn Lys Ala Glu Met Val
            100                 105                 110

Val Pro Asp Phe Ser Glu Leu Phe Lys Glu Arg Ala Thr Ala Pro Phe
        115                 120                 125

Phe Val Phe Gln Val Phe Cys Val Gly Leu Trp Cys Leu Asp Glu Tyr
    130                 135                 140

Trp Tyr Tyr Ser Val Phe Thr Leu Ser Met Leu Val Ala Phe Glu Ala
```

145 150 155 160

Ser Leu Val Gln Gln Gln Met Arg Asn Met Ser Glu Ile Arg Lys Met
165 170 175

Gly Asn Lys Pro His Met Ile Gln Val Tyr Arg Ser Arg Lys Trp Arg
180 185 190

Pro Ile Ala Ser Asp Glu Ile Val Pro Gly Asp Ile Val Ser Ile Gly
195 200 205

Arg Ser Pro Gln Glu Asn Leu Val Pro Cys Asp Val Leu Leu Leu Arg
210 215 220

Gly Arg Cys Ile Val Asp Glu Ala Met Leu Thr Gly Glu Ser Val Pro
225 230 235 240

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

Leu Gln Ala Asp Ser Arg Leu His Val Ile Phe Gly Gly Thr Lys Val
260 265 270

Val Gln His Ile Pro Pro Gln Lys Ala Thr Thr Gly Leu Lys Pro Val
275 280 285

Asp Ser Gly Cys Val Ala Tyr Val Leu Arg Thr Gly Phe Asn Thr Ser
290 295 300

Gln Gly Lys Leu Leu Arg Thr Ile Leu Phe Gly Val Lys Arg Val Thr
305 310 315 320

Ala Asn Asn Leu Glu Thr Phe Ile Phe Ile Leu Phe Leu Leu Val Phe
325 330 335

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

Ser Arg Asn Arg Tyr Lys Leu Phe Leu Glu Cys Thr Leu Ile Leu Thr
355 360 365

Ser Val Val Pro Pro Glu Leu Pro Ile Glu Leu Ser Leu Ala Val Asn
370 375 380

```
Thr Ser Leu Ile Ala Leu Ala Lys Leu Tyr Met Tyr Cys Thr Glu Pro
385                 390                 395                 400

Phe Arg Ile Pro Phe Ala Gly Lys Val Glu Val Cys Cys Phe Asp Lys
                405                 410                 415

Thr Gly Thr Leu Thr Ser Asp Ser Leu Val Val Arg Gly Val Ala Gly
            420                 425                 430

Leu Arg Asp Gly Lys Glu Val Thr Pro Val Ser Ser Ile Pro Val Glu
        435                 440                 445

Thr His Arg Ala Leu Ala Ser Cys His Ser Leu Met Gln Leu Asp Asp
    450                 455                 460

Gly Thr Leu Val Gly Asp Pro Leu Glu Lys Ala Met Leu Thr Ala Val
465                 470                 475                 480

Asp Trp Thr Leu Thr Lys Asp Glu Lys Val Phe Pro Arg Ser Ile Lys
                485                 490                 495

Thr Gln Gly Leu Lys Ile His Gln Arg Phe His Phe Ala Ser Ala Leu
            500                 505                 510

Lys Arg Met Ser Val Leu Ala Ser Tyr Glu Lys Leu Gly Ser Thr Asp
        515                 520                 525

Leu Cys Tyr Ile Ala Ala Val Lys Gly Ala Pro Glu Thr Leu His Ser
    530                 535                 540

Met Phe Ser Gln Cys Pro Pro Asp Tyr His His Ile His Thr Glu Ile
545                 550                 555                 560

Ser Arg Glu Gly Ala Arg Val Leu Ala Leu Gly Tyr Lys Glu Leu Gly
                565                 570                 575

His Leu Thr His Gln Gln Ala Arg Glu Val Lys Arg Glu Ala Leu Glu
            580                 585                 590

Cys Ser Leu Lys Phe Val Gly Phe Ile Val Val Ser Cys Pro Leu Lys
        595                 600                 605
```

```
Ala Asp Ser Lys Ala Val Ile Arg Glu Ile Gln Asn Ala Ser His Arg
    610                 615                 620

Val Val Met Ile Thr Gly Asp Asn Pro Leu Thr Ala Cys His Val Ala
625                 630                 635                 640

Gln Glu Leu His Phe Ile Glu Lys Ala His Thr Leu Ile Leu Gln Pro
                645                 650                 655

Pro Ser Glu Lys Gly Arg Gln Cys Glu Trp Arg Ser Ile Asp Gly Ser
            660                 665                 670

Ile Val Leu Pro Leu Ala Arg Gly Ser Pro Lys Ala Leu Ala Leu Glu
        675                 680                 685

Tyr Ala Leu Cys Leu Thr Gly Asp Gly Leu Ala His Leu Gln Ala Thr
    690                 695                 700

Asp Pro Gln Gln Leu Leu Arg Leu Ile Pro His Val Gln Val Phe Ala
705                 710                 715                 720

Arg Val Ala Pro Lys Gln Lys Glu Phe Val Ile Thr Ser Leu Lys Glu
                725                 730                 735

Leu Gly Tyr Val Thr Leu Met Cys Gly Asp Gly Thr Asn Asp Val Gly
            740                 745                 750

Ala Leu Lys His Ala Asp Val Gly Val Ala Leu Leu Ala Asn Ala Pro
        755                 760                 765

Glu Arg Val Val Glu Arg Arg Arg Arg Pro Arg Asp Ser Pro Thr Leu
    770                 775                 780

Ser Asn Ser Gly Ile Arg Ala Thr Ser Arg Thr Ala Lys Gln Arg Ser
785                 790                 795                 800

Gly Leu Pro Pro Ser Glu Glu Gln Pro Thr Ser Gln Arg Asp Arg Leu
                805                 810                 815

Ser Gln Val Leu Arg Asp Leu Glu Asp Glu Ser Thr Pro Ile Val Lys
            820                 825                 830
```

Leu Gly Asp Ala Ser Ile Ala Ala Pro Phe Thr Ser Lys Leu Ser Ser
835 840 845

Ile Gln Cys Ile Cys His Val Ile Lys Gln Gly Arg Cys Thr Leu Val
850 855 860

Thr Thr Leu Gln Met Phe Lys Ile Leu Ala Leu Asn Ala Leu Ile Leu
865 870 875 880

Ala Tyr Ser Gln Ser Val Leu Tyr Leu Glu Gly Val Lys Phe Ser Asp
885 890 895

Phe Gln Ala Thr Leu Gln Gly Leu Leu Leu Ala Gly Cys Phe Leu Phe
900 905 910

Ile Ser Arg Ser Lys Pro Leu Lys Thr Leu Ser Arg Glu Arg Pro Leu
915 920 925

Pro Asn Ile Phe Asn Leu Tyr Thr Ile Leu Thr Val Met Leu Gln Phe
930 935 940

Phe Val His Phe Leu Ser Leu Val Tyr Leu Tyr Arg Glu Ala Gln Ala
945 950 955 960

Arg Ser Pro Glu Lys Gln Glu Gln Phe Val Asp Leu Tyr Lys Glu Phe
965 970 975

Glu Pro Ser Leu Val Asn Ser Thr Val Tyr Ile Met Ala Met Ala Met
980 985 990

Gln Met Ala Thr Phe Ala Ile Asn Tyr Lys Gly Pro Pro Phe Met
Glu
995 1000 1005

Ser Leu Pro Glu Asn Lys Pro Leu Val Trp Ser Leu Ala Val Ser
1010 1015 1020

Leu Leu Ala Ile Ile Gly Leu Leu Leu Gly Ser Ser Pro Asp Phe
1025 1030 1035

Asn Ser Gln Phe Gly Leu Val Asp Ile Pro Val Glu Phe Lys Leu
1040 1045 1050

```
Val Ile  Ala Gln Val Leu Leu  Leu Asp Phe Cys Leu  Ala Leu Leu
    1055                1060                1065


Ala Asp  Arg Val Leu Gln Phe  Phe Leu Gly Thr Pro  Lys Leu Lys
    1070                1075                1080


Val Pro  Ser
    1085


<210> 7180
<211> 1204
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1532; "

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<220>
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<223> /note="Uniprot ID:  Q9HD20; "

<220>
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<400> 7180
Met Ala Ala Ala Ala Ala Val Gly Asn Ala Val Pro Cys Gly Ala Arg
1               5                  10                  15


Pro Cys Gly Val Arg Pro Asp Gly Gln Pro Lys Pro Gly Pro Gln Pro
            20                  25                  30


Arg Ala Leu Leu Ala Ala Gly Pro Ala Leu Ile Ala Asn Gly Asp Glu
        35                  40                  45


Leu Val Ala Ala Val Trp Pro Tyr Arg Arg Leu Ala Leu Leu Arg Arg
    50                  55                  60


Leu Thr Val Leu Pro Phe Ala Gly Leu Leu Tyr Pro Ala Trp Leu Gly
65                  70                  75                  80
```

```
Ala Ala Ala Ala Gly Cys Trp Gly Trp Gly Ser Ser Trp Val Gln Ile
                85                  90                  95

Pro Glu Ala Ala Leu Leu Val Leu Ala Thr Ile Cys Leu Ala His Ala
            100                 105                 110

Leu Thr Val Leu Ser Gly His Trp Ser Val His Ala His Cys Ala Leu
        115                 120                 125

Thr Cys Thr Pro Glu Tyr Asp Pro Ser Lys Ala Thr Phe Val Lys Val
    130                 135                 140

Val Pro Thr Pro Asn Asn Gly Ser Thr Glu Leu Val Ala Leu His Arg
145                 150                 155                 160

Asn Glu Gly Glu Asp Gly Leu Glu Val Leu Ser Phe Glu Phe Gln Lys
                165                 170                 175

Ile Lys Tyr Ser Tyr Asp Ala Leu Glu Lys Lys Gln Phe Leu Pro Val
            180                 185                 190

Ala Phe Pro Val Gly Asn Ala Phe Ser Tyr Tyr Gln Ser Asn Arg Gly
        195                 200                 205

Phe Gln Glu Asp Ser Glu Ile Arg Ala Ala Glu Lys Lys Phe Gly Ser
    210                 215                 220

Asn Lys Ala Glu Met Val Val Pro Asp Phe Ser Glu Leu Phe Lys Glu
225                 230                 235                 240

Arg Ala Thr Ala Pro Phe Phe Val Phe Gln Val Phe Cys Val Gly Leu
                245                 250                 255

Trp Cys Leu Asp Glu Tyr Trp Tyr Tyr Ser Val Phe Thr Leu Ser Met
            260                 265                 270

Leu Val Ala Phe Glu Ala Ser Leu Val Gln Gln Gln Met Arg Asn Met
        275                 280                 285

Ser Glu Ile Arg Lys Met Gly Asn Lys Pro His Met Ile Gln Val Tyr
    290                 295                 300
```

```
Arg Ser Arg Lys Trp Arg Pro Ile Ala Ser Asp Glu Ile Val Pro Gly
305                 310                 315                 320

Asp Ile Val Ser Ile Gly Arg Ser Pro Gln Glu Asn Leu Val Pro Cys
                325                 330                 335

Asp Val Leu Leu Leu Arg Gly Arg Cys Ile Val Asp Glu Ala Met Leu
            340                 345                 350

Thr Gly Glu Ser Val Pro Gln Met Lys Glu Pro Ile Glu Asp Leu Ser
        355                 360                 365

Pro Asp Arg Val Leu Asp Leu Gln Ala Asp Ser Arg Leu His Val Ile
    370                 375                 380

Phe Gly Gly Thr Lys Val Val Gln His Ile Pro Pro Gln Lys Ala Thr
385                 390                 395                 400

Thr Gly Leu Lys Pro Val Asp Ser Gly Cys Val Ala Tyr Val Leu Arg
                405                 410                 415

Thr Gly Phe Asn Thr Ser Gln Gly Lys Leu Leu Arg Thr Ile Leu Phe
            420                 425                 430

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

Leu Phe Leu Leu Val Phe Ala Ile Ala Ala Ala Ala Tyr Val Trp Ile
    450                 455                 460

Glu Gly Thr Lys Asp Pro Ser Arg Asn Arg Tyr Lys Leu Phe Leu Glu
465                 470                 475                 480

Cys Thr Leu Ile Leu Thr Ser Val Val Pro Pro Glu Leu Pro Ile Glu
                485                 490                 495

Leu Ser Leu Ala Val Asn Thr Ser Leu Ile Ala Leu Ala Lys Leu Tyr
            500                 505                 510

Met Tyr Cys Thr Glu Pro Phe Arg Ile Pro Phe Ala Gly Lys Val Glu
        515                 520                 525
```

```
Val Cys Cys Phe Asp Lys Thr Gly Thr Leu Thr Ser Asp Ser Leu Val
    530                 535                 540

Val Arg Gly Val Ala Gly Leu Arg Asp Gly Lys Glu Val Thr Pro Val
545                 550                 555                 560

Ser Ser Ile Pro Val Glu Thr His Arg Ala Leu Ala Ser Cys His Ser
                565                 570                 575

Leu Met Gln Leu Asp Asp Gly Thr Leu Val Gly Asp Pro Leu Glu Lys
            580                 585                 590

Ala Met Leu Thr Ala Val Asp Trp Thr Leu Thr Lys Asp Glu Lys Val
        595                 600                 605

Phe Pro Arg Ser Ile Lys Thr Gln Gly Leu Lys Ile His Gln Arg Phe
    610                 615                 620

His Phe Ala Ser Ala Leu Lys Arg Met Ser Val Leu Ala Ser Tyr Glu
625                 630                 635                 640

Lys Leu Gly Ser Thr Asp Leu Cys Tyr Ile Ala Ala Val Lys Gly Ala
                645                 650                 655

Pro Glu Thr Leu His Ser Met Phe Ser Gln Cys Pro Pro Asp Tyr His
            660                 665                 670

His Ile His Thr Glu Ile Ser Arg Glu Gly Ala Arg Val Leu Ala Leu
        675                 680                 685

Gly Tyr Lys Glu Leu Gly His Leu Thr His Gln Gln Ala Arg Glu Val
    690                 695                 700

Lys Arg Glu Ala Leu Glu Cys Ser Leu Lys Phe Val Gly Phe Ile Val
705                 710                 715                 720

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

Gln Asn Ala Ser His Arg Val Val Met Ile Thr Gly Asp Asn Pro Leu
            740                 745                 750

Thr Ala Cys His Val Ala Gln Glu Leu His Phe Ile Glu Lys Ala His
```

```
        755                 760                 765

Thr Leu Ile Leu Gln Pro Pro Ser Glu Lys Gly Arg Gln Cys Glu Trp
    770                 775                 780

Arg Ser Ile Asp Gly Ser Ile Val Leu Pro Leu Ala Arg Gly Ser Pro
785                 790                 795                 800

Lys Ala Leu Ala Leu Glu Tyr Ala Leu Cys Leu Thr Gly Asp Gly Leu
                805                 810                 815

Ala His Leu Gln Ala Thr Asp Pro Gln Gln Leu Leu Arg Leu Ile Pro
            820                 825                 830

His Val Gln Val Phe Ala Arg Val Ala Pro Lys Gln Lys Glu Phe Val
        835                 840                 845

Ile Thr Ser Leu Lys Glu Leu Gly Tyr Val Thr Leu Met Cys Gly Asp
    850                 855                 860

Gly Thr Asn Asp Val Gly Ala Leu Lys His Ala Asp Val Gly Val Ala
865                 870                 875                 880

Leu Leu Ala Asn Ala Pro Glu Arg Val Val Glu Arg Arg Arg Arg Pro
                885                 890                 895

Arg Asp Ser Pro Thr Leu Ser Asn Ser Gly Ile Arg Ala Thr Ser Arg
            900                 905                 910

Thr Ala Lys Gln Arg Ser Gly Leu Pro Pro Ser Glu Glu Gln Pro Thr
        915                 920                 925

Ser Gln Arg Asp Arg Leu Ser Gln Val Leu Arg Asp Leu Glu Asp Glu
    930                 935                 940

Ser Thr Pro Ile Val Lys Leu Gly Asp Ala Ser Ile Ala Ala Pro Phe
945                 950                 955                 960

Thr Ser Lys Leu Ser Ser Ile Gln Cys Ile Cys His Val Ile Lys Gln
                965                 970                 975

Gly Arg Cys Thr Leu Val Thr Thr Leu Gln Met Phe Lys Ile Leu Ala
            980                 985                 990
```

Leu Asn Ala Leu Ile Leu Ala Tyr Ser Gln Ser Val Leu Tyr Leu Glu
995 1000 1005

Gly Val Lys Phe Ser Asp Phe Gln Ala Thr Leu Gln Gly Leu Leu
1010 1015 1020

Leu Ala Gly Cys Phe Leu Phe Ile Ser Arg Ser Lys Pro Leu Lys
1025 1030 1035

Thr Leu Ser Arg Glu Arg Pro Leu Pro Asn Ile Phe Asn Leu Tyr
1040 1045 1050

Thr Ile Leu Thr Val Met Leu Gln Phe Phe Val His Phe Leu Ser
1055 1060 1065

Leu Val Tyr Leu Tyr Arg Glu Ala Gln Ala Arg Ser Pro Glu Lys
1070 1075 1080

Gln Glu Gln Phe Val Asp Leu Tyr Lys Glu Phe Glu Pro Ser Leu
1085 1090 1095

Val Asn Ser Thr Val Tyr Ile Met Ala Met Ala Met Gln Met Ala
1100 1105 1110

Thr Phe Ala Ile Asn Tyr Lys Gly Pro Pro Phe Met Glu Ser Leu
1115 1120 1125

Pro Glu Asn Lys Pro Leu Val Trp Ser Leu Ala Val Ser Leu Leu
1130 1135 1140

Ala Ile Ile Gly Leu Leu Leu Gly Ser Ser Pro Asp Phe Asn Ser
1145 1150 1155

Gln Phe Gly Leu Val Asp Ile Pro Val Glu Phe Lys Leu Val Ile
1160 1165 1170

Ala Gln Val Leu Leu Leu Asp Phe Cys Leu Ala Leu Leu Ala Asp
1175 1180 1185

Arg Val Leu Gln Phe Phe Leu Gly Thr Pro Lys Leu Lys Val Pro
1190 1195 1200

Ser

<210> 7181
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1532; "

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<220>
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<223> /note="Gene Name:
ATPase type 13A1; "

<220>
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<223> /note="ENSP ID: ENSP00000411891"

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

<400> 7181
Xaa Ala Ser Pro Trp Val Pro Ala Ala Ala Phe Leu Ser Val Thr Ile
1 5 10 15

Ala Thr Trp Ala Thr His Leu Pro Gly Leu Asp Ser Gln Gly His Pro
20 25 30

Leu His Phe Gly Ala Gly Leu Ile Met Thr Pro Leu Leu Thr Cys Cys
35 40 45

Ala Cys Leu Glu Tyr Asp Pro Ser Lys Ala Thr Phe Val Lys Val Val
50 55 60

Pro Thr Pro Asn Asn Gly Ser Thr Glu Leu Val Ala Leu His Arg Asn
65 70 75 80

Glu Gly Glu Asp Gly Leu Glu Val Leu Ser Phe Glu Phe Gln Lys Ile
85 90 95

```
Lys Tyr Ser Tyr Asp Ala Leu Glu Lys Lys Gln Phe Leu Pro Val Ala
            100                 105                 110

Phe Pro Val Gly Asn Ala Phe Ser Tyr Tyr Gln Ser Asn Arg Gly Phe
        115                 120                 125

Gln Glu Asp Ser Glu Ile Arg Ala Ala Glu Lys Lys Phe Gly Ser Asn
    130                 135                 140

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

Ala Thr Ala Pro Phe Phe Val Phe Gln Val Phe Cys Val Gly Leu Trp
                165                 170                 175

Cys Leu Asp Glu Tyr Trp Tyr Tyr Ser
            180                 185


<210> 7182
<211> 1180
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<220>
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<400> 7182
Met Ser Ala Asp Ser Ser Pro Leu Val Gly Ser Thr Pro Thr Gly Tyr
1               5                   10                  15
```

```
Gly Thr Leu Thr Ile Gly Thr Ser Ile Asp Pro Leu Ser Ser Ser Val
            20                  25                  30

Ser Ser Val Arg Leu Ser Gly Tyr Cys Gly Ser Pro Trp Arg Val Ile
        35                  40                  45

Gly Tyr His Val Val Val Trp Met Met Ala Gly Ile Pro Leu Leu Leu
    50                  55                  60

Phe Arg Trp Lys Pro Leu Trp Gly Val Arg Leu Arg Leu Arg Pro Cys
65                  70                  75                  80

Asn Leu Ala His Ala Glu Thr Leu Val Ile Glu Ile Arg Asp Lys Glu
                85                  90                  95

Asp Ser Ser Trp Gln Leu Phe Thr Val Gln Val Gln Thr Glu Ala Ile
            100                 105                 110

Gly Glu Gly Ser Leu Glu Pro Ser Pro Gln Ser Gln Ala Glu Asp Gly
        115                 120                 125

Arg Ser Gln Ala Ala Val Gly Ala Val Pro Glu Gly Ala Trp Lys Asp
    130                 135                 140

Thr Ala Gln Leu His Lys Ser Glu Glu Ala Val Ser Val Gly Gln Lys
145                 150                 155                 160

Arg Val Leu Arg Tyr Tyr Leu Phe Gln Gly Gln Arg Tyr Ile Trp Ile
                165                 170                 175

Glu Thr Gln Gln Ala Phe Tyr Gln Val Ser Leu Leu Asp His Gly Arg
            180                 185                 190

Ser Cys Asp Asp Val His Arg Ser Arg His Gly Leu Ser Leu Gln Asp
        195                 200                 205

Gln Met Val Arg Lys Ala Ile Tyr Gly Pro Asn Val Ile Ser Ile Pro
    210                 215                 220

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

Tyr Gly Phe Gln Ala Phe Ser Ile Ala Leu Trp Leu Ala Asp His Tyr
```

```
                245                 250                 255

Tyr Trp Tyr Ala Leu Cys Ile Phe Leu Ile Ser Ser Ile Ser Ile Cys
            260                 265                 270

Leu Ser Leu Tyr Lys Thr Arg Lys Gln Ser Gln Thr Leu Arg Asp Met
        275                 280                 285

Val Lys Leu Ser Met Arg Val Cys Val Cys Arg Pro Gly Gly Glu Glu
    290                 295                 300

Glu Trp Val Asp Ser Ser Glu Leu Val Pro Gly Asp Cys Leu Val Leu
305                 310                 315                 320

Pro Gln Glu Gly Gly Leu Met Pro Cys Asp Ala Ala Leu Val Ala Gly
                325                 330                 335

Glu Cys Met Val Asn Glu Ser Ser Leu Thr Gly Glu Ser Ile Pro Val
            340                 345                 350

Leu Lys Thr Ala Leu Pro Glu Gly Leu Gly Pro Tyr Cys Ala Glu Thr
        355                 360                 365

His Arg Arg His Thr Leu Phe Cys Gly Thr Leu Ile Leu Gln Ala Arg
    370                 375                 380

Ala Tyr Val Gly Pro His Val Leu Ala Val Val Thr Arg Thr Gly Phe
385                 390                 395                 400

Cys Thr Ala Lys Gly Gly Leu Val Ser Ser Ile Leu His Pro Arg Pro
                405                 410                 415

Ile Asn Phe Lys Phe Tyr Lys His Ser Met Lys Phe Val Ala Ala Leu
            420                 425                 430

Ser Val Leu Ala Leu Leu Gly Thr Ile Tyr Ser Ile Phe Ile Leu Tyr
        435                 440                 445

Arg Asn Arg Val Pro Leu Asn Glu Ile Val Ile Arg Ala Leu Asp Leu
    450                 455                 460

Val Thr Val Val Val Pro Pro Ala Leu Pro Ala Ala Met Thr Val Cys
465                 470                 475                 480
```

Thr Leu Tyr Ala Gln Ser Arg Leu Arg Arg Gln Gly Ile Phe Cys Ile
485 490 495

His Pro Leu Arg Ile Asn Leu Gly Gly Lys Leu Gln Leu Val Cys Phe
500 505 510

Asp Lys Thr Gly Thr Leu Thr Glu Asp Gly Leu Asp Val Met Gly Val
515 520 525

Val Pro Leu Lys Gly Gln Ala Phe Leu Pro Leu Val Pro Glu Pro Arg
530 535 540

Arg Leu Pro Val Gly Pro Leu Leu Arg Ala Leu Ala Thr Cys His Ala
545 550 555 560

Leu Ser Arg Leu Gln Asp Thr Pro Val Gly Asp Pro Met Asp Leu Lys
565 570 575

Met Val Glu Ser Thr Gly Trp Val Leu Glu Glu Glu Pro Ala Ala Asp
580 585 590

Ser Ala Phe Gly Thr Gln Val Leu Ala Val Met Arg Pro Pro Leu Trp
595 600 605

Glu Pro Gln Leu Gln Ala Met Glu Glu Pro Pro Val Pro Val Ser Val
610 615 620

Leu His Arg Phe Pro Phe Ser Ser Ala Leu Gln Arg Met Ser Val Val
625 630 635 640

Val Ala Trp Pro Gly Ala Thr Gln Pro Glu Ala Tyr Val Lys Gly Ser
645 650 655

Pro Glu Leu Val Ala Gly Leu Cys Asn Pro Glu Thr Val Pro Thr Asp
660 665 670

Phe Ala Gln Met Leu Gln Ser Tyr Thr Ala Ala Gly Tyr Arg Val Val
675 680 685

Ala Leu Ala Ser Lys Pro Leu Pro Thr Val Pro Ser Leu Glu Ala Ala
690 695 700

```
Gln Gln Leu Thr Arg Asp Thr Val Glu Gly Asp Leu Ser Leu Leu Gly
705                 710                 715                 720

Leu Leu Val Met Arg Asn Leu Leu Lys Pro Gln Thr Thr Pro Val Ile
                725                 730                 735

Gln Ala Leu Arg Arg Thr Arg Ile Arg Ala Val Met Val Thr Gly Asp
            740                 745                 750

Asn Leu Gln Thr Ala Val Thr Val Ala Arg Gly Cys Gly Met Val Ala
        755                 760                 765

Pro Gln Glu His Leu Ile Ile Val His Ala Thr His Pro Glu Arg Gly
    770                 775                 780

Gln Pro Ala Ser Leu Glu Phe Leu Pro Met Glu Ser Pro Thr Ala Val
785                 790                 795                 800

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

Asp Pro Arg Ser Arg His Leu Ala Leu Ser Gly Pro Thr Phe Gly Ile
            820                 825                 830

Ile Val Lys His Phe Pro Lys Leu Leu Pro Lys Val Leu Val Gln Gly
        835                 840                 845

Thr Val Phe Ala Arg Met Ala Pro Glu Gln Lys Thr Glu Leu Val Cys
    850                 855                 860

Glu Leu Gln Lys Leu Gln Tyr Cys Val Gly Met Cys Gly Asp Gly Ala
865                 870                 875                 880

Asn Asp Cys Gly Ala Leu Lys Ala Ala Asp Val Gly Ile Ser Leu Ser
                885                 890                 895

Gln Ala Glu Ala Ser Val Val Ser Pro Phe Thr Ser Ser Met Ala Ser
            900                 905                 910

Ile Glu Cys Val Pro Met Val Ile Arg Glu Gly Arg Cys Ser Leu Asp
        915                 920                 925
```

```
Thr Ser Phe Ser Val Phe Lys Tyr Met Ala Leu Tyr Ser Leu Thr Gln
    930                 935                 940

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

Leu Gln Phe Leu Ala Ile Asp Leu Val Ile Thr Thr Thr Val Ala Val
                965                 970                 975

Leu Met Ser Arg Thr Gly Pro Ala Leu Val Leu Gly Arg Val Arg Pro
            980                 985                 990

Pro Gly Ala Leu Leu Ser Val Pro  Val Leu Ser Ser Leu  Leu Leu
Gln
        995                 1000                1005

Met Val  Leu Val Thr Gly Val  Gln Leu Gly Gly Tyr  Phe Leu Thr
    1010                1015                1020

Leu Ala  Gln Pro Trp Phe Val  Pro Leu Asn Arg Thr  Val Ala Ala
    1025                1030                1035

Pro Asp  Asn Leu Pro Asn Tyr  Glu Asn Thr Val Val  Phe Ser Leu
    1040                1045                1050

Ser Ser  Phe Gln Tyr Leu Ile  Leu Ala Ala Ala Val  Ser Lys Gly
    1055                1060                1065

Ala Pro  Phe Arg Arg Pro Leu  Tyr Thr Asn Val Pro  Phe Leu Val
    1070                1075                1080

Ala Leu  Ala Leu Leu Ser Ser  Val Leu Val Gly Leu  Val Leu Val
    1085                1090                1095

Pro Gly  Leu Leu Gln Gly Pro  Leu Ala Leu Arg Asn  Ile Thr Asp
    1100                1105                1110

Thr Gly  Phe Lys Leu Leu Leu  Leu Gly Leu Val Thr  Leu Asn Phe
    1115                1120                1125

Val Gly  Ala Phe Met Leu Glu  Ser Val Leu Asp Gln  Cys Leu Pro
    1130                1135                1140
```

```
Ala Cys  Leu Arg Arg Leu Arg  Pro Lys Arg Ala Ser  Lys Lys Arg
    1145                1150                1155


Phe Lys  Gln Leu Glu Arg Glu  Leu Ala Glu Gln Pro  Trp Pro Pro
    1160                1165                1170


Leu Pro  Ala Gly Pro Leu Arg
    1175                1180


<210> 7183
<211> 1158
<212> PRT
<213> Homo sapiens

<220>
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<221> source
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<220>
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<223> /note="Gene Name:
      ATPase type 13A2; "

<220>
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<223> /note="Uniprot ID:  Q9NQ11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000341115"

<400> 7183
Met Ser Ala Asp Ser Ser Pro Leu Val Gly Ser Thr Pro Thr Gly Tyr
1               5                  10                  15


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


Ser Ser Val Arg Leu Ser Gly Tyr Cys Gly Ser Pro Trp Arg Val Ile
        35                  40                  45


Gly Tyr His Val Val Val Trp Met Met Ala Gly Ile Pro Leu Leu Leu
    50                  55                  60


Phe Arg Trp Lys Pro Leu Trp Gly Val Arg Leu Arg Leu Arg Pro Cys
65                  70                  75                  80
```

```
Asn Leu Ala His Ala Glu Thr Leu Val Ile Glu Ile Arg Asp Lys Glu
                85                  90                  95

Asp Ser Ser Trp Gln Leu Phe Thr Val Gln Val Gln Thr Glu Ala Ile
            100                 105                 110

Gly Glu Gly Ser Leu Glu Pro Ser Pro Gln Ser Gln Ala Glu Asp Gly
        115                 120                 125

Arg Ser Gln Ala Ala Val Gly Ala Val Pro Glu Gly Ala Trp Lys Asp
    130                 135                 140

Thr Ala Gln Leu His Lys Ser Glu Glu Ala Lys Arg Val Leu Arg Tyr
145                 150                 155                 160

Tyr Leu Phe Gln Gly Gln Arg Tyr Ile Trp Ile Glu Thr Gln Gln Ala
                165                 170                 175

Phe Tyr Gln Val Ser Leu Leu Asp His Gly Arg Ser Cys Asp Asp Val
            180                 185                 190

His Arg Ser Arg His Gly Leu Ser Leu Gln Asp Gln Met Val Arg Lys
        195                 200                 205

Ala Ile Tyr Gly Pro Asn Val Ile Ser Ile Pro Val Lys Ser Tyr Pro
    210                 215                 220

Gln Leu Leu Val Asp Glu Ala Leu Asn Pro Tyr Tyr Gly Phe Gln Ala
225                 230                 235                 240

Phe Ser Ile Ala Leu Trp Leu Ala Asp His Tyr Tyr Trp Tyr Ala Leu
                245                 250                 255

Cys Ile Phe Leu Ile Ser Ser Ile Ser Ile Cys Leu Ser Leu Tyr Lys
            260                 265                 270

Thr Arg Lys Gln Ser Gln Thr Leu Arg Asp Met Val Lys Leu Ser Met
        275                 280                 285

Arg Val Cys Val Cys Arg Pro Gly Gly Glu Glu Glu Trp Val Asp Ser
    290                 295                 300
```

Ser Glu Leu Val Pro Gly Asp Cys Leu Val Leu Pro Gln Glu Gly Gly
305 310 315 320

Leu Met Pro Cys Asp Ala Ala Leu Val Ala Gly Glu Cys Met Val Asn
325 330 335

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

Pro Glu Gly Leu Gly Pro Tyr Cys Ala Glu Thr His Arg Arg His Thr
355 360 365

Leu Phe Cys Gly Thr Leu Ile Leu Gln Ala Arg Ala Tyr Val Gly Pro
370 375 380

His Val Leu Ala Val Val Thr Arg Thr Gly Phe Cys Thr Ala Lys Gly
385 390 395 400

Gly Leu Val Ser Ser Ile Leu His Pro Arg Pro Ile Asn Phe Lys Phe
405 410 415

Tyr Lys His Ser Met Lys Phe Val Ala Ala Leu Ser Val Leu Ala Leu
420 425 430

Leu Gly Thr Ile Tyr Ser Ile Phe Ile Leu Tyr Arg Asn Arg Val Pro
435 440 445

Leu Asn Glu Ile Val Ile Arg Ala Leu Asp Leu Val Thr Val Val Val
450 455 460

Pro Pro Ala Leu Pro Ala Ala Met Thr Val Cys Thr Leu Tyr Ala Gln
465 470 475 480

Ser Arg Leu Arg Arg Gln Gly Ile Phe Cys Ile His Pro Leu Arg Ile
485 490 495

Asn Leu Gly Gly Lys Leu Gln Leu Val Cys Phe Asp Lys Thr Gly Thr
500 505 510

Leu Thr Glu Asp Gly Leu Asp Val Met Gly Val Val Pro Leu Lys Gly
515 520 525

```
Gln Ala Phe Leu Pro Leu Val Pro Glu Pro Arg Arg Leu Pro Val Gly
    530                 535                 540

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

Asp Thr Pro Val Gly Asp Pro Met Asp Leu Lys Met Val Glu Ser Thr
                565                 570                 575

Gly Trp Val Leu Glu Glu Glu Pro Ala Ala Asp Ser Ala Phe Gly Thr
            580                 585                 590

Gln Val Leu Ala Val Met Arg Pro Pro Leu Trp Glu Pro Gln Leu Gln
        595                 600                 605

Ala Met Glu Glu Pro Pro Val Pro Val Ser Val Leu His Arg Phe Pro
    610                 615                 620

Phe Ser Ser Ala Leu Gln Arg Met Ser Val Val Val Ala Trp Pro Gly
625                 630                 635                 640

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

Gly Leu Cys Asn Pro Glu Thr Val Pro Thr Asp Phe Ala Gln Met Leu
            660                 665                 670

Gln Ser Tyr Thr Ala Ala Gly Tyr Arg Val Val Ala Leu Ala Ser Lys
        675                 680                 685

Pro Leu Pro Thr Val Pro Ser Leu Glu Ala Ala Gln Gln Leu Thr Arg
    690                 695                 700

Asp Thr Val Glu Gly Asp Leu Ser Leu Leu Gly Leu Leu Val Met Arg
705                 710                 715                 720

Asn Leu Leu Lys Pro Gln Thr Thr Pro Val Ile Gln Ala Leu Arg Arg
                725                 730                 735

Thr Arg Ile Arg Ala Val Met Val Thr Gly Asp Asn Leu Gln Thr Ala
            740                 745                 750

Val Thr Val Ala Arg Gly Cys Gly Met Val Ala Pro Gln Glu His Leu
```

```
        755                 760                 765

Ile Ile Val His Ala Thr His Pro Glu Arg Gly Gln Pro Ala Ser Leu
    770                 775                 780

Glu Phe Leu Pro Met Glu Ser Pro Thr Ala Val Asn Gly Val Lys Val
785                 790                 795                 800

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

Glu Leu Val Cys Glu Leu Gln Lys Leu Gln Tyr Cys Val Gly Met Cys
            820                 825                 830

Gly Asp Gly Ala Asn Asp Cys Gly Ala Leu Lys Ala Ala Asp Val Gly
        835                 840                 845

Ile Ser Leu Ser Gln Ala Glu Ala Ser Val Val Ser Pro Phe Thr Ser
    850                 855                 860

Ser Met Ala Ser Ile Glu Cys Val Pro Met Val Ile Arg Glu Gly Arg
865                 870                 875                 880

Cys Ser Leu Asp Thr Ser Phe Ser Val Phe Lys Tyr Met Ala Leu Tyr
                885                 890                 895

Ser Leu Thr Gln Phe Ile Ser Val Leu Ile Leu Tyr Thr Ile Asn Thr
            900                 905                 910

Asn Leu Gly Asp Leu Gln Phe Leu Ala Ile Asp Leu Val Ile Thr Thr
        915                 920                 925

Thr Val Ala Val Leu Met Ser Arg Thr Gly Pro Ala Leu Val Leu Gly
    930                 935                 940

Arg Val Arg Pro Pro Gly Ala Leu Leu Ser Val Pro Val Leu Ser Ser
945                 950                 955                 960

Leu Leu Leu Gln Met Val Leu Val Thr Gly Val Gln Leu Gly Gly Tyr
                965                 970                 975

Phe Leu Thr Leu Ala Gln Pro Trp Phe Val Pro Leu Asn Arg Thr Val
            980                 985                 990
```

Ala Ala Pro Asp Asn Leu Pro Asn Tyr Glu Asn Thr Val Val Phe
Ser
        995   1000   1005

Leu Ser Ser Phe Gln Tyr Leu Ile Leu Ala Ala Ala Val Ser Lys
    1010   1015   1020

Gly Ala Pro Phe Arg Arg Pro Leu Tyr Thr Asn Glu Arg Ala Arg
    1025   1030   1035

Pro Val Pro Pro Arg Leu Pro Ala Pro Pro Pro Ala Gln Ala Gly
    1040   1045   1050

Leu Gln Glu Ala Leu Gln Ala Ala Gly Thr Arg Ala Gly Arg Ala
    1055   1060   1065

Ala Leu Ala Ala Ala Ala Arg Arg Pro Pro Glu Val Val Gln Ala
    1070   1075   1080

His Gly His Pro Arg His Trp Asn Ser Leu Pro Leu Ser His Gln
    1085   1090   1095

Leu Asp Pro Ser Pro Ala Thr Pro Pro Pro Pro Pro Pro Thr Ser
    1100   1105   1110

Leu Arg Leu Ala Thr Val Tyr Thr Pro Pro Pro Arg Pro Pro Pro
    1115   1120   1125

Pro Trp Gly Ser Val Asp Tyr Cys Pro Leu Pro Trp Thr Ile Pro
    1130   1135   1140

Arg Arg Gly Gly Ser Pro Gln Leu Pro Ser Val Leu Leu Ser Val
    1145   1150   1155

<210> 7184
<211> 1175
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1533; "

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<220>
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<223> /note="Gene Name:
ATPase type 13A2; "

<220>
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<223> /note="Uniprot ID: Q9NQ11; "

<220>
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<223> /note="ENSP ID: ENSP00000413307"

<400> 7184

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Met Ser Ala Asp Ser Ser Pro Leu Val Gly Ser Thr Pro Thr Gly Tyr
1               5                  10                  15

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

Ser Ser Val Arg Leu Ser Gly Tyr Cys Gly Ser Pro Trp Arg Val Ile
        35                  40                  45

Gly Tyr His Val Val Val Trp Met Met Ala Gly Ile Pro Leu Leu Leu
    50                  55                  60

Phe Arg Trp Lys Pro Leu Trp Gly Val Arg Leu Arg Leu Arg Pro Cys
65                  70                  75                  80

Asn Leu Ala His Ala Glu Thr Leu Val Ile Glu Ile Arg Asp Lys Glu
                85                  90                  95

Asp Ser Ser Trp Gln Leu Phe Thr Val Gln Val Gln Thr Glu Ala Ile
            100                 105                 110

Gly Glu Gly Ser Leu Glu Pro Ser Pro Gln Ser Gln Ala Glu Asp Gly
        115                 120                 125

Arg Ser Gln Ala Ala Val Gly Ala Val Pro Glu Gly Ala Trp Lys Asp
    130                 135                 140

Thr Ala Gln Leu His Lys Ser Glu Glu Ala Lys Arg Val Leu Arg Tyr
145                 150                 155                 160
```

```
Tyr Leu Phe Gln Gly Gln Arg Tyr Ile Trp Ile Glu Thr Gln Gln Ala
                165                 170                 175

Phe Tyr Gln Val Ser Leu Leu Asp His Gly Arg Ser Cys Asp Asp Val
            180                 185                 190

His Arg Ser Arg His Gly Leu Ser Leu Gln Asp Gln Met Val Arg Lys
        195                 200                 205

Ala Ile Tyr Gly Pro Asn Val Ile Ser Ile Pro Val Lys Ser Tyr Pro
    210                 215                 220

Gln Leu Leu Val Asp Glu Ala Leu Asn Pro Tyr Tyr Gly Phe Gln Ala
225                 230                 235                 240

Phe Ser Ile Ala Leu Trp Leu Ala Asp His Tyr Tyr Trp Tyr Ala Leu
                245                 250                 255

Cys Ile Phe Leu Ile Ser Ser Ile Ser Ile Cys Leu Ser Leu Tyr Lys
            260                 265                 270

Thr Arg Lys Gln Ser Gln Thr Leu Arg Asp Met Val Lys Leu Ser Met
        275                 280                 285

Arg Val Cys Val Cys Arg Pro Gly Gly Glu Glu Glu Trp Val Asp Ser
    290                 295                 300

Ser Glu Leu Val Pro Gly Asp Cys Leu Val Leu Pro Gln Glu Gly Gly
305                 310                 315                 320

Leu Met Pro Cys Asp Ala Ala Leu Val Ala Gly Glu Cys Met Val Asn
                325                 330                 335

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

Pro Glu Gly Leu Gly Pro Tyr Cys Ala Glu Thr His Arg Arg His Thr
        355                 360                 365

Leu Phe Cys Gly Thr Leu Ile Leu Gln Ala Arg Ala Tyr Val Gly Pro
    370                 375                 380

His Val Leu Ala Val Val Thr Arg Thr Gly Phe Cys Thr Ala Lys Gly
```

385 390 395 400

Gly Leu Val Ser Ser Ile Leu His Pro Arg Pro Ile Asn Phe Lys Phe
405 410 415

Tyr Lys His Ser Met Lys Phe Val Ala Ala Leu Ser Val Leu Ala Leu
420 425 430

Leu Gly Thr Ile Tyr Ser Ile Phe Ile Leu Tyr Arg Asn Arg Val Pro
435 440 445

Leu Asn Glu Ile Val Ile Arg Ala Leu Asp Leu Val Thr Val Val Val
450 455 460

Pro Pro Ala Leu Pro Ala Ala Met Thr Val Cys Thr Leu Tyr Ala Gln
465 470 475 480

Ser Arg Leu Arg Arg Gln Gly Ile Phe Cys Ile His Pro Leu Arg Ile
485 490 495

Asn Leu Gly Gly Lys Leu Gln Leu Val Cys Phe Asp Lys Thr Gly Thr
500 505 510

Leu Thr Glu Asp Gly Leu Asp Val Met Gly Val Val Pro Leu Lys Gly
515 520 525

Gln Ala Phe Leu Pro Leu Val Pro Glu Pro Arg Arg Leu Pro Val Gly
530 535 540

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

Asp Thr Pro Val Gly Asp Pro Met Asp Leu Lys Met Val Glu Ser Thr
565 570 575

Gly Trp Val Leu Glu Glu Glu Pro Ala Ala Asp Ser Ala Phe Gly Thr
580 585 590

Gln Val Leu Ala Val Met Arg Pro Pro Leu Trp Glu Pro Gln Leu Gln
595 600 605

Ala Met Glu Glu Pro Pro Val Pro Val Ser Val Leu His Arg Phe Pro
610 615 620

```
Phe Ser Ser Ala Leu Gln Arg Met Ser Val Val Val Ala Trp Pro Gly
625                 630                 635                 640

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

Gly Leu Cys Asn Pro Glu Thr Val Pro Thr Asp Phe Ala Gln Met Leu
            660                 665                 670

Gln Ser Tyr Thr Ala Ala Gly Tyr Arg Val Val Ala Leu Ala Ser Lys
        675                 680                 685

Pro Leu Pro Thr Val Pro Ser Leu Glu Ala Ala Gln Gln Leu Thr Arg
    690                 695                 700

Asp Thr Val Glu Gly Asp Leu Ser Leu Leu Gly Leu Leu Val Met Arg
705                 710                 715                 720

Asn Leu Leu Lys Pro Gln Thr Thr Pro Val Ile Gln Ala Leu Arg Arg
                725                 730                 735

Thr Arg Ile Arg Ala Val Met Val Thr Gly Asp Asn Leu Gln Thr Ala
            740                 745                 750

Val Thr Val Ala Arg Gly Cys Gly Met Val Ala Pro Gln Glu His Leu
        755                 760                 765

Ile Ile Val His Ala Thr His Pro Glu Arg Gly Gln Pro Ala Ser Leu
    770                 775                 780

Glu Phe Leu Pro Met Glu Ser Pro Thr Ala Val Asn Gly Val Lys Asp
785                 790                 795                 800

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

His Leu Ala Leu Ser Gly Pro Thr Phe Gly Ile Ile Val Lys His Phe
            820                 825                 830

Pro Lys Leu Leu Pro Lys Val Leu Val Gln Gly Thr Val Phe Ala Arg
        835                 840                 845
```

```
Met Ala Pro Glu Gln Lys Thr Glu Leu Val Cys Glu Leu Gln Lys Leu
    850                 855                 860

Gln Tyr Cys Val Gly Met Cys Gly Asp Gly Ala Asn Asp Cys Gly Ala
865                 870                 875                 880

Leu Lys Ala Ala Asp Val Gly Ile Ser Leu Ser Gln Ala Glu Ala Ser
                885                 890                 895

Val Val Ser Pro Phe Thr Ser Ser Met Ala Ser Ile Glu Cys Val Pro
            900                 905                 910

Met Val Ile Arg Glu Gly Arg Cys Ser Leu Asp Thr Ser Phe Ser Val
        915                 920                 925

Phe Lys Tyr Met Ala Leu Tyr Ser Leu Thr Gln Phe Ile Ser Val Leu
    930                 935                 940

Ile Leu Tyr Thr Ile Asn Thr Asn Leu Gly Asp Leu Gln Phe Leu Ala
945                 950                 955                 960

Ile Asp Leu Val Ile Thr Thr Thr Val Ala Val Leu Met Ser Arg Thr
                965                 970                 975

Gly Pro Ala Leu Val Leu Gly Arg Val Arg Pro Pro Gly Ala Leu Leu
            980                 985                 990

Ser Val Pro Val Leu Ser Ser Leu  Leu Leu Gln Met Val  Leu Val
Thr
        995                 1000                1005

Gly Val  Gln Leu Gly Gly Tyr  Phe Leu Thr Leu Ala  Gln Pro Trp
    1010                1015                1020

Phe Val  Pro Leu Asn Arg Thr  Val Ala Ala Pro Asp  Asn Leu Pro
    1025                1030                1035

Asn Tyr  Glu Asn Thr Val Val  Phe Ser Leu Ser Ser  Phe Gln Tyr
    1040                1045                1050

Leu Ile  Leu Ala Ala Ala Val  Ser Lys Gly Ala Pro  Phe Arg Arg
    1055                1060                1065
```

```
Pro Leu  Tyr Thr Asn Val Pro  Phe Leu Val Ala Leu  Ala Leu Leu
    1070                1075                1080

Ser Ser  Val Leu Val Gly Leu  Val Leu Val Pro Gly  Leu Leu Gln
    1085                1090                1095

Gly Pro  Leu Ala Leu Arg Asn  Ile Thr Asp Thr Gly  Phe Lys Leu
    1100                1105                1110

Leu Leu  Leu Gly Leu Val Thr  Leu Asn Phe Val Gly  Ala Phe Met
    1115                1120                1125

Leu Glu  Ser Val Leu Asp Gln  Cys Leu Pro Ala Cys  Leu Arg Arg
    1130                1135                1140

Leu Arg  Pro Lys Arg Ala Ser  Lys Lys Arg Phe Lys  Gln Leu Glu
    1145                1150                1155

Arg Glu  Leu Ala Glu Gln Pro  Trp Pro Pro Leu Pro  Ala Gly Pro
    1160                1165                1170

Leu Arg
    1175
```

<210> 7185
<211> 258
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421126"

<400> 7185
Tyr Ser Ile Phe Ile Leu Tyr Arg Asn Arg Val Pro Leu Asn Glu Ile

```
1               5                   10                  15

Val Ile Arg Ala Leu Asp Leu Val Thr Val Val Val Pro Pro Ala Leu
            20                  25                  30

Pro Ala Ala Met Thr Val Cys Thr Leu Tyr Ala Gln Ser Arg Leu Arg
        35                  40                  45

Arg Gln Gly Ile Phe Cys Ile His Pro Leu Arg Ile Asn Leu Gly Gly
    50                  55                  60

Lys Leu Gln Leu Val Cys Phe Asp Lys Val Leu Glu Glu Glu Pro Ala
65                  70                  75                  80

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

Leu Trp Glu Pro Gln Leu Gln Ala Met Arg Met Ser Val Val Val Ala
            100                 105                 110

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

Leu Val Ala Gly Leu Cys Asn Pro Glu Thr Val Pro Thr Asp Phe Ala
    130                 135                 140

Gln Met Leu Gln Ser Tyr Thr Ala Ala Gly Tyr Arg Val Val Ala Leu
145                 150                 155                 160

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

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

Val Met Arg Asn Leu Leu Lys Pro Gln Thr Thr Pro Val Ile Gln Ala
        195                 200                 205

Leu Arg Arg Thr Arg Ile Arg Ala Val Met Val Thr Gly Asp Asn Leu
    210                 215                 220

Gln Thr Ala Val Thr Val Ala Arg Gly Cys Gly Met Val Ala Pro Gln
225                 230                 235                 240
```

Glu His Leu Ile Ile Val His Ala Thr His Pro Glu Arg Gly Gln Pro
245 250 255

Ala Ser

<210> 7186
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422227"

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

<400> 7186
Xaa Ile Glu Ile Arg Asp Lys Glu Asp Ser Ser Trp Gln Leu Phe Thr
1 5 10 15

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

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

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

Glu Ala Lys Arg Val Leu Arg Tyr Tyr Leu Phe Gln Gly Gln Arg Tyr
65 70 75 80

```
Ile Trp Ile Glu Thr Gln Gln Ala Phe Tyr Gln Val Ser Leu Leu Asp
                85                  90                  95

His Gly Arg Ser Cys Asp Asp Val His Arg Ser Arg His Gly Leu Ser
            100                 105                 110

Leu Gln Asp Gln Met Val Arg Lys Ala Ile Tyr Gly Pro Asn Val Ile
        115                 120                 125

Ser Ile Pro Val Lys Ser Tyr Pro Gln Leu Leu Val Asp Glu Ala Phe
    130                 135                 140

Ser Ile Ala Leu Trp Leu Ala Asp His Tyr Tyr Trp Tyr Ala Leu Cys
145                 150                 155                 160

Ile Phe Leu Ile Ser Ser Ile Ser Ile Cys Leu Ser Leu Tyr Lys Thr
                165                 170                 175

Arg Lys Gln Ser Gln Thr Leu Arg Asp Met Val Lys
            180                 185


<210> 7187
<211> 190
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422668"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid
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<400> 7187
Xaa Val Gly Ser Thr Pro Thr Gly Tyr Gly Thr Leu Thr Ile Gly Thr
1 5 10 15

Ser Ile Asp Pro Leu Ser Ser Ser Val Ser Ser Val Arg Leu Ser Gly
20 25 30

Tyr Cys Gly Ser Pro Trp Arg Val Ile Gly Tyr His Val Val Val Trp
35 40 45

Met Met Ala Gly Ile Pro Leu Leu Leu Phe Arg Trp Lys Pro Leu Trp
50 55 60

Gly Val Arg Leu Arg Leu Arg Pro Cys Asn Leu Ala His Ala Glu Thr
65 70 75 80

Leu Val Ile Glu Ile Arg Asp Lys Glu Asp Ser Ser Trp Gln Leu Phe
85 90 95

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

Ser Pro Gln Ser Gln Ala Glu Asp Gly Arg Ser Gln Ala Ala Val Gly
115 120 125

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

Glu Glu Ala Arg Val Leu Arg Tyr Tyr Leu Phe Gln Gly Gln Arg Tyr
145 150 155 160

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

His Gly Arg Ser Cys Asp Asp Val His Arg Ser Arg His Gly
180 185 190

<210> 7188
<211> 398
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423065"

<400> 7188

```
Asp Pro Asp Gln Ala Ala Ser Tyr Thr Val Glu Pro Asp Pro Arg Ser
1               5                  10                  15

Arg His Leu Ala Leu Ser Gly Pro Thr Phe Gly Ile Ile Val Lys His
            20                  25                  30

Phe Pro Lys Leu Leu Pro Lys Val Leu Val Gln Gly Thr Val Phe Ala
        35                  40                  45

Arg Met Ala Pro Glu Gln Lys Thr Glu Leu Val Cys Glu Leu Gln Lys
    50                  55                  60

Leu Gln Tyr Cys Val Gly Met Cys Gly Asp Gly Ala Asn Asp Cys Gly
65                  70                  75                  80

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

Ser Val Val Ser Pro Phe Thr Ser Ser Met Ala Ser Ile Glu Cys Val
            100                 105                 110

Pro Met Val Ile Arg Glu Gly Arg Cys Ser Leu Asp Thr Ser Phe Ser
        115                 120                 125

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

Leu Ile Leu Tyr Thr Ile Asn Thr Asn Leu Gly Asp Leu Gln Phe Leu
145                 150                 155                 160

Ala Ile Asp Leu Val Ile Thr Thr Thr Val Ala Val Leu Met Ser Arg
```

```
                165                 170                 175

Thr Gly Pro Ala Leu Val Leu Gly Arg Val Arg Pro Pro Gly Ala Leu
            180                 185                 190

Leu Ser Val Pro Val Leu Ser Ser Leu Leu Leu Gln Met Val Leu Val
        195                 200                 205

Thr Gly Val Gln Leu Gly Gly Tyr Phe Leu Thr Leu Ala Gln Pro Trp
    210                 215                 220

Phe Val Pro Leu Asn Arg Thr Val Ala Ala Pro Asp Asn Leu Pro Asn
225                 230                 235                 240

Tyr Glu Asn Thr Val Val Phe Ser Leu Ser Ser Phe Gln Tyr Leu Ile
                245                 250                 255

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

Thr Asn Glu Arg Ala Arg Pro Val Pro Pro Arg Leu Pro Ala Pro Pro
        275                 280                 285

Pro Ala Gln Ala Gly Leu Gln Glu Ala Leu Gln Ala Ala Gly Thr Arg
    290                 295                 300

Ala Gly Arg Ala Ala Leu Ala Ala Ala Ala Arg Arg Pro Pro Glu Val
305                 310                 315                 320

Val Gln Ala His Gly His Pro Arg His Trp Asn Ser Leu Pro Leu Ser
                325                 330                 335

His Gln Leu Asp Pro Ser Pro Ala Thr Pro Pro Pro Pro Pro Pro Thr
            340                 345                 350

Ser Leu Arg Leu Ala Thr Val Tyr Thr Pro Pro Pro Arg Pro Pro Pro
        355                 360                 365

Pro Trp Gly Ser Val Asp Tyr Cys Pro Leu Pro Trp Thr Ile Pro Arg
    370                 375                 380

Arg Gly Gly Ser Pro Gln Leu Pro Ser Val Leu Leu Ser Val
385                 390                 395
```

<210> 7189
<211> 321
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424313"

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

<400> 7189
Xaa Asp Pro Leu Ser Ser Ser Val Ser Ser Val Arg Leu Ser Gly Tyr
1 5 10 15

Cys Gly Ser Pro Trp Arg Val Ile Gly Tyr His Val Val Val Trp Met
20 25 30

Met Ala Gly Ile Pro Leu Leu Leu Phe Arg Trp Lys Pro Leu Trp Gly
35 40 45

Val Arg Leu Arg Leu Arg Pro Cys Asn Leu Ala His Ala Glu Thr Leu
50 55 60

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

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

Pro Gln Ser Gln Ala Glu Asp Gly Arg Ser Gln Ala Ala Val Gly Ala
100 105 110

```
Val Pro Glu Gly Ala Trp Lys Asp Thr Ala Gln Leu His Lys Ser Glu
        115                 120                 125

Glu Ala Val Ser Val Gly Gln Arg Val Leu Arg Tyr Tyr Leu Phe Gln
    130                 135                 140

Gly Gln Arg Tyr Ile Trp Ile Glu Thr Gln Gln Ala Phe Tyr Gln Val
145                 150                 155                 160

Ser Leu Leu Asp His Gly Arg Ser Cys Asp Asp Val His Arg Ser Arg
                165                 170                 175

His Gly Leu Ser Leu Gln Asp Gln Met Val Arg Lys Ala Ile Tyr Gly
            180                 185                 190

Pro Asn Val Ile Ser Ile Pro Val Lys Ser Tyr Pro Gln Leu Leu Val
        195                 200                 205

Asp Glu Ala Leu Asn Pro Tyr Tyr Gly Phe Gln Ala Phe Ser Ile Ala
    210                 215                 220

Leu Trp Leu Ala Asp His Tyr Tyr Trp Tyr Ala Leu Cys Ile Phe Leu
225                 230                 235                 240

Ile Ser Ser Ile Ser Ile Cys Leu Ser Leu Tyr Lys Thr Arg Lys Gln
                245                 250                 255

Ser Gln Thr Leu Arg Asp Met Val Lys Leu Ser Met Arg Val Cys Val
            260                 265                 270

Cys Arg Pro Gly Gly Glu Glu Glu Trp Val Asp Ser Ser Glu Leu Val
        275                 280                 285

Pro Gly Asp Cys Leu Val Leu Pro Gln Glu Gly Gly Leu Met Pro Cys
    290                 295                 300

Asp Ala Ala Leu Val Ala Gly Glu Cys Met Val Asn Glu Ser Ser Leu
305                 310                 315                 320

Thr
```

<210> 7190
<211> 191
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424393"

<400> 7190
Gln Ser Gln Thr Leu Arg Asp Met Val Lys Leu Ser Met Arg Val Cys
1 5 10 15

Val Cys Arg Pro Gly Gly Glu Glu Glu Trp Val Asp Ser Ser Glu Leu
20 25 30

Val Pro Gly Asp Cys Leu Val Leu Pro Gln Glu Gly Gly Leu Met Pro
35 40 45

Cys Asp Ala Ala Leu Val Ala Gly Glu Cys Met Val Asn Glu Ser Ser
50 55 60

Leu Thr Gly Glu Ser Ile Pro Val Leu Lys Thr Ala Leu Pro Glu Gly
65 70 75 80

Leu Gly Pro Tyr Cys Ala Glu Thr His Arg Arg His Thr Leu Phe Cys
85 90 95

Gly Thr Leu Ile Leu Gln Ala Arg Ala Tyr Val Gly Pro His Val Leu
100 105 110

Ala Val Val Thr Arg Thr Gly Gly Leu Val Ser Ser Ile Leu His Pro
115 120 125

Arg Pro Ile Asn Phe Lys Phe Tyr Lys His Ser Met Lys Phe Val Ala

```
    130                 135                 140

Ala Leu Ser Val Leu Ala Leu Leu Gly Thr Ile Tyr Ser Ile Phe Ile
145                 150                 155                 160

Leu Tyr Arg Asn Arg Val Pro Leu Asn Glu Ile Val Ile Arg Ala Leu
                165                 170                 175

Asp Leu Val Thr Val Val Val Pro Pro Ala Leu Pro Ala Ala Met
            180                 185                 190


<210> 7191
<211> 189
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427241"

<400> 7191
Asp Ser Ser Trp Gln Leu Phe Thr Val Gln Val Gln Thr Glu Ala Ile
1               5                   10                  15

Gly Glu Gly Ser Leu Glu Pro Ser Pro Gln Ser Gln Ala Glu Asp Gly
            20                  25                  30

Arg Ser Gln Ala Ala Val Gly Ala Val Pro Glu Gly Ala Trp Lys Asp
        35                  40                  45

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

Arg Val Leu Arg Tyr Tyr Leu Phe Gln Gly Gln Arg Tyr Ile Trp Ile
65                  70                  75                  80
```

```
Glu Thr Gln Gln Ala Phe Tyr Gln Val Ser Leu Leu Asp His Gly Arg
                85                  90                  95

Ser Cys Asp Asp Val His Arg Ser Arg His Gly Leu Ser Leu Gln Asp
            100                 105                 110

Gln Met Val Arg Lys Ala Ile Tyr Gly Pro Asn Val Ile Ser Ile Pro
        115                 120                 125

Val Lys Ser Tyr Pro Gln Leu Leu Val Asp Glu Ala Phe Ser Ile Ala
    130                 135                 140

Leu Trp Leu Ala Asp His Tyr Tyr Trp Tyr Ala Leu Cys Ile Phe Leu
145                 150                 155                 160

Ile Ser Ser Ile Ser Ile Cys Leu Ser Leu Tyr Lys Thr Arg Lys Gln
                165                 170                 175

Ser Gln Thr Leu Arg Asp Met Val Lys Leu Ser Met Arg
            180                 185


<210> 7192
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1533; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase type 13A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478781"

<400> 7192
Met Val Lys Leu Ser Met Arg Val Cys Val Cys Arg Pro Gly Gly Glu
1               5                   10                  15

Glu Glu Trp Val Asp Ser Ser Glu Leu Val Pro Gly Asp Cys Leu Val
```

20 25 30

Leu Pro Gln Glu Gly Gly Leu Met Pro Cys Asp Ala Ala Leu Val Ala
35 40 45

Gly Glu Cys Met Val Asn Glu Ser Ser Leu Thr Gly Glu Ser Ile Pro
50 55 60

Val Leu Lys Thr Ala Leu Pro Glu Gly Leu Gly Pro Tyr Cys Ala Glu
65 70 75 80

Thr His Arg Arg His Thr Leu Phe Cys Gly Thr Leu Ile Leu Gln Ala
85 90 95

Arg Ala Tyr Val Gly Pro His Val Leu Ala Val Val Thr Arg Thr Ala
100 105 110

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

Pro Leu Asn Glu Ile Val Ile Arg Ala Leu Asp Leu Val Thr Val Val
130 135 140

Val Pro Pro Ala Leu Pro Ala Ala Met Thr Val Cys Thr Leu Tyr Ala
145 150 155 160

Gln Ser Arg Leu Arg Arg Gln Gly Ile Phe Cys Ile His Pro Leu Arg
165 170 175

Ile Asn Leu Gly Gly Lys Leu Gln Leu Val Cys Phe Asp Lys Val Gly
180 185 190

Pro Gln Val Gly Leu Val Gln Gly Ser Gly Thr Ala Thr Gly Ala Pro
195 200 205

Val Arg Pro Pro His Pro Arg Tyr Ser Leu Ser Ser Thr His Arg Met
210 215 220

Pro Gly Pro Val
225

<210> 7193
<211> 1226

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1534; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A3; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H7F0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000256031"

<400> 7193

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

Met Glu Ile Tyr Gly Tyr Asn Leu Ser Arg Trp Lys Leu Ala Ile Val
            20                  25                  30

Ser Leu Gly Val Ile Cys Ser Gly Gly Phe Leu Leu Leu Leu Leu Tyr
        35                  40                  45

Trp Met Pro Glu Trp Arg Val Lys Ala Thr Cys Val Arg Ala Ala Ile
    50                  55                  60

Lys Asp Cys Glu Val Val Leu Leu Arg Thr Thr Asp Glu Phe Lys Met
65                  70                  75                  80

Trp Phe Cys Ala Lys Ile Arg Val Leu Ser Leu Glu Thr Tyr Pro Val
                85                  90                  95

Ser Ser Pro Lys Ser Met Ser Asn Lys Leu Ser Asn Gly His Ala Val
            100                 105                 110

Cys Leu Ile Glu Asn Pro Thr Glu Glu Asn Arg His Arg Ile Ser Lys
        115                 120                 125
```

```
Tyr Ser Gln Thr Glu Ser Gln Gln Ile Arg Tyr Phe Thr His His Ser
    130                 135                 140

Val Lys Tyr Phe Trp Asn Asp Thr Ile His Asn Phe Asp Phe Leu Lys
145                 150                 155                 160

Gly Leu Asp Glu Gly Val Ser Cys Thr Ser Ile Tyr Glu Lys His Ser
                165                 170                 175

Ala Gly Leu Thr Lys Gly Met His Ala Tyr Arg Lys Leu Leu Tyr Gly
            180                 185                 190

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

Lys Glu Val Leu Asn Pro Phe Tyr Ile Phe Gln Leu Phe Ser Val Ile
    210                 215                 220

Leu Trp Ser Thr Asp Glu Tyr Tyr Tyr Tyr Ala Leu Ala Ile Val Val
225                 230                 235                 240

Met Ser Ile Val Ser Ile Val Ser Ser Leu Tyr Ser Ile Arg Lys Gln
                245                 250                 255

Tyr Val Met Leu His Asp Met Val Ala Thr His Ser Thr Val Arg Val
            260                 265                 270

Ser Val Cys Arg Val Asn Glu Glu Ile Glu Glu Ile Phe Ser Thr Asp
        275                 280                 285

Leu Val Pro Gly Asp Val Met Val Ile Pro Leu Asn Gly Thr Ile Met
    290                 295                 300

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

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

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

Thr His Lys Arg His Thr Leu Phe Cys Gly Thr Thr Val Ile Gln Thr
```

```
        355                 360                 365

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

Phe Ser Thr Ser Lys Gly Gln Leu Val Arg Ser Ile Leu Tyr Pro Lys
385                 390                 395                 400

Pro Thr Asp Phe Lys Leu Tyr Arg Asp Ala Tyr Leu Phe Leu Leu Cys
                405                 410                 415

Leu Val Ala Val Ala Gly Ile Gly Phe Ile Tyr Thr Ile Ile Asn Ser
            420                 425                 430

Ile Leu Asn Glu Val Gln Val Gly Val Ile Ile Ile Glu Ser Leu Asp
        435                 440                 445

Ile Ile Thr Ile Thr Val Pro Pro Ala Leu Pro Ala Ala Met Thr Ala
    450                 455                 460

Gly Ile Val Tyr Ala Gln Arg Arg Leu Lys Lys Ile Gly Ile Phe Cys
465                 470                 475                 480

Ile Ser Pro Gln Arg Ile Asn Ile Cys Gly Gln Leu Asn Leu Val Cys
                485                 490                 495

Phe Asp Lys Thr Gly Thr Leu Thr Glu Asp Gly Leu Asp Leu Trp Gly
            500                 505                 510

Ile Gln Arg Val Glu Asn Ala Arg Phe Leu Ser Pro Glu Glu Asn Val
        515                 520                 525

Cys Asn Glu Met Leu Val Lys Ser Gln Phe Val Ala Cys Met Ala Thr
    530                 535                 540

Cys His Ser Leu Thr Lys Ile Glu Gly Val Leu Ser Gly Asp Pro Leu
545                 550                 555                 560

Asp Leu Lys Met Phe Glu Ala Ile Gly Trp Ile Leu Glu Glu Ala Thr
                565                 570                 575

Glu Glu Glu Thr Ala Leu His Asn Arg Ile Met Pro Thr Val Val Arg
            580                 585                 590
```

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

Met Glu Leu Phe Glu Leu Pro Ala Thr Tyr Glu Ile Gly Ile Val Arg
    610                 615                 620

Gln Phe Pro Phe Ser Ser Ala Leu Gln Arg Met Ser Val Val Ala Arg
625                 630                 635                 640

Val Leu Gly Asp Arg Lys Met Asp Ala Tyr Met Lys Gly Ala Pro Glu
                645                 650                 655

Ala Ile Ala Gly Leu Cys Lys Pro Glu Thr Val Pro Val Asp Phe Gln
            660                 665                 670

Asn Val Leu Glu Asp Phe Thr Lys Gln Gly Phe Arg Val Ile Ala Leu
        675                 680                 685

Ala His Arg Lys Leu Glu Ser Lys Leu Thr Trp His Lys Val Gln Asn
    690                 695                 700

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

Ile Met Gln Asn Lys Leu Lys Gln Glu Thr Pro Ala Val Leu Glu Asp
                725                 730                 735

Leu His Lys Ala Asn Ile Arg Thr Val Met Val Thr Gly Asp Ser Met
            740                 745                 750

Leu Thr Ala Val Ser Val Ala Arg Asp Cys Gly Met Ile Leu Pro Gln
        755                 760                 765

Asp Lys Val Ile Ile Ala Glu Ala Leu Pro Pro Lys Asp Gly Lys Val
    770                 775                 780

Ala Lys Ile Asn Trp His Tyr Ala Asp Ser Leu Thr Gln Cys Ser His
785                 790                 795                 800

Pro Ser Ala Ile Asp Pro Glu Ala Ile Pro Val Lys Leu Val His Asp
                805                 810                 815
```

```
Ser Leu Glu Asp Leu Gln Met Thr Arg Tyr His Phe Ala Met Asn Gly
            820                 825                 830

Lys Ser Phe Ser Val Ile Leu Glu His Phe Gln Asp Leu Val Pro Lys
        835                 840                 845

Leu Met Leu His Gly Thr Val Phe Ala Arg Met Ala Pro Asp Gln Lys
    850                 855                 860

Thr Gln Leu Ile Glu Ala Leu Gln Asn Val Asp Tyr Phe Val Gly Met
865                 870                 875                 880

Cys Gly Asp Gly Ala Asn Asp Cys Gly Ala Leu Lys Arg Ala His Gly
                885                 890                 895

Gly Ile Ser Leu Ser Glu Leu Glu Ala Ser Val Ala Ser Pro Phe Thr
            900                 905                 910

Ser Lys Thr Pro Ser Ile Ser Cys Val Pro Asn Leu Ile Arg Glu Gly
        915                 920                 925

Arg Ala Ala Leu Ile Thr Ser Phe Cys Val Phe Lys Phe Met Ala Leu
    930                 935                 940

Tyr Ser Ile Ile Gln Tyr Phe Ser Val Thr Leu Leu Tyr Ser Ile Leu
945                 950                 955                 960

Ser Asn Leu Gly Asp Phe Gln Phe Leu Phe Ile Asp Leu Ala Ile Ile
                965                 970                 975

Leu Val Val Val Phe Thr Met Ser Leu Asn Pro Ala Trp Lys Glu Leu
            980                 985                 990

Val Ala Gln Arg Pro Pro Ser Gly  Leu Ile Ser Gly Ala  Leu Leu
Phe
        995                 1000                1005

Ser Val  Leu Ser Gln Ile Ile  Ile Cys Ile Gly Phe  Gln Ser Leu
    1010                1015                1020

Gly Phe  Phe Trp Val Lys Gln  Gln Pro Trp Tyr Glu  Val Trp His
    1025                1030                1035
```

```
Pro Lys  Ser Asp Ala Cys Asn  Thr Thr Gly Ser Gly  Phe Trp Asn
    1040                1045                1050

Ser Ser  His Val Asp Asn Glu  Thr Glu Leu Asp Glu  His Asn Ile
    1055                1060                1065

Gln Asn  Tyr Glu Asn Thr Thr  Val Phe Phe Ile Ser  Ser Phe Gln
    1070                1075                1080

Tyr Leu  Ile Val Ala Ile Ala  Phe Ser Lys Gly Lys  Pro Phe Arg
    1085                1090                1095

Gln Pro  Cys Tyr Lys Asn Tyr  Phe Phe Val Phe Ser  Val Ile Phe
    1100                1105                1110

Leu Tyr  Ile Phe Ile Leu Phe  Ile Met Leu Tyr Pro  Val Ala Ser
    1115                1120                1125

Val Asp  Gln Val Leu Gln Ile  Val Cys Val Pro Tyr  Gln Trp Arg
    1130                1135                1140

Val Thr  Met Leu Ile Ile Val  Leu Val Asn Ala Phe  Val Ser Ile
    1145                1150                1155

Thr Val  Glu Glu Ser Val Asp  Arg Trp Gly Lys Cys  Cys Leu Pro
    1160                1165                1170

Trp Ala  Leu Gly Cys Arg Lys  Lys Thr Pro Lys Ala  Lys Tyr Met
    1175                1180                1185

Tyr Leu  Ala Gln Glu Leu Leu  Val Asp Pro Glu Trp  Pro Pro Lys
    1190                1195                1200

Pro Gln  Thr Thr Thr Glu Ala  Lys Ala Leu Val Lys  Glu Asn Gly
    1205                1210                1215

Ser Cys  Gln Ile Ile Thr Ile  Thr
    1220                1225
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<210> 7194
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1534; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402550"

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

<400> 7194
Xaa Pro Phe Arg Gln Pro Cys Tyr Lys Asn Tyr Phe Phe Val Phe Ser
1 5 10 15

Val Ile Phe Leu Tyr Ile Phe Ile Leu Phe Ile Met Leu Tyr Pro Val
20 25 30

Ala Ser Val Asp Gln Val Leu Gln Ile Val Cys Val Pro Tyr Gln Trp
35 40 45

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

Thr Val Glu Asn Phe Phe Leu Asp Met Val Leu Trp Lys Val Val Phe
65 70 75 80

Asn Arg Asp Lys Gln Gly Glu Tyr Arg Phe Ser Thr Thr Gln Pro Pro
85 90 95

Gln Glu Ser Val Asp Arg Trp Gly Lys Cys Cys Leu Pro Trp Ala Leu
100 105 110

Gly Cys Arg Lys Lys Thr Pro Lys Ala Lys Tyr Met Tyr Leu Ala Gln
115 120 125

```
Glu Leu Leu Val Asp Pro Glu Trp Pro Pro Lys Pro Gln Thr Thr Thr
    130                 135                 140

Glu Ala Lys Ala Leu Val Lys Glu Asn Gly Ser Cys Gln Ile Ile Thr
145                 150                 155                 160

Ile Thr
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<210> 7195
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1534; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406234"

<400> 7195

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

Met Glu Ile Tyr Gly Tyr Asn Leu Ser Arg Trp Lys Leu Ala Ile Val
            20                  25                  30

Ser Leu Gly Val Ile Cys Ser Gly Gly Phe Leu Leu Leu Leu Leu Tyr
        35                  40                  45

Trp Met Pro Glu Trp Arg Val Lys Ala Thr Cys Val Arg Ala Ala Ile
    50                  55                  60

Lys Asp Cys Glu Val Val Leu Leu Arg Thr Thr Asp Glu Phe Lys Met
65                  70                  75                  80

Trp Phe Cys Ala Lys Ile Arg Val Leu Ser Leu Glu Thr Tyr Pro Val
                85                  90                  95
```

Ser Ser Pro Lys Ser Met
100

<210> 7196
<211> 46
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1534; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
ATPase type 13A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410767"

<400> 7196
Met Asp Arg Glu Glu Arg Lys Thr Ile Asn Gln Gly Gln Glu Asp Glu
1 5 10 15

Met Glu Ile Tyr Gly Tyr Asn Leu Ser Arg Trp Lys Leu Ala Ile Val
20 25 30

Ser Leu Gly Val Ile Cys Ser Gly Gly Phe Leu Leu Leu Leu
35 40 45

<210> 7197
<211> 1226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1534; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:

ATPase type 13A3; "

<220>
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<223> /note="Uniprot ID: Q9H7F0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416508"

<400> 7197

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

Met Glu Ile Tyr Gly Tyr Asn Leu Ser Arg Trp Lys Leu Ala Ile Val
            20                  25                  30

Ser Leu Gly Val Ile Cys Ser Gly Gly Phe Leu Leu Leu Leu Leu Tyr
        35                  40                  45

Trp Met Pro Glu Trp Arg Val Lys Ala Thr Cys Val Arg Ala Ala Ile
    50                  55                  60

Lys Asp Cys Glu Val Val Leu Leu Arg Thr Thr Asp Glu Phe Lys Met
65                  70                  75                  80

Trp Phe Cys Ala Lys Ile Arg Val Leu Ser Leu Glu Thr Tyr Pro Val
                85                  90                  95

Ser Ser Pro Lys Ser Met Ser Asn Lys Leu Ser Asn Gly His Ala Val
            100                 105                 110

Cys Leu Ile Glu Asn Pro Thr Glu Glu Asn Arg His Arg Ile Ser Lys
        115                 120                 125

Tyr Ser Gln Thr Glu Ser Gln Gln Ile Arg Tyr Phe Thr His His Ser
    130                 135                 140

Val Lys Tyr Phe Trp Asn Asp Thr Ile His Asn Phe Asp Phe Leu Lys
145                 150                 155                 160

Gly Leu Asp Glu Gly Val Ser Cys Thr Ser Ile Tyr Glu Lys His Ser
                165                 170                 175

Ala Gly Leu Thr Lys Gly Met His Ala Tyr Arg Lys Leu Leu Tyr Gly
            180                 185                 190
```

```
Val Asn Glu Ile Ala Val Lys Val Pro Ser Val Phe Lys Leu Leu Ile
        195                 200                 205

Lys Glu Val Leu Asn Pro Phe Tyr Ile Phe Gln Leu Phe Ser Val Ile
    210                 215                 220

Leu Trp Ser Thr Asp Glu Tyr Tyr Tyr Tyr Ala Leu Ala Ile Val Val
225                 230                 235                 240

Met Ser Ile Val Ser Ile Val Ser Ser Leu Tyr Ser Ile Arg Lys Gln
                245                 250                 255

Tyr Val Met Leu His Asp Met Val Ala Thr His Ser Thr Val Arg Val
            260                 265                 270

Ser Val Cys Arg Val Asn Glu Glu Ile Glu Glu Ile Phe Ser Thr Asp
        275                 280                 285

Leu Val Pro Gly Asp Val Met Val Ile Pro Leu Asn Gly Thr Ile Met
    290                 295                 300

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

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

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

Thr His Lys Arg His Thr Leu Phe Cys Gly Thr Thr Val Ile Gln Thr
        355                 360                 365

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

Phe Ser Thr Ser Lys Gly Gln Leu Val Arg Ser Ile Leu Tyr Pro Lys
385                 390                 395                 400

Pro Thr Asp Phe Lys Leu Tyr Arg Asp Ala Tyr Leu Phe Leu Leu Cys
                405                 410                 415
```

```
Leu Val Ala Val Ala Gly Ile Gly Phe Ile Tyr Thr Ile Ile Asn Ser
            420                 425                 430

Ile Leu Asn Glu Val Gln Val Gly Val Ile Ile Ile Glu Ser Leu Asp
        435                 440                 445

Ile Ile Thr Ile Thr Val Pro Pro Ala Leu Pro Ala Ala Met Thr Ala
    450                 455                 460

Gly Ile Val Tyr Ala Gln Arg Arg Leu Lys Lys Ile Gly Ile Phe Cys
465                 470                 475                 480

Ile Ser Pro Gln Arg Ile Asn Ile Cys Gly Gln Leu Asn Leu Val Cys
                485                 490                 495

Phe Asp Lys Thr Gly Thr Leu Thr Glu Asp Gly Leu Asp Leu Trp Gly
            500                 505                 510

Ile Gln Arg Val Glu Asn Ala Arg Phe Leu Ser Pro Glu Glu Asn Val
        515                 520                 525

Cys Asn Glu Met Leu Val Lys Ser Gln Phe Val Ala Cys Met Ala Thr
    530                 535                 540

Cys His Ser Leu Thr Lys Ile Glu Gly Val Leu Ser Gly Asp Pro Leu
545                 550                 555                 560

Asp Leu Lys Met Phe Glu Ala Ile Gly Trp Ile Leu Glu Glu Ala Thr
                565                 570                 575

Glu Glu Glu Thr Ala Leu His Asn Arg Ile Met Pro Thr Val Val Arg
            580                 585                 590

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

Met Glu Leu Phe Glu Leu Pro Ala Thr Tyr Glu Ile Gly Ile Val Arg
    610                 615                 620

Gln Phe Pro Phe Ser Ser Ala Leu Gln Arg Met Ser Val Val Ala Arg
625                 630                 635                 640
```

Val Leu Gly Asp Arg Lys Met Asp Ala Tyr Met Lys Gly Ala Pro Glu
645 650 655

Ala Ile Ala Gly Leu Cys Lys Pro Glu Thr Val Pro Val Asp Phe Gln
660 665 670

Asn Val Leu Glu Asp Phe Thr Lys Gln Gly Phe Arg Val Ile Ala Leu
675 680 685

Ala His Arg Lys Leu Glu Ser Lys Leu Thr Trp His Lys Val Gln Asn
690 695 700

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

Ile Met Gln Asn Lys Leu Lys Gln Glu Thr Pro Ala Val Leu Glu Asp
725 730 735

Leu His Lys Ala Asn Ile Arg Thr Val Met Val Thr Gly Asp Ser Met
740 745 750

Leu Thr Ala Val Ser Val Ala Arg Asp Cys Gly Met Ile Leu Pro Gln
755 760 765

Asp Lys Val Ile Ile Ala Glu Ala Leu Pro Pro Lys Asp Gly Lys Val
770 775 780

Ala Lys Ile Asn Trp His Tyr Ala Asp Ser Leu Thr Gln Cys Ser His
785 790 795 800

Pro Ser Ala Ile Asp Pro Glu Ala Ile Pro Val Lys Leu Val His Asp
805 810 815

Ser Leu Glu Asp Leu Gln Met Thr Arg Tyr His Phe Ala Met Asn Gly
820 825 830

Lys Ser Phe Ser Val Ile Leu Glu His Phe Gln Asp Leu Val Pro Lys
835 840 845

Leu Met Leu His Gly Thr Val Phe Ala Arg Met Ala Pro Asp Gln Lys
850 855 860

Thr Gln Leu Ile Glu Ala Leu Gln Asn Val Asp Tyr Phe Val Gly Met

865 870 875 880

Cys Gly Asp Gly Ala Asn Asp Cys Gly Ala Leu Lys Arg Ala His Gly
885 890 895

Gly Ile Ser Leu Ser Glu Leu Glu Ala Ser Val Ala Ser Pro Phe Thr
900 905 910

Ser Lys Thr Pro Ser Ile Ser Cys Val Pro Asn Leu Ile Arg Glu Gly
915 920 925

Arg Ala Ala Leu Ile Thr Ser Phe Cys Val Phe Lys Phe Met Ala Leu
930 935 940

Tyr Ser Ile Ile Gln Tyr Phe Ser Val Thr Leu Leu Tyr Ser Ile Leu
945 950 955 960

Ser Asn Leu Gly Asp Phe Gln Phe Leu Phe Ile Asp Leu Ala Ile Ile
965 970 975

Leu Val Val Val Phe Thr Met Ser Leu Asn Pro Ala Trp Lys Glu Leu
980 985 990

Val Ala Gln Arg Pro Pro Ser Gly Leu Ile Ser Gly Ala Leu Leu
Phe
995 1000 1005

Ser Val Leu Ser Gln Ile Ile Ile Cys Ile Gly Phe Gln Ser Leu
1010 1015 1020

Gly Phe Phe Trp Val Lys Gln Gln Pro Trp Tyr Glu Val Trp His
1025 1030 1035

Pro Lys Ser Asp Ala Cys Asn Thr Thr Gly Ser Gly Phe Trp Asn
1040 1045 1050

Ser Ser His Val Asp Asn Glu Thr Glu Leu Asp Glu His Asn Ile
1055 1060 1065

Gln Asn Tyr Glu Asn Thr Thr Val Phe Phe Ile Ser Ser Phe Gln
1070 1075 1080

Tyr Leu Ile Val Ala Ile Ala Phe Ser Lys Gly Lys Pro Phe Arg

```
    1085                1090                1095

Gln Pro  Cys Tyr Lys Asn Tyr  Phe Phe Val Phe Ser  Val Ile Phe
    1100                1105                1110

Leu Tyr  Ile Phe Ile Leu Phe  Ile Met Leu Tyr Pro  Val Ala Ser
    1115                1120                1125

Val Asp  Gln Val Leu Gln Ile  Val Cys Val Pro Tyr  Gln Trp Arg
    1130                1135                1140

Val Thr  Met Leu Ile Ile Val  Leu Val Asn Ala Phe  Val Ser Ile
    1145                1150                1155

Thr Val  Glu Glu Ser Val Asp  Arg Trp Gly Lys Cys  Cys Leu Pro
    1160                1165                1170

Trp Ala  Leu Gly Cys Arg Lys  Lys Thr Pro Lys Ala  Lys Tyr Met
    1175                1180                1185

Tyr Leu  Ala Gln Glu Leu Leu  Val Asp Pro Glu Trp  Pro Pro Lys
    1190                1195                1200

Pro Gln  Thr Thr Thr Glu Ala  Lys Ala Leu Val Lys  Glu Asn Gly
    1205                1210                1215

Ser Cys  Gln Ile Ile Thr Ile  Thr
    1220                1225


<210> 7198
<211> 701
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1534; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A3; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase type 13A3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000482200"

<400> 7198
Ile Ser Glu Ile Glu Glu Ile Phe Ser Thr Asp Leu Val Pro Gly Asp
1 5 10 15

Val Met Val Ile Pro Leu Asn Gly Thr Ile Met Pro Cys Asp Ala Val
20 25 30

Leu Ile Asn Gly Thr Cys Ile Val Asn Glu Ser Met Leu Thr Gly Glu
35 40 45

Ser Val Pro Val Thr Lys Thr Asn Leu Pro Asn Pro Ser Val Asp Val
50 55 60

Lys Gly Ile Gly Asp Glu Leu Tyr Asn Pro Glu Thr His Lys Arg His
65 70 75 80

Thr Leu Phe Cys Gly Thr Thr Val Ile Gln Thr Arg Phe Tyr Thr Gly
85 90 95

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

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

Leu Tyr Arg Asp Ala Tyr Leu Phe Leu Leu Cys Leu Val Ala Val Ala
130 135 140

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

Gln Val Gly Val Ile Ile Ile Glu Ser Leu Asp Ile Ile Thr Ile Thr
165 170 175

Val Pro Pro Ala Leu Pro Ala Ala Met Thr Ala Gly Ile Val Tyr Ala
180 185 190

Gln Arg Arg Leu Lys Lys Ile Gly Ile Phe Cys Ile Ser Pro Gln Arg
195 200 205

```
Ile Asn Ile Cys Gly Gln Leu Asn Leu Val Cys Phe Asp Lys Thr Gly
    210                 215                 220

Thr Leu Thr Glu Asp Gly Leu Asp Leu Trp Gly Ile Gln Arg Val Glu
225                 230                 235                 240

Asn Ala Arg Phe Leu Ser Pro Glu Glu Asn Val Cys Asn Glu Met Leu
                245                 250                 255

Val Lys Ser Gln Phe Val Ala Cys Met Ala Thr Cys His Ser Leu Thr
            260                 265                 270

Lys Ile Glu Gly Val Leu Ser Gly Asp Pro Leu Asp Leu Lys Met Phe
        275                 280                 285

Glu Ala Ile Gly Trp Ile Leu Glu Glu Ala Thr Glu Glu Glu Thr Ala
    290                 295                 300

Leu His Asn Arg Ile Met Pro Thr Val Val Arg Pro Pro Lys Gln Leu
305                 310                 315                 320

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

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

Ser Ala Leu Gln Arg Met Ser Val Val Ala Arg Val Leu Gly Asp Arg
        355                 360                 365

Lys Met Asp Ala Tyr Met Lys Gly Ala Pro Glu Ala Ile Ala Gly Leu
    370                 375                 380

Cys Lys Pro Glu Thr Val Pro Val Asp Phe Gln Asn Val Leu Glu Asp
385                 390                 395                 400

Phe Thr Lys Gln Gly Phe Arg Val Ile Ala Leu Ala His Arg Lys Leu
                405                 410                 415

Glu Ser Lys Leu Thr Trp His Lys Val Gln Asn Ile Ser Arg Asp Ala
            420                 425                 430

Ile Glu Asn Asn Met Asp Phe Met Gly Leu Ile Ile Met Gln Asn Lys
```

435 440 445

Leu Lys Gln Glu Thr Pro Ala Val Leu Glu Asp Leu His Lys Ala Asn
450 455 460

Ile Arg Thr Val Met Val Thr Gly Asp Ser Met Leu Thr Ala Val Ser
465 470 475 480

Val Ala Arg Asp Cys Gly Met Ile Leu Pro Gln Asp Lys Val Ile Ile
485 490 495

Ala Glu Ala Leu Pro Pro Lys Asp Gly Lys Val Ala Lys Ile Asn Trp
500 505 510

His Tyr Ala Asp Ser Leu Thr Gln Cys Ser His Pro Ser Ala Ile Asp
515 520 525

Pro Glu Ala Ile Pro Val Lys Leu Val His Asp Ser Leu Glu Asp Leu
530 535 540

Gln Met Thr Arg Tyr His Phe Ala Met Asn Gly Lys Ser Phe Ser Val
545 550 555 560

Ile Leu Glu His Phe Gln Asp Leu Val Pro Lys Leu Met Leu His Gly
565 570 575

Thr Val Phe Ala Arg Met Ala Pro Asp Gln Lys Thr Gln Leu Ile Glu
580 585 590

Ala Leu Gln Asn Val Asp Tyr Phe Val Gly Met Cys Gly Asp Gly Ala
595 600 605

Asn Asp Cys Gly Ala Leu Lys Arg Ala His Gly Gly Ile Ser Leu Ser
610 615 620

Glu Leu Glu Ala Ser Val Ala Ser Pro Phe Thr Ser Lys Thr Pro Ser
625 630 635 640

Ile Ser Cys Val Pro Asn Leu Ile Arg Glu Gly Arg Ala Ala Leu Ile
645 650 655

Thr Ser Phe Cys Glu Leu Ala Leu Phe Ser Ile Val Thr Tyr Ser Leu
660 665 670

```
Asp His Phe Ile Ile Ser Ile Leu Ile Ser Asn Met Leu Val Leu Phe
        675                 680                 685


Phe Ser Asp Phe His Asn Cys Ala Phe Tyr Ser Leu Val
    690                 695                 700


<210> 7199
<211> 576
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1535; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A4; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase type 13A4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q4VNC1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295548"

<400> 7199
Met Gly His Phe Glu Lys Gly Gln His Ala Leu Leu Asn Glu Gly Glu
1               5                   10                  15


Glu Asn Glu Met Glu Ile Phe Gly Tyr Arg Thr Gln Gly Cys Arg Lys
            20                  25                  30


Ser Leu Cys Leu Ala Gly Ser Ile Phe Ser Phe Gly Ile Leu Pro Leu
        35                  40                  45


Val Phe Tyr Trp Arg Pro Ala Trp His Val Trp Ala His Cys Val Pro
    50                  55                  60


Cys Ser Leu Gln Glu Ala Asp Thr Val Leu Leu Arg Thr Thr Asp Glu
65                  70                  75                  80
```

```
Phe Gln Ile Tyr Ser Trp Lys Lys Val Ile Trp Ile Tyr Leu Ser Ala
                85                  90                  95

Leu Asn Ser Ala Phe Gly Leu Thr Pro Asp His Pro Leu Met Thr Asp
            100                 105                 110

Glu Glu Tyr Ile Ile Asn Arg Ala Ile Arg Lys Pro Asp Leu Lys Val
        115                 120                 125

Arg Cys Ile Lys Val Gln Lys Ile Arg Tyr Val Trp Asn Tyr Leu Glu
    130                 135                 140

Gly Gln Phe Gln Lys Ile Gly Ser Leu Glu Asp Trp Leu Ser Ser Ala
145                 150                 155                 160

Lys Ile His Gln Lys Phe Gly Ser Gly Leu Thr Arg Glu Glu Gln Glu
                165                 170                 175

Ile Arg Arg Leu Ile Cys Gly Pro Asn Thr Ile Asp Val Glu Val Thr
            180                 185                 190

Pro Ile Trp Lys Leu Leu Ile Lys Glu Val Leu Asn Pro Phe Tyr Ile
        195                 200                 205

Phe Gln Leu Phe Ser Val Cys Leu Trp Phe Ser Glu Asp Tyr Lys Glu
    210                 215                 220

Tyr Ala Phe Ala Ile Ile Ile Met Ser Ile Ile Ser Ile Ser Leu Thr
225                 230                 235                 240

Val Tyr Asp Leu Arg Glu Gln Ser Val Lys Leu His His Leu Val Glu
                245                 250                 255

Ser His Asn Ser Ile Thr Val Ser Val Cys Gly Arg Lys Ala Gly Val
            260                 265                 270

Gln Glu Leu Glu Ser Arg Val Leu Val Pro Gly Asp Leu Leu Ile Leu
        275                 280                 285

Thr Gly Asn Lys Val Leu Met Pro Cys Asp Ala Val Leu Ile Glu Gly
    290                 295                 300

Ser Cys Val Val Asp Glu Gly Met Leu Thr Gly Glu Ser Ile Pro Val
```

305 310 315 320

Thr Lys Thr Pro Leu Pro Lys Met Asp Ser Ser Val Pro Trp Lys Thr
325 330 335

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

Val Ile Gln Ala Lys Ala Ala Cys Ser Gly Thr Val Arg Ala Val Val
355 360 365

Leu Gln Thr Gly Phe Asn Thr Ala Lys Gly Asp Leu Val Arg Ser Ile
370 375 380

Leu Tyr Pro Lys Pro Val Asn Phe Gln Leu Tyr Arg Asp Ala Ile Arg
385 390 395 400

Phe Leu Leu Cys Leu Val Gly Thr Ala Thr Ile Gly Met Ile Tyr Thr
405 410 415

Leu Cys Val Tyr Val Leu Ser Gly Glu Pro Pro Glu Glu Val Val Arg
420 425 430

Lys Ala Leu Asp Val Ile Thr Ile Ala Val Pro Pro Ala Leu Pro Ala
435 440 445

Ala Leu Thr Thr Gly Ile Ile Tyr Ala Gln Arg Arg Leu Lys Lys Arg
450 455 460

Gly Ile Phe Cys Ile Ser Pro Gln Arg Ile Asn Val Cys Gly Gln Leu
465 470 475 480

Asn Leu Val Cys Phe Asp Lys Thr Gly Thr Leu Thr Arg Asp Gly Leu
485 490 495

Asp Leu Trp Gly Val Val Ser Cys Asp Arg Asn Gly Phe Gln Glu Val
500 505 510

His Ser Phe Ala Ser Gly Gln Ala Leu Pro Trp Gly Pro Leu Cys Ala
515 520 525

Ala Met Ala Ser Cys His Ser Leu Ile Leu Leu Asp Gly Thr Ile Gln
530 535 540

```
Gly Asp Pro Leu Asp Leu Lys Met Phe Glu Ala Thr Thr Trp Val Ser
545                 550                 555                 560


Leu Cys Ser Ser Glu Asn Leu Arg Ser Phe Phe Asn Ala Arg Ala Thr
                565                 570                 575


<210> 7200
<211> 1196
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1535; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A4; "

<220>
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<223> /note="Gene Name:
      ATPase type 13A4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q4VNC1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339182"

<400> 7200
Met Gly His Phe Glu Lys Gly Gln His Ala Leu Leu Asn Glu Gly Glu
1               5                   10                  15


Glu Asn Glu Met Glu Ile Phe Gly Tyr Arg Thr Gln Gly Cys Arg Lys
            20                  25                  30


Ser Leu Cys Leu Ala Gly Ser Ile Phe Ser Phe Gly Ile Leu Pro Leu
        35                  40                  45


Val Phe Tyr Trp Arg Pro Ala Trp His Val Trp Ala His Cys Val Pro
    50                  55                  60


Cys Ser Leu Gln Glu Ala Asp Thr Val Leu Leu Arg Thr Thr Asp Glu
65                  70                  75                  80
```

```
Phe Gln Ile Tyr Ser Trp Lys Lys Val Ile Trp Ile Tyr Leu Ser Ala
                85                  90                  95

Leu Asn Ser Ala Phe Gly Leu Thr Pro Asp His Pro Leu Met Thr Asp
            100                 105                 110

Glu Glu Tyr Ile Ile Asn Arg Ala Ile Arg Lys Pro Asp Leu Lys Val
        115                 120                 125

Arg Cys Ile Lys Val Gln Lys Ile Arg Tyr Val Trp Asn Tyr Leu Glu
    130                 135                 140

Gly Gln Phe Gln Lys Ile Gly Ser Leu Glu Asp Trp Leu Ser Ser Ala
145                 150                 155                 160

Lys Ile His Gln Lys Phe Gly Ser Gly Leu Thr Arg Glu Glu Gln Glu
                165                 170                 175

Ile Arg Arg Leu Ile Cys Gly Pro Asn Thr Ile Asp Val Glu Val Thr
            180                 185                 190

Pro Ile Trp Lys Leu Leu Ile Lys Glu Val Leu Asn Pro Phe Tyr Ile
        195                 200                 205

Phe Gln Leu Phe Ser Val Cys Leu Trp Phe Ser Glu Asp Tyr Lys Glu
    210                 215                 220

Tyr Ala Phe Ala Ile Ile Ile Met Ser Ile Ile Ser Ile Ser Leu Thr
225                 230                 235                 240

Val Tyr Asp Leu Arg Glu Gln Ser Val Lys Leu His His Leu Val Glu
                245                 250                 255

Ser His Asn Ser Ile Thr Val Ser Val Cys Gly Arg Lys Ala Gly Val
            260                 265                 270

Gln Glu Leu Glu Ser Arg Val Leu Val Pro Gly Asp Leu Leu Ile Leu
        275                 280                 285

Thr Gly Asn Lys Val Leu Met Pro Cys Asp Ala Val Leu Ile Glu Gly
    290                 295                 300

Ser Cys Val Val Asp Glu Gly Met Leu Thr Gly Glu Ser Ile Pro Val
```

305 310 315 320

Thr Lys Thr Pro Leu Pro Lys Met Asp Ser Ser Val Pro Trp Lys Thr
325 330 335

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

Val Ile Gln Ala Lys Ala Ala Cys Ser Gly Thr Val Arg Ala Val Val
355 360 365

Leu Gln Thr Gly Phe Asn Thr Ala Lys Gly Asp Leu Val Arg Ser Ile
370 375 380

Leu Tyr Pro Lys Pro Val Asn Phe Gln Leu Tyr Arg Asp Ala Ile Arg
385 390 395 400

Phe Leu Leu Cys Leu Val Gly Thr Ala Thr Ile Gly Met Ile Tyr Thr
405 410 415

Leu Cys Val Tyr Val Leu Ser Gly Glu Pro Pro Glu Glu Val Val Arg
420 425 430

Lys Ala Leu Asp Val Ile Thr Ile Ala Val Pro Pro Ala Leu Pro Ala
435 440 445

Ala Leu Thr Thr Gly Ile Ile Tyr Ala Gln Arg Arg Leu Lys Lys Arg
450 455 460

Gly Ile Phe Cys Ile Ser Pro Gln Arg Ile Asn Val Cys Gly Gln Leu
465 470 475 480

Asn Leu Val Cys Phe Asp Lys Thr Gly Thr Leu Thr Arg Asp Gly Leu
485 490 495

Asp Leu Trp Gly Val Val Ser Cys Asp Arg Asn Gly Phe Gln Glu Val
500 505 510

His Ser Phe Ala Ser Gly Gln Ala Leu Pro Trp Gly Pro Leu Cys Ala
515 520 525

Ala Met Ala Ser Cys His Ser Leu Ile Leu Leu Asp Gly Thr Ile Gln
530 535 540

```
Gly Asp Pro Leu Asp Leu Lys Met Phe Glu Ala Thr Thr Trp Glu Met
545                 550                 555                 560

Ala Phe Ser Gly Asp Asp Phe His Ile Lys Gly Val Pro Ala His Ala
                565                 570                 575

Met Val Val Lys Pro Cys Arg Thr Ala Ser Gln Val Pro Val Glu Gly
            580                 585                 590

Ile Ala Ile Leu His Gln Phe Pro Phe Ser Ser Ala Leu Gln Arg Met
        595                 600                 605

Thr Val Ile Val Gln Glu Met Gly Gly Asp Arg Leu Ala Phe Met Lys
    610                 615                 620

Gly Ala Pro Glu Arg Val Ala Ser Phe Cys Gln Pro Glu Thr Val Pro
625                 630                 635                 640

Thr Ser Phe Val Ser Glu Leu Gln Ile Tyr Thr Thr Gln Gly Phe Arg
                645                 650                 655

Val Ile Ala Leu Ala Tyr Lys Lys Leu Glu Asn Asp His His Ala Thr
            660                 665                 670

Thr Leu Thr Arg Glu Thr Val Glu Ser Asp Leu Ile Phe Leu Gly Leu
        675                 680                 685

Leu Ile Leu Glu Asn Arg Leu Lys Glu Glu Thr Lys Pro Val Leu Glu
    690                 695                 700

Glu Leu Ile Ser Ala Arg Ile Arg Thr Val Met Ile Thr Gly Asp Asn
705                 710                 715                 720

Leu Gln Thr Ala Ile Thr Val Ala Arg Lys Ser Gly Met Val Ser Glu
                725                 730                 735

Ser Gln Lys Val Ile Leu Ile Glu Ala Asn Glu Thr Thr Gly Ser Ser
            740                 745                 750

Ser Ala Ser Ile Ser Trp Thr Leu Val Glu Glu Lys Lys His Ile Met
        755                 760                 765
```

```
Tyr Gly Asn Gln Asp Asn Tyr Ile Asn Ile Arg Asp Glu Val Ser Asp
    770                 775                 780

Lys Gly Arg Glu Gly Ser Tyr His Phe Ala Leu Thr Gly Lys Ser Phe
785                 790                 795                 800

His Val Ile Ser Gln His Phe Ser Ser Leu Leu Pro Lys Ile Leu Ile
                805                 810                 815

Asn Gly Thr Ile Phe Ala Arg Met Ser Pro Gly Gln Lys Ser Ser Leu
            820                 825                 830

Val Glu Glu Phe Gln Lys Leu Asp Tyr Phe Val Gly Met Cys Gly Asp
        835                 840                 845

Gly Ala Asn Asp Cys Gly Ala Leu Lys Met Ala His Val Gly Ile Ser
    850                 855                 860

Leu Ser Glu Gln Glu Ala Ser Val Ala Ser Pro Phe Thr Ser Lys Thr
865                 870                 875                 880

Pro Asn Ile Glu Cys Val Pro His Leu Ile Lys Glu Gly Arg Ala Ala
                885                 890                 895

Leu Val Thr Ser Phe Cys Met Phe Lys Tyr Met Ala Leu Tyr Ser Met
            900                 905                 910

Ile Gln Tyr Val Gly Val Leu Leu Leu Tyr Trp Glu Thr Asn Ser Leu
        915                 920                 925

Ser Asn Tyr Gln Phe Leu Phe Gln Asp Leu Ala Ile Thr Thr Leu Ile
    930                 935                 940

Gly Val Thr Met Asn Leu Asn Gly Ala Tyr Pro Lys Leu Val Pro Phe
945                 950                 955                 960

Arg Pro Ala Gly Arg Leu Ile Ser Pro Pro Leu Leu Leu Ser Val Ile
                965                 970                 975

Phe Asn Ile Leu Leu Ser Leu Ala Met His Ile Ala Gly Phe Ile Leu
            980                 985                 990
```

Val Gln Arg Gln Pro Trp Tyr Ser Val Glu Ile His Ser Ala Cys Thr
995 1000 1005

Val Gln Asn Glu Ser Ile Ser Glu Leu Thr Met Ser Pro Thr Ala
1010 1015 1020

Pro Glu Lys Met Glu Ser Asn Ser Thr Phe Thr Ser Phe Glu Asn
1025 1030 1035

Thr Thr Val Trp Phe Leu Gly Thr Ile Asn Cys Ile Thr Val Ala
1040 1045 1050

Leu Val Phe Ser Lys Gly Lys Pro Phe Arg Gln Pro Thr Tyr Thr
1055 1060 1065

Asn Tyr Ile Phe Val Leu Val Leu Ile Ile Gln Leu Gly Val Cys
1070 1075 1080

Leu Phe Ile Leu Phe Ala Asp Ile Pro Glu Leu Tyr Arg Arg Leu
1085 1090 1095

Asp Leu Leu Cys Thr Pro Val Leu Trp Arg Ala Ser Ile Val Ile
1100 1105 1110

Met Leu Ser Leu Asn Phe Ile Val Ser Leu Val Ala Glu Glu Ala
1115 1120 1125

Val Ile Glu Asn Arg Ala Leu Trp Met Met Ile Lys Arg Cys Phe
1130 1135 1140

Gly Tyr Gln Ser Lys Ser Gln Tyr Arg Ile Trp Gln Arg Asp Leu
1145 1150 1155

Ala Asn Asp Pro Ser Trp Pro Pro Leu Asn Gln Thr Ser His Ser
1160 1165 1170

Asp Met Pro Glu Cys Gly Arg Gly Val Ser Tyr Ser Asn Pro Val
1175 1180 1185

Phe Glu Ser Asn Glu Glu Gln Leu
1190 1195

<210> 7201
<211> 1177
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ATPase type 13A4; "

<220>
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Met Gly His Phe Glu Lys Gly Gln His Ala Leu Leu Asn Glu Gly Glu
1 5 10 15

Glu Asn Glu Met Glu Ile Phe Gly Tyr Arg Thr Gln Gly Cys Arg Lys
20 25 30

Ser Leu Cys Leu Ala Gly Ser Ile Phe Ser Phe Gly Ile Leu Pro Leu
35 40 45

Val Phe Tyr Trp Arg Pro Ala Trp His Val Trp Ala His Cys Val Pro
50 55 60

Cys Ser Leu Gln Glu Ala Asp Thr Val Leu Leu Arg Thr Thr Asp Glu
65 70 75 80

Phe Gln Ile Tyr Ser Trp Lys Lys Val Ile Trp Ile Tyr Leu Ser Ala
85 90 95

Leu Asn Ser Ala Phe Gly Leu Thr Pro Asp His Pro Leu Met Thr Asp
100 105 110

Glu Glu Tyr Ile Ile Asn Arg Ala Ile Arg Lys Pro Asp Leu Lys Val
115 120 125

Arg Cys Ile Lys Val Gln Lys Ile Arg Tyr Val Trp Asn Tyr Leu Glu
130 135 140

```
Gly Gln Phe Gln Lys Ile Gly Ser Leu Glu Asp Trp Leu Ser Ser Ala
145                 150                 155                 160

Lys Ile His Gln Lys Phe Gly Ser Gly Leu Thr Arg Glu Glu Gln Glu
                165                 170                 175

Ile Arg Arg Leu Ile Cys Gly Pro Asn Thr Ile Asp Val Glu Val Thr
            180                 185                 190

Pro Ile Trp Lys Leu Leu Ile Lys Glu Val Leu Asn Pro Phe Tyr Ile
        195                 200                 205

Phe Gln Leu Phe Ser Val Cys Leu Trp Phe Ser Glu Asp Tyr Lys Glu
    210                 215                 220

Tyr Ala Phe Ala Ile Ile Ile Met Ser Ile Ile Ser Ile Ser Leu Thr
225                 230                 235                 240

Val Tyr Asp Leu Arg Glu Gln Ser Val Lys Leu His His Leu Val Glu
                245                 250                 255

Ser His Asn Ser Ile Thr Val Ser Val Cys Gly Arg Lys Ala Gly Val
            260                 265                 270

Gln Glu Leu Glu Ser Arg Val Leu Val Pro Gly Asp Leu Leu Ile Leu
        275                 280                 285

Thr Gly Asn Lys Val Leu Met Pro Cys Asp Ala Val Leu Ile Glu Gly
    290                 295                 300

Ser Cys Val Val Asp Glu Gly Met Leu Thr Gly Glu Ser Ile Pro Val
305                 310                 315                 320

Thr Lys Thr Pro Leu Pro Lys Met Asp Ser Ser Val Pro Trp Lys Thr
                325                 330                 335

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

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

Leu Tyr Pro Lys Pro Val Asn Phe Gln Leu Tyr Arg Asp Ala Ile Arg
385                 390                 395                 400

Phe Leu Leu Cys Leu Glu Pro Pro Glu Glu Val Val Arg Lys Ala Leu
                405                 410                 415

Asp Val Ile Thr Ile Ala Val Pro Pro Ala Leu Pro Ala Ala Leu Thr
            420                 425                 430

Thr Gly Ile Ile Tyr Ala Gln Arg Arg Leu Lys Lys Arg Gly Ile Phe
        435                 440                 445

Cys Ile Ser Pro Gln Arg Ile Asn Val Cys Gly Gln Leu Asn Leu Val
    450                 455                 460

Cys Phe Asp Lys Thr Gly Thr Leu Thr Arg Asp Gly Leu Asp Leu Trp
465                 470                 475                 480

Gly Val Val Ser Cys Asp Arg Asn Gly Phe Gln Glu Val His Ser Phe
                485                 490                 495

Ala Ser Gly Gln Ala Leu Pro Trp Gly Pro Leu Cys Ala Ala Met Ala
            500                 505                 510

Ser Cys His Ser Leu Ile Leu Leu Asp Gly Thr Ile Gln Gly Asp Pro
        515                 520                 525

Leu Asp Leu Lys Met Phe Glu Ala Thr Thr Trp Glu Met Ala Phe Ser
    530                 535                 540

Gly Asp Asp Phe His Ile Lys Gly Val Pro Ala His Ala Met Val Val
545                 550                 555                 560

Lys Pro Cys Arg Thr Ala Ser Gln Val Pro Val Glu Gly Ile Ala Ile
                565                 570                 575

Leu His Gln Phe Pro Phe Ser Ser Ala Leu Gln Arg Met Thr Val Ile
            580                 585                 590
```

```
Val Gln Glu Met Gly Gly Asp Arg Leu Ala Phe Met Lys Gly Ala Pro
        595                 600                 605

Glu Arg Val Ala Ser Phe Cys Gln Pro Glu Thr Val Pro Thr Ser Phe
    610                 615                 620

Val Ser Glu Leu Gln Ile Tyr Thr Thr Gln Gly Phe Arg Val Ile Ala
625                 630                 635                 640

Leu Ala Tyr Lys Lys Leu Glu Asn Asp His His Ala Thr Thr Leu Thr
                645                 650                 655

Arg Glu Thr Val Glu Ser Asp Leu Ile Phe Leu Gly Leu Leu Ile Leu
            660                 665                 670

Glu Asn Arg Leu Lys Glu Glu Thr Lys Pro Val Leu Glu Glu Leu Ile
        675                 680                 685

Ser Ala Arg Ile Arg Thr Val Met Ile Thr Gly Asp Asn Leu Gln Thr
    690                 695                 700

Ala Ile Thr Val Ala Arg Lys Ser Gly Met Val Ser Glu Ser Gln Lys
705                 710                 715                 720

Val Ile Leu Ile Glu Ala Asn Glu Thr Thr Gly Ser Ser Ser Ala Ser
                725                 730                 735

Ile Ser Trp Thr Leu Val Glu Glu Lys Lys His Ile Met Tyr Gly Asn
            740                 745                 750

Gln Asp Asn Tyr Ile Asn Ile Arg Asp Glu Val Ser Asp Lys Gly Arg
        755                 760                 765

Glu Gly Ser Tyr His Phe Ala Leu Thr Gly Lys Ser Phe His Val Ile
    770                 775                 780

Ser Gln His Phe Ser Ser Leu Leu Pro Lys Ile Leu Ile Asn Gly Thr
785                 790                 795                 800

Ile Phe Ala Arg Met Ser Pro Gly Gln Lys Ser Ser Leu Val Glu Glu
                805                 810                 815

Phe Gln Lys Leu Asp Tyr Phe Val Gly Met Cys Gly Asp Gly Ala Asn
```

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            820                 825                 830

Asp Cys Gly Ala Leu Lys Met Ala His Val Gly Ile Ser Leu Ser Glu
        835                 840                 845

Gln Glu Ala Ser Val Ala Ser Pro Phe Thr Ser Lys Thr Pro Asn Ile
    850                 855                 860

Glu Cys Val Pro His Leu Ile Lys Glu Gly Arg Ala Ala Leu Val Thr
865                 870                 875                 880

Ser Phe Cys Met Phe Lys Tyr Met Ala Leu Tyr Ser Met Ile Gln Tyr
                885                 890                 895

Val Gly Val Leu Leu Leu Tyr Trp Glu Thr Asn Ser Leu Ser Asn Tyr
            900                 905                 910

Gln Phe Leu Phe Gln Asp Leu Ala Ile Thr Thr Leu Ile Gly Val Thr
        915                 920                 925

Met Asn Leu Asn Gly Ala Tyr Pro Lys Leu Val Pro Phe Arg Pro Ala
    930                 935                 940

Gly Arg Leu Ile Ser Pro Pro Leu Leu Leu Ser Val Ile Phe Asn Ile
945                 950                 955                 960

Leu Leu Ser Leu Ala Met His Ile Ala Gly Phe Ile Leu Val Gln Arg
                965                 970                 975

Gln Pro Trp Tyr Ser Val Glu Ile His Ser Ala Cys Thr Val Gln Asn
            980                 985                 990

Glu Ser Ile Ser Glu Leu Thr Met  Ser Pro Thr Ala Pro  Glu Lys
Met
        995                 1000                1005

Glu Ser  Asn Ser Thr Phe Thr  Ser Phe Glu Asn Thr  Thr Val Trp
    1010                1015                1020

Phe Leu  Gly Thr Ile Asn Cys  Ile Thr Val Ala Leu  Val Phe Ser
    1025                1030                1035

Lys Gly  Lys Pro Phe Arg Gln  Pro Thr Tyr Thr Asn  Tyr Ile Phe
```

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    1040                1045                1050

Val Leu  Val Leu Ile Ile Gln  Leu Gly Val Cys Leu  Phe Ile Leu
    1055                1060                1065

Phe Ala  Asp Ile Pro Glu Leu  Tyr Arg Arg Leu Asp  Leu Leu Cys
    1070                1075                1080

Thr Pro  Val Leu Trp Arg Ala  Ser Ile Val Ile Met  Leu Ser Leu
    1085                1090                1095

Asn Phe  Ile Val Ser Leu Val  Ala Glu Glu Ala Val  Ile Glu Asn
    1100                1105                1110

Arg Ala  Leu Trp Met Met Ile  Lys Arg Cys Phe Gly  Tyr Gln Ser
    1115                1120                1125

Lys Ser  Gln Tyr Arg Ile Trp  Gln Arg Asp Leu Ala  Asn Asp Pro
    1130                1135                1140

Ser Trp  Pro Pro Leu Asn Gln  Thr Ser His Ser Asp  Met Pro Glu
    1145                1150                1155

Cys Gly  Arg Gly Val Ser Tyr  Ser Asn Pro Val Phe  Glu Ser Asn
    1160                1165                1170

Glu Glu  Gln Leu
    1175


<210> 7202
<211> 212
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1535; "

<220>
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<223> /note="Gene Symbol: ATP13A4; "

<220>
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<223> /note="Gene Name:
      ATPase type 13A4; "
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<220>
<221> source
<223> /note="Uniprot ID: Q4VNC1; "

<220>
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<223> /note="ENSP ID: ENSP00000383129"

<400> 7202
Met His Ile Ala Gly Phe Ile Leu Val Gln Arg Gln Pro Trp Tyr Ser
1   5   10   15

Val Glu Ile His Ser Ala Cys Thr Val Gln Asn Glu Ser Ile Ser Glu
            20   25   30

Leu Thr Met Ser Pro Thr Ala Pro Glu Lys Met Glu Ser Asn Ser Thr
        35   40   45

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

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

Pro Thr Tyr Thr Asn Tyr Ile Phe Val Leu Val Leu Ile Ile Gln Leu
                85   90   95

Gly Val Cys Leu Phe Ile Leu Phe Ala Asp Ile Pro Glu Leu Tyr Arg
            100   105   110

Arg Leu Asp Leu Leu Cys Thr Pro Val Leu Trp Arg Ala Ser Ile Val
        115   120   125

Ile Met Leu Ser Leu Asn Phe Ile Val Ser Leu Val Ala Glu Glu Ala
    130   135   140

Val Ile Glu Asn Arg Ala Leu Trp Met Met Ile Lys Arg Cys Phe Gly
145   150   155   160

Tyr Gln Ser Lys Ser Gln Tyr Arg Ile Trp Gln Arg Asp Leu Ala Asn
                165   170   175

Asp Pro Ser Trp Pro Pro Leu Asn Gln Thr Ser His Ser Asp Met Pro
            180   185   190

Glu Cys Gly Arg Gly Val Ser Tyr Ser Asn Pro Val Phe Glu Ser Asn
195 200 205

Glu Glu Gln Leu
210

<210> 7203
<211> 576
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000395367"

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

<400> 7203
Xaa Gly Thr Val Arg Ala Val Val Leu Gln Thr Gly Phe Asn Thr Ala
1 5 10 15

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

Gln Leu Tyr Arg Asp Ala Ile Arg Phe Leu Leu Cys Leu Val Gly Thr
35 40 45

Ala Thr Ile Gly Met Ile Tyr Thr Leu Cys Val Tyr Val Leu Ser Gly
50 55 60

Glu Pro Pro Glu Glu Val Val Arg Lys Ala Leu Asp Val Ile Thr Ile
65 70 75 80

```
Ala Val Pro Pro Ala Leu Pro Ala Ala Leu Thr Thr Gly Ile Ile Tyr
                85                  90                  95

Ala Gln Arg Arg Leu Lys Lys Arg Gly Ile Phe Cys Ile Ser Pro Gln
            100                 105                 110

Arg Ile Asn Val Cys Gly Gln Leu Asn Leu Val Cys Phe Asp Lys Thr
        115                 120                 125

Gly Thr Leu Thr Arg Asp Gly Leu Asp Leu Trp Gly Val Val Ser Cys
    130                 135                 140

Asp Arg Asn Gly Phe Gln Glu Val His Ser Phe Ala Ser Gly Gln Ala
145                 150                 155                 160

Leu Pro Trp Gly Pro Leu Cys Ala Ala Met Ala Ser Cys His Ser Leu
                165                 170                 175

Ile Leu Leu Asp Gly Thr Ile Gln Gly Asp Pro Leu Asp Leu Lys Met
            180                 185                 190

Phe Glu Ala Thr Thr Trp Glu Met Ala Phe Ser Gly Asp Asp Phe His
        195                 200                 205

Ile Lys Gly Val Pro Ala His Ala Met Val Val Lys Pro Cys Arg Thr
    210                 215                 220

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

Phe Ser Ser Ala Leu Gln Arg Met Thr Val Ile Val Gln Glu Met Gly
                245                 250                 255

Gly Asp Arg Leu Ala Phe Met Lys Gly Ala Pro Glu Arg Val Ala Ser
            260                 265                 270

Phe Cys Gln Pro Glu Thr Val Pro Thr Ser Phe Val Ser Glu Leu Gln
        275                 280                 285

Ile Tyr Thr Thr Gln Gly Phe Arg Val Ile Ala Leu Ala Tyr Lys Lys
    290                 295                 300

Leu Glu Asn Asp His His Ala Thr Thr Leu Thr Arg Glu Thr Val Glu
```

```
305                 310                 315                 320

Ser Asp Leu Ile Phe Leu Gly Leu Leu Ile Leu Glu Asn Arg Leu Lys
                325                 330                 335

Glu Glu Thr Lys Pro Val Leu Glu Glu Leu Ile Ser Ala Arg Ile Arg
            340                 345                 350

Thr Val Met Ile Thr Gly Asp Asn Leu Gln Thr Ala Ile Thr Val Ala
        355                 360                 365

Arg Lys Ser Gly Met Val Ser Glu Ser Gln Lys Val Ile Leu Ile Glu
    370                 375                 380

Ala Asn Glu Thr Thr Gly Ser Ser Ser Ala Ser Ile Ser Trp Thr Leu
385                 390                 395                 400

Val Glu Glu Lys Lys His Ile Met Tyr Gly Asn Gln Asp Asn Tyr Ile
                405                 410                 415

Asn Ile Arg Asp Glu Val Ser Asp Lys Gly Arg Glu Gly Ser Tyr His
            420                 425                 430

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

Ser Leu Leu Pro Lys Ile Leu Ile Asn Gly Thr Ile Phe Ala Arg Met
    450                 455                 460

Ser Pro Gly Gln Lys Ser Ser Leu Val Glu Glu Phe Gln Lys Leu Asp
465                 470                 475                 480

Tyr Phe Val Gly Met Cys Gly Asp Gly Ala Asn Asp Cys Gly Ala Leu
                485                 490                 495

Lys Met Ala His Val Gly Ile Ser Leu Ser Glu Gln Glu Ala Ser Val
            500                 505                 510

Ala Ser Pro Phe Thr Ser Lys Thr Pro Asn Ile Glu Cys Val Pro His
        515                 520                 525

Leu Ile Lys Glu Gly Arg Ala Ala Leu Val Thr Ser Phe Cys Met Phe
    530                 535                 540
```

```
Lys Tyr Met Ala Leu Tyr Ser Met Ile Gln Arg Gln Thr Ala Phe Gln
545                 550                 555                 560


Ile Thr Ser Phe Cys Ser Arg Ile Trp Pro Leu Gln Leu Leu Leu Val
                565                 570                 575


<210> 7204
<211> 122
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1535; "

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<221> source
<223> /note="ENSP ID: ENSP00000401481"


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

<400> 7204
Xaa Asn Leu Gln Thr Ala Ile Thr Val Ala Arg Lys Ser Gly Met Val
1               5                   10                  15


Ser Glu Ser Gln Lys Val Ile Leu Ile Glu Ala Asn Glu Thr Thr Gly
            20                  25                  30


Ser Ser Ser Ala Ser Ile Ser Trp Thr Leu Val Glu Glu Lys Lys His
        35                  40                  45


Ile Met Tyr Gly Asn Gln Asp Asn Tyr Ile Asn Ile Arg Asp Glu Val
    50                  55                  60


Ser Asp Lys Gly Arg Glu Gly Ser Tyr His Phe Ala Leu Thr Gly Lys
65                  70                  75                  80
```

Ser Phe His Val Ile Ser Gln His Phe Ser Ser Leu Leu Pro Lys Ile
85 90 95

Leu Ile Asn Gly Thr Ile Phe Ala Arg Met Ser Pro Gly Gln Lys Ser
100 105 110

Ser Leu Val Glu Glu Phe Gln Lys Leu Glu
115 120

<210> 7205
<211> 83
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1535; "

<220>
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<220>
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<223> /note="Gene Name:
ATPase type 13A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402023"

<400> 7205
Met Gly His Phe Glu Lys Gly Gln His Ala Leu Leu Asn Glu Gly Glu
1 5 10 15

Glu Asn Glu Met Glu Ile Phe Gly Tyr Arg Thr Gln Gly Cys Arg Lys
20 25 30

Ser Leu Cys Leu Ala Gly Ser Ile Phe Ser Phe Gly Ile Leu Pro Leu
35 40 45

Val Phe Tyr Trp Arg Pro Ala Trp His Val Trp Ala His Cys Val Pro
50 55 60

Cys Ser Leu Gln Glu Ala Asp Thr Val Leu Leu Arg Thr Thr Met Arg
65 70 75 80

Ser Ile Ser

<210> 7206
<211> 1218
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1536; "

<220>
<221> source
<223> /note="Gene Symbol: ATP13A5; "

<220>
<221> source
<223> /note="Gene Name:
ATPase type 13A5; "

<220>
<221> source
<223> /note="Uniprot ID: Q4VNC0; "

<220>
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<223> /note="ENSP ID: ENSP00000341942"

<400> 7206
Met Glu Glu Asn Ser Lys Lys Asp His Arg Ala Leu Leu Asn Gln Gly
1 5 10 15

Glu Glu Asp Glu Leu Glu Val Phe Gly Tyr Arg Asp His Asn Val Arg
20 25 30

Lys Ala Phe Cys Leu Val Ala Ser Val Leu Thr Cys Gly Gly Leu Leu
35 40 45

Leu Val Phe Tyr Trp Arg Pro Gln Trp Arg Val Trp Ala Asn Cys Ile
50 55 60

Pro Cys Pro Leu Gln Glu Ala Asp Thr Val Leu Leu Arg Thr Thr Asp
65 70 75 80

Glu Phe Gln Arg Tyr Met Arg Lys Lys Val Phe Cys Leu Tyr Leu Ser
85 90 95

Thr Leu Lys Phe Pro Val Ser Lys Lys Trp Glu Glu Ser Leu Val Ala
100 105 110

```
Asp Arg His Ser Val Ile Asn Gln Ala Leu Ile Lys Pro Glu Leu Lys
        115                 120                 125

Leu Arg Cys Met Glu Val Gln Lys Ile Arg Tyr Val Trp Asn Asp Leu
    130                 135                 140

Glu Lys Arg Phe Gln Lys Val Gly Leu Leu Glu Asp Ser Asn Ser Cys
145                 150                 155                 160

Ser Asp Ile His Gln Thr Phe Gly Leu Gly Leu Thr Ser Glu Glu Gln
                165                 170                 175

Glu Val Arg Arg Leu Val Cys Gly Pro Asn Ala Ile Glu Val Glu Ile
            180                 185                 190

Gln Pro Ile Trp Lys Leu Leu Val Lys Gln Val Leu Asn Pro Phe Tyr
        195                 200                 205

Val Phe Gln Ala Phe Thr Leu Thr Leu Trp Leu Ser Gln Gly Tyr Ile
    210                 215                 220

Glu Tyr Ser Val Ala Ile Ile Ile Leu Thr Val Ile Ser Ile Val Leu
225                 230                 235                 240

Ser Val Tyr Asp Leu Arg Gln Gln Ser Val Lys Leu His Asn Leu Val
                245                 250                 255

Glu Asp His Asn Lys Val Gln Val Thr Ile Ile Val Lys Asp Lys Gly
            260                 265                 270

Leu Glu Glu Leu Glu Ser Arg Leu Leu Val Pro Gly Asp Ile Leu Ile
        275                 280                 285

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

Ser Cys Val Val Asn Glu Gly Met Leu Thr Gly Glu Ser Ile Pro Val
305                 310                 315                 320

Thr Lys Thr Pro Leu Pro Gln Met Glu Asn Thr Met Pro Trp Lys Cys
                325                 330                 335
```

```
His Ser Leu Glu Asp Tyr Arg Lys His Val Leu Phe Cys Gly Thr Glu
            340                 345                 350

Val Ile Gln Val Lys Pro Ser Gly Gln Gly Pro Val Arg Ala Val Val
        355                 360                 365

Leu Gln Thr Gly Tyr Asn Thr Ala Lys Gly Asp Leu Val Arg Ser Ile
    370                 375                 380

Leu Tyr Pro Arg Pro Leu Asn Phe Lys Leu Tyr Ser Asp Ala Phe Lys
385                 390                 395                 400

Phe Ile Val Phe Leu Ala Cys Leu Gly Val Met Gly Phe Phe Tyr Ala
                405                 410                 415

Leu Gly Val Tyr Met Tyr His Gly Val Pro Pro Lys Asp Thr Val Thr
            420                 425                 430

Met Ala Leu Ile Leu Leu Thr Val Thr Val Pro Pro Val Leu Pro Ala
        435                 440                 445

Ala Leu Thr Ile Gly Asn Val Tyr Ala Gln Lys Arg Leu Lys Lys Lys
    450                 455                 460

Lys Ile Phe Cys Ile Ser Pro Gln Arg Ile Asn Met Cys Gly Gln Ile
465                 470                 475                 480

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

Asp Leu Trp Gly Thr Val Pro Thr Ala Asp Asn Cys Phe Gln Glu Ala
            500                 505                 510

His Ser Phe Ala Ser Gly Gln Ala Val Pro Trp Ser Pro Leu Cys Ala
        515                 520                 525

Ala Met Ala Ser Cys His Ser Leu Ile Leu Leu Asn Gly Thr Ile Gln
    530                 535                 540

Gly Asp Pro Leu Asp Leu Lys Met Phe Glu Gly Thr Ala Trp Lys Met
545                 550                 555                 560
```

```
Glu Asp Cys Ile Val Asp Ser Cys Lys Phe Gly Thr Ser Val Ser Asn
                565                 570                 575

Ile Ile Lys Pro Gly Pro Lys Ala Ser Lys Ser Pro Val Glu Ala Ile
            580                 585                 590

Ile Thr Leu Cys Gln Phe Pro Phe Ser Ser Ser Leu Gln Arg Met Ser
        595                 600                 605

Val Ile Ala Gln Leu Ala Gly Glu Asn His Phe His Val Tyr Met Lys
    610                 615                 620

Gly Ala Pro Glu Met Val Ala Arg Phe Cys Arg Ser Glu Thr Val Pro
625                 630                 635                 640

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

Val Ile Ala Leu Ala His Lys Thr Leu Lys Met Gly Asn Leu Ser Glu
            660                 665                 670

Val Glu His Leu Ala Arg Glu Lys Val Glu Ser Glu Leu Thr Phe Leu
        675                 680                 685

Gly Leu Leu Ile Met Glu Asn Arg Leu Lys Lys Glu Thr Lys Leu Val
    690                 695                 700

Leu Lys Glu Leu Ser Glu Ala Arg Ile Arg Thr Val Met Ile Thr Gly
705                 710                 715                 720

Asp Asn Leu Gln Thr Ala Ile Thr Val Ala Lys Asn Ser Glu Met Ile
                725                 730                 735

Pro Pro Gly Ser Gln Val Ile Ile Val Glu Ala Asp Glu Pro Glu Glu
            740                 745                 750

Phe Val Pro Ala Ser Val Thr Trp Gln Leu Val Glu Asn Gln Glu Thr
        755                 760                 765

Gly Pro Gly Lys Lys Glu Ile Tyr Met His Thr Gly Asn Ser Ser Thr
    770                 775                 780

Pro Arg Gly Glu Gly Gly Ser Cys Tyr His Phe Ala Met Ser Gly Lys
```

785 790 795 800

Ser Tyr Gln Val Ile Phe Gln His Phe Asn Ser Leu Leu Pro Lys Ile
805 810 815

Leu Val Asn Gly Thr Val Phe Ala Arg Met Ser Pro Gly Gln Lys Ser
820 825 830

Ser Leu Ile Glu Glu Phe Gln Lys Leu Asn Tyr Tyr Val Gly Met Cys
835 840 845

Gly Asp Gly Ala Asn Asp Cys Gly Ala Leu Lys Ala Ala His Ala Gly
850 855 860

Ile Ser Leu Ser Glu Gln Glu Ala Ser Val Ala Ser Pro Phe Thr Ser
865 870 875 880

Lys Thr Thr Asn Ile Gln Cys Val Pro His Leu Ile Arg Glu Gly Arg
885 890 895

Ala Ala Leu Val Ser Ser Phe Gly Val Phe Lys Tyr Leu Thr Met Tyr
900 905 910

Gly Ile Ile Gln Phe Ile Ser Ala Leu Leu Leu Tyr Trp Gln Leu Gln
915 920 925

Leu Phe Gly Asn Tyr Gln Tyr Leu Met Gln Asp Val Ala Ile Thr Leu
930 935 940

Met Val Cys Leu Thr Met Ser Ser Thr His Ala Tyr Pro Lys Leu Ala
945 950 955 960

Pro Tyr Arg Pro Ala Gly Gln Leu Leu Ser Pro Pro Leu Leu Leu Ser
965 970 975

Ile Phe Leu Asn Ser Cys Phe Ser Cys Ile Val Gln Ile Ser Ala Phe
980 985 990

Leu Tyr Val Lys Gln Gln Pro Trp Tyr Cys Glu Val Tyr Gln Tyr
Ser
995 1000 1005

Glu Cys Phe Leu Ala Asn Gln Ser Asn Phe Ser Thr Asn Val Ser

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    1010                1015                1020

Leu Glu  Arg Asn Trp Thr Gly  Asn Ala Thr Leu Ile  Pro Gly Ser
    1025                1030                1035

Ile Leu  Ser Phe Glu Thr Thr  Thr Leu Trp Pro Ile  Thr Thr Ile
    1040                1045                1050

Asn Tyr  Ile Thr Val Ala Phe  Ile Phe Ser Lys Gly  Lys Pro Phe
    1055                1060                1065

Arg Lys  Pro Ile Tyr Thr Asn  Tyr Ile Phe Ser Phe  Leu Leu Leu
    1070                1075                1080

Ala Ala  Leu Gly Leu Thr Ile  Phe Ile Leu Phe Ser  Asp Phe Gln
    1085                1090                1095

Val Ile  Tyr Arg Gly Met Glu  Leu Ile Pro Thr Ile  Thr Ser Trp
    1100                1105                1110

Arg Val  Leu Ile Leu Val Val  Ala Leu Thr Gln Phe  Cys Val Ala
    1115                1120                1125

Phe Phe  Val Glu Asp Ser Ile  Leu Gln Asn His Glu  Leu Trp Leu
    1130                1135                1140

Leu Ile  Lys Arg Glu Phe Gly  Phe Tyr Ser Lys Ser  Gln Tyr Arg
    1145                1150                1155

Thr Trp  Gln Lys Lys Leu Ala  Glu Asp Ser Thr Trp  Pro Pro Ile
    1160                1165                1170

Asn Arg  Thr Asp Tyr Ser Gly  Asp Gly Lys Asn Gly  Phe Tyr Ile
    1175                1180                1185

Asn Gly  Gly Tyr Glu Ser His  Glu Gln Ile Pro Lys  Arg Lys Leu
    1190                1195                1200

Lys Leu  Gly Gly Gln Pro Thr  Glu Gln His Phe Trp  Ala Arg Leu
    1205                1210                1215
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<210> 7207
<211> 158

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP13A5; "

<220>
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<223> /note="Gene Name:
ATPase type 13A5; "

<220>
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<400> 7207
Met Glu Glu Asn Ser Lys Lys Asp His Arg Ala Leu Leu Asn Gln Gly
1 5 10 15

Glu Glu Asp Glu Leu Val Glu Ser Cys Pro Gly Trp Ser Glu Met Ala
20 25 30

Arg Ser Arg Leu Thr Ala Thr Ser Ala Ser Gln Glu Val Phe Gly Tyr
35 40 45

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

Thr Cys Gly Gly Leu Leu Leu Val Phe Tyr Trp Arg Pro Gln Trp Arg
65 70 75 80

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

Leu Leu Arg Thr Thr Asp Glu Phe Gln Arg Tyr Met Arg Lys Lys Val
100 105 110

Phe Cys Leu Tyr Leu Ser Thr Leu Lys Phe Pro Val Ser Lys Lys Trp
115 120 125

Glu Glu Ser Leu Val Ala Asp Arg His Ser Val Ile Asn Gln Ala Leu
130 135 140

```
Ile Lys Pro Glu Leu Lys Leu Arg Cys Met Glu Val Gln Lys
145                 150                 155


<210> 7208
<211> 114
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<400> 7208
Met Glu Leu Ile Pro Thr Ile Thr Ser Trp Arg Val Leu Ile Leu Val
1               5                   10                  15


Val Ala Leu Thr Gln Phe Cys Gly Phe Leu Cys Arg Gly Phe His Leu
            20                  25                  30


Gln Asn His Glu Leu Trp Leu Leu Ile Lys Arg Glu Phe Gly Phe Tyr
        35                  40                  45


Ser Lys Ser Gln Tyr Arg Thr Trp Gln Lys Lys Leu Ala Glu Asp Ser
    50                  55                  60


Thr Trp Pro Pro Ile Asn Arg Thr Asp Tyr Ser Gly Asp Gly Lys Asn
65                  70                  75                  80


Gly Phe Tyr Ile Asn Gly Gly Tyr Glu Ser His Glu Gln Ile Pro Lys
                85                  90                  95


Arg Lys Leu Lys Leu Gly Gly Gln Pro Thr Glu Gln His Phe Trp Ala
            100                 105                 110


Arg Leu
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<210> 7209
<211> 1149
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
ATPase, aminophospholipid transporter (APLT),
class I, type 8A, member 1; "

<220>
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<223> /note="Uniprot ID: Q9Y2Q0; "

<220>
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<223> /note="ENSP ID: ENSP00000264449"

<400> 7209

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Met Pro Thr Met Arg Arg Thr Val Ser Glu Ile Arg Ser Arg Ala Glu
1               5                  10                  15


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


Gln Glu Glu Val Arg Thr Ile Phe Ile Asn Gln Pro Gln Leu Thr Lys
        35                  40                  45


Phe Cys Asn Asn His Val Ser Thr Ala Lys Tyr Asn Ile Ile Thr Phe
    50                  55                  60


Leu Pro Arg Phe Leu Tyr Ser Gln Phe Arg Arg Ala Ala Asn Ser Phe
65                  70                  75                  80


Phe Leu Phe Ile Ala Leu Leu Gln Gln Ile Pro Asp Val Ser Pro Thr
                85                  90                  95


Gly Arg Tyr Thr Thr Leu Val Pro Leu Leu Phe Ile Leu Ala Val Ala
            100                 105                 110
```

```
Ala Ile Lys Glu Ile Ile Glu Asp Ile Lys Arg His Lys Ala Asp Asn
        115                 120                 125

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

Ile Val His Trp Glu Lys Val Asn Val Gly Asp Ile Val Ile Ile Lys
145                 150                 155                 160

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

Pro Gln Ala Met Cys Tyr Ile Glu Thr Ser Asn Leu Asp Gly Glu Thr
            180                 185                 190

Asn Leu Lys Ile Arg Gln Gly Leu Pro Ala Thr Ser Asp Ile Lys Asp
        195                 200                 205

Val Asp Ser Leu Met Arg Ile Ser Gly Arg Ile Glu Cys Glu Ser Pro
    210                 215                 220

Asn Arg His Leu Tyr Asp Phe Val Gly Asn Ile Arg Leu Asp Gly His
225                 230                 235                 240

Gly Thr Val Pro Leu Gly Ala Asp Gln Ile Leu Leu Arg Gly Ala Gln
                245                 250                 255

Leu Arg Asn Thr Gln Trp Val His Gly Ile Val Val Tyr Thr Gly His
            260                 265                 270

Asp Thr Lys Leu Met Gln Asn Ser Thr Ser Pro Pro Leu Lys Leu Ser
        275                 280                 285

Asn Val Glu Arg Ile Thr Asn Val Gln Ile Leu Ile Leu Phe Cys Ile
    290                 295                 300

Leu Ile Ala Met Ser Leu Val Cys Ser Val Gly Ser Ala Ile Trp Asn
305                 310                 315                 320

Arg Arg His Ser Gly Lys Asp Trp Tyr Leu Asn Leu Asn Tyr Gly Gly
                325                 330                 335
```

```
Ala Ser Asn Phe Gly Leu Asn Phe Leu Thr Phe Ile Ile Leu Phe Asn
            340                 345                 350

Asn Leu Ile Pro Ile Ser Leu Leu Val Thr Leu Glu Val Val Lys Phe
        355                 360                 365

Thr Gln Ala Tyr Phe Ile Asn Trp Asp Leu Asp Met His Tyr Glu Pro
    370                 375                 380

Thr Asp Thr Ala Ala Met Ala Arg Thr Ser Asn Leu Asn Glu Glu Leu
385                 390                 395                 400

Gly Gln Val Lys Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Cys
                405                 410                 415

Asn Val Met Gln Phe Lys Lys Cys Thr Ile Ala Gly Val Ala Tyr Gly
            420                 425                 430

Gln Asn Ser Gln Phe Gly Asp Glu Lys Thr Phe Ser Asp Ser Ser Leu
        435                 440                 445

Leu Glu Asn Leu Gln Asn Asn His Pro Thr Ala Pro Ile Ile Cys Glu
    450                 455                 460

Phe Leu Thr Met Met Ala Val Cys His Thr Ala Val Pro Glu Arg Glu
465                 470                 475                 480

Gly Asp Lys Ile Ile Tyr Gln Ala Ala Ser Pro Asp Glu Gly Ala Leu
                485                 490                 495

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

Asp Ser Val Ile Ile Asp Ser Leu Gly Gln Glu Glu Arg Tyr Glu Leu
        515                 520                 525

Leu Asn Val Leu Glu Phe Thr Ser Ala Arg Lys Arg Met Ser Val Ile
    530                 535                 540

Val Arg Thr Pro Ser Gly Lys Leu Arg Leu Tyr Cys Lys Gly Ala Asp
545                 550                 555                 560

Thr Val Ile Tyr Asp Arg Leu Ala Glu Thr Ser Lys Tyr Lys Glu Ile
```

565 570 575

Thr Leu Lys His Leu Glu Gln Phe Ala Thr Glu Gly Leu Arg Thr Leu
580 585 590

Cys Phe Ala Val Ala Glu Ile Ser Glu Ser Asp Phe Gln Glu Trp Arg
595 600 605

Ala Val Tyr Gln Arg Ala Ser Thr Ser Val Gln Asn Arg Leu Leu Lys
610 615 620

Leu Glu Glu Ser Tyr Glu Leu Ile Glu Lys Asn Leu Gln Leu Leu Gly
625 630 635 640

Ala Thr Ala Ile Glu Asp Lys Leu Gln Asp Gln Val Pro Glu Thr Ile
645 650 655

Glu Thr Leu Met Lys Ala Asp Ile Lys Ile Trp Ile Leu Thr Gly Asp
660 665 670

Lys Gln Glu Thr Ala Ile Asn Ile Gly His Ser Cys Lys Leu Leu Lys
675 680 685

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

Arg Glu Thr Leu Ser Arg His Cys Thr Thr Leu Gly Asp Ala Leu Arg
705 710 715 720

Lys Glu Asn Asp Phe Ala Leu Ile Ile Asp Gly Lys Thr Leu Lys Tyr
725 730 735

Ala Leu Thr Phe Gly Val Arg Gln Tyr Phe Leu Asp Leu Ala Leu Ser
740 745 750

Cys Lys Ala Val Ile Cys Cys Arg Val Ser Pro Leu Gln Lys Ser Glu
755 760 765

Val Val Glu Met Val Lys Lys Gln Val Lys Val Val Thr Leu Ala Ile
770 775 780

Gly Asp Gly Ala Asn Asp Val Ser Met Ile Gln Thr Ala His Val Gly
785 790 795 800

```
Val Gly Ile Ser Gly Asn Glu Gly Leu Gln Ala Ala Asn Ser Ser Asp
                805                 810                 815

Tyr Ser Ile Ala Gln Phe Lys Tyr Leu Lys Asn Leu Leu Met Ile His
            820                 825                 830

Gly Ala Trp Asn Tyr Asn Arg Val Ser Lys Cys Ile Leu Tyr Cys Phe
        835                 840                 845

Tyr Lys Asn Ile Val Leu Tyr Ile Ile Glu Ile Trp Phe Ala Phe Val
    850                 855                 860

Asn Gly Phe Ser Gly Gln Ile Leu Phe Glu Arg Trp Cys Ile Gly Leu
865                 870                 875                 880

Tyr Asn Val Met Phe Thr Ala Met Pro Pro Leu Thr Leu Gly Ile Phe
                885                 890                 895

Glu Arg Ser Cys Arg Lys Glu Asn Met Leu Lys Tyr Pro Glu Leu Tyr
            900                 905                 910

Lys Thr Ser Gln Asn Ala Leu Asp Phe Asn Thr Lys Val Phe Trp Val
        915                 920                 925

His Cys Leu Asn Gly Leu Phe His Ser Val Ile Leu Phe Trp Phe Pro
    930                 935                 940

Leu Lys Ala Leu Gln Tyr Gly Thr Ala Phe Gly Asn Gly Lys Thr Ser
945                 950                 955                 960

Asp Tyr Leu Leu Leu Gly Asn Phe Val Tyr Thr Phe Val Val Ile Thr
                965                 970                 975

Val Cys Leu Lys Ala Gly Leu Glu Thr Ser Tyr Trp Thr Trp Phe Ser
            980                 985                 990

His Ile Ala Ile Trp Gly Ser Ile  Ala Leu Trp Val Val  Phe Phe
Gly
        995                 1000                1005

Ile Tyr  Ser Ser Leu Trp Pro  Ala Ile Pro Met Ala  Pro Asp Met
    1010                1015                1020
```

```
Ser Gly  Glu Ala Ala Met Leu  Phe Ser Ser Gly Val  Phe Trp Met
    1025                1030                1035

Gly Leu  Leu Phe Ile Pro Val  Ala Ser Leu Leu Leu  Asp Val Val
    1040                1045                1050

Tyr Lys  Val Ile Lys Arg Thr  Ala Phe Lys Thr Leu  Val Asp Glu
    1055                1060                1065

Val Gln  Glu Leu Glu Ala Lys  Ser Gln Asp Pro Gly  Ala Val Val
    1070                1075                1080

Leu Gly  Lys Ser Leu Thr Glu  Arg Ala Gln Leu Leu  Lys Asn Val
    1085                1090                1095

Phe Lys  Lys Asn His Val Asn  Leu Tyr Arg Ser Glu  Ser Leu Gln
    1100                1105                1110

Gln Asn  Leu Leu His Gly Tyr  Ala Phe Ser Gln Asp  Glu Asn Gly
    1115                1120                1125

Ile Val  Ser Gln Ser Glu Val  Ile Arg Ala Tyr Asp  Thr Thr Lys
    1130                1135                1140

Gln Arg  Pro Asp Glu Trp
    1145


<210> 7210
<211> 1164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1537; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8A1; "

<220>
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<223> /note="Gene Name:
      ATPase, aminophospholipid transporter (APLT),
      class I, type 8A, member 1; "
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<220>
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<223> /note="Uniprot ID: Q9Y2Q0; "

<220>
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<223> /note="ENSP ID: ENSP00000371084"

<400> 7210
Met Pro Thr Met Arg Arg Thr Val Ser Glu Ile Arg Ser Arg Ala Glu
1   5   10   15

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

Gln Glu Glu Val Arg Thr Ile Phe Ile Asn Gln Pro Gln Leu Thr Lys
        35   40   45

Phe Cys Asn Asn His Val Ser Thr Ala Lys Tyr Asn Ile Ile Thr Phe
    50   55   60

Leu Pro Arg Phe Leu Tyr Ser Gln Phe Arg Arg Ala Ala Asn Ser Phe
65   70   75   80

Phe Leu Phe Ile Ala Leu Leu Gln Gln Ile Pro Asp Val Ser Pro Thr
                85   90   95

Gly Arg Tyr Thr Thr Leu Val Pro Leu Leu Phe Ile Leu Ala Val Ala
            100   105   110

Ala Ile Lys Glu Ile Ile Glu Asp Ile Lys Arg His Lys Ala Asp Asn
        115   120   125

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

Ile Val His Trp Glu Lys Val Ala Val Gly Glu Ile Val Lys Val Thr
145   150   155   160

Asn Gly Glu His Leu Pro Ala Asp Leu Ile Ser Leu Ser Ser Ser Glu
                165   170   175

Pro Gln Ala Met Cys Tyr Ile Glu Thr Ser Asn Leu Asp Gly Glu Thr
            180   185   190

```
Asn Leu Lys Ile Arg Gln Gly Leu Pro Ala Thr Ser Asp Ile Lys Asp
        195                 200                 205

Val Asp Ser Leu Met Arg Ile Ser Gly Arg Ile Glu Cys Glu Ser Pro
    210                 215                 220

Asn Arg His Leu Tyr Asp Phe Val Gly Asn Ile Arg Leu Asp Gly His
225                 230                 235                 240

Gly Thr Val Pro Leu Gly Ala Asp Gln Ile Leu Leu Arg Gly Ala Gln
                245                 250                 255

Leu Arg Asn Thr Gln Trp Val His Gly Ile Val Val Tyr Thr Gly His
            260                 265                 270

Asp Thr Lys Leu Met Gln Asn Ser Thr Ser Pro Pro Leu Lys Leu Ser
        275                 280                 285

Asn Val Glu Arg Ile Thr Asn Val Gln Ile Leu Ile Leu Phe Cys Ile
    290                 295                 300

Leu Ile Ala Met Ser Leu Val Cys Ser Val Gly Ser Ala Ile Trp Asn
305                 310                 315                 320

Arg Arg His Ser Gly Lys Asp Trp Tyr Leu Asn Leu Asn Tyr Gly Gly
                325                 330                 335

Ala Ser Asn Phe Gly Leu Asn Phe Leu Thr Phe Ile Ile Leu Phe Asn
            340                 345                 350

Asn Leu Ile Pro Ile Ser Leu Leu Val Thr Leu Glu Val Val Lys Phe
        355                 360                 365

Thr Gln Ala Tyr Phe Ile Asn Trp Asp Leu Asp Met His Tyr Glu Pro
    370                 375                 380

Thr Asp Thr Ala Ala Met Ala Arg Thr Ser Asn Leu Asn Glu Glu Leu
385                 390                 395                 400

Gly Gln Val Lys Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Cys
                405                 410                 415

Asn Val Met Gln Phe Lys Lys Cys Thr Ile Ala Gly Val Ala Tyr Gly
```

```
            420                 425                 430

His Val Pro Glu Pro Glu Asp Tyr Gly Cys Ser Pro Asp Glu Trp Gln
        435                 440                 445

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

Glu Asn Leu Gln Asn Asn His Pro Thr Ala Pro Ile Ile Cys Glu Phe
465                 470                 475                 480

Leu Thr Met Met Ala Val Cys His Thr Ala Val Pro Glu Arg Glu Gly
                485                 490                 495

Asp Lys Ile Ile Tyr Gln Ala Ala Ser Pro Asp Glu Gly Ala Leu Val
            500                 505                 510

Arg Ala Ala Lys Gln Leu Asn Phe Val Phe Thr Gly Arg Thr Pro Asp
        515                 520                 525

Ser Val Ile Ile Asp Ser Leu Gly Gln Glu Glu Arg Tyr Glu Leu Leu
    530                 535                 540

Asn Val Leu Glu Phe Thr Ser Ala Arg Lys Arg Met Ser Val Ile Val
545                 550                 555                 560

Arg Thr Pro Ser Gly Lys Leu Arg Leu Tyr Cys Lys Gly Ala Asp Thr
                565                 570                 575

Val Ile Tyr Asp Arg Leu Ala Glu Thr Ser Lys Tyr Lys Glu Ile Thr
            580                 585                 590

Leu Lys His Leu Glu Gln Phe Ala Thr Glu Gly Leu Arg Thr Leu Cys
        595                 600                 605

Phe Ala Val Ala Glu Ile Ser Glu Ser Asp Phe Gln Glu Trp Arg Ala
    610                 615                 620

Val Tyr Gln Arg Ala Ser Thr Ser Val Gln Asn Arg Leu Leu Lys Leu
625                 630                 635                 640

Glu Glu Ser Tyr Glu Leu Ile Glu Lys Asn Leu Gln Leu Leu Gly Ala
                645                 650                 655
```

```
Thr Ala Ile Glu Asp Lys Leu Gln Asp Gln Val Pro Glu Thr Ile Glu
            660                 665                 670

Thr Leu Met Lys Ala Asp Ile Lys Ile Trp Ile Leu Thr Gly Asp Lys
        675                 680                 685

Gln Glu Thr Ala Ile Asn Ile Gly His Ser Cys Lys Leu Leu Lys Lys
    690                 695                 700

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

Glu Thr Leu Ser Arg His Cys Thr Thr Leu Gly Asp Ala Leu Arg Lys
                725                 730                 735

Glu Asn Asp Phe Ala Leu Ile Ile Asp Gly Lys Thr Leu Lys Tyr Ala
            740                 745                 750

Leu Thr Phe Gly Val Arg Gln Tyr Phe Leu Asp Leu Ala Leu Ser Cys
        755                 760                 765

Lys Ala Val Ile Cys Cys Arg Val Ser Pro Leu Gln Lys Ser Glu Val
    770                 775                 780

Val Glu Met Val Lys Lys Gln Val Lys Val Val Thr Leu Ala Ile Gly
785                 790                 795                 800

Asp Gly Ala Asn Asp Val Ser Met Ile Gln Thr Ala His Val Gly Val
                805                 810                 815

Gly Ile Ser Gly Asn Glu Gly Leu Gln Ala Ala Asn Ser Ser Asp Tyr
            820                 825                 830

Ser Ile Ala Gln Phe Lys Tyr Leu Lys Asn Leu Leu Met Ile His Gly
        835                 840                 845

Ala Trp Asn Tyr Asn Arg Val Ser Lys Cys Ile Leu Tyr Cys Phe Tyr
    850                 855                 860

Lys Asn Ile Val Leu Tyr Ile Ile Glu Ile Trp Phe Ala Phe Val Asn
865                 870                 875                 880
```

```
Gly Phe Ser Gly Gln Ile Leu Phe Glu Arg Trp Cys Ile Gly Leu Tyr
                885                 890                 895

Asn Val Met Phe Thr Ala Met Pro Pro Leu Thr Leu Gly Ile Phe Glu
            900                 905                 910

Arg Ser Cys Arg Lys Glu Asn Met Leu Lys Tyr Pro Glu Leu Tyr Lys
        915                 920                 925

Thr Ser Gln Asn Ala Leu Asp Phe Asn Thr Lys Val Phe Trp Val His
    930                 935                 940

Cys Leu Asn Gly Leu Phe His Ser Val Ile Leu Phe Trp Phe Pro Leu
945                 950                 955                 960

Lys Ala Leu Gln Tyr Gly Thr Ala Phe Gly Asn Gly Lys Thr Ser Asp
                965                 970                 975

Tyr Leu Leu Leu Gly Asn Phe Val Tyr Thr Phe Val Val Ile Thr Val
            980                 985                 990

Cys Leu Lys Ala Gly Leu Glu Thr  Ser Tyr Trp Thr Trp  Phe Ser
His
        995                 1000                1005

Ile Ala  Ile Trp Gly Ser Ile  Ala Leu Trp Val Val  Phe Phe Gly
    1010                1015                1020

Ile Tyr  Ser Ser Leu Trp Pro  Ala Ile Pro Met Ala  Pro Asp Met
    1025                1030                1035

Ser Gly  Glu Ala Ala Met Leu  Phe Ser Ser Gly Val  Phe Trp Met
    1040                1045                1050

Gly Leu  Leu Phe Ile Pro Val  Ala Ser Leu Leu Leu  Asp Val Val
    1055                1060                1065

Tyr Lys  Val Ile Lys Arg Thr  Ala Phe Lys Thr Leu  Val Asp Glu
    1070                1075                1080

Val Gln  Glu Leu Glu Ala Lys  Ser Gln Asp Pro Gly  Ala Val Val
    1085                1090                1095
```

```
Leu Gly  Lys Ser Leu Thr Glu  Arg Ala Gln Leu Leu  Lys Asn Val
    1100                1105                1110

Phe Lys  Lys Asn His Val Asn  Leu Tyr Arg Ser Glu  Ser Leu Gln
    1115                1120                1125

Gln Asn  Leu Leu His Gly Tyr  Ala Phe Ser Gln Asp  Glu Asn Gly
    1130                1135                1140

Ile Val  Ser Gln Ser Glu Val  Ile Arg Ala Tyr Asp  Thr Thr Lys
    1145                1150                1155

Gln Arg  Pro Asp Glu Trp
    1160


<210> 7211
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1537; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
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      class I, type 8A, member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421164"


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

<400> 7211
Xaa Ala Val Ile Cys Cys Arg Val Ser Pro Leu Gln Lys Ser Glu Val
1               5                  10                  15

Val Glu Met Val Lys Lys Gln Val Lys Val Val Thr Leu Ala Ile Gly
            20                  25                  30
```

```
Asp Gly Ala Asn Asp Val Ser Met Ile Gln Thr Ala His Val Gly Val
        35                  40                  45

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

Ser Ile Ala Gln Phe Lys Tyr Leu Lys Asn Leu Leu Met Ile His Gly
65                  70                  75                  80

Ala Trp Asn Tyr Asn Arg Val Ser Lys Cys Ile Leu Tyr Cys Phe Tyr
                85                  90                  95

Lys Asn Ile Val Leu Tyr Ile Ile Glu Ile Trp Phe Ala Phe Val Asn
            100                 105                 110

Gly Phe Ser Gly Gln Ile Leu Phe Glu Arg Trp Cys Ile Gly Leu Tyr
        115                 120                 125

Asn Val Phe Val Arg Phe Arg Cys Leu Gln Gln Cys Leu Leu
    130                 135                 140


<210> 7212
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
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      class I, type 8A, member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426495"

<400> 7212
Asn Leu Gln Leu Leu Gly Ala Thr Ala Ile Glu Asp Lys Leu Gln Asp
1               5                   10                  15
```

```
Gln Val Pro Glu Thr Ile Glu Thr Leu Met Lys Ala Asp Ile Lys Ile
            20                  25                  30

Trp Ile Leu Thr Gly Asp Lys Gln Glu Thr Ala Ile Asn Ile Gly His
        35                  40                  45

Ser Cys Lys Leu Leu Lys Lys Asn Met Gly Met Ile Val Ile Asn Glu
    50                  55                  60

Gly Ser Leu Asp Gly Phe Ser Ser Ser Lys Ile
65                  70                  75


<210> 7213
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP8A1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter (APLT),
      class I, type 8A, member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426636"

<400> 7213
Met Pro Thr Met Arg Arg Thr Val Ser Glu Ile Arg Ser Arg Ala Glu
1               5                   10                  15

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

Gln Glu Glu Val Arg Thr Ile Phe Ile Asn Gln Pro Gln Leu Thr Lys
        35                  40                  45

Phe Cys Asn Asn His Val Arg
    50                  55
```

<210> 7214
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP8A1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, aminophospholipid transporter (APLT),
class I, type 8A, member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426935"

<400> 7214
Val Ser Pro Leu Gln Lys Ser Glu Val Val Glu Met Val Lys Lys Gln
1 5 10 15

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

Met Ile Gln Thr Ala His Val Gly Val Gly Ile Ser Gly Asn Glu Gly
35 40 45

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

Leu Lys Asn Leu Leu Met Ile His Gly Ala Trp Asn Tyr Asn Arg Val
65 70 75 80

Ser Lys Cys Ile Leu Tyr Cys Phe Tyr Lys Asn Ile Val Leu Tyr Ile
85 90 95

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

Thr

<210> 7215

<211> 29
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1537; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8A1; "

<220>
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<223> /note="Gene Name:
ATPase, aminophospholipid transporter (APLT),
class I, type 8A, member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427295"

<400> 7215
Lys Arg His Lys Ala Asp Asn Ala Val Asn Lys Lys Gln Thr Gln Val
1 5 10 15

Leu Arg Asn Gly Ala Trp Glu Ile Val His Trp Glu Lys
20 25

<210> 7216
<211> 994
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1538; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8A, member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000255283"

<400> 7216
Met Ser Arg Ala Thr Ser Val Gly Asp Gln Leu Glu Ala Pro Ala Arg
1 5 10 15

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Thr Ile Tyr Leu Asn Gln Pro His Leu Asn Lys Phe Arg Asp Asn Gln
            20                  25                  30

Ile Ser Thr Ala Lys Tyr Ser Val Leu Thr Phe Leu Pro Arg Phe Leu
        35                  40                  45

Tyr Glu Gln Ile Arg Arg Ala Ala Asn Ala Phe Phe Leu Phe Ile Ala
    50                  55                  60

Leu Leu Gln Gln Ile Pro Asp Val Ser Pro Thr Gly Arg Tyr Thr Thr
65                  70                  75                  80

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

Val Glu Asp Phe Lys Arg His Lys Ala Asp Asn Ala Val Asn Lys Lys
            100                 105                 110

Lys Thr Ile Val Leu Arg Asn Gly Met Trp His Thr Ile Met Trp Lys
        115                 120                 125

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

Pro Ala Asp Val Val Leu Leu Ser Ser Ser Glu Pro Gln Ala Met Cys
145                 150                 155                 160

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

Gln Gly Leu Ser His Thr Ala Asp Met Gln Thr Arg Glu Val Leu Met
            180                 185                 190

Lys Leu Ser Gly Thr Ile Glu Cys Glu Gly Pro Asn Arg His Leu Tyr
        195                 200                 205

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

Gly Pro Asp Gln Ile Leu Leu Arg Gly Thr Gln Leu Arg Asn Thr Gln
225                 230                 235                 240
```

```
Trp Val Phe Gly Ile Val Val Tyr Thr Gly His Asp Thr Lys Leu Met
                245                 250                 255

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

Thr Asn Val Gln Ile Leu Val Leu Phe Gly Ile Leu Leu Val Met Ala
        275                 280                 285

Leu Val Ser Ser Ala Gly Ala Leu Tyr Trp Asn Arg Ser His Gly Glu
    290                 295                 300

Lys Asn Trp Tyr Ile Lys Lys Met Asp Thr Thr Ser Asp Asn Phe Gly
305                 310                 315                 320

Tyr Asn Leu Leu Thr Phe Ile Ile Leu Tyr Asn Asn Leu Ile Pro Ile
                325                 330                 335

Ser Leu Leu Val Thr Leu Glu Val Val Lys Tyr Thr Gln Ala Leu Phe
            340                 345                 350

Ile Asn Trp Asp Thr Asp Met Tyr Tyr Ile Gly Asn Asp Thr Pro Ala
        355                 360                 365

Met Ala Arg Thr Ser Asn Leu Asn Glu Glu Leu Gly Gln Val Lys Tyr
    370                 375                 380

Leu Phe Ser Asp Lys Thr Gly Thr Leu Thr Cys Asn Ile Met Asn Phe
385                 390                 395                 400

Lys Lys Cys Ser Ile Ala Gly Val Thr Tyr Gly His Phe Pro Glu Leu
                405                 410                 415

Ala Arg Glu Pro Ser Ser Asp Asp Phe Cys Arg Met Pro Pro Pro Cys
            420                 425                 430

Ser Asp Ser Cys Asp Phe Asp Asp Pro Arg Leu Leu Lys Asn Ile Glu
        435                 440                 445

Asp Arg His Pro Thr Ala Pro Cys Ile Gln Glu Phe Leu Thr Leu Leu
    450                 455                 460
```

```
Ala Val Cys His Thr Val Val Pro Glu Lys Asp Gly Asp Asn Ile Ile
465                 470                 475                 480

Tyr Gln Ala Ser Ser Pro Asp Glu Ala Ala Leu Val Lys Gly Ala Lys
                485                 490                 495

Lys Leu Gly Phe Val Phe Thr Ala Arg Thr Pro Phe Ser Val Ile Ile
            500                 505                 510

Glu Ala Val Ser Asn Met Arg Val His Phe Arg Ser Pro Ala Phe Val
        515                 520                 525

Lys Ile Val Cys Val Lys Trp His Val Tyr Cys Lys Tyr Val Gln Ala
    530                 535                 540

Thr Arg Ala Ala Ile Thr Gln His Cys Thr Asp Leu Gly Asn Leu Leu
545                 550                 555                 560

Gly Lys Glu Asn Asp Val Ala Leu Ile Ile Asp Gly His Thr Leu Lys
                565                 570                 575

Tyr Ala Leu Ser Phe Glu Val Arg Arg Ser Phe Leu Asp Leu Ala Leu
            580                 585                 590

Ser Cys Lys Ala Val Ile Cys Cys Arg Val Ser Pro Leu Gln Lys Ser
        595                 600                 605

Glu Ile Val Asp Val Val Lys Lys Arg Val Lys Ala Ile Thr Leu Ala
    610                 615                 620

Ile Gly Asp Gly Ala Asn Asp Val Gly Met Ile Gln Thr Ala His Val
625                 630                 635                 640

Gly Val Gly Ile Ser Gly Asn Glu Gly Met Gln Ala Thr Asn Asn Ser
                645                 650                 655

Asp Tyr Ala Ile Ala Gln Phe Ser Tyr Leu Glu Lys Leu Leu Leu Val
            660                 665                 670

His Gly Ala Trp Ser Tyr Asn Arg Val Thr Lys Cys Ile Leu Tyr Cys
        675                 680                 685

Phe Tyr Lys Asn Val Val Leu Tyr Ile Ile Glu Leu Trp Phe Ala Phe
```

690 695 700

Val Asn Gly Phe Ser Gly Gln Ile Leu Phe Glu Arg Trp Cys Ile Gly
705 710 715 720

Leu Tyr Asn Val Ile Phe Thr Ala Leu Pro Pro Phe Thr Leu Gly Ile
725 730 735

Phe Glu Arg Ser Cys Thr Gln Glu Ser Met Leu Arg Phe Pro Gln Leu
740 745 750

Tyr Lys Ile Thr Gln Asn Gly Glu Gly Phe Asn Thr Lys Val Phe Trp
755 760 765

Gly His Cys Ile Asn Ala Leu Val His Ser Leu Ile Leu Phe Trp Phe
770 775 780

Pro Met Lys Ala Leu Glu His Asp Thr Val Leu Thr Ser Gly His Ala
785 790 795 800

Thr Asp Tyr Leu Phe Val Gly Asn Ile Val Tyr Thr Tyr Val Val Val
805 810 815

Thr Val Cys Leu Lys Ala Gly Leu Glu Thr Thr Ala Trp Thr Lys Phe
820 825 830

Ser His Leu Ala Val Trp Gly Ser Met Leu Thr Trp Leu Val Phe Phe
835 840 845

Gly Ile Tyr Ser Thr Ile Trp Pro Thr Ile Pro Ile Ala Pro Asp Met
850 855 860

Arg Gly Gln Ala Thr Met Val Leu Ser Ser Ala His Phe Trp Leu Gly
865 870 875 880

Leu Phe Leu Val Pro Thr Ala Cys Leu Ile Glu Asp Val Ala Trp Arg
885 890 895

Ala Ala Lys His Thr Cys Lys Lys Thr Leu Leu Glu Glu Val Gln Glu
900 905 910

Leu Glu Thr Lys Ser Arg Val Leu Gly Lys Ala Val Leu Arg Asp Ser
915 920 925

```
Asn Gly Lys Arg Leu Asn Glu Arg Asp Arg Leu Ile Lys Arg Leu Gly
    930                 935                 940

Arg Lys Thr Pro Pro Thr Leu Phe Arg Gly Ser Ser Leu Gln Gln Gly
945                 950                 955                 960

Val Pro His Gly Tyr Ala Phe Ser Gln Glu Glu His Gly Ala Val Ser
                965                 970                 975

Gln Glu Glu Val Ile Arg Ala Tyr Asp Thr Thr Lys Lys Lys Ser Arg
            980                 985                 990

Lys Lys
```

<210> 7217
<211> 643
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1538; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8A, member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000281620"

<400> 7217

```
Met Trp His Thr Ile Met Trp Lys Glu Val Ala Val Gly Asp Ile Val
1               5                   10                  15

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

Ser Ser Glu Pro Gln Ala Met Cys Tyr Val Glu Thr Ala Asn Leu Asp
        35                  40                  45
```

```
Gly Glu Thr Asn Leu Lys Ile Arg Gln Gly Leu Ser His Thr Ala Asp
    50                  55                  60

Met Gln Thr Arg Glu Val Leu Met Lys Leu Ser Gly Thr Ile Glu Cys
65                  70                  75                  80

Glu Gly Pro Asn Arg His Leu Tyr Asp Phe Thr Gly Asn Leu Asn Leu
                85                  90                  95

Asp Gly Lys Ser Leu Val Ala Leu Gly Pro Asp Gln Ile Leu Leu Arg
            100                 105                 110

Gly Thr Gln Leu Arg Asn Thr Gln Trp Val Phe Gly Ile Val Val Tyr
        115                 120                 125

Thr Gly His Asp Thr Lys Leu Met Gln Asn Ser Thr Lys Ala Pro Leu
    130                 135                 140

Lys Arg Ser Asn Val Glu Lys Val Thr Asn Val Gln Ile Leu Val Leu
145                 150                 155                 160

Phe Gly Ile Leu Leu Val Met Ala Leu Val Ser Ser Ala Gly Ala Leu
                165                 170                 175

Tyr Trp Asn Arg Ser His Gly Glu Lys Asn Trp Tyr Ile Lys Lys Met
            180                 185                 190

Asp Thr Thr Ser Asp Asn Phe Gly Tyr Asn Leu Leu Thr Phe Ile Ile
        195                 200                 205

Leu Tyr Asn Asn Leu Ile Pro Ile Ser Leu Leu Val Thr Leu Glu Val
    210                 215                 220

Val Lys Tyr Thr Gln Ala Leu Phe Ile Asn Trp Asp Thr Asp Met Tyr
225                 230                 235                 240

Tyr Ile Gly Asn Asp Thr Pro Ala Met Ala Arg Thr Ser Asn Leu Asn
                245                 250                 255

Glu Glu Leu Gly Gln Val Lys Tyr Leu Phe Ser Asp Lys Thr Gly Thr
            260                 265                 270
```

```
Leu Thr Cys Asn Ile Met Asn Phe Lys Lys Cys Ser Ile Ala Gly Val
        275                 280                 285

Thr Tyr Gly His Phe Pro Glu Leu Ala Arg Glu Pro Ser Ser Asp Asp
    290                 295                 300

Phe Cys Arg Met Pro Pro Pro Cys Ser Asp Ser Cys Asp Phe Asp Asp
305                 310                 315                 320

Pro Arg Leu Leu Lys Asn Ile Glu Asp Arg His Pro Thr Ala Pro Cys
                325                 330                 335

Ile Gln Glu Phe Leu Thr Leu Leu Ala Val Cys His Thr Val Val Pro
            340                 345                 350

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

Ala Ala Leu Val Lys Gly Ala Lys Lys Leu Gly Phe Val Phe Thr Ala
    370                 375                 380

Arg Thr Pro Phe Ser Val Ile Ile Glu Ala Met Gly Gln Glu Gln Thr
385                 390                 395                 400

Phe Gly Ile Leu Asn Val Leu Glu Phe Ser Ser Asp Arg Lys Arg Met
                405                 410                 415

Ser Val Ile Val Arg Thr Pro Ser Gly Arg Leu Arg Leu Tyr Cys Lys
            420                 425                 430

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

Met Glu Glu Thr Leu Cys His Leu Glu Tyr Phe Ala Thr Glu Gly Leu
    450                 455                 460

Arg Thr Leu Cys Val Ala Tyr Ala Asp Leu Ser Glu Asn Glu Tyr Glu
465                 470                 475                 480

Glu Trp Leu Lys Val Tyr Gln Glu Ala Ser Thr Ile Leu Lys Asp Arg
                485                 490                 495

Ala Gln Arg Leu Glu Glu Cys Tyr Glu Ile Ile Glu Lys Asn Leu Leu
```

```
            500                 505                 510

Leu Leu Gly Ala Thr Ala Ile Glu Asp Arg Leu Gln Ala Gly Val Pro
        515                 520                 525

Glu Thr Ile Ala Thr Leu Leu Lys Ala Glu Ile Lys Ile Trp Val Leu
    530                 535                 540

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

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

Asp Ala Thr Arg Ala Ala Ile Thr Gln His Cys Thr Asp Leu Gly Asn
            580                 585                 590

Leu Leu Gly Lys Glu Asn Asp Val Ala Leu Ile Ile Asp Gly His Thr
        595                 600                 605

Leu Lys Tyr Ala Leu Ser Phe Glu Val Arg Arg Ser Phe Leu Asp Leu
    610                 615                 620

Ala Leu Ser Cys Lys Ala Val Ile Cys Cys Arg Ser Leu Phe Leu Ser
625                 630                 635                 640

Lys Trp Arg
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<210> 7218
<211> 1188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1538; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8A, member 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NTI2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371070"

<400> 7218
Met Leu Asn Gly Ala Gly Leu Asp Lys Ala Leu Lys Met Ser Leu Pro
1   5   10   15

Arg Arg Ser Arg Ile Arg Ser Ser Val Gly Pro Val Arg Ser Ser Leu
            20   25   30

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

Asp Gln Leu Glu Ala Pro Ala Arg Thr Ile Tyr Leu Asn Gln Pro His
    50   55   60

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

Leu Thr Phe Leu Pro Arg Phe Leu Tyr Glu Gln Ile Arg Arg Ala Ala
                85   90   95

Asn Ala Phe Phe Leu Phe Ile Ala Leu Leu Gln Gln Ile Pro Asp Val
            100   105   110

Ser Pro Thr Gly Arg Tyr Thr Thr Leu Val Pro Leu Ile Ile Ile Leu
        115   120   125

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

Ala Asp Asn Ala Val Asn Lys Lys Lys Thr Ile Val Leu Arg Asn Gly
145   150   155   160

Met Trp His Thr Ile Met Trp Lys Glu Val Ala Val Gly Asp Ile Val
                165   170   175

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

```
Ser Ser Glu Pro Gln Ala Met Cys Tyr Val Glu Thr Ala Asn Leu Asp
        195                 200                 205

Gly Glu Thr Asn Leu Lys Ile Arg Gln Gly Leu Ser His Thr Ala Asp
    210                 215                 220

Met Gln Thr Arg Glu Val Leu Met Lys Leu Ser Gly Thr Ile Glu Cys
225                 230                 235                 240

Glu Gly Pro Asn Arg His Leu Tyr Asp Phe Thr Gly Asn Leu Asn Leu
                245                 250                 255

Asp Gly Lys Ser Leu Val Ala Leu Gly Pro Asp Gln Ile Leu Leu Arg
            260                 265                 270

Gly Thr Gln Leu Arg Asn Thr Gln Trp Val Phe Gly Ile Val Val Tyr
        275                 280                 285

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

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

Phe Gly Ile Leu Leu Val Met Ala Leu Val Ser Ser Ala Gly Ala Leu
                325                 330                 335

Tyr Trp Asn Arg Ser His Gly Glu Lys Asn Trp Tyr Ile Lys Lys Met
            340                 345                 350

Asp Thr Thr Ser Asp Asn Phe Gly Tyr Asn Leu Leu Thr Phe Ile Ile
        355                 360                 365

Leu Tyr Asn Asn Leu Ile Pro Ile Ser Leu Leu Val Thr Leu Glu Val
    370                 375                 380

Val Lys Tyr Thr Gln Ala Leu Phe Ile Asn Trp Asp Thr Asp Met Tyr
385                 390                 395                 400

Tyr Ile Gly Asn Asp Thr Pro Ala Met Ala Arg Thr Ser Asn Leu Asn
                405                 410                 415
```

```
Glu Glu Leu Gly Gln Val Lys Tyr Leu Phe Ser Asp Lys Thr Gly Thr
            420                 425                 430

Leu Thr Cys Asn Ile Met Asn Phe Lys Lys Cys Ser Ile Ala Gly Val
        435                 440                 445

Thr Tyr Gly His Phe Pro Glu Leu Ala Arg Glu Pro Ser Ser Asp Asp
    450                 455                 460

Phe Cys Arg Met Pro Pro Pro Cys Ser Asp Ser Cys Asp Phe Asp Asp
465                 470                 475                 480

Pro Arg Leu Leu Lys Asn Ile Glu Asp Arg His Pro Thr Ala Pro Cys
                485                 490                 495

Ile Gln Glu Phe Leu Thr Leu Leu Ala Val Cys His Thr Val Val Pro
            500                 505                 510

Glu Lys Asp Gly Asp Asn Ile Ile Tyr Gln Ala Ser Ser Pro Asp Glu
        515                 520                 525

Ala Ala Leu Val Lys Gly Ala Lys Lys Leu Gly Phe Val Phe Thr Ala
    530                 535                 540

Arg Thr Pro Phe Ser Val Ile Ile Glu Ala Met Gly Gln Glu Gln Thr
545                 550                 555                 560

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

Ser Val Ile Val Arg Thr Pro Ser Gly Arg Leu Arg Leu Tyr Cys Lys
            580                 585                 590

Gly Ala Asp Asn Val Ile Phe Glu Arg Leu Ser Lys Asp Ser Lys Tyr
        595                 600                 605

Met Glu Glu Thr Leu Cys His Leu Glu Tyr Phe Ala Thr Glu Gly Leu
    610                 615                 620

Arg Thr Leu Cys Val Ala Tyr Ala Asp Leu Ser Glu Asn Glu Tyr Glu
625                 630                 635                 640

Glu Trp Leu Lys Val Tyr Gln Glu Ala Ser Thr Ile Leu Lys Asp Arg
```

```
                645                 650                 655

Ala Gln Arg Leu Glu Glu Cys Tyr Glu Ile Ile Glu Lys Asn Leu Leu
            660                 665                 670

Leu Leu Gly Ala Thr Ala Ile Glu Asp Arg Leu Gln Ala Gly Val Pro
        675                 680                 685

Glu Thr Ile Ala Thr Leu Leu Lys Ala Glu Ile Lys Ile Trp Val Leu
    690                 695                 700

Thr Gly Asp Lys Gln Glu Thr Ala Ile Asn Ile Gly Tyr Ser Cys Arg
705                 710                 715                 720

Leu Val Ser Gln Asn Met Ala Leu Ile Leu Leu Lys Glu Asp Ser Leu
                725                 730                 735

Asp Ala Thr Arg Ala Ala Ile Thr Gln His Cys Thr Asp Leu Gly Asn
            740                 745                 750

Leu Leu Gly Lys Glu Asn Asp Val Ala Leu Ile Ile Asp Gly His Thr
        755                 760                 765

Leu Lys Tyr Ala Leu Ser Phe Glu Val Arg Arg Ser Phe Leu Asp Leu
    770                 775                 780

Ala Leu Ser Cys Lys Ala Val Ile Cys Cys Arg Val Ser Pro Leu Gln
785                 790                 795                 800

Lys Ser Glu Ile Val Asp Val Val Lys Lys Arg Val Lys Ala Ile Thr
                805                 810                 815

Leu Ala Ile Gly Asp Gly Ala Asn Asp Val Gly Met Ile Gln Thr Ala
            820                 825                 830

His Val Gly Val Gly Ile Ser Gly Asn Glu Gly Met Gln Ala Thr Asn
        835                 840                 845

Asn Ser Asp Tyr Ala Ile Ala Gln Phe Ser Tyr Leu Glu Lys Leu Leu
    850                 855                 860

Leu Val His Gly Ala Trp Ser Tyr Asn Arg Val Thr Lys Cys Ile Leu
865                 870                 875                 880
```

```
Tyr Cys Phe Tyr Lys Asn Val Val Leu Tyr Ile Ile Glu Leu Trp Phe
                885                 890                 895

Ala Phe Val Asn Gly Phe Ser Gly Gln Ile Leu Phe Glu Arg Trp Cys
            900                 905                 910

Ile Gly Leu Tyr Asn Val Ile Phe Thr Ala Leu Pro Pro Phe Thr Leu
        915                 920                 925

Gly Ile Phe Glu Arg Ser Cys Thr Gln Glu Ser Met Leu Arg Phe Pro
    930                 935                 940

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

Phe Trp Gly His Cys Ile Asn Ala Leu Val His Ser Leu Ile Leu Phe
                965                 970                 975

Trp Phe Pro Met Lys Ala Leu Glu His Asp Thr Val Leu Thr Ser Gly
            980                 985                 990

His Ala Thr Asp Tyr Leu Phe Val  Gly Asn Ile Val Tyr  Thr Tyr
Val
        995                 1000                1005

Val Val  Thr Val Cys Leu Lys  Ala Gly Leu Glu Thr  Thr Ala Trp
    1010                1015                1020

Thr Lys  Phe Ser His Leu Ala  Val Trp Gly Ser Met  Leu Thr Trp
    1025                1030                1035

Leu Val  Phe Phe Gly Ile Tyr  Ser Thr Ile Trp Pro  Thr Ile Pro
    1040                1045                1050

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

Ala His  Phe Trp Leu Gly Leu  Phe Leu Val Pro Thr  Ala Cys Leu
    1070                1075                1080

Ile Glu  Asp Val Ala Trp Arg  Ala Ala Lys His Thr  Cys Lys Lys
    1085                1090                1095
```

```
Thr Leu  Leu Glu Glu Val Gln  Glu Leu Glu Thr Lys  Ser Arg Val
    1100                1105                1110

Leu Gly  Lys Ala Val Leu Arg  Asp Ser Asn Gly Lys  Arg Leu Asn
    1115                1120                1125

Glu Arg  Asp Arg Leu Ile Lys  Arg Leu Gly Arg Lys  Thr Pro Pro
    1130                1135                1140

Thr Leu  Phe Arg Gly Ser Ser  Leu Gln Gln Gly Val  Pro His Gly
    1145                1150                1155

Tyr Ala  Phe Ser Gln Glu Glu  His Gly Ala Val Ser  Gln Glu Glu
    1160                1165                1170

Val Ile  Arg Ala Tyr Asp Thr  Thr Lys Lys Lys Ser  Arg Lys Lys
    1175                1180                1185


<210> 7219
<211> 1251
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1539; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O43520; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000283684"

<400> 7219
Met Ser Thr Glu Arg Asp Ser Glu Thr Thr Phe Asp Glu Asp Ser Gln
1               5                  10                  15
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```
Pro Asn Asp Glu Val Val Pro Tyr Ser Asp Asp Glu Thr Glu Asp Glu
            20                  25                  30

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

Arg Glu Ala Glu Glu Asn Arg Glu Pro Phe Arg Lys Glu Cys Thr Trp
    50                  55                  60

Gln Val Lys Ala Asn Asp Arg Lys Tyr His Glu Gln Pro His Phe Met
65                  70                  75                  80

Asn Thr Lys Phe Leu Cys Ile Lys Glu Ser Lys Tyr Ala Asn Asn Ala
                85                  90                  95

Ile Lys Thr Tyr Lys Tyr Asn Ala Phe Thr Phe Ile Pro Met Asn Leu
            100                 105                 110

Phe Glu Gln Phe Lys Arg Ala Ala Asn Leu Tyr Phe Leu Ala Leu Leu
        115                 120                 125

Ile Leu Gln Ala Val Pro Gln Ile Ser Thr Leu Ala Trp Tyr Thr Thr
    130                 135                 140

Leu Val Pro Leu Leu Val Val Leu Gly Val Thr Ala Ile Lys Asp Leu
145                 150                 155                 160

Val Asp Asp Val Ala Arg His Lys Met Asp Lys Glu Ile Asn Asn Arg
                165                 170                 175

Thr Cys Glu Val Ile Lys Asp Gly Arg Phe Lys Val Ala Lys Trp Lys
            180                 185                 190

Glu Ile Gln Val Gly Asp Val Ile Arg Leu Lys Lys Asn Asp Phe Val
        195                 200                 205

Pro Ala Asp Ile Leu Leu Leu Ser Ser Ser Glu Pro Asn Ser Leu Cys
    210                 215                 220

Tyr Val Glu Thr Ala Glu Leu Asp Gly Glu Thr Asn Leu Lys Phe Lys
225                 230                 235                 240
```

```
Met Ser Leu Glu Ile Thr Asp Gln Tyr Leu Gln Arg Glu Asp Thr Leu
                245                 250                 255

Ala Thr Phe Asp Gly Phe Ile Glu Cys Glu Glu Pro Asn Asn Arg Leu
            260                 265                 270

Asp Lys Phe Thr Gly Thr Leu Phe Trp Arg Asn Thr Ser Phe Pro Leu
        275                 280                 285

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

Phe Cys His Gly Leu Val Ile Phe Ala Gly Ala Asp Thr Lys Ile Met
305                 310                 315                 320

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

Met Asn Tyr Met Val Tyr Thr Ile Phe Val Val Leu Ile Leu Leu Ser
            340                 345                 350

Ala Gly Leu Ala Ile Gly His Ala Tyr Trp Glu Ala Gln Val Gly Asn
        355                 360                 365

Ser Ser Trp Tyr Leu Tyr Asp Gly Glu Asp Asp Thr Pro Ser Tyr Arg
    370                 375                 380

Gly Phe Leu Ile Phe Trp Gly Tyr Ile Ile Val Leu Asn Thr Met Val
385                 390                 395                 400

Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly Gln Ser
                405                 410                 415

His Phe Ile Asn Trp Asp Leu Gln Met Tyr Tyr Ala Glu Lys Asp Thr
            420                 425                 430

Pro Ala Lys Ala Arg Thr Thr Thr Leu Asn Glu Gln Leu Gly Gln Ile
        435                 440                 445

His Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Ile Met
    450                 455                 460
```

```
Thr Phe Lys Lys Cys Cys Ile Asn Gly Gln Ile Tyr Gly Asp His Arg
465                 470                 475                 480

Asp Ala Ser Gln His Asn His Asn Lys Ile Glu Gln Val Asp Phe Ser
                485                 490                 495

Trp Asn Thr Tyr Ala Asp Gly Lys Leu Ala Phe Tyr Asp His Tyr Leu
            500                 505                 510

Ile Glu Gln Ile Gln Ser Gly Lys Glu Pro Glu Val Arg Gln Phe Phe
        515                 520                 525

Phe Leu Leu Ala Val Cys His Thr Val Met Val Asp Arg Thr Asp Gly
    530                 535                 540

Gln Leu Asn Tyr Gln Ala Ala Ser Pro Asp Glu Gly Ala Leu Val Asn
545                 550                 555                 560

Ala Ala Arg Asn Phe Gly Phe Ala Phe Leu Ala Arg Thr Gln Asn Thr
                565                 570                 575

Ile Thr Ile Ser Glu Leu Gly Thr Glu Arg Thr Tyr Asn Val Leu Ala
            580                 585                 590

Ile Leu Asp Phe Asn Ser Asp Arg Lys Arg Met Ser Ile Ile Val Arg
        595                 600                 605

Thr Pro Glu Gly Asn Ile Lys Leu Tyr Cys Lys Gly Ala Asp Thr Val
    610                 615                 620

Ile Tyr Glu Arg Leu His Arg Met Asn Pro Thr Lys Gln Glu Thr Gln
625                 630                 635                 640

Asp Ala Leu Asp Ile Phe Ala Asn Glu Thr Leu Arg Thr Leu Cys Leu
                645                 650                 655

Cys Tyr Lys Glu Ile Glu Glu Lys Glu Phe Thr Glu Trp Asn Lys Lys
            660                 665                 670

Phe Met Ala Ala Ser Val Ala Ser Thr Asn Arg Asp Glu Ala Leu Asp
        675                 680                 685

Lys Val Tyr Glu Glu Ile Glu Lys Asp Leu Ile Leu Leu Gly Ala Thr
```

690 695 700

Ala Ile Glu Asp Lys Leu Gln Asp Gly Val Pro Glu Thr Ile Ser Lys
705 710 715 720

Leu Ala Lys Ala Asp Ile Lys Ile Trp Val Leu Thr Gly Asp Lys Lys
725 730 735

Glu Thr Ala Glu Asn Ile Gly Phe Ala Cys Glu Leu Leu Thr Glu Asp
740 745 750

Thr Thr Ile Cys Tyr Gly Glu Asp Ile Asn Ser Leu Leu His Ala Arg
755 760 765

Met Glu Asn Gln Arg Asn Arg Gly Gly Val Tyr Ala Lys Phe Ala Pro
770 775 780

Pro Val Gln Glu Ser Phe Phe Pro Pro Gly Gly Asn Arg Ala Leu Ile
785 790 795 800

Ile Thr Gly Ser Trp Leu Asn Glu Ile Leu Leu Glu Lys Lys Thr Lys
805 810 815

Arg Asn Lys Ile Leu Lys Leu Lys Phe Pro Arg Thr Glu Glu Glu Arg
820 825 830

Arg Met Arg Thr Gln Ser Lys Arg Arg Leu Glu Ala Lys Lys Glu Gln
835 840 845

Arg Gln Lys Asn Phe Val Asp Leu Ala Cys Glu Cys Ser Ala Val Ile
850 855 860

Cys Cys Arg Val Thr Pro Lys Gln Lys Ala Met Val Val Asp Leu Val
865 870 875 880

Lys Arg Tyr Lys Lys Ala Ile Thr Leu Ala Ile Gly Asp Gly Ala Asn
885 890 895

Asp Val Asn Met Ile Lys Thr Ala His Ile Gly Val Gly Ile Ser Gly
900 905 910

Gln Glu Gly Met Gln Ala Val Met Ser Ser Asp Tyr Ser Phe Ala Gln
915 920 925

```
Phe Arg Tyr Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp Ser Tyr
    930                 935                 940

Ile Arg Met Cys Lys Phe Leu Arg Tyr Phe Phe Tyr Lys Asn Phe Ala
945                 950                 955                 960

Phe Thr Leu Val His Phe Trp Tyr Ser Phe Phe Asn Gly Tyr Ser Ala
                965                 970                 975

Gln Thr Ala Tyr Glu Asp Trp Phe Ile Thr Leu Tyr Asn Val Leu Tyr
            980                 985                 990

Thr Ser Leu Pro Val Leu Leu Met  Gly Leu Leu Asp Gln  Asp Val
Ser
        995                 1000                1005

Asp Lys  Leu Ser Leu Arg Phe  Pro Gly Leu Tyr Ile  Val Gly Gln
    1010                1015                1020

Arg Asp  Leu Leu Phe Asn Tyr  Lys Arg Phe Phe Val  Ser Leu Leu
    1025                1030                1035

His Gly  Val Leu Thr Ser Met  Ile Leu Phe Phe Ile  Pro Leu Gly
    1040                1045                1050

Ala Tyr  Leu Gln Thr Val Gly  Gln Asp Gly Glu Ala  Pro Ser Asp
    1055                1060                1065

Tyr Gln  Ser Phe Ala Val Thr  Ile Ala Ser Ala Leu  Val Ile Thr
    1070                1075                1080

Val Asn  Phe Gln Ile Gly Leu  Asp Thr Ser Tyr Trp  Thr Phe Val
    1085                1090                1095

Asn Ala  Phe Ser Ile Phe Gly  Ser Ile Ala Leu Tyr  Phe Gly Ile
    1100                1105                1110

Met Phe  Asp Phe His Ser Ala  Gly Ile His Val Leu  Phe Pro Ser
    1115                1120                1125

Ala Phe  Gln Phe Thr Gly Thr  Ala Ser Asn Ala Leu  Arg Gln Pro
    1130                1135                1140
```

```
Tyr Ile  Trp Leu Thr Ile Ile  Leu Ala Val Ala Val  Cys Leu Leu
    1145                1150                1155

Pro Val  Val Ala Ile Arg Phe  Leu Ser Met Thr Ile  Trp Pro Ser
    1160                1165                1170

Glu Ser  Asp Lys Ile Gln Lys  His Arg Lys Arg Leu  Lys Ala Glu
    1175                1180                1185

Glu Gln  Trp Gln Arg Arg Gln  Gln Val Phe Arg Arg  Gly Val Ser
    1190                1195                1200

Thr Arg  Arg Ser Ala Tyr Ala  Phe Ser His Gln Arg  Gly Tyr Ala
    1205                1210                1215

Asp Leu  Ile Ser Ser Gly Arg  Ser Ile Arg Lys Lys  Arg Ser Pro
    1220                1225                1230

Leu Asp  Ala Ile Val Ala Asp  Gly Thr Ala Glu Tyr  Arg Arg Thr
    1235                1240                1245

Gly Asp  Ser
    1250


<210> 7220
<211> 1251
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1539; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 1; "

<220>
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<223> /note="Uniprot ID:  O43520; "
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<220>
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<400> 7220
Met Ser Thr Glu Arg Asp Ser Glu Thr Thr Phe Asp Glu Asp Ser Gln
1   5   10   15

Pro Asn Asp Glu Val Val Pro Tyr Ser Asp Asp Glu Thr Glu Asp Glu
            20   25   30

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

Arg Glu Ala Glu Glu Asn Arg Glu Pro Phe Arg Lys Glu Cys Thr Trp
    50   55   60

Gln Val Lys Ala Asn Asp Arg Lys Tyr His Glu Gln Pro His Phe Met
65   70   75   80

Asn Thr Lys Phe Leu Cys Ile Lys Glu Ser Lys Tyr Ala Asn Asn Ala
                85   90   95

Ile Lys Thr Tyr Lys Tyr Asn Ala Phe Thr Phe Ile Pro Met Asn Leu
            100   105   110

Phe Glu Gln Phe Lys Arg Ala Ala Asn Leu Tyr Phe Leu Ala Leu Leu
        115   120   125

Ile Leu Gln Ala Val Pro Gln Ile Ser Thr Leu Ala Trp Tyr Thr Thr
    130   135   140

Leu Val Pro Leu Leu Val Val Leu Gly Val Thr Ala Ile Lys Asp Leu
145   150   155   160

Val Asp Asp Val Ala Arg His Lys Met Asp Lys Glu Ile Asn Asn Arg
                165   170   175

Thr Cys Glu Val Ile Lys Asp Gly Arg Phe Lys Val Ala Lys Trp Lys
            180   185   190

Glu Ile Gln Val Gly Asp Val Ile Arg Leu Lys Lys Asn Asp Phe Val
        195   200   205

```
Pro Ala Asp Ile Leu Leu Leu Ser Ser Ser Glu Pro Asn Ser Leu Cys
    210                 215                 220

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

Met Ser Leu Glu Ile Thr Asp Gln Tyr Leu Gln Arg Glu Asp Thr Leu
                245                 250                 255

Ala Thr Phe Asp Gly Phe Ile Glu Cys Glu Glu Pro Asn Asn Arg Leu
            260                 265                 270

Asp Lys Phe Thr Gly Thr Leu Phe Trp Arg Asn Thr Ser Phe Pro Leu
        275                 280                 285

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

Phe Cys His Gly Leu Val Ile Phe Ala Gly Ala Asp Thr Lys Ile Met
305                 310                 315                 320

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

Met Asn Tyr Met Val Tyr Thr Ile Phe Val Val Leu Ile Leu Leu Ser
            340                 345                 350

Ala Gly Leu Ala Ile Gly His Ala Tyr Trp Glu Ala Gln Val Gly Asn
        355                 360                 365

Ser Ser Trp Tyr Leu Tyr Asp Gly Glu Asp Asp Thr Pro Ser Tyr Arg
    370                 375                 380

Gly Phe Leu Ile Phe Trp Gly Tyr Ile Ile Val Leu Asn Thr Met Val
385                 390                 395                 400

Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly Gln Ser
                405                 410                 415

His Phe Ile Asn Trp Asp Leu Gln Met Tyr Tyr Ala Glu Lys Asp Thr
            420                 425                 430
```

```
Pro Ala Lys Ala Arg Thr Thr Thr Leu Asn Glu Gln Leu Gly Gln Ile
        435                 440                 445

His Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Ile Met
    450                 455                 460

Thr Phe Lys Lys Cys Cys Ile Asn Gly Gln Ile Tyr Gly Asp His Arg
465                 470                 475                 480

Asp Ala Ser Gln His Asn His Asn Lys Ile Glu Gln Val Asp Phe Ser
                485                 490                 495

Trp Asn Thr Tyr Ala Asp Gly Lys Leu Ala Phe Tyr Asp His Tyr Leu
            500                 505                 510

Ile Glu Gln Ile Gln Ser Gly Lys Glu Pro Glu Val Arg Gln Phe Phe
        515                 520                 525

Phe Leu Leu Ala Val Cys His Thr Val Met Val Asp Arg Thr Asp Gly
    530                 535                 540

Gln Leu Asn Tyr Gln Ala Ala Ser Pro Asp Glu Gly Ala Leu Val Asn
545                 550                 555                 560

Ala Ala Arg Asn Phe Gly Phe Ala Phe Leu Ala Arg Thr Gln Asn Thr
                565                 570                 575

Ile Thr Ile Ser Glu Leu Gly Thr Glu Arg Thr Tyr Asn Val Leu Ala
            580                 585                 590

Ile Leu Asp Phe Asn Ser Asp Arg Lys Arg Met Ser Ile Ile Val Arg
        595                 600                 605

Thr Pro Glu Gly Asn Ile Lys Leu Tyr Cys Lys Gly Ala Asp Thr Val
    610                 615                 620

Ile Tyr Glu Arg Leu His Arg Met Asn Pro Thr Lys Gln Glu Thr Gln
625                 630                 635                 640

Asp Ala Leu Asp Ile Phe Ala Asn Glu Thr Leu Arg Thr Leu Cys Leu
                645                 650                 655

Cys Tyr Lys Glu Ile Glu Glu Lys Glu Phe Thr Glu Trp Asn Lys Lys
```

660 665 670

Phe Met Ala Ala Ser Val Ala Ser Thr Asn Arg Asp Glu Ala Leu Asp
675 680 685

Lys Val Tyr Glu Glu Ile Glu Lys Asp Leu Ile Leu Leu Gly Ala Thr
690 695 700

Ala Ile Glu Asp Lys Leu Gln Asp Gly Val Pro Glu Thr Ile Ser Lys
705 710 715 720

Leu Ala Lys Ala Asp Ile Lys Ile Trp Val Leu Thr Gly Asp Lys Lys
725 730 735

Glu Thr Ala Glu Asn Ile Gly Phe Ala Cys Glu Leu Leu Thr Glu Asp
740 745 750

Thr Thr Ile Cys Tyr Gly Glu Asp Ile Asn Ser Leu Leu His Ala Arg
755 760 765

Met Glu Asn Gln Arg Asn Arg Gly Gly Val Tyr Ala Lys Phe Ala Pro
770 775 780

Pro Val Gln Glu Ser Phe Phe Pro Pro Gly Gly Asn Arg Ala Leu Ile
785 790 795 800

Ile Thr Gly Ser Trp Leu Asn Glu Ile Leu Leu Glu Lys Lys Thr Lys
805 810 815

Arg Asn Lys Ile Leu Lys Leu Lys Phe Pro Arg Thr Glu Glu Glu Arg
820 825 830

Arg Met Arg Thr Gln Ser Lys Arg Arg Leu Glu Ala Lys Lys Glu Gln
835 840 845

Arg Gln Lys Asn Phe Val Asp Leu Ala Cys Glu Cys Ser Ala Val Ile
850 855 860

Cys Cys Arg Val Thr Pro Lys Gln Lys Ala Met Val Val Asp Leu Val
865 870 875 880

Lys Arg Tyr Lys Lys Ala Ile Thr Leu Ala Ile Gly Asp Gly Ala Asn
885 890 895

```
Asp Val Asn Met Ile Lys Thr Ala His Ile Gly Val Gly Ile Ser Gly
            900                 905                 910

Gln Glu Gly Met Gln Ala Val Met Ser Ser Asp Tyr Ser Phe Ala Gln
        915                 920                 925

Phe Arg Tyr Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp Ser Tyr
    930                 935                 940

Ile Arg Met Cys Lys Phe Leu Arg Tyr Phe Phe Tyr Lys Asn Phe Ala
945                 950                 955                 960

Phe Thr Leu Val His Phe Trp Tyr Ser Phe Phe Asn Gly Tyr Ser Ala
                965                 970                 975

Gln Thr Ala Tyr Glu Asp Trp Phe Ile Thr Leu Tyr Asn Val Leu Tyr
            980                 985                 990

Thr Ser Leu Pro Val Leu Leu Met  Gly Leu Leu Asp Gln  Asp Val
Ser
        995                 1000                1005

Asp Lys  Leu Ser Leu Arg Phe  Pro Gly Leu Tyr Ile  Val Gly Gln
    1010                1015                1020

Arg Asp  Leu Leu Phe Asn Tyr  Lys Arg Phe Phe Val  Ser Leu Leu
    1025                1030                1035

His Gly  Val Leu Thr Ser Met  Ile Leu Phe Phe Ile  Pro Leu Gly
    1040                1045                1050

Ala Tyr  Leu Gln Thr Val Gly  Gln Asp Gly Glu Ala  Pro Ser Asp
    1055                1060                1065

Tyr Gln  Ser Phe Ala Val Thr  Ile Ala Ser Ala Leu  Val Ile Thr
    1070                1075                1080

Val Asn  Phe Gln Ile Gly Leu  Asp Thr Ser Tyr Trp  Thr Phe Val
    1085                1090                1095

Asn Ala  Phe Ser Ile Phe Gly  Ser Ile Ala Leu Tyr  Phe Gly Ile
    1100                1105                1110
```

```
Met Phe  Asp Phe His Ser Ala  Gly Ile His Val Leu  Phe Pro Ser
    1115                1120                1125

Ala Phe  Gln Phe Thr Gly Thr  Ala Ser Asn Ala Leu  Arg Gln Pro
    1130                1135                1140

Tyr Ile  Trp Leu Thr Ile Ile  Leu Ala Val Ala Val  Cys Leu Leu
    1145                1150                1155

Pro Val  Val Ala Ile Arg Phe  Leu Ser Met Thr Ile  Trp Pro Ser
    1160                1165                1170

Glu Ser  Asp Lys Ile Gln Lys  His Arg Lys Arg Leu  Lys Ala Glu
    1175                1180                1185

Glu Gln  Trp Gln Arg Arg Gln  Gln Val Phe Arg Arg  Gly Val Ser
    1190                1195                1200

Thr Arg  Arg Ser Ala Tyr Ala  Phe Ser His Gln Arg  Gly Tyr Ala
    1205                1210                1215

Asp Leu  Ile Ser Ser Gly Arg  Ser Ile Arg Lys Lys  Arg Ser Pro
    1220                1225                1230

Leu Asp  Ala Ile Val Ala Asp  Gly Thr Ala Glu Tyr  Arg Arg Thr
    1235                1240                1245

Gly Asp  Ser
    1250
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<210> 7221
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP8B1; "

<220>
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<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8B,
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467767"

<400> 7221
Met Ser Thr Glu Arg Asp Ser Glu Thr Thr Phe Asp Glu Asp Ser Gln
1 5 10 15

Pro Asn Asp Glu Val Val Pro Tyr Ser Asp Asp Glu Thr Glu Asp Glu
20 25 30

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

Arg Glu Ala Glu Glu Asn Arg Glu Pro Phe Arg Lys Glu
50 55 60

<210> 7222
<211> 92
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1539; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B1; "

<220>
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<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8B,
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468266"

<400> 7222
Met Tyr Tyr Ala Glu Lys Asp Thr Pro Ala Lys Ala Arg Thr Thr Thr
1 5 10 15

Leu Asn Glu Gln Leu Gly Gln Ile His Tyr Ile Phe Ser Asp Lys Thr
20 25 30

```
Gly Thr Leu Thr Gln Asn Ile Met Thr Phe Lys Lys Cys Cys Ile Asn
        35                  40                  45


Gly Gln Ile Tyr Gly Asp His Arg Asp Ala Ser Gln His Asn His Asn
    50                  55                  60


Lys Ile Glu Gln Val Asp Phe Ser Trp Asn Thr Tyr Ala Asp Gly Lys
65                  70                  75                  80


Leu Ala Phe Tyr Asp His Tyr Leu Ile Glu Gln Ile
                85                  90


<210> 7223
<211> 11
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1539; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B1; "

<220>
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<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468751"

<400> 7223
Met Ser Thr Glu Arg Asp Ser Glu Thr Thr Phe
1               5                   10


<210> 7224
<211> 387
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1540; "

<220>
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<221> source
<223> /note="Gene Symbol: ATP8B2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8B,
member 2; "

<220>
<221> source
<223> /note="Uniprot ID: P98198; "

<220>
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<223> /note="ENSP ID: ENSP00000357472"

<400> 7224

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Met Ala Val Cys Ala Lys Lys Arg Pro Pro Glu Glu Glu Arg Arg Ala
1               5                  10                  15

Arg Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Ser Asn
            20                  25                  30

Cys Ile Lys Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Val Asn
        35                  40                  45

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

Leu Ile Leu Gln Leu Ile Pro Gln Ile Ser Ser Leu Ser Trp Phe Thr
65                  70                  75                  80

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

Ala Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn Asn
            100                 105                 110

Arg Gln Ser Gln Val Leu Ile Asn Gly Ile Leu Gln Gln Glu Gln Trp
        115                 120                 125

Met Asn Val Cys Val Gly Asp Ile Ile Lys Leu Glu Asn Asn Gln Phe
    130                 135                 140

Val Ala Ala Asp Leu Leu Leu Leu Ser Ser Ser Glu Pro His Gly Leu
145                 150                 155                 160
```

```
Cys Tyr Ile Glu Thr Ala Glu Leu Asp Gly Glu Thr Asn Met Lys Val
                165                 170                 175

Arg Gln Ala Ile Pro Val Thr Ser Glu Leu Gly Asp Ile Ser Lys Leu
            180                 185                 190

Ala Lys Phe Asp Gly Glu Val Ile Cys Glu Pro Pro Asn Asn Lys Leu
        195                 200                 205

Asp Lys Phe Ser Gly Thr Leu Tyr Trp Lys Glu Asn Lys Phe Pro Leu
    210                 215                 220

Ser Asn Gln Asn Met Leu Leu Arg Gly Cys Val Leu Arg Asn Thr Glu
225                 230                 235                 240

Trp Cys Phe Gly Leu Val Ile Phe Ala Gly Pro Asp Thr Lys Leu Met
                245                 250                 255

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

Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Val Cys Met Gly
        275                 280                 285

Val Ile Leu Ala Ile Gly Asn Ala Ile Trp Glu His Glu Val Gly Met
    290                 295                 300

Arg Phe Gln Val Tyr Leu Pro Trp Asp Glu Ala Val Asp Ser Ala Phe
305                 310                 315                 320

Phe Ser Gly Phe Leu Ser Phe Trp Ser Tyr Ile Ile Ile Leu Asn Thr
                325                 330                 335

Val Val Pro Ile Ser Leu Tyr Val Arg Tyr Val Pro Ser Leu Thr Trp
            340                 345                 350

Gly Leu Ser Arg Glu Ser Gly Gly Pro Ile Glu Leu Phe Phe Ser Met
        355                 360                 365

Lys Met Lys Ser Leu Arg Ser Asn Glu Lys Ser Ser Ser Ser Cys Thr
    370                 375                 380
```

Val Asn Ile
385

<210> 7225
<211> 1223
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1540; "

<220>
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<223> /note="Gene Symbol: ATP8B2; "

<220>
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<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8B,
member 2; "

<220>
<221> source
<223> /note="Uniprot ID: P98198; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357475"

<400> 7225
Met Asp Thr Leu Arg Ala Val Pro Leu Phe Ser Ile Ser Gly Leu Phe
1 5 10 15

Ser Phe Pro Tyr Arg Val Ser His Gly Ile Ala Gly Ile Leu Leu Gly
20 25 30

Glu Met Ala Val Cys Ala Lys Lys Arg Pro Pro Glu Glu Glu Arg Arg
35 40 45

Ala Arg Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Ser
50 55 60

Asn Cys Ile Lys Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Val
65 70 75 80

Asn Leu Phe Glu Gln Phe Gln Glu Val Ala Asn Thr Tyr Phe Leu Phe
85 90 95

```
Leu Leu Ile Leu Gln Leu Ile Pro Gln Ile Ser Ser Leu Ser Trp Phe
            100                 105                 110

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

Asp Ala Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn
    130                 135                 140

Asn Arg Gln Ser Gln Val Leu Ile Asn Gly Ile Leu Gln Gln Glu Gln
145                 150                 155                 160

Trp Met Asn Val Cys Val Gly Asp Ile Ile Lys Leu Glu Asn Asn Gln
                165                 170                 175

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

Leu Cys Tyr Ile Glu Thr Ala Glu Leu Asp Gly Glu Thr Asn Met Lys
        195                 200                 205

Val Arg Gln Ala Ile Pro Val Thr Ser Glu Leu Gly Asp Ile Ser Lys
    210                 215                 220

Leu Ala Lys Phe Asp Gly Glu Val Ile Cys Glu Pro Pro Asn Asn Lys
225                 230                 235                 240

Leu Asp Lys Phe Ser Gly Thr Leu Tyr Trp Lys Glu Asn Lys Phe Pro
                245                 250                 255

Leu Ser Asn Gln Asn Met Leu Leu Arg Gly Cys Val Leu Arg Asn Thr
            260                 265                 270

Glu Trp Cys Phe Gly Leu Val Ile Phe Ala Gly Pro Asp Thr Lys Leu
        275                 280                 285

Met Gln Asn Ser Gly Arg Thr Lys Phe Lys Arg Thr Ser Ile Asp Arg
    290                 295                 300

Leu Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Val Cys Met
305                 310                 315                 320
```

```
Gly Val Ile Leu Ala Ile Gly Asn Ala Ile Trp Glu His Glu Val Gly
                325                 330                 335

Met Arg Phe Gln Val Tyr Leu Pro Trp Asp Glu Ala Val Asp Ser Ala
            340                 345                 350

Phe Phe Ser Gly Phe Leu Ser Phe Trp Ser Tyr Ile Ile Ile Leu Asn
        355                 360                 365

Thr Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu
    370                 375                 380

Gly His Ser Tyr Phe Ile Asn Trp Asp Lys Lys Met Phe Cys Met Lys
385                 390                 395                 400

Lys Arg Thr Pro Ala Glu Ala Arg Thr Thr Thr Leu Asn Glu Glu Leu
                405                 410                 415

Gly Gln Val Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln
            420                 425                 430

Asn Ile Met Val Phe Asn Lys Cys Ser Ile Asn Gly His Ser Tyr Gly
        435                 440                 445

Asp Val Phe Asp Val Leu Gly His Lys Ala Glu Leu Gly Glu Arg Pro
    450                 455                 460

Glu Pro Val Asp Phe Ser Phe Asn Pro Leu Ala Asp Lys Lys Phe Leu
465                 470                 475                 480

Phe Trp Asp Pro Ser Leu Leu Glu Ala Val Lys Ile Gly Asp Pro His
                485                 490                 495

Thr His Glu Phe Phe Arg Leu Leu Ser Leu Cys His Thr Val Met Ser
            500                 505                 510

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

Glu Gly Ala Leu Val Thr Ala Ala Arg Asn Phe Gly Phe Val Phe Arg
    530                 535                 540

Ser Arg Thr Pro Lys Thr Ile Thr Val His Glu Met Gly Thr Ala Ile
```

545 550 555 560

Thr Tyr Gln Leu Leu Ala Ile Leu Asp Phe Asn Asn Ile Arg Lys Arg
565 570 575

Met Ser Val Ile Val Arg Asn Pro Glu Gly Lys Ile Arg Leu Tyr Cys
580 585 590

Lys Gly Ala Asp Thr Ile Leu Leu Asp Arg Leu His His Ser Thr Gln
595 600 605

Glu Leu Leu Asn Thr Thr Met Asp His Leu Asn Glu Tyr Ala Gly Glu
610 615 620

Gly Leu Arg Thr Leu Val Leu Ala Tyr Lys Asp Leu Asp Glu Glu Tyr
625 630 635 640

Tyr Glu Glu Trp Ala Glu Arg Arg Leu Gln Ala Ser Leu Ala Gln Asp
645 650 655

Ser Arg Glu Asp Arg Leu Ala Ser Ile Tyr Glu Glu Val Glu Asn Asn
660 665 670

Met Met Leu Leu Gly Ala Thr Ala Ile Glu Asp Lys Leu Gln Gln Gly
675 680 685

Val Pro Glu Thr Ile Ala Leu Leu Thr Leu Ala Asn Ile Lys Ile Trp
690 695 700

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

Cys Lys Met Leu Thr Asp Asp Met Thr Glu Val Phe Ile Val Thr Gly
725 730 735

His Thr Val Leu Glu Val Arg Glu Glu Leu Arg Lys Ala Arg Glu Lys
740 745 750

Met Met Asp Ser Ser Arg Ser Val Gly Asn Gly Phe Thr Tyr Gln Asp
755 760 765

Lys Leu Ser Ser Ser Lys Leu Thr Ser Val Leu Glu Ala Val Ala Gly
770 775 780

```
Glu Tyr Ala Leu Val Ile Asn Gly His Ser Leu Ala His Ala Leu Glu
785                 790                 795                 800

Ala Asp Met Glu Leu Glu Phe Leu Glu Thr Ala Cys Ala Cys Lys Ala
                805                 810                 815

Val Ile Cys Cys Arg Val Thr Pro Leu Gln Lys Ala Gln Val Val Glu
            820                 825                 830

Leu Val Lys Lys Tyr Lys Lys Ala Val Thr Leu Ala Ile Gly Asp Gly
        835                 840                 845

Ala Asn Asp Val Ser Met Ile Lys Thr Ala His Ile Gly Val Gly Ile
    850                 855                 860

Ser Gly Gln Glu Gly Ile Gln Ala Val Leu Ala Ser Asp Tyr Ser Phe
865                 870                 875                 880

Ser Gln Phe Lys Phe Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp
                885                 890                 895

Ser Tyr Leu Arg Met Cys Lys Phe Leu Cys Tyr Phe Phe Tyr Lys Asn
            900                 905                 910

Phe Ala Phe Thr Met Val His Phe Trp Phe Gly Phe Phe Cys Gly Phe
        915                 920                 925

Ser Ala Gln Thr Val Tyr Asp Gln Tyr Phe Ile Thr Leu Tyr Asn Ile
    930                 935                 940

Val Tyr Thr Ser Leu Pro Val Leu Ala Met Gly Val Phe Asp Gln Asp
945                 950                 955                 960

Val Pro Glu Gln Arg Ser Met Glu Tyr Pro Lys Leu Tyr Glu Pro Gly
                965                 970                 975

Gln Leu Asn Leu Leu Phe Asn Lys Arg Glu Phe Phe Ile Cys Ile Ala
            980                 985                 990

Gln Gly Ile Tyr Thr Ser Val Leu  Met Phe Phe Ile Pro  Tyr Gly
Val
        995                 1000                1005
```

```
Phe Ala  Asp Ala Thr Arg Asp  Asp Gly Thr Gln Leu  Ala Asp Tyr
    1010                1015                1020

Gln Ser  Phe Ala Val Thr Val  Ala Thr Ser Leu Val  Ile Val Val
    1025                1030                1035

Ser Val  Gln Ile Gly Leu Asp  Thr Gly Tyr Trp Thr  Ala Ile Asn
    1040                1045                1050

His Phe  Phe Ile Trp Gly Ser  Leu Ala Val Tyr Phe  Ala Ile Leu
    1055                1060                1065

Phe Ala  Met His Ser Asn Gly  Leu Phe Asp Met Phe  Pro Asn Gln
    1070                1075                1080

Phe Arg  Phe Val Gly Asn Ala  Gln Asn Thr Leu Ala  Gln Pro Thr
    1085                1090                1095

Val Trp  Leu Thr Ile Val Leu  Thr Thr Val Val Cys  Ile Met Pro
    1100                1105                1110

Val Val  Ala Phe Arg Phe Leu  Arg Leu Asn Leu Lys  Pro Asp Leu
    1115                1120                1125

Ser Asp  Thr Val Arg Tyr Thr  Gln Leu Val Arg Lys  Lys Gln Lys
    1130                1135                1140

Ala Gln  His Arg Cys Met Arg  Arg Val Gly Arg Thr  Gly Ser Arg
    1145                1150                1155

Arg Ser  Gly Tyr Ala Phe Ser  His Gln Glu Gly Phe  Gly Glu Leu
    1160                1165                1170

Ile Met  Ser Gly Lys Asn Met  Arg Leu Ser Ser Leu  Ala Leu Ser
    1175                1180                1185

Ser Phe  Thr Thr Arg Ser Ser  Ser Ser Trp Ile Glu  Ser Leu Arg
    1190                1195                1200

Arg Lys  Lys Ser Asp Ser Ala  Ser Ser Pro Ser Gly  Gly Ala Asp
    1205                1210                1215
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Lys Pro Leu Lys Gly
1220

<210> 7226
<211> 1300
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1541; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, aminophospholipid transporter,
class I, type 8B,
member 3; "

<220>
<221> source
<223> /note="Uniprot ID: O60423; "

<220>
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<223> /note="ENSP ID: ENSP00000311336"

<400> 7226
Met Gly Thr Gly Pro Ala Gln Thr Pro Arg Ser Thr Arg Ala Gly Pro
1 5 10 15

Glu Pro Ser Pro Ala Pro Pro Gly Pro Gly Asp Thr Gly Asp Ser Asp
20 25 30

Val Thr Gln Glu Gly Ser Gly Pro Ala Gly Ile Arg Gly Gly Glu Thr
35 40 45

Val Ile Arg Ala Gly Met Gly Asp Ser Pro Gly Arg Gly Ala Pro Glu
50 55 60

Arg Arg His Lys Ala Gln Pro Gly Arg Ala Arg Lys Tyr Glu Trp Arg
65 70 75 80

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

```
Gln Asp Glu Asp Arg Asn Ser Ala Phe Thr Trp Lys Val Gln Ala Asn
            100                 105                 110

Asn Arg Ala Tyr Asn Gly Gln Phe Lys Glu Lys Val Ile Leu Cys Trp
        115                 120                 125

Gln Arg Lys Lys Tyr Lys Thr Asn Val Ile Arg Thr Ala Lys Tyr Asn
    130                 135                 140

Phe Tyr Ser Phe Leu Pro Leu Asn Leu Tyr Glu Gln Phe His Arg Val
145                 150                 155                 160

Ser Asn Leu Phe Phe Leu Ile Ile Ile Ile Leu Gln Ser Ile Pro Asp
                165                 170                 175

Ile Ser Thr Leu Pro Trp Phe Ser Leu Ser Thr Pro Met Val Cys Leu
            180                 185                 190

Leu Phe Ile Arg Ala Thr Arg Asp Leu Val Asp Asp Met Gly Arg His
        195                 200                 205

Lys Ser Asp Arg Ala Ile Asn Asn Arg Pro Cys Gln Ile Leu Met Gly
    210                 215                 220

Lys Ser Phe Lys Gln Lys Lys Trp Gln Asp Leu Cys Val Gly Asp Val
225                 230                 235                 240

Val Cys Leu Arg Lys Asp Asn Ile Val Pro Ala Asp Met Leu Leu Leu
                245                 250                 255

Ala Ser Thr Glu Pro Ser Ser Leu Cys Tyr Val Glu Thr Val Asp Ile
            260                 265                 270

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

Lys Glu Leu Ala Thr Ile Lys Lys Met Ala Ser Phe Gln Gly Thr Val
    290                 295                 300

Thr Cys Glu Ala Pro Asn Ser Arg Met His His Phe Val Gly Cys Leu
305                 310                 315                 320
```

```
Glu Trp Asn Asp Lys Lys Tyr Ser Leu Asp Ile Gly Asn Leu Leu Leu
                325                 330                 335

Arg Gly Cys Arg Ile Arg Asn Thr Asp Thr Cys Tyr Gly Leu Val Ile
            340                 345                 350

Tyr Ala Gly Phe Asp Thr Lys Ile Met Lys Asn Cys Gly Lys Ile His
        355                 360                 365

Leu Lys Arg Thr Lys Leu Asp Leu Leu Met Asn Lys Leu Val Val Val
    370                 375                 380

Ile Phe Ile Ser Val Val Leu Val Cys Leu Val Leu Ala Phe Gly Phe
385                 390                 395                 400

Gly Phe Ser Val Lys Glu Phe Lys Asp His His Tyr Tyr Leu Ser Gly
                405                 410                 415

Val His Gly Ser Ser Val Ala Ala Glu Ser Phe Phe Val Phe Trp Ser
            420                 425                 430

Phe Leu Ile Leu Leu Ser Val Thr Ile Pro Met Ser Met Phe Ile Leu
        435                 440                 445

Ser Glu Phe Ile Tyr Leu Gly Asn Ser Val Phe Ile Asp Trp Asp Val
    450                 455                 460

Gln Met Tyr Tyr Lys Pro Gln Asp Val Pro Ala Lys Ala Arg Ser Thr
465                 470                 475                 480

Ser Leu Asn Asp His Leu Gly Gln Val Glu Tyr Ile Phe Ser Asp Lys
                485                 490                 495

Thr Gly Thr Leu Thr Gln Asn Ile Leu Thr Phe Asn Lys Cys Cys Ile
            500                 505                 510

Ser Gly Arg Val Tyr Gly Pro Asp Ser Glu Ala Thr Thr Arg Pro Lys
        515                 520                 525

Glu Asn Pro Tyr Leu Trp Asn Lys Phe Ala Asp Gly Lys Leu Leu Phe
    530                 535                 540

His Asn Ala Ala Leu Leu His Leu Val Arg Thr Asn Gly Asp Glu Ala
```

545 550 555 560

Val Arg Glu Phe Trp Arg Leu Leu Ala Ile Cys His Thr Val Met Val
565 570 575

Arg Glu Ser Pro Arg Glu Arg Pro Asp Gln Leu Leu Tyr Gln Ala Ala
580 585 590

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

Val Phe Leu Ser Arg Thr Gln Asp Thr Val Thr Ile Met Glu Leu Gly
610 615 620

Glu Glu Arg Val Tyr Gln Val Leu Ala Ile Met Asp Phe Asn Ser Thr
625 630 635 640

Arg Lys Arg Met Ser Val Leu Val Arg Lys Pro Glu Gly Ala Ile Cys
645 650 655

Leu Tyr Thr Lys Gly Ala Asp Thr Val Ile Phe Glu Arg Leu His Arg
660 665 670

Arg Gly Ala Met Glu Phe Ala Thr Glu Glu Ala Leu Ala Ala Phe Ala
675 680 685

Gln Glu Thr Leu Arg Thr Leu Cys Leu Ala Tyr Arg Glu Val Ala Glu
690 695 700

Asp Ile Tyr Glu Asp Trp Gln Gln Arg His Gln Glu Ala Ser Leu Leu
705 710 715 720

Leu Gln Asn Arg Ala Gln Ala Leu Gln Gln Leu Leu Gly Ala Thr Ala
725 730 735

Ile Glu Asp Arg Leu Gln Asp Gly Val Pro Glu Thr Ile Lys Cys Leu
740 745 750

Lys Lys Ser Asn Ile Lys Ile Trp Val Leu Thr Gly Asp Lys Gln Glu
755 760 765

Thr Ala Val Asn Ile Gly Phe Ala Cys Glu Leu Leu Ser Glu Asn Met
770 775 780

```
Leu Ile Leu Glu Glu Lys Glu Ile Ser Arg Ile Leu Glu Thr Tyr Trp
785                 790                 795                 800

Glu Asn Ser Asn Asn Leu Leu Thr Arg Glu Ser Leu Ser Gln Val Lys
                805                 810                 815

Leu Ala Leu Val Ile Asn Gly Asp Phe Leu Asp Lys Leu Leu Val Ser
            820                 825                 830

Leu Arg Lys Glu Pro Arg Ala Leu Ala Gln Asn Val Asn Met Asp Glu
        835                 840                 845

Ala Trp Gln Glu Leu Gly Gln Ser Arg Arg Asp Phe Leu Tyr Ala Arg
    850                 855                 860

Arg Leu Ser Leu Leu Cys Arg Arg Phe Gly Leu Pro Leu Ala Ala Pro
865                 870                 875                 880

Pro Ala Gln Asp Ser Arg Ala Arg Arg Ser Ser Glu Val Leu Gln Glu
                885                 890                 895

Arg Ala Phe Val Asp Leu Ala Ser Lys Cys Gln Ala Val Ile Cys Cys
            900                 905                 910

Arg Val Thr Pro Lys Gln Lys Ala Leu Ile Val Ala Leu Val Lys Lys
        915                 920                 925

Tyr His Gln Val Val Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Ile
    930                 935                 940

Asn Met Ile Lys Thr Ala Asp Val Gly Val Gly Leu Ala Gly Gln Glu
945                 950                 955                 960

Gly Met Gln Ala Val Gln Asn Ser Asp Phe Val Leu Gly Gln Phe Cys
                965                 970                 975

Phe Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp Ser Tyr Val Arg
            980                 985                 990

Ile Cys Lys Phe Leu Arg Tyr Phe  Phe Tyr Lys Ser Met  Ala Ser
Met
        995                 1000                1005
```

```
Met Val  Gln Val Trp Phe Ala  Cys Tyr Asn Gly Phe  Thr Gly Gln
    1010                1015                1020

Pro Leu  Tyr Glu Gly Trp Phe  Leu Ala Leu Phe Asn  Leu Leu Tyr
    1025                1030                1035

Ser Thr  Leu Pro Val Leu Tyr  Ile Gly Leu Phe Glu  Gln Asp Val
    1040                1045                1050

Ser Ala  Glu Gln Ser Leu Glu  Lys Pro Glu Leu Tyr  Val Val Gly
    1055                1060                1065

Gln Lys  Asp Glu Leu Phe Asn  Tyr Trp Val Phe Val  Gln Ala Ile
    1070                1075                1080

Ala His  Gly Val Thr Thr Ser  Leu Val Asn Phe Phe  Met Thr Leu
    1085                1090                1095

Trp Ile  Ser Arg Asp Thr Ala  Gly Pro Ala Ser Phe  Ser Asp His
    1100                1105                1110

Gln Ser  Phe Ala Val Val Val  Ala Leu Ser Cys Leu  Leu Ser Ile
    1115                1120                1125

Thr Met  Glu Val Ile Leu Ile  Ile Lys Tyr Trp Thr  Ala Leu Cys
    1130                1135                1140

Val Ala  Thr Ile Leu Leu Ser  Leu Gly Phe Tyr Ala  Ile Met Thr
    1145                1150                1155

Thr Thr  Thr Gln Ser Phe Trp  Leu Phe Arg Val Ser  Pro Thr Thr
    1160                1165                1170

Phe Pro  Phe Leu Tyr Ala Asp  Leu Ser Val Met Ser  Ser Pro Ser
    1175                1180                1185

Ile Leu  Leu Val Val Leu Leu  Ser Val Ser Ile Asn  Thr Phe Pro
    1190                1195                1200

Val Leu  Ala Leu Arg Val Ile  Phe Pro Ala Leu Lys  Glu Leu Arg
    1205                1210                1215
```

```
Ala Lys  Glu Glu Lys Val Glu  Glu Gly Pro Ser Glu  Glu Ile Phe
    1220                1225                1230

Thr Met  Glu Pro Leu Pro His  Val His Arg Glu Ser  Arg Ala Arg
    1235                1240                1245

Arg Ser  Ser Tyr Ala Phe Ser  His Arg Glu Gly Tyr  Ala Asn Leu
    1250                1255                1260

Ile Thr  Gln Gly Thr Ile Leu  Arg Arg Gly Pro Gly  Val Ser Ser
    1265                1270                1275

Asp Ile  Ala Ser Glu Ser Leu  Asp Pro Ser Asp Glu  Glu Ala Ala
    1280                1285                1290

Ser Ser  Pro Lys Glu Ser Gln
    1295                1300


<210> 7227
<211> 1263
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1541; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B3; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 3; "

<220>
<221> source
<223> /note="Uniprot ID:  O60423; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437115"

<400> 7227
Met Gly Asp Ser Pro Gly Arg Gly Ala Pro Glu Arg Arg His Lys Ala
1               5                  10                  15
```

```
Gln Pro Gly Arg Ala Arg Lys Tyr Glu Trp Arg Pro Glu Gly Pro Thr
            20                  25                  30

Ser Met Gly Ser Leu Gly Gln Arg Glu Asp Leu Gln Asp Glu Asp Arg
        35                  40                  45

Asn Ser Ala Phe Thr Trp Lys Val Gln Ala Asn Asn Arg Ala Tyr Asn
    50                  55                  60

Gly Gln Phe Lys Glu Lys Val Ile Leu Cys Trp Gln Arg Lys Lys Tyr
65                  70                  75                  80

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

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

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

Trp Phe Ser Leu Ser Thr Pro Met Val Cys Leu Leu Phe Ile Arg Ala
    130                 135                 140

Thr Arg Asp Leu Val Asp Asp Met Gly Arg His Lys Ser Asp Arg Ala
145                 150                 155                 160

Ile Asn Asn Arg Pro Cys Gln Ile Leu Met Gly Lys Ser Phe Lys Gln
                165                 170                 175

Lys Lys Trp Gln Asp Leu Cys Val Gly Asp Val Val Cys Leu Arg Lys
            180                 185                 190

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

Ser Ser Leu Cys Tyr Val Glu Thr Val Asp Ile Asp Gly Glu Thr Asn
    210                 215                 220

Leu Lys Phe Arg Gln Ala Leu Met Val Thr His Lys Glu Leu Ala Thr
225                 230                 235                 240
```

```
Ile Lys Lys Met Ala Ser Phe Gln Gly Thr Val Thr Cys Glu Ala Pro
                245                 250                 255

Asn Ser Arg Met His His Phe Val Gly Cys Leu Glu Trp Asn Asp Lys
            260                 265                 270

Lys Tyr Ser Leu Asp Ile Gly Asn Leu Leu Leu Arg Gly Cys Arg Ile
        275                 280                 285

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

Met Phe Val Gly Phe Asp Thr Lys Ile Met Lys Asn Cys Gly Lys Ile
305                 310                 315                 320

His Leu Lys Arg Thr Lys Leu Asp Leu Leu Met Asn Lys Leu Val Val
                325                 330                 335

Val Ile Phe Ile Ser Val Val Leu Val Cys Leu Val Leu Ala Phe Gly
            340                 345                 350

Phe Gly Phe Ser Val Lys Glu Phe Lys Asp His His Tyr Tyr Leu Ser
        355                 360                 365

Gly Val His Gly Ser Ser Val Ala Ala Glu Ser Phe Phe Val Phe Trp
    370                 375                 380

Ser Phe Leu Ile Leu Leu Ser Val Thr Ile Pro Met Ser Met Phe Ile
385                 390                 395                 400

Leu Ser Glu Phe Ile Tyr Leu Gly Asn Ser Val Phe Ile Asp Trp Asp
                405                 410                 415

Val Gln Met Tyr Tyr Lys Pro Gln Asp Val Pro Ala Lys Ala Arg Ser
            420                 425                 430

Thr Ser Leu Asn Asp His Leu Gly Gln Val Glu Tyr Ile Phe Ser Asp
        435                 440                 445

Lys Thr Gly Thr Leu Thr Gln Asn Ile Leu Thr Phe Asn Lys Cys Cys
    450                 455                 460

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

```
465                 470                 475                 480

Lys Glu Asn Pro Tyr Leu Trp Asn Lys Phe Ala Asp Gly Lys Leu Leu
                485                 490                 495

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

Ala Val Arg Glu Phe Trp Arg Leu Leu Ala Ile Cys His Thr Val Met
        515                 520                 525

Val Arg Glu Ser Pro Arg Glu Arg Pro Asp Gln Leu Leu Tyr Gln Ala
    530                 535                 540

Ala Ser Pro Asp Glu Gly Ala Leu Val Thr Ala Ala Arg Asn Phe Gly
545                 550                 555                 560

Tyr Val Phe Leu Ser Arg Thr Gln Asp Thr Val Thr Ile Met Glu Leu
                565                 570                 575

Gly Glu Glu Arg Val Tyr Gln Val Leu Ala Ile Met Asp Phe Asn Ser
            580                 585                 590

Thr Arg Lys Arg Met Ser Val Leu Val Arg Lys Pro Glu Gly Ala Ile
        595                 600                 605

Cys Leu Tyr Thr Lys Gly Ala Asp Thr Val Ile Phe Glu Arg Leu His
    610                 615                 620

Arg Arg Gly Ala Met Glu Phe Ala Thr Glu Glu Ala Leu Ala Ala Phe
625                 630                 635                 640

Ala Gln Glu Thr Leu Arg Thr Leu Cys Leu Ala Tyr Arg Glu Val Ala
                645                 650                 655

Glu Asp Ile Tyr Glu Asp Trp Gln Gln Arg His Gln Glu Ala Ser Leu
            660                 665                 670

Leu Leu Gln Asn Arg Ala Gln Ala Leu Gln Gln Val Tyr Asn Glu Met
        675                 680                 685

Glu Gln Asp Leu Arg Leu Leu Gly Ala Thr Ala Ile Glu Asp Arg Leu
    690                 695                 700
```

```
Gln Asp Gly Val Pro Glu Thr Ile Lys Cys Leu Lys Lys Ser Asn Ile
705                 710                 715                 720

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

Gly Phe Ala Cys Glu Leu Leu Ser Glu Asn Met Leu Ile Leu Glu Glu
            740                 745                 750

Lys Glu Ile Ser Arg Ile Leu Glu Thr Tyr Trp Glu Asn Ser Asn Asn
        755                 760                 765

Leu Leu Thr Arg Glu Ser Leu Ser Gln Val Lys Leu Ala Leu Val Ile
    770                 775                 780

Asn Gly Asp Phe Leu Asp Lys Leu Leu Val Ser Leu Arg Lys Glu Pro
785                 790                 795                 800

Arg Ala Leu Ala Gln Asn Val Asn Met Asp Glu Ala Trp Gln Glu Leu
                805                 810                 815

Gly Gln Ser Arg Arg Asp Phe Leu Tyr Ala Arg Arg Leu Ser Leu Leu
            820                 825                 830

Cys Arg Arg Phe Gly Leu Pro Leu Ala Ala Pro Pro Ala Gln Asp Ser
        835                 840                 845

Arg Ala Arg Arg Ser Ser Glu Val Leu Gln Glu Arg Ala Phe Val Asp
    850                 855                 860

Leu Ala Ser Lys Cys Gln Ala Val Ile Cys Cys Arg Val Thr Pro Lys
865                 870                 875                 880

Gln Lys Ala Leu Ile Val Ala Leu Val Lys Lys Tyr His Gln Val Val
                885                 890                 895

Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Ile Asn Met Ile Lys Thr
            900                 905                 910

Ala Asp Val Gly Val Gly Leu Ala Gly Gln Glu Gly Met Gln Ala Val
        915                 920                 925
```

```
Gln Asn Ser Asp Phe Val Leu Gly Gln Phe Cys Phe Leu Gln Arg Leu
    930                 935                 940

Leu Leu Val His Gly Arg Trp Ser Tyr Val Arg Ile Cys Lys Phe Leu
945                 950                 955                 960

Arg Tyr Phe Phe Tyr Lys Ser Met Ala Ser Met Met Val Gln Val Trp
                965                 970                 975

Phe Ala Cys Tyr Asn Gly Phe Thr Gly Gln Pro Leu Tyr Glu Gly Trp
            980                 985                 990

Phe Leu Ala Leu Phe Asn Leu Leu  Tyr Ser Thr Leu Pro  Val Leu
Tyr
        995                 1000                1005

Ile Gly  Leu Phe Glu Gln Asp  Val Ser Ala Glu Gln  Ser Leu Glu
    1010                1015                1020

Lys Pro  Glu Leu Tyr Val Val  Gly Gln Lys Asp Glu  Leu Phe Asn
    1025                1030                1035

Tyr Trp  Val Phe Val Gln Ala  Ile Ala His Gly Val  Thr Thr Ser
    1040                1045                1050

Leu Val  Asn Phe Phe Met Thr  Leu Trp Ile Ser Arg  Asp Thr Ala
    1055                1060                1065

Gly Pro  Ala Ser Phe Ser Asp  His Gln Ser Phe Ala  Val Val Val
    1070                1075                1080

Ala Leu  Ser Cys Leu Leu Ser  Ile Thr Met Glu Val  Ile Leu Ile
    1085                1090                1095

Ile Lys  Tyr Trp Thr Ala Leu  Cys Val Ala Thr Ile  Leu Leu Ser
    1100                1105                1110

Leu Gly  Phe Tyr Ala Ile Met  Thr Thr Thr Thr Gln  Ser Phe Trp
    1115                1120                1125

Leu Phe  Arg Val Ser Pro Thr  Thr Phe Pro Phe Leu  Tyr Ala Asp
    1130                1135                1140
```

```
Leu Ser  Val Met Ser Ser Pro  Ser Ile Leu Leu Val  Val Leu Leu
    1145                1150                1155

Ser Val  Ser Ile Asn Thr Phe  Pro Val Leu Ala Leu  Arg Val Ile
    1160                1165                1170

Phe Pro  Ala Leu Lys Glu Leu  Arg Ala Lys Glu Glu  Lys Val Glu
    1175                1180                1185

Glu Gly  Pro Ser Glu Glu Ile  Phe Thr Met Glu Pro  Leu Pro His
    1190                1195                1200

Val His  Arg Glu Ser Arg Ala  Arg Arg Ser Ser Tyr  Ala Phe Ser
    1205                1210                1215

His Arg  Glu Gly Tyr Ala Asn  Leu Ile Thr Gln Gly  Thr Ile Leu
    1220                1225                1230

Arg Arg  Gly Pro Gly Val Ser  Ser Asp Ile Ala Ser  Glu Ser Leu
    1235                1240                1245

Asp Pro  Ser Asp Glu Glu Ala  Ala Ser Ser Pro Lys  Glu Ser Gln
    1250                1255                1260


<210> 7228
<211> 38
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1541; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B3; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439993"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7228
Xaa Gly Phe Ala Cys Glu Leu Leu Ser Glu Asn Met Leu Ile Leu Glu
1   5   10   15

Glu Lys Glu Ile Arg Thr Asn Cys Trp Cys Pro Cys Gly Arg Ser Arg
            20   25   30

Ala Pro Trp Arg Arg Thr
        35

<210> 7229
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1541; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B3; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444334"

<400> 7229
Met Gly Thr Gly Pro Ala Gln Thr Pro Arg Ser Thr Arg Ala Gly Pro
1   5   10   15

Glu Pro Ser Pro Ala Pro Pro Gly Pro Gly Asp Thr Gly Asp Ser Asp
            20   25   30

Val Thr Gln Glu Gly Ser Gly Pro Ala Gly Ile Arg Gly Ala Pro Pro
        35   40   45

Ala Trp Ala Ala Ser Ala Arg Glu Lys Ile Ser Lys Met Arg Thr Gly

```
    50                  55                  60

Thr Gln His Ser Pro Gly Arg Ser Arg Pro Thr Thr Val Pro Thr Thr
65                  70                  75                  80

Gly Ser Ser Arg Arg Arg
                85


<210> 7230
<211> 562
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1541; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445204"

<400> 7230
Met Gly Asp Ser Pro Gly Arg Gly Ala Pro Glu Arg Arg His Lys Ala
1               5                   10                  15

Gln Pro Gly Arg Ala Arg Lys Tyr Glu Trp Arg Pro Glu Gly Pro Thr
            20                  25                  30

Ser Met Gly Ser Leu Gly Gln Arg Glu Asp Leu Gln Asp Glu Asp Arg
        35                  40                  45

Asn Ser Ala Phe Thr Trp Lys Val Gln Ala Asn Asn Arg Ala Tyr Asn
    50                  55                  60

Gly Gln Phe Lys Glu Lys Val Ile Leu Cys Trp Gln Arg Lys Lys Tyr
65                  70                  75                  80

Lys Thr Asn Val Ile Arg Thr Ala Lys Tyr Asn Phe Tyr Ser Phe Leu
```

```
                85                  90                  95

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

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

Trp Phe Ser Leu Ser Thr Pro Met Val Cys Leu Leu Phe Ile Arg Ala
    130                 135                 140

Thr Arg Asp Leu Val Asp Asp Met Gly Arg His Lys Ser Asp Arg Ala
145                 150                 155                 160

Ile Asn Asn Arg Pro Cys Gln Ile Leu Met Gly Lys Ser Phe Lys Gln
                165                 170                 175

Lys Lys Trp Gln Asp Leu Cys Val Gly Asp Val Val Cys Leu Arg Lys
            180                 185                 190

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

Ser Ser Leu Cys Tyr Val Glu Thr Val Asp Ile Asp Gly Glu Thr Asn
    210                 215                 220

Leu Lys Phe Arg Gln Ala Leu Met Val Thr His Lys Glu Leu Ala Thr
225                 230                 235                 240

Ile Lys Lys Met Ala Ser Phe Gln Gly Thr Val Thr Cys Glu Ala Pro
                245                 250                 255

Asn Ser Arg Met His His Phe Val Gly Cys Leu Glu Trp Asn Asp Lys
            260                 265                 270

Lys Tyr Ser Leu Asp Ile Gly Asn Leu Leu Leu Arg Gly Cys Arg Ile
        275                 280                 285

Arg Asn Thr Asp Thr Cys Tyr Gly Leu Val Ile Tyr Ala Gly Phe Asp
    290                 295                 300

Thr Lys Ile Met Lys Asn Cys Gly Lys Ile His Leu Lys Arg Thr Lys
305                 310                 315                 320
```

```
Leu Asp Leu Leu Met Asn Lys Leu Val Val Val Ile Phe Ile Ser Val
                325                 330                 335

Val Leu Val Cys Leu Val Leu Ala Phe Gly Phe Gly Phe Ser Val Lys
            340                 345                 350

Glu Phe Lys Asp His His Tyr Tyr Leu Ser Gly Val His Gly Ser Ser
        355                 360                 365

Val Ala Ala Glu Ser Phe Phe Val Phe Trp Ser Phe Leu Ile Leu Leu
    370                 375                 380

Ser Val Thr Ile Pro Met Ser Met Phe Ile Leu Ser Glu Phe Ile Tyr
385                 390                 395                 400

Leu Gly Asn Ser Val Phe Ile Asp Trp Asp Val Gln Met Tyr Tyr Lys
                405                 410                 415

Pro Gln Asp Val Pro Ala Lys Ala Arg Ser Thr Ser Leu Asn Asp His
            420                 425                 430

Leu Gly Gln Val Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr
        435                 440                 445

Gln Asn Ile Leu Thr Phe Asn Lys Cys Cys Ile Ser Gly Arg Val Tyr
    450                 455                 460

Gly Ala Ala Pro Thr Pro Glu Leu Pro Ala Gly Ser Ser Ile Phe Lys
465                 470                 475                 480

Gly Leu Arg Val Pro Glu Asn Gln Ser His Val Trp Pro His Ala Gln
                485                 490                 495

His Leu Arg Pro Asn Leu Asn Gln Gly Thr Val Ala Arg Trp Pro Gly
            500                 505                 510

Phe Leu Trp Arg Gly Pro Gly Lys Phe Phe Phe Phe Phe Glu Ala Glu
        515                 520                 525

Ser His Ser Val Tyr Pro Gly Arg Asn Ala Val Val Gln Ser Trp Leu
    530                 535                 540
```

```
Thr Ala Ile Ser Thr Ser Gln Val Gln Ala Ile Leu Leu Ala Gln Pro
545                 550                 555                 560


Pro Glu



<210> 7231
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1541; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B3; "

<220>
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<223> /note="Gene Name:
      ATPase, aminophospholipid transporter,
      class I, type 8B,
      member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465027"

<400> 7231
Met Gly Thr Gly Pro Ala Gln Thr Pro Arg Ser Thr Arg Ala Gly Pro
1               5                   10                  15


Glu Pro Ser Pro Ala Pro Pro Gly Pro Gly Asp Thr Gly Asp Ser Asp
            20                  25                  30


Val Thr Gln Glu Gly Ser Gly Pro Ala Gly Ile Arg Gly Gly Glu Thr
        35                  40                  45


Val Ile Arg Ala Gly Met Gly Asp Ser Pro Gly Arg Gly Ala Pro Glu
    50                  55                  60


Arg Arg His Lys Ala Gln Pro Gly Arg Ala Arg Lys Tyr Glu Trp Arg
65                  70                  75                  80


Pro Glu Gly Pro Thr Ser Met Gly Ser Leu Gly Gln Arg Glu Asp Leu
                85                  90                  95
```

```
Gln Asp Glu Asp Arg Asn Ser Ala Phe Thr Trp Lys Val Gln Ala Asn
            100                 105                 110

Asn Arg Ala Tyr Asn Gly Gln Phe Lys Glu Lys Val Ile Leu Cys Trp
        115                 120                 125

Gln Arg Lys Lys Tyr Lys Thr Asn Val Ile Arg Thr Ala Lys Tyr Asn
    130                 135                 140

Phe Tyr Ser Phe Leu Pro Leu Asn Leu Tyr Glu Gln Phe His Arg Val
145                 150                 155                 160

Ser Asn Leu Phe Phe Leu Ile Ile Ile Ile Leu Gln Ser Ile Pro Asp
                165                 170                 175

Ile Ser Thr Leu Pro Trp Phe Ser Leu Ser Thr Pro Met Val Cys Leu
            180                 185                 190

Leu Phe Ile Arg Ala Thr Arg Asp Leu Val Asp Asp Met
        195                 200                 205


<210> 7232
<211> 1001
<212> PRT
<213> Homo sapiens

<220>
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      ATPase, Ca++ transporting, cardiac muscle,
      fast twitch 1; "

<220>
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<220>
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<400> 7232
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```
Met Glu Ala Ala His Ala Lys Thr Thr Glu Glu Cys Leu Ala Tyr Phe
1               5                  10                  15

Gly Val Ser Glu Thr Thr Gly Leu Thr Pro Asp Gln Val Lys Arg Asn
            20                  25                  30

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

Leu Trp Glu Leu Val Ile Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60

Leu Leu Leu Ala Ala Cys Ile Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Ile Thr Ala Phe Val Glu Pro Phe Val Ile Leu Leu
                85                  90                  95

Ile Leu Ile Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Asn Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Tyr Arg Ala Asp Arg Lys Ser Val Gln Arg Ile Lys Ala Arg Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

Ala Asp Ile Arg Ile Leu Ala Ile Lys Ser Thr Thr Leu Arg Val Asp
                165                 170                 175

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Ile Lys His Thr Glu
            180                 185                 190

Pro Val Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

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

Thr Thr Gly Val Gly Thr Glu Ile Gly Lys Ile Arg Asp Gln Met Ala
```

225 230 235 240

Ala Thr Glu Gln Asp Lys Thr Pro Leu Gln Gln Lys Leu Asp Glu Phe
245 250 255

Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Val Ala Val Trp
260 265 270

Leu Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly Gly Ser Trp
275 280 285

Phe Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
290 295 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305 310 315 320

Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val Arg Ser Leu
325 330 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Lys Met Phe Ile
355 360 365

Ile Asp Lys Val Asp Gly Asp Ile Cys Leu Leu Asn Glu Phe Ser Ile
370 375 380

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

Pro Val Arg Pro Gly Gln Tyr Asp Gly Leu Val Glu Leu Ala Thr Ile
405 410 415

Cys Ala Leu Cys Asn Asp Ser Ser Leu Asp Phe Asn Glu Ala Lys Gly
420 425 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Thr Leu
435 440 445

Val Glu Lys Met Asn Val Phe Asn Thr Asp Val Arg Ser Leu Ser Lys
450 455 460

```
Val Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Arg Gln Leu Met Lys
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Ser Pro Ala Lys Ser Ser Arg Ala Ala Val Gly Asn Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys Asn Tyr Val
        515                 520                 525

Arg Val Gly Thr Thr Arg Val Pro Leu Thr Gly Pro Val Lys Glu Lys
    530                 535                 540

Ile Met Ala Val Ile Lys Glu Trp Gly Thr Gly Arg Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Thr Pro Pro Lys Arg Glu Glu Met
                565                 570                 575

Val Leu Asp Asp Ser Ala Arg Phe Leu Glu Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Val Val Gly Met Leu Asp Pro Pro Arg Lys Glu Val Thr
        595                 600                 605

Gly Ser Ile Gln Leu Cys Arg Asp Ala Gly Ile Arg Val Ile Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Ile Ala Ile Cys Arg Arg Ile Gly
625                 630                 635                 640

Ile Phe Gly Glu Asn Glu Glu Val Ala Asp Arg Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Pro Leu Ala Glu Gln Arg Glu Ala Cys Arg Arg
            660                 665                 670

Ala Cys Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser Lys Ile Val
        675                 680                 685
```

```
Glu Tyr Leu Gln Ser Tyr Asp Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720

Gly Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val Leu Ala
                725                 730                 735

Asp Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750

Ile Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Asp Arg Pro Pro Arg Ser Pro Lys Glu Pro Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Met Ala Ile Gly Gly Tyr Val Gly Ala Ala Thr
        835                 840                 845

Val Gly Ala Ala Ala Trp Trp Phe Leu Tyr Ala Glu Asp Gly Pro His
    850                 855                 860

Val Asn Tyr Ser Gln Leu Thr His Phe Met Gln Cys Thr Glu Asp Asn
865                 870                 875                 880

Thr His Phe Glu Gly Ile Asp Cys Glu Val Phe Glu Ala Pro Glu Pro
                885                 890                 895

Met Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910
```

```
Leu Asn Ser Leu Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
        915                 920                 925

Val Asn Ile Trp Leu Leu Gly Ser Ile Cys Leu Ser Met Ser Leu His
    930                 935                 940

Phe Leu Ile Leu Tyr Val Asp Pro Leu Pro Met Ile Phe Lys Leu Arg
945                 950                 955                 960

Ala Leu Asp Leu Thr Gln Trp Leu Met Val Leu Lys Ile Ser Leu Pro
                965                 970                 975

Val Ile Gly Leu Asp Glu Ile Leu Lys Phe Val Ala Arg Asn Tyr Leu
            980                 985                 990

Glu Asp Pro Glu Asp Glu Arg Arg  Lys
        995                 1000


<210> 7233
<211> 994
<212> PRT
<213> Homo sapiens

<220>
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      fast twitch 1; "

<220>
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<223> /note="Uniprot ID:  O14983; "

<220>
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<400> 7233
Met Glu Ala Ala His Ala Lys Thr Thr Glu Glu Cys Leu Ala Tyr Phe
1               5                   10                  15

Gly Val Ser Glu Thr Thr Gly Leu Thr Pro Asp Gln Val Lys Arg Asn
```

```
            20                  25                  30

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

Leu Trp Glu Leu Val Ile Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60

Leu Leu Leu Ala Ala Cys Ile Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Ile Thr Ala Phe Val Glu Pro Phe Val Ile Leu Leu
                85                  90                  95

Ile Leu Ile Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Asn Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Tyr Arg Ala Asp Arg Lys Ser Val Gln Arg Ile Lys Ala Arg Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

Ala Asp Ile Arg Ile Leu Ala Ile Lys Ser Thr Thr Leu Arg Val Asp
                165                 170                 175

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Ile Lys His Thr Glu
            180                 185                 190

Pro Val Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

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

Thr Thr Gly Val Gly Thr Glu Ile Gly Lys Ile Arg Asp Gln Met Ala
225                 230                 235                 240

Ala Thr Glu Gln Asp Lys Thr Pro Leu Gln Gln Lys Leu Asp Glu Phe
                245                 250                 255
```

```
Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Val Ala Val Trp
            260                 265                 270

Leu Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly Gly Ser Trp
        275                 280                 285

Phe Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Lys Met Phe Ile
        355                 360                 365

Ile Asp Lys Val Asp Gly Asp Ile Cys Leu Leu Asn Glu Phe Ser Ile
    370                 375                 380

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

Pro Val Arg Pro Gly Gln Tyr Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ser Leu Asp Phe Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Thr Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asn Thr Asp Val Arg Ser Leu Ser Lys
    450                 455                 460

Val Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Arg Gln Leu Met Lys
465                 470                 475                 480
```

```
Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Ser Pro Ala Lys Ser Ser Arg Ala Ala Val Gly Asn Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys Asn Tyr Val
        515                 520                 525

Arg Val Gly Thr Thr Arg Val Pro Leu Thr Gly Pro Val Lys Glu Lys
    530                 535                 540

Ile Met Ala Val Ile Lys Glu Trp Gly Thr Gly Arg Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Thr Pro Pro Lys Arg Glu Glu Met
                565                 570                 575

Val Leu Asp Asp Ser Ala Arg Phe Leu Glu Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Val Val Gly Met Leu Asp Pro Pro Arg Lys Glu Val Thr
        595                 600                 605

Gly Ser Ile Gln Leu Cys Arg Asp Ala Gly Ile Arg Val Ile Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Ile Ala Ile Cys Arg Arg Ile Gly
625                 630                 635                 640

Ile Phe Gly Glu Asn Glu Glu Val Ala Asp Arg Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Pro Leu Ala Glu Gln Arg Glu Ala Cys Arg Arg
            660                 665                 670

Ala Cys Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser Lys Ile Val
        675                 680                 685

Glu Tyr Leu Gln Ser Tyr Asp Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700
```

```
Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720

Gly Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val Leu Ala
                725                 730                 735

Asp Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750

Ile Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Asp Arg Pro Pro Arg Ser Pro Lys Glu Pro Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Met Ala Ile Gly Gly Tyr Val Gly Ala Ala Thr
        835                 840                 845

Val Gly Ala Ala Ala Trp Trp Phe Leu Tyr Ala Glu Asp Gly Pro His
    850                 855                 860

Val Asn Tyr Ser Gln Leu Thr His Phe Met Gln Cys Thr Glu Asp Asn
865                 870                 875                 880

Thr His Phe Glu Gly Ile Asp Cys Glu Val Phe Glu Ala Pro Glu Pro
                885                 890                 895

Met Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910

Leu Asn Ser Leu Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
        915                 920                 925

Val Asn Ile Trp Leu Leu Gly Ser Ile Cys Leu Ser Met Ser Leu His
```

```
    930                 935                 940

Phe Leu Ile Leu Tyr Val Asp Pro Leu Pro Met Ile Phe Lys Leu Arg
945                 950                 955                 960

Ala Leu Asp Leu Thr Gln Trp Leu Met Val Leu Lys Ile Ser Leu Pro
                965                 970                 975

Val Ile Gly Leu Asp Glu Ile Leu Lys Phe Val Ala Arg Asn Tyr Leu
            980                 985                 990

Glu Gly
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<210> 7234
<211> 869
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, cardiac muscle,
fast twitch 1; "

<220>
<221> source
<223> /note="Uniprot ID: O14983; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443101"

<400> 7234

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Met Gly Lys Val Tyr Arg Ala Asp Arg Lys Ser Val Gln Arg Ile Lys
1               5                   10                  15

Ala Arg Asp Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp
            20                  25                  30

Lys Val Pro Ala Asp Ile Arg Ile Leu Ala Ile Lys Ser Thr Thr Leu
        35                  40                  45
```

```
Arg Val Asp Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Ile Lys
    50                  55                  60

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

Asn Met Leu Phe Ser Gly Thr Asn Ile Ala Ala Gly Lys Ala Leu Gly
                85                  90                  95

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

Gln Met Ala Ala Thr Glu Gln Asp Lys Thr Pro Leu Gln Gln Lys Leu
        115                 120                 125

Asp Glu Phe Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Val
    130                 135                 140

Ala Val Trp Leu Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly
145                 150                 155                 160

Gly Ser Trp Phe Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala
                165                 170                 175

Leu Ala Val Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr
            180                 185                 190

Cys Leu Ala Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val
        195                 200                 205

Arg Ser Leu Pro Ser Val Glu Thr Leu Gly Cys Thr Ser Val Ile Cys
    210                 215                 220

Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Lys
225                 230                 235                 240

Met Phe Ile Ile Asp Lys Val Asp Gly Asp Ile Cys Leu Leu Asn Glu
                245                 250                 255

Phe Ser Ile Thr Gly Ser Thr Tyr Ala Pro Glu Gly Glu Val Leu Lys
            260                 265                 270
```

```
Asn Asp Lys Pro Val Arg Pro Gly Gln Tyr Asp Gly Leu Val Glu Leu
        275                 280                 285

Ala Thr Ile Cys Ala Leu Cys Asn Asp Ser Ser Leu Asp Phe Asn Glu
    290                 295                 300

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

Thr Thr Leu Val Glu Lys Met Asn Val Phe Asn Thr Asp Val Arg Ser
                325                 330                 335

Leu Ser Lys Val Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Arg Gln
            340                 345                 350

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

Met Ser Val Tyr Cys Ser Pro Ala Lys Ser Ser Arg Ala Ala Val Gly
    370                 375                 380

Asn Lys Met Phe Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys
385                 390                 395                 400

Asn Tyr Val Arg Val Gly Thr Thr Arg Val Pro Leu Thr Gly Pro Val
                405                 410                 415

Lys Glu Lys Ile Met Ala Val Ile Lys Glu Trp Gly Thr Gly Arg Asp
            420                 425                 430

Thr Leu Arg Cys Leu Ala Leu Ala Thr Arg Asp Thr Pro Pro Lys Arg
        435                 440                 445

Glu Glu Met Val Leu Asp Asp Ser Ala Arg Phe Leu Glu Tyr Glu Thr
    450                 455                 460

Asp Leu Thr Phe Val Gly Val Val Gly Met Leu Asp Pro Pro Arg Lys
465                 470                 475                 480

Glu Val Thr Gly Ser Ile Gln Leu Cys Arg Asp Ala Gly Ile Arg Val
                485                 490                 495
```

```
Ile Met Ile Thr Gly Asp Asn Lys Gly Thr Ala Ile Ala Ile Cys Arg
            500                 505                 510

Arg Ile Gly Ile Phe Gly Glu Asn Glu Glu Val Ala Asp Arg Ala Tyr
        515                 520                 525

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

Cys Arg Arg Ala Cys Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser
545                 550                 555                 560

Lys Ile Val Glu Tyr Leu Gln Ser Tyr Asp Glu Ile Thr Ala Met Thr
                565                 570                 575

Gly Asp Gly Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly
            580                 585                 590

Ile Ala Met Gly Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met
        595                 600                 605

Val Leu Ala Asp Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu
    610                 615                 620

Gly Arg Ala Ile Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile
625                 630                 635                 640

Ser Ser Asn Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu
                645                 650                 655

Gly Leu Pro Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu
            660                 665                 670

Val Thr Asp Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp
        675                 680                 685

Leu Asp Ile Met Asp Arg Pro Pro Arg Ser Pro Lys Glu Pro Leu Ile
    690                 695                 700

Ser Gly Trp Leu Phe Phe Arg Tyr Met Ala Ile Gly Gly Tyr Val Gly
705                 710                 715                 720

Ala Ala Thr Val Gly Ala Ala Ala Trp Trp Phe Leu Tyr Ala Glu Asp
```

```
                725                 730                 735

Gly Pro His Val Asn Tyr Ser Gln Leu Thr His Phe Met Gln Cys Thr
            740                 745                 750

Glu Asp Asn Thr His Phe Glu Gly Ile Asp Cys Glu Val Phe Glu Ala
        755                 760                 765

Pro Glu Pro Met Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met
    770                 775                 780

Cys Asn Ala Leu Asn Ser Leu Ser Glu Asn Gln Ser Leu Leu Arg Met
785                 790                 795                 800

Pro Pro Trp Val Asn Ile Trp Leu Leu Gly Ser Ile Cys Leu Ser Met
                805                 810                 815

Ser Leu His Phe Leu Ile Leu Tyr Val Asp Pro Leu Pro Met Ile Phe
            820                 825                 830

Lys Leu Arg Ala Leu Asp Leu Thr Gln Trp Leu Met Val Leu Lys Ile
        835                 840                 845

Ser Leu Pro Val Ile Gly Leu Asp Glu Ile Leu Lys Phe Val Ala Arg
    850                 855                 860

Asn Tyr Leu Glu Gly
865


<210> 7235
<211> 41
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, cardiac muscle,
      fast twitch 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000457148"

<400> 7235
Val Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Gln Met Ser
1   5   10   15

Val Cys Lys Gly Leu Pro Leu Thr Ser Gly Gln Glu Pro Leu Pro Phe
            20   25   30

Thr Glu Phe Cys Gly Arg Leu His Pro
        35   40

<210> 7236
<211> 128
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Symbol: ATP2A1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000457357"

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

<400> 7236
Xaa Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val Ala
1   5   10   15

Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala Leu
            20   25   30

Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val Arg Ser Leu Pro

```
        35                  40                  45

Ser Val Glu Thr Leu Gly Cys Thr Ser Val Ile Cys Ser Asp Lys Thr
    50                  55                  60

Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Lys Met Phe Ile Ile
65                  70                  75                  80

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

Gly Ser Thr Tyr Ala Pro Glu Gly Glu Val Pro Lys Val Ser Met Arg
            100                 105                 110

Arg Ser Ala Arg Pro Pro Arg Gln His Ser Pro Pro Trp Trp Arg Arg
        115                 120                 125


<210> 7237
<211> 24
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP2A1; "

<220>
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<223> /note="Gene Name:
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      fast twitch 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457793"


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

<400> 7237
Xaa Lys Ile Ser Leu Pro Val Ile Gly Leu Asp Glu Ile Leu Lys Phe
1               5                   10                  15
```

Val Ala Arg Asn Tyr Leu Glu Gly
            20

<210> 7238
<211> 26
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      fast twitch 1; "

<220>
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<223> /note="ENSP ID: ENSP00000457798"

<400> 7238
Met Gly Lys Val Tyr Arg Ala Asp Arg Lys Ser Val Gln Arg Ile Lys
1   5   10   15

Ala Arg Asp Ile Val Pro Gly Asp Ile Val
            20   25

<210> 7239
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Symbol: ATP2A1; "

<220>
<221> source
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      fast twitch 1; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000458035"

<400> 7239
Met Asn Leu Ser Phe Ser Ser Phe Ser Trp Val Glu Leu Pro Ala Glu
1   5   10   15

Glu Gly Lys Thr Leu Trp Glu Leu Val Ile Glu Gln Phe Glu Asp Leu
            20   25   30

Leu Val Arg Ile Leu Leu Leu Ala Ala Cys Ile Ser Phe Val Leu Ala
        35   40   45

Trp Phe Glu Glu Gly Glu Glu Thr Ile Thr Ala Phe Val Glu Pro Phe
    50   55   60

Val Ile Leu Leu Ile Leu Ile Ala Asn Ala Ile Val Gly Val Trp Gln
65   70   75   80

Glu Arg Asn Ala Glu Asn Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro
                85   90   95

Glu Met Gly Lys Val Tyr Arg Ala Asp Arg Lys Ser Val Gln Arg Ile
            100   105   110

Lys

<210> 7240
<211> 997
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1543; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Ca++ transporting, cardiac muscle,
slow twitch 2; "

<220>
<221> source
<223> /note="Uniprot ID: P16615; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000311186"

<400> 7240
Met Glu Asn Ala His Thr Lys Thr Val Glu Glu Val Leu Gly His Phe
1   5   10   15

Gly Val Asn Glu Ser Thr Gly Leu Ser Leu Glu Gln Val Lys Lys Leu
            20   25   30

Lys Glu Arg Trp Gly Ser Asn Glu Leu Pro Ala Glu Glu Gly Lys Thr
        35   40   45

Leu Leu Glu Leu Val Ile Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50   55   60

Leu Leu Leu Ala Ala Cys Ile Ser Phe Val Leu Ala Trp Phe Glu Glu
65   70   75   80

Gly Glu Glu Thr Ile Thr Ala Phe Val Glu Pro Phe Val Ile Leu Leu
                85   90   95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100   105   110

Glu Asn Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115   120   125

Val Tyr Arg Gln Asp Arg Lys Ser Val Gln Arg Ile Lys Ala Lys Asp
    130   135   140

Ile Val Pro Gly Asp Ile Val Glu Ile Ala Val Gly Asp Lys Val Pro
145   150   155   160

Ala Asp Ile Arg Leu Thr Ser Ile Lys Ser Thr Thr Leu Arg Val Asp
                165   170   175

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Ile Lys His Thr Asp
            180   185   190

Pro Val Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195   200   205

```
Phe Ser Gly Thr Asn Ile Ala Ala Gly Lys Ala Met Gly Val Val Val
    210                 215                 220

Ala Thr Gly Val Asn Thr Glu Ile Gly Lys Ile Arg Asp Glu Met Val
225                 230                 235                 240

Ala Thr Glu Gln Glu Arg Thr Pro Leu Gln Gln Lys Leu Asp Glu Phe
                245                 250                 255

Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Ile Ala Val Trp
            260                 265                 270

Ile Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly Gly Ser Trp
        275                 280                 285

Ile Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Ile
        355                 360                 365

Leu Asp Arg Val Glu Gly Asp Thr Cys Ser Leu Asn Glu Phe Thr Ile
    370                 375                 380

Thr Gly Ser Thr Tyr Ala Pro Ile Gly Glu Val His Lys Asp Asp Lys
385                 390                 395                 400

Pro Val Asn Cys His Gln Tyr Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430
```

```
Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asp Thr Glu Leu Lys Gly Leu Ser Lys
    450                 455                 460

Ile Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Lys Gln Leu Met Lys
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Thr Pro Asn Lys Pro Ser Arg Thr Ser Met Ser Lys Met Phe
            500                 505                 510

Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys Thr His Ile Arg
        515                 520                 525

Val Gly Ser Thr Lys Val Pro Met Thr Ser Gly Val Lys Gln Lys Ile
    530                 535                 540

Met Ser Val Ile Arg Glu Trp Gly Ser Gly Ser Asp Thr Leu Arg Cys
545                 550                 555                 560

Leu Ala Leu Ala Thr His Asp Asn Pro Leu Arg Arg Glu Glu Met His
                565                 570                 575

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

Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Ile Glu Val Ala Ser
        595                 600                 605

Ser Val Lys Leu Cys Arg Gln Ala Gly Ile Arg Val Ile Met Ile Thr
    610                 615                 620

Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Ile Gly Ile
625                 630                 635                 640

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

Phe Asp Glu Leu Asn Pro Ser Ala Gln Arg Asp Ala Cys Leu Asn Ala
```

660 665 670

Arg Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser Lys Ile Val Glu
675 680 685

Phe Leu Gln Ser Phe Asp Glu Ile Thr Ala Met Thr Gly Asp Gly Val
690 695 700

Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met Gly
705 710 715 720

Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val Leu Ala Asp
725 730 735

Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu Gly Arg Ala Ile
740 745 750

Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn Val
755 760 765

Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly Phe Pro Glu
770 775 780

Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp Gly
785 790 795 800

Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile Met
805 810 815

Asn Lys Pro Pro Arg Asn Pro Lys Glu Pro Leu Ile Ser Gly Trp Leu
820 825 830

Phe Phe Arg Tyr Leu Ala Ile Gly Cys Tyr Val Gly Ala Ala Thr Val
835 840 845

Gly Ala Ala Ala Trp Trp Phe Ile Ala Ala Asp Gly Gly Pro Arg Val
850 855 860

Ser Phe Tyr Gln Leu Ser His Phe Leu Gln Cys Lys Glu Asp Asn Pro
865 870 875 880

Asp Phe Glu Gly Val Asp Cys Ala Ile Phe Glu Ser Pro Tyr Pro Met
885 890 895

```
Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala Leu
            900                 905                 910

Asn Ser Leu Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp Glu
        915                 920                 925

Asn Ile Trp Leu Val Gly Ser Ile Cys Leu Ser Met Ser Leu His Phe
    930                 935                 940

Leu Ile Leu Tyr Val Glu Pro Leu Pro Leu Ile Phe Gln Ile Thr Pro
945                 950                 955                 960

Leu Asn Val Thr Gln Trp Leu Met Val Leu Lys Ile Ser Leu Pro Val
                965                 970                 975

Ile Leu Met Asp Glu Thr Leu Lys Phe Val Ala Arg Asn Tyr Leu Glu
            980                 985                 990

Pro Ala Ile Leu Glu
        995


<210> 7241
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1543; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, cardiac muscle,
      slow twitch 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366913"

<400> 7241
Met Glu Asn Ala His Thr Lys Thr Val Glu Glu Val Leu Gly His Phe
1               5                  10                  15
```

```
Gly Val Asn Glu Ser Thr Gly Leu Ser Leu Glu Gln Val Lys Lys Leu
            20                  25                  30

Lys Glu Arg Trp Gly Ser Asn Gly Arg Cys Arg Glu Lys Pro Cys Trp
        35                  40                  45

Asn Leu
    50
```

<210> 7242
<211> 1042
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1543; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A2; "

<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, cardiac muscle,
slow twitch 2; "

<220>
<221> source
<223> /note="Uniprot ID: P16615; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440045"

<400> 7242

```
Met Glu Asn Ala His Thr Lys Thr Val Glu Glu Val Leu Gly His Phe
1               5                  10                  15

Gly Val Asn Glu Ser Thr Gly Leu Ser Leu Glu Gln Val Lys Lys Leu
            20                  25                  30

Lys Glu Arg Trp Gly Ser Asn Glu Leu Pro Ala Glu Glu Gly Lys Thr
        35                  40                  45

Leu Leu Glu Leu Val Ile Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60
```

```
Leu Leu Leu Ala Ala Cys Ile Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Ile Thr Ala Phe Val Glu Pro Phe Val Ile Leu Leu
                85                  90                  95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Asn Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Tyr Arg Gln Asp Arg Lys Ser Val Gln Arg Ile Lys Ala Lys Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Ile Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

Ala Asp Ile Arg Leu Thr Ser Ile Lys Ser Thr Thr Leu Arg Val Asp
                165                 170                 175

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Ile Lys His Thr Asp
            180                 185                 190

Pro Val Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

Phe Ser Gly Thr Asn Ile Ala Ala Gly Lys Ala Met Gly Val Val Val
    210                 215                 220

Ala Thr Gly Val Asn Thr Glu Ile Gly Lys Ile Arg Asp Glu Met Val
225                 230                 235                 240

Ala Thr Glu Gln Glu Arg Thr Pro Leu Gln Gln Lys Leu Asp Glu Phe
                245                 250                 255

Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Ile Ala Val Trp
            260                 265                 270

Ile Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly Gly Ser Trp
        275                 280                 285

Ile Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
```

290 295 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305 310 315 320

Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val Arg Ser Leu
325 330 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Ile
355 360 365

Leu Asp Arg Val Glu Gly Asp Thr Cys Ser Leu Asn Glu Phe Thr Ile
370 375 380

Thr Gly Ser Thr Tyr Ala Pro Ile Gly Glu Val His Lys Asp Asp Lys
385 390 395 400

Pro Val Asn Cys His Gln Tyr Asp Gly Leu Val Glu Leu Ala Thr Ile
405 410 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
420 425 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
435 440 445

Val Glu Lys Met Asn Val Phe Asp Thr Glu Leu Lys Gly Leu Ser Lys
450 455 460

Ile Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Lys Gln Leu Met Lys
465 470 475 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
485 490 495

Tyr Cys Thr Pro Asn Lys Pro Ser Arg Thr Ser Met Ser Lys Met Phe
500 505 510

Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys Thr His Ile Arg
515 520 525

```
Val Gly Ser Thr Lys Val Pro Met Thr Ser Gly Val Lys Gln Lys Ile
    530                 535                 540

Met Ser Val Ile Arg Glu Trp Gly Ser Gly Ser Asp Thr Leu Arg Cys
545                 550                 555                 560

Leu Ala Leu Ala Thr His Asp Asn Pro Leu Arg Arg Glu Glu Met His
                565                 570                 575

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

Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Ile Glu Val Ala Ser
        595                 600                 605

Ser Val Lys Leu Cys Arg Gln Ala Gly Ile Arg Val Ile Met Ile Thr
    610                 615                 620

Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Ile Gly Ile
625                 630                 635                 640

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

Phe Asp Glu Leu Asn Pro Ser Ala Gln Arg Asp Ala Cys Leu Asn Ala
            660                 665                 670

Arg Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser Lys Ile Val Glu
        675                 680                 685

Phe Leu Gln Ser Phe Asp Glu Ile Thr Ala Met Thr Gly Asp Gly Val
    690                 695                 700

Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met Gly
705                 710                 715                 720

Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val Leu Ala Asp
                725                 730                 735

Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu Gly Arg Ala Ile
            740                 745                 750
```

```
Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn Val
        755                 760                 765

Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly Phe Pro Glu
    770                 775                 780

Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp Gly
785                 790                 795                 800

Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile Met
                805                 810                 815

Asn Lys Pro Pro Arg Asn Pro Lys Glu Pro Leu Ile Ser Gly Trp Leu
            820                 825                 830

Phe Phe Arg Tyr Leu Ala Ile Gly Cys Tyr Val Gly Ala Ala Thr Val
        835                 840                 845

Gly Ala Ala Ala Trp Trp Phe Ile Ala Ala Asp Gly Gly Pro Arg Val
    850                 855                 860

Ser Phe Tyr Gln Leu Ser His Phe Leu Gln Cys Lys Glu Asp Asn Pro
865                 870                 875                 880

Asp Phe Glu Gly Val Asp Cys Ala Ile Phe Glu Ser Pro Tyr Pro Met
                885                 890                 895

Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala Leu
            900                 905                 910

Asn Ser Leu Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp Glu
        915                 920                 925

Asn Ile Trp Leu Val Gly Ser Ile Cys Leu Ser Met Ser Leu His Phe
    930                 935                 940

Leu Ile Leu Tyr Val Glu Pro Leu Pro Leu Ile Phe Gln Ile Thr Pro
945                 950                 955                 960

Leu Asn Val Thr Gln Trp Leu Met Val Leu Lys Ile Ser Leu Pro Val
                965                 970                 975
```

Ile Leu Met Asp Glu Thr Leu Lys Phe Val Ala Arg Asn Tyr Leu Glu
980 985 990

Pro Gly Lys Glu Cys Val Gln Pro Ala Thr Lys Ser Cys Ser Phe
Ser
995 1000 1005

Ala Cys Thr Asp Gly Ile Ser Trp Pro Phe Val Leu Leu Ile Met
1010 1015 1020

Pro Leu Val Ile Trp Val Tyr Ser Thr Asp Thr Asn Phe Ser Asp
1025 1030 1035

Met Phe Trp Ser
1040

<210> 7243
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1543; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Ca++ transporting, cardiac muscle,
slow twitch 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447406"

<400> 7243
Met Gln Leu Trp Val Tyr Gly Arg Lys Glu Met Leu Lys Met Pro Ser
1 5 10 15

Lys Pro Leu Arg Asn Met Ser Leu Lys Trp Ala Lys Cys Ile Asp Arg
20 25 30

Thr Glu Arg Val Cys Ser Gly Leu Lys Leu Lys Thr
35 40

<210> 7244
<211> 933
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1543; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A2; "

<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, cardiac muscle,
slow twitch 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449454"

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

<400> 7244
Xaa Thr Ile Thr Ala Phe Val Glu Pro Phe Val Ile Leu Leu Ile Leu
1 5 10 15

Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala Glu Asn
20 25 30

Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys Val Tyr
35 40 45

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

Pro Gly Asp Ile Val Glu Ile Ala Gly Glu Ser Val Ser Val Ile Lys
65 70 75 80

His Thr Asp Pro Val Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys
85 90 95

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

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

Glu Met Val Ala Thr Glu Gln Glu Arg Thr Pro Leu Gln Gln Lys Leu
    130                 135                 140

Asp Glu Phe Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Ile
145                 150                 155                 160

Ala Val Trp Ile Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly
                165                 170                 175

Gly Ser Trp Ile Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala
            180                 185                 190

Leu Ala Val Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr
        195                 200                 205

Cys Leu Ala Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val
    210                 215                 220

Arg Ser Leu Pro Ser Val Glu Thr Leu Gly Cys Thr Ser Val Ile Cys
225                 230                 235                 240

Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg
                245                 250                 255

Met Phe Ile Leu Asp Arg Val Glu Gly Asp Thr Cys Ser Leu Asn Glu
            260                 265                 270

Phe Thr Ile Thr Gly Ser Thr Tyr Ala Pro Ile Gly Glu Val His Lys
        275                 280                 285

Asp Asp Lys Pro Val Asn Cys His Gln Tyr Asp Gly Leu Val Glu Leu
    290                 295                 300

Ala Thr Ile Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu
305                 310                 315                 320

Ala Lys Gly Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu
                325                 330                 335
```

```
Thr Cys Leu Val Glu Lys Met Asn Val Phe Asp Thr Glu Leu Lys Gly
            340                 345                 350

Leu Ser Lys Ile Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Lys Gln
        355                 360                 365

Leu Met Lys Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser
    370                 375                 380

Met Ser Val Tyr Cys Thr Pro Asn Lys Pro Ser Arg Thr Ser Met Ser
385                 390                 395                 400

Lys Met Phe Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys Thr
                405                 410                 415

His Ile Arg Val Gly Ser Thr Lys Val Pro Met Thr Ser Gly Val Lys
            420                 425                 430

Gln Lys Ile Met Ser Val Ile Arg Glu Trp Gly Ser Gly Ser Asp Thr
        435                 440                 445

Leu Arg Cys Leu Ala Leu Ala Thr His Asp Asn Pro Leu Arg Arg Glu
    450                 455                 460

Glu Met His Leu Glu Asp Ser Ala Asn Phe Ile Lys Tyr Glu Thr Asn
465                 470                 475                 480

Leu Thr Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Ile Glu
                485                 490                 495

Val Ala Ser Ser Val Lys Leu Cys Arg Gln Ala Gly Ile Arg Val Ile
            500                 505                 510

Met Ile Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg
        515                 520                 525

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

Gly Arg Glu Phe Asp Glu Leu Asn Pro Ser Ala Gln Arg Asp Ala Cys
545                 550                 555                 560

Leu Asn Ala Arg Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser Lys
```

```
                565                 570                 575

Ile Val Glu Phe Leu Gln Ser Phe Asp Glu Ile Thr Ala Met Thr Gly
            580                 585                 590

Asp Gly Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile
        595                 600                 605

Ala Met Gly Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val
    610                 615                 620

Leu Ala Asp Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu Gly
625                 630                 635                 640

Arg Ala Ile Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser
                645                 650                 655

Ser Asn Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly
            660                 665                 670

Phe Pro Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val
        675                 680                 685

Thr Asp Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu
    690                 695                 700

Asp Ile Met Asn Lys Pro Pro Arg Asn Pro Lys Glu Pro Leu Ile Ser
705                 710                 715                 720

Gly Trp Leu Phe Phe Arg Tyr Leu Ala Ile Gly Cys Tyr Val Gly Ala
                725                 730                 735

Ala Thr Val Gly Ala Ala Ala Trp Trp Phe Ile Ala Ala Asp Gly Gly
            740                 745                 750

Pro Arg Val Ser Phe Tyr Gln Leu Ser His Phe Leu Gln Cys Lys Glu
        755                 760                 765

Asp Asn Pro Asp Phe Glu Gly Val Asp Cys Ala Ile Phe Glu Ser Pro
    770                 775                 780

Tyr Pro Met Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys
785                 790                 795                 800
```

```
Asn Ala Leu Asn Ser Leu Ser Glu Asn Gln Ser Leu Leu Arg Met Pro
                805                 810                 815

Pro Trp Glu Asn Ile Trp Leu Val Gly Ser Ile Cys Leu Ser Met Ser
            820                 825                 830

Leu His Phe Leu Ile Leu Tyr Val Glu Pro Leu Pro Leu Ile Phe Gln
        835                 840                 845

Ile Thr Pro Leu Asn Val Thr Gln Trp Leu Met Val Leu Lys Ile Ser
    850                 855                 860

Leu Pro Val Ile Leu Met Asp Glu Thr Leu Lys Phe Val Ala Arg Asn
865                 870                 875                 880

Tyr Leu Glu Pro Gly Lys Glu Cys Val Gln Pro Ala Thr Lys Ser Cys
                885                 890                 895

Ser Phe Ser Ala Cys Thr Asp Gly Ile Ser Trp Pro Phe Val Leu Leu
            900                 905                 910

Ile Met Pro Leu Val Ile Trp Val Tyr Ser Thr Asp Thr Asn Phe Ser
        915                 920                 925

Asp Met Phe Trp Ser
    930
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<210> 7245
<211> 46
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1543; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Ca++ transporting, cardiac muscle,
slow twitch 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450407"

<400> 7245
Leu Ile Phe Gln Ile Thr Pro Leu Asn Val Thr Gln Trp Leu Met Val
1   5   10   15

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

Val Ala Arg Asn Tyr Leu Glu Pro Val Leu Ser Ser Glu Leu
        35   40   45

<210> 7246
<211> 1220
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1544; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2B1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, plasma membrane 1; "

<220>
<221> source
<223> /note="Uniprot ID: P20020; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261173"

<400> 7246
Met Gly Asp Met Ala Asn Asn Ser Val Ala Tyr Ser Gly Val Lys Asn
1   5   10   15

Ser Leu Lys Glu Ala Asn His Asp Gly Asp Phe Gly Ile Thr Leu Ala
            20   25   30

Glu Leu Arg Ala Leu Met Glu Leu Arg Ser Thr Asp Ala Leu Arg Lys
        35   40   45

Ile Gln Glu Ser Tyr Gly Asp Val Tyr Gly Ile Cys Thr Lys Leu Lys

```
    50                  55                  60

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

Arg Glu Ala Val Phe Gly Lys Asn Phe Ile Pro Pro Lys Lys Pro Lys
                85                  90                  95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100                 105                 110

Ile Leu Glu Ile Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Gln
        115                 120                 125

Pro Pro Glu Gly Asp Asn Ala Leu Cys Gly Glu Val Ser Val Gly Glu
    130                 135                 140

Glu Glu Gly Glu Gly Glu Thr Gly Trp Ile Glu Gly Ala Ala Ile Leu
145                 150                 155                 160

Leu Ser Val Val Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser
                165                 170                 175

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

Lys Phe Thr Val Ile Arg Gly Gly Gln Val Ile Gln Ile Pro Val Ala
        195                 200                 205

Asp Ile Thr Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu
    210                 215                 220

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

Ser Ser Leu Thr Gly Glu Ser Asp His Val Lys Lys Ser Leu Asp Lys
                245                 250                 255

Asp Pro Leu Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg
            260                 265                 270

Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe
        275                 280                 285
```

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

Lys Lys Glu Lys Lys Asn Lys Lys Gln Asp Gly Ala Ile Glu Asn Arg
305                 310                 315                 320

Asn Lys Ala Lys Ala Gln Asp Gly Ala Ala Met Glu Met Gln Pro Leu
                325                 330                 335

Lys Ser Glu Glu Gly Gly Asp Gly Asp Glu Lys Asp Lys Lys Lys Ala
            340                 345                 350

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

Leu Ala Val Gln Ile Gly Lys Ala Gly Leu Leu Met Ser Ala Ile Thr
    370                 375                 380

Val Ile Ile Leu Val Leu Tyr Phe Val Ile Asp Thr Phe Trp Val Gln
385                 390                 395                 400

Lys Arg Pro Trp Leu Ala Glu Cys Thr Pro Ile Tyr Ile Gln Tyr Phe
                405                 410                 415

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

Glu Gly Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys
        435                 440                 445

Lys Met Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu
    450                 455                 460

Thr Met Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu
465                 470                 475                 480

Thr Met Asn Arg Met Thr Val Val Gln Ala Tyr Ile Asn Glu Lys His
                485                 490                 495

Tyr Lys Lys Val Pro Glu Pro Glu Ala Ile Pro Pro Asn Ile Leu Ser
            500                 505                 510
```

```
Tyr Leu Val Thr Gly Ile Ser Val Asn Cys Ala Tyr Thr Ser Lys Ile
        515                 520                 525

Leu Pro Pro Glu Lys Glu Gly Gly Leu Pro Arg His Val Gly Asn Lys
    530                 535                 540

Thr Glu Cys Ala Leu Leu Gly Leu Leu Leu Asp Leu Lys Arg Asp Tyr
545                 550                 555                 560

Gln Asp Val Arg Asn Glu Ile Pro Glu Glu Ala Leu Tyr Lys Val Tyr
                565                 570                 575

Thr Phe Asn Ser Val Arg Lys Ser Met Ser Thr Val Leu Lys Asn Ser
            580                 585                 590

Asp Gly Ser Tyr Arg Ile Phe Ser Lys Gly Ala Ser Glu Ile Ile Leu
        595                 600                 605

Lys Lys Cys Phe Lys Ile Leu Ser Ala Asn Gly Glu Ala Lys Val Phe
    610                 615                 620

Arg Pro Arg Asp Arg Asp Asp Ile Val Lys Thr Val Ile Glu Pro Met
625                 630                 635                 640

Ala Ser Glu Gly Leu Arg Thr Ile Cys Leu Ala Phe Arg Asp Phe Pro
                645                 650                 655

Ala Gly Glu Pro Glu Pro Glu Trp Asp Asn Glu Asn Asp Ile Val Thr
            660                 665                 670

Gly Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro
        675                 680                 685

Glu Val Pro Asp Ala Ile Lys Lys Cys Gln Arg Ala Gly Ile Thr Val
    690                 695                 700

Arg Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Thr
705                 710                 715                 720

Lys Cys Gly Ile Leu His Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly
                725                 730                 735
```

```
Lys Asp Phe Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln
            740                 745                 750

Glu Arg Ile Asp Lys Ile Trp Pro Lys Leu Arg Val Leu Ala Arg Ser
        755                 760                 765

Ser Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr
    770                 775                 780

Val Ser Asp Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn
785                 790                 795                 800

Asp Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe Ala Met Gly Ile
                805                 810                 815

Ala Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp
            820                 825                 830

Asp Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val
        835                 840                 845

Tyr Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val
    850                 855                 860

Val Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser
865                 870                 875                 880

Pro Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu Ile Met Asp Thr
                885                 890                 895

Leu Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr Glu Ser Leu Leu
            900                 905                 910

Leu Arg Lys Pro Tyr Gly Arg Asn Lys Pro Leu Ile Ser Arg Thr Met
        915                 920                 925

Met Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu Val Val Val Phe
    930                 935                 940

Thr Leu Leu Phe Ala Gly Glu Lys Phe Phe Asp Ile Asp Ser Gly Arg
945                 950                 955                 960

Asn Ala Pro Leu His Ala Pro Pro Ser Glu His Tyr Thr Ile Val Phe
```

965 970 975

Asn Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys
980 985 990

Ile His Gly Glu Arg Asn Val Phe Glu Gly Ile Phe Asn Asn Ala
Ile
995 1000 1005

Phe Cys Thr Ile Val Leu Gly Thr Phe Val Val Gln Ile Ile Ile
1010 1015 1020

Val Gln Phe Gly Gly Lys Pro Phe Ser Cys Ser Glu Leu Ser Ile
1025 1030 1035

Glu Gln Trp Leu Trp Ser Ile Phe Leu Gly Met Gly Thr Leu Leu
1040 1045 1050

Trp Gly Gln Leu Ile Ser Thr Ile Pro Thr Ser Arg Leu Lys Phe
1055 1060 1065

Leu Lys Glu Ala Gly His Gly Thr Gln Lys Glu Glu Ile Pro Glu
1070 1075 1080

Glu Glu Leu Ala Glu Asp Val Glu Glu Ile Asp His Ala Glu Arg
1085 1090 1095

Glu Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn Arg
1100 1105 1110

Ile Gln Thr Gln Ile Arg Val Val Asn Ala Phe Arg Ser Ser Leu
1115 1120 1125

Tyr Glu Gly Leu Glu Lys Pro Glu Ser Arg Ser Ser Ile His Asn
1130 1135 1140

Phe Met Thr His Pro Glu Phe Arg Ile Glu Asp Ser Glu Pro His
1145 1150 1155

Ile Pro Leu Ile Asp Asp Thr Asp Ala Glu Asp Asp Ala Pro Thr
1160 1165 1170

Lys Arg Asn Ser Ser Pro Pro Pro Ser Pro Asn Lys Asn Asn Asn

```
    1175                1180                1185

Ala Val  Asp Ser Gly Ile His  Leu Thr Ile Glu Met  Asn Lys Ser
    1190                1195                1200

Ala Thr  Ser Ser Ser Pro Gly  Ser Pro Leu His Ser  Leu Glu Thr
    1205                1210                1215

Ser Leu
    1220
```

<210> 7247
<211> 1176
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1544; "

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ATPase, Ca++ transporting, plasma membrane 1; "

<220>
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<400> 7247

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

Ser Leu Lys Glu Ala Asn His Asp Gly Asp Phe Gly Ile Thr Leu Ala
            20                  25                  30

Glu Leu Arg Ala Leu Met Glu Leu Arg Ser Thr Asp Ala Leu Arg Lys
        35                  40                  45

Ile Gln Glu Ser Tyr Gly Asp Val Tyr Gly Ile Cys Thr Lys Leu Lys
    50                  55                  60
```

```
Thr Ser Pro Asn Glu Gly Leu Ser Gly Asn Pro Ala Asp Leu Glu Arg
65                  70                  75                  80

Arg Glu Ala Val Phe Gly Lys Asn Phe Ile Pro Pro Lys Lys Pro Lys
                85                  90                  95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100                 105                 110

Ile Leu Glu Ile Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Gln
        115                 120                 125

Pro Pro Glu Gly Asp Asn Ala Leu Cys Gly Glu Val Ser Val Gly Glu
    130                 135                 140

Glu Glu Gly Glu Gly Glu Thr Gly Trp Ile Glu Gly Ala Ala Ile Leu
145                 150                 155                 160

Leu Ser Val Val Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser
                165                 170                 175

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

Lys Phe Thr Val Ile Arg Gly Gly Gln Val Ile Gln Ile Pro Val Ala
        195                 200                 205

Asp Ile Thr Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu
    210                 215                 220

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

Ser Ser Leu Thr Gly Glu Ser Asp His Val Lys Lys Ser Leu Asp Lys
                245                 250                 255

Asp Pro Leu Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg
            260                 265                 270

Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe
        275                 280                 285
```

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

Lys Lys Glu Lys Lys Asn Lys Lys Gln Asp Gly Ala Ile Glu Asn Arg
305                 310                 315                 320

Asn Lys Ala Lys Ala Gln Asp Gly Ala Ala Met Glu Met Gln Pro Leu
                325                 330                 335

Lys Ser Glu Glu Gly Gly Asp Gly Asp Glu Lys Asp Lys Lys Lys Ala
            340                 345                 350

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

Leu Ala Val Gln Ile Gly Lys Ala Gly Leu Leu Met Ser Ala Ile Thr
    370                 375                 380

Val Ile Ile Leu Val Leu Tyr Phe Val Ile Asp Thr Phe Trp Val Gln
385                 390                 395                 400

Lys Arg Pro Trp Leu Ala Glu Cys Thr Pro Ile Tyr Ile Gln Tyr Phe
                405                 410                 415

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

Glu Gly Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys
        435                 440                 445

Lys Met Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu
    450                 455                 460

Thr Met Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu
465                 470                 475                 480

Thr Met Asn Arg Met Thr Val Val Gln Ala Tyr Ile Asn Glu Lys His
                485                 490                 495

Tyr Lys Lys Val Pro Glu Pro Glu Ala Ile Pro Pro Asn Ile Leu Ser
            500                 505                 510

Tyr Leu Val Thr Gly Ile Ser Val Asn Cys Ala Tyr Thr Ser Lys Ile
```

```
        515                 520                 525

Leu Pro Pro Glu Lys Glu Gly Gly Leu Pro Arg His Val Gly Asn Lys
    530                 535                 540

Thr Glu Cys Ala Leu Leu Gly Leu Leu Leu Asp Leu Lys Arg Asp Tyr
545                 550                 555                 560

Gln Asp Val Arg Asn Glu Ile Pro Glu Glu Ala Leu Tyr Lys Val Tyr
                565                 570                 575

Thr Phe Asn Ser Val Arg Lys Ser Met Ser Thr Val Leu Lys Asn Ser
            580                 585                 590

Asp Gly Ser Tyr Arg Ile Phe Ser Lys Gly Ala Ser Glu Ile Ile Leu
        595                 600                 605

Lys Lys Cys Phe Lys Ile Leu Ser Ala Asn Gly Glu Ala Lys Val Phe
    610                 615                 620

Arg Pro Arg Asp Arg Asp Asp Ile Val Lys Thr Val Ile Glu Pro Met
625                 630                 635                 640

Ala Ser Glu Gly Leu Arg Thr Ile Cys Leu Ala Phe Arg Asp Phe Pro
                645                 650                 655

Ala Gly Glu Pro Glu Pro Glu Trp Asp Asn Glu Asn Asp Ile Val Thr
            660                 665                 670

Gly Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro
        675                 680                 685

Glu Val Pro Asp Ala Ile Lys Lys Cys Gln Arg Ala Gly Ile Thr Val
    690                 695                 700

Arg Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Thr
705                 710                 715                 720

Lys Cys Gly Ile Leu His Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly
                725                 730                 735

Lys Asp Phe Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln
            740                 745                 750
```

```
Glu Arg Ile Asp Lys Ile Trp Pro Lys Leu Arg Val Leu Ala Arg Ser
        755                 760                 765

Ser Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr
    770                 775                 780

Val Ser Asp Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn
785                 790                 795                 800

Asp Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe Ala Met Gly Ile
                805                 810                 815

Ala Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp
            820                 825                 830

Asp Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val
        835                 840                 845

Tyr Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val
    850                 855                 860

Val Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser
865                 870                 875                 880

Pro Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu Ile Met Asp Thr
                885                 890                 895

Leu Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr Glu Ser Leu Leu
            900                 905                 910

Leu Arg Lys Pro Tyr Gly Arg Asn Lys Pro Leu Ile Ser Arg Thr Met
        915                 920                 925

Met Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu Val Val Val Phe
    930                 935                 940

Thr Leu Leu Phe Ala Gly Glu Lys Phe Phe Asp Ile Asp Ser Gly Arg
945                 950                 955                 960

Asn Ala Pro Leu His Ala Pro Pro Ser Glu His Tyr Thr Ile Val Phe
                965                 970                 975
```

```
Asn Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys
            980                 985                 990

Ile His Gly Glu Arg Asn Val Phe  Glu Gly Ile Phe Asn  Asn Ala
Ile
        995                 1000                1005

Phe Cys  Thr Ile Val Leu Gly  Thr Phe Val Val Gln  Ile Ile Ile
    1010                1015                1020

Val Gln  Phe Gly Gly Lys Pro  Phe Ser Cys Ser Glu  Leu Ser Ile
    1025                1030                1035

Glu Gln  Trp Leu Trp Ser Ile  Phe Leu Gly Met Gly  Thr Leu Leu
    1040                1045                1050

Trp Gly  Gln Leu Ile Ser Thr  Ile Pro Thr Ser Arg  Leu Lys Phe
    1055                1060                1065

Leu Lys  Glu Ala Gly His Gly  Thr Gln Lys Glu Glu  Ile Pro Glu
    1070                1075                1080

Glu Glu  Leu Ala Glu Asp Val  Glu Glu Ile Asp His  Ala Glu Arg
    1085                1090                1095

Glu Leu  Arg Arg Gly Gln Ile  Leu Trp Phe Arg Gly  Leu Asn Arg
    1100                1105                1110

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

Ser Ile  Gln Gly Ala Leu Arg  Arg Gln Pro Ser Ile  Ala Ser Gln
    1130                1135                1140

His His  Asp Val Thr Asn Ile  Ser Thr Pro Thr His  Val Val Phe
    1145                1150                1155

Ser Ser  Ser Thr Ala Ser Thr  Thr Val Gly Tyr Ser  Ser Gly Glu
    1160                1165                1170

Cys Ile  Ser
    1175
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<210> 7248
<211> 963
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="Gene Symbol: ATP2B1; "

<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, plasma membrane 1; "

<220>
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<400> 7248

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Met Phe Leu Val Ile Gly Thr His Val Met Glu Gly Ser Gly Arg Met
1               5                  10                  15

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

Leu Leu Gly Ala Gly Gly Glu Glu Glu Glu Lys Lys Asp Glu Lys Lys
        35                  40                  45

Lys Glu Lys Lys Asn Lys Lys Gln Asp Gly Ala Ile Glu Asn Arg Asn
    50                  55                  60

Lys Ala Lys Ala Gln Asp Gly Ala Ala Met Glu Met Gln Pro Leu Lys
65                  70                  75                  80

Ser Glu Glu Gly Gly Asp Gly Asp Glu Lys Asp Lys Lys Lys Ala Asn
                85                  90                  95

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

Ala Val Gln Ile Gly Lys Ala Gly Leu Leu Met Ser Ala Ile Thr Val
        115                 120                 125

Ile Ile Leu Val Leu Tyr Phe Val Ile Asp Thr Phe Trp Val Gln Lys
```

```
    130                 135                 140

Arg Pro Trp Leu Ala Glu Cys Thr Pro Ile Tyr Ile Gln Tyr Phe Val
145                 150                 155                 160

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

Gly Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys
            180                 185                 190

Met Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr
        195                 200                 205

Met Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr
    210                 215                 220

Met Asn Arg Met Thr Val Val Gln Ala Tyr Ile Asn Glu Lys His Tyr
225                 230                 235                 240

Lys Lys Val Pro Glu Pro Glu Ala Ile Pro Pro Asn Ile Leu Ser Tyr
                245                 250                 255

Leu Val Thr Gly Ile Ser Val Asn Cys Ala Tyr Thr Ser Lys Ile Leu
            260                 265                 270

Pro Pro Glu Lys Glu Gly Gly Leu Pro Arg His Val Gly Asn Lys Thr
        275                 280                 285

Glu Cys Ala Leu Leu Gly Leu Leu Leu Asp Leu Lys Arg Asp Tyr Gln
    290                 295                 300

Asp Val Arg Asn Glu Ile Pro Glu Glu Ala Leu Tyr Lys Val Tyr Thr
305                 310                 315                 320

Phe Asn Ser Val Arg Lys Ser Met Ser Thr Val Leu Lys Asn Ser Asp
                325                 330                 335

Gly Ser Tyr Arg Ile Phe Ser Lys Gly Ala Ser Glu Ile Ile Leu Lys
            340                 345                 350

Lys Cys Phe Lys Ile Leu Ser Ala Asn Gly Glu Ala Lys Val Phe Arg
        355                 360                 365
```

```
Pro Arg Asp Arg Asp Asp Ile Val Lys Thr Val Ile Glu Pro Met Ala
    370                 375                 380

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

Gly Glu Pro Glu Pro Glu Trp Asp Asn Glu Asn Asp Ile Val Thr Gly
                405                 410                 415

Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu
            420                 425                 430

Val Pro Asp Ala Ile Lys Lys Cys Gln Arg Ala Gly Ile Thr Val Arg
        435                 440                 445

Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Thr Lys
    450                 455                 460

Cys Gly Ile Leu His Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys
465                 470                 475                 480

Asp Phe Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu
                485                 490                 495

Arg Ile Asp Lys Ile Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser
            500                 505                 510

Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr Val
        515                 520                 525

Ser Asp Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp
    530                 535                 540

Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe Ala Met Gly Ile Ala
545                 550                 555                 560

Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp
                565                 570                 575

Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr
            580                 585                 590
```

```
Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val
        595                 600                 605

Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro
    610                 615                 620

Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu Ile Met Asp Thr Leu
625                 630                 635                 640

Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr Glu Ser Leu Leu Leu
                645                 650                 655

Arg Lys Pro Tyr Gly Arg Asn Lys Pro Leu Ile Ser Arg Thr Met Met
            660                 665                 670

Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu Val Val Val Phe Thr
        675                 680                 685

Leu Leu Phe Ala Gly Glu Lys Phe Phe Asp Ile Asp Ser Gly Arg Asn
    690                 695                 700

Ala Pro Leu His Ala Pro Pro Ser Glu His Tyr Thr Ile Val Phe Asn
705                 710                 715                 720

Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile
                725                 730                 735

His Gly Glu Arg Asn Val Phe Glu Gly Ile Phe Asn Asn Ala Ile Phe
            740                 745                 750

Cys Thr Ile Val Leu Gly Thr Phe Val Val Gln Ile Ile Ile Val Gln
        755                 760                 765

Phe Gly Gly Lys Pro Phe Ser Cys Ser Glu Leu Ser Ile Glu Gln Trp
    770                 775                 780

Leu Trp Ser Ile Phe Leu Gly Met Gly Thr Leu Leu Trp Gly Gln Leu
785                 790                 795                 800

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

```
His Gly Thr Gln Lys Glu Glu Ile Pro Glu Glu Glu Leu Ala Glu Asp
            820                 825                 830

Val Glu Glu Ile Asp His Ala Glu Arg Glu Leu Arg Arg Gly Gln Ile
        835                 840                 845

Leu Trp Phe Arg Gly Leu Asn Arg Ile Gln Thr Gln Ile Arg Val Val
    850                 855                 860

Asn Ala Phe Arg Ser Ser Leu Tyr Glu Gly Leu Glu Lys Pro Glu Ser
865                 870                 875                 880

Arg Ser Ser Ile His Asn Phe Met Thr His Pro Glu Phe Arg Ile Glu
                885                 890                 895

Asp Ser Glu Pro His Ile Pro Leu Ile Asp Asp Thr Asp Ala Glu Asp
            900                 905                 910

Asp Ala Pro Thr Lys Arg Asn Ser Ser Pro Pro Pro Ser Pro Asn Lys
        915                 920                 925

Asn Asn Asn Ala Val Asp Ser Gly Ile His Leu Thr Ile Glu Met Asn
    930                 935                 940

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

Thr Ser Leu
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<210> 7249
<211> 1220
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, plasma membrane 1; "

<220>
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<223> /note="Uniprot ID: P20020; "

<220>
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<223> /note="ENSP ID: ENSP00000392043"

<400> 7249
Met Gly Asp Met Ala Asn Asn Ser Val Ala Tyr Ser Gly Val Lys Asn
1   5   10   15

Ser Leu Lys Glu Ala Asn His Asp Gly Asp Phe Gly Ile Thr Leu Ala
            20   25   30

Glu Leu Arg Ala Leu Met Glu Leu Arg Ser Thr Asp Ala Leu Arg Lys
        35   40   45

Ile Gln Glu Ser Tyr Gly Asp Val Tyr Gly Ile Cys Thr Lys Leu Lys
    50   55   60

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

Arg Glu Ala Val Phe Gly Lys Asn Phe Ile Pro Pro Lys Lys Pro Lys
                85   90   95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100   105   110

Ile Leu Glu Ile Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Gln
        115   120   125

Pro Pro Glu Gly Asp Asn Ala Leu Cys Gly Glu Val Ser Val Gly Glu
    130   135   140

Glu Glu Gly Glu Gly Glu Thr Gly Trp Ile Glu Gly Ala Ala Ile Leu
145   150   155   160

Leu Ser Val Val Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser
                165   170   175

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

```
Lys Phe Thr Val Ile Arg Gly Gly Gln Val Ile Gln Ile Pro Val Ala
        195                 200                 205

Asp Ile Thr Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu
    210                 215                 220

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

Ser Ser Leu Thr Gly Glu Ser Asp His Val Lys Lys Ser Leu Asp Lys
                245                 250                 255

Asp Pro Leu Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg
            260                 265                 270

Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe
        275                 280                 285

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

Lys Lys Glu Lys Lys Asn Lys Lys Gln Asp Gly Ala Ile Glu Asn Arg
305                 310                 315                 320

Asn Lys Ala Lys Ala Gln Asp Gly Ala Ala Met Glu Met Gln Pro Leu
                325                 330                 335

Lys Ser Glu Glu Gly Gly Asp Gly Asp Glu Lys Asp Lys Lys Lys Ala
            340                 345                 350

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

Leu Ala Val Gln Ile Gly Lys Ala Gly Leu Leu Met Ser Ala Ile Thr
    370                 375                 380

Val Ile Ile Leu Val Leu Tyr Phe Val Ile Asp Thr Phe Trp Val Gln
385                 390                 395                 400

Lys Arg Pro Trp Leu Ala Glu Cys Thr Pro Ile Tyr Ile Gln Tyr Phe
                405                 410                 415
```

```
Val Lys Phe Phe Ile Ile Gly Val Thr Val Leu Val Val Ala Val Pro
            420                 425                 430

Glu Gly Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys
        435                 440                 445

Lys Met Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu
    450                 455                 460

Thr Met Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu
465                 470                 475                 480

Thr Met Asn Arg Met Thr Val Val Gln Ala Tyr Ile Asn Glu Lys His
                485                 490                 495

Tyr Lys Lys Val Pro Glu Pro Glu Ala Ile Pro Pro Asn Ile Leu Ser
            500                 505                 510

Tyr Leu Val Thr Gly Ile Ser Val Asn Cys Ala Tyr Thr Ser Lys Ile
        515                 520                 525

Leu Pro Pro Glu Lys Glu Gly Gly Leu Pro Arg His Val Gly Asn Lys
    530                 535                 540

Thr Glu Cys Ala Leu Leu Gly Leu Leu Leu Asp Leu Lys Arg Asp Tyr
545                 550                 555                 560

Gln Asp Val Arg Asn Glu Ile Pro Glu Glu Ala Leu Tyr Lys Val Tyr
                565                 570                 575

Thr Phe Asn Ser Val Arg Lys Ser Met Ser Thr Val Leu Lys Asn Ser
            580                 585                 590

Asp Gly Ser Tyr Arg Ile Phe Ser Lys Gly Ala Ser Glu Ile Ile Leu
        595                 600                 605

Lys Lys Cys Phe Lys Ile Leu Ser Ala Asn Gly Glu Ala Lys Val Phe
    610                 615                 620

Arg Pro Arg Asp Arg Asp Asp Ile Val Lys Thr Val Ile Glu Pro Met
625                 630                 635                 640

Ala Ser Glu Gly Leu Arg Thr Ile Cys Leu Ala Phe Arg Asp Phe Pro
```

645 650 655

Ala Gly Glu Pro Glu Pro Glu Trp Asp Asn Glu Asn Asp Ile Val Thr
660 665 670

Gly Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro
675 680 685

Glu Val Pro Asp Ala Ile Lys Lys Cys Gln Arg Ala Gly Ile Thr Val
690 695 700

Arg Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Thr
705 710 715 720

Lys Cys Gly Ile Leu His Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly
725 730 735

Lys Asp Phe Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln
740 745 750

Glu Arg Ile Asp Lys Ile Trp Pro Lys Leu Arg Val Leu Ala Arg Ser
755 760 765

Ser Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr
770 775 780

Val Ser Asp Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn
785 790 795 800

Asp Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe Ala Met Gly Ile
805 810 815

Ala Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp
820 825 830

Asp Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val
835 840 845

Tyr Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val
850 855 860

Val Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser
865 870 875 880

```
Pro Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu Ile Met Asp Thr
                885                 890                 895

Leu Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr Glu Ser Leu Leu
            900                 905                 910

Leu Arg Lys Pro Tyr Gly Arg Asn Lys Pro Leu Ile Ser Arg Thr Met
        915                 920                 925

Met Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu Val Val Val Phe
    930                 935                 940

Thr Leu Leu Phe Ala Gly Glu Lys Phe Phe Asp Ile Asp Ser Gly Arg
945                 950                 955                 960

Asn Ala Pro Leu His Ala Pro Pro Ser Glu His Tyr Thr Ile Val Phe
                965                 970                 975

Asn Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys
            980                 985                 990

Ile His Gly Glu Arg Asn Val Phe  Glu Gly Ile Phe Asn  Asn Ala
Ile
        995                 1000                1005

Phe Cys  Thr Ile Val Leu Gly  Thr Phe Val Val Gln  Ile Ile Ile
    1010                1015                1020

Val Gln  Phe Gly Gly Lys Pro  Phe Ser Cys Ser Glu  Leu Ser Ile
    1025                1030                1035

Glu Gln  Trp Leu Trp Ser Ile  Phe Leu Gly Met Gly  Thr Leu Leu
    1040                1045                1050

Trp Gly  Gln Leu Ile Ser Thr  Ile Pro Thr Ser Arg  Leu Lys Phe
    1055                1060                1065

Leu Lys  Glu Ala Gly His Gly  Thr Gln Lys Glu Glu  Ile Pro Glu
    1070                1075                1080

Glu Glu  Leu Ala Glu Asp Val  Glu Glu Ile Asp His  Ala Glu Arg
    1085                1090                1095
```

```
Glu Leu  Arg Arg Gly Gln Ile  Leu Trp Phe Arg Gly  Leu Asn Arg
    1100                1105                1110

Ile Gln  Thr Gln Ile Arg Val  Val Asn Ala Phe Arg  Ser Ser Leu
    1115                1120                1125

Tyr Glu  Gly Leu Glu Lys Pro  Glu Ser Arg Ser Ser  Ile His Asn
    1130                1135                1140

Phe Met  Thr His Pro Glu Phe  Arg Ile Glu Asp Ser  Glu Pro His
    1145                1150                1155

Ile Pro  Leu Ile Asp Asp Thr  Asp Ala Glu Asp Asp  Ala Pro Thr
    1160                1165                1170

Lys Arg  Asn Ser Ser Pro Pro  Pro Ser Pro Asn Lys  Asn Asn Asn
    1175                1180                1185

Ala Val  Asp Ser Gly Ile His  Leu Thr Ile Glu Met  Asn Lys Ser
    1190                1195                1200

Ala Thr  Ser Ser Ser Pro Gly  Ser Pro Leu His Ser  Leu Glu Thr
    1205                1210                1215

Ser Leu
    1220


<210> 7250
<211> 101
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      ATPase, Ca++ transporting, plasma membrane 1; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000447041"

<400> 7250
Met Gly Asp Met Ala Asn Asn Ser Val Ala Tyr Ser Gly Val Lys Asn
1   5   10   15

Ser Leu Lys Glu Ala Asn His Asp Gly Asp Phe Gly Ile Thr Leu Ala
            20   25   30

Glu Leu Arg Ala Leu Met Glu Leu Arg Ser Thr Asp Ala Leu Arg Lys
        35   40   45

Ile Gln Glu Ser Tyr Gly Asp Val Tyr Gly Ile Cys Thr Lys Leu Lys
    50   55   60

Thr Ser Pro Asn Glu Gly Glu Phe Tyr Tyr Ala Cys Phe Trp Phe Phe
65   70   75   80

Val Gln Arg Val Leu Tyr Ile Trp Leu Ile Asn Glu His Ala Tyr Ile
                85   90   95

Ile Leu Ala Ile Val
            100

<210> 7251
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1544; "

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7251
Xaa Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg Asn Val
1 5 10 15

Phe Glu Gly Ile Phe Asn Asn Ala Ile Phe Cys Thr Ile Val Leu Gly
20 25 30

Thr Phe Val Val Gln Leu Ile Ser Thr Ile Pro Thr Ser Arg Leu Lys
35 40 45

Phe Leu Lys Glu Ala Gly His Gly Thr Gln Lys Glu Glu Ile Pro Glu
50 55 60

Glu Glu Leu Ala Glu Asp Val Glu Glu Ile Asp His Ala Glu Arg Glu
65 70 75 80

Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn Arg Ile Gln
85 90 95

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

Leu Glu Lys Pro Glu Ser Arg Ser Ser Ile His Asn Phe Met Thr His
115 120 125

Pro Glu Phe Arg Ile Glu Asp Ser Glu Pro His Ile Pro Leu Ile Asp
130 135 140

Asp Thr Asp Ala Glu Asp Asp Ala Pro Thr Lys Arg Asn Ser Ser Pro
145 150 155 160

Pro Pro

<210> 7252
<211> 300
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATPase, Ca++ transporting, plasma membrane 1; "

<220>
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<223> /note="ENSP ID: ENSP00000489171"

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

<400> 7252
Xaa Glu Lys Phe Phe Asp Ile Asp Ser Gly Arg Asn Ala Pro Leu His
1 5 10 15

Ala Pro Pro Ser Glu His Tyr Thr Ile Val Phe Asn Thr Phe Val Leu
20 25 30

Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg
35 40 45

Asn Val Phe Glu Gly Ile Phe Asn Asn Ala Ile Phe Cys Thr Ile Val
50 55 60

Leu Gly Thr Phe Val Val Gln Ile Ile Ile Val Gln Phe Gly Gly Lys
65 70 75 80

Pro Phe Ser Cys Ser Glu Leu Ser Ile Glu Gln Trp Leu Trp Ser Ile
85 90 95

Phe Leu Gly Met Gly Thr Leu Leu Trp Gly Gln Leu Ile Ser Thr Ile
100 105 110

Pro Thr Ser Arg Leu Lys Phe Leu Lys Glu Ala Gly His Gly Thr Gln
115 120 125

Lys Glu Glu Ile Pro Glu Glu Glu Leu Ala Glu Asp Val Glu Glu Ile
130 135 140

Asp His Ala Glu Arg Glu Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg

```
145                 150                 155                 160

Gly Leu Asn Arg Ile Gln Thr Gln Met Asp Val Val Asn Ala Phe Gln
                165                 170                 175

Ser Gly Ser Ser Ile Gln Gly Ala Leu Arg Arg Gln Pro Ser Ile Ala
            180                 185                 190

Ser Gln His His Asp Ile Arg Val Val Asn Ala Phe Arg Ser Ser Leu
        195                 200                 205

Tyr Glu Gly Leu Glu Lys Pro Glu Ser Arg Ser Ser Ile His Asn Phe
    210                 215                 220

Met Thr His Pro Glu Phe Arg Ile Glu Asp Ser Glu Pro His Ile Pro
225                 230                 235                 240

Leu Ile Asp Asp Thr Asp Ala Glu Asp Asp Ala Pro Thr Lys Arg Asn
                245                 250                 255

Ser Ser Pro Pro Pro Ser Pro Asn Lys Asn Asn Asn Ala Val Asp Ser
            260                 265                 270

Gly Ile His Leu Thr Ile Glu Met Asn Lys Ser Ala Thr Ser Ser Ser
        275                 280                 285

Pro Gly Ser Pro Leu His Ser Leu Glu Thr Ser Leu
    290                 295                 300


<210> 7253
<211> 1243
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP2B2; "

<220>
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      ATPase, Ca++ transporting, plasma membrane 2; "
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<220>
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<223> /note="Uniprot ID: Q01814; "

<220>
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<400> 7253
Met Gly Asp Met Thr Asn Ser Asp Phe Tyr Ser Lys Asn Gln Arg Asn
1   5   10   15

Glu Ser Ser His Gly Gly Glu Phe Gly Cys Thr Met Glu Glu Leu Arg
            20   25   30

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

Thr Tyr Gly Asp Thr Glu Ala Ile Cys Arg Arg Leu Lys Thr Ser Pro
    50   55   60

Val Glu Gly Leu Pro Gly Thr Ala Pro Asp Leu Glu Lys Arg Lys Gln
65   70   75   80

Ile Phe Gly Gln Asn Phe Ile Pro Pro Lys Lys Pro Lys Thr Phe Leu
                85   90   95

Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu
            100   105   110

Ile Ala Ala Ile Ile Ser Leu Gly Leu Ser Phe Tyr His Pro Pro Gly
        115   120   125

Glu Gly Asn Glu Gly Cys Ala Thr Ala Gln Gly Gly Ala Glu Asp Glu
    130   135   140

Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Leu Ser
145   150   155   160

Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu
                165   170   175

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

```
Thr Val Val Arg Ala Gly Gln Val Val Gln Ile Pro Val Ala Glu Ile
        195                 200                 205

Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala
    210                 215                 220

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

Leu Thr Gly Glu Ser Asp Gln Val Arg Lys Ser Val Asp Lys Asp Pro
                245                 250                 255

Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Leu
            260                 265                 270

Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe Thr Leu
        275                 280                 285

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

Lys Lys Gly Asp Gly Leu Gln Leu Pro Ala Ala Asp Gly Ala Ala Ala
305                 310                 315                 320

Ser Asn Ala Ala Asp Ser Ala Asn Ala Ser Leu Val Asn Gly Lys Met
                325                 330                 335

Gln Asp Gly Asn Val Asp Ala Ser Gln Ser Lys Ala Lys Gln Gln Asp
            340                 345                 350

Gly Ala Ala Ala Met Glu Met Gln Pro Leu Lys Ser Ala Glu Gly Gly
        355                 360                 365

Asp Ala Asp Asp Arg Lys Lys Ala Ser Met His Lys Lys Glu Lys Ser
    370                 375                 380

Val Leu Gln Gly Lys Leu Thr Lys Leu Ala Val Gln Ile Gly Lys Ala
385                 390                 395                 400

Gly Leu Val Met Ser Ala Ile Thr Val Ile Ile Leu Val Leu Tyr Phe
                405                 410                 415

Thr Val Asp Thr Phe Val Val Asn Lys Lys Pro Trp Leu Pro Glu Cys
```

```
            420                 425                 430

Thr Pro Val Tyr Val Gln Tyr Phe Val Lys Phe Phe Ile Ile Gly Val
        435                 440                 445

Thr Val Leu Val Val Ala Val Pro Glu Gly Leu Pro Leu Ala Val Thr
    450                 455                 460

Ile Ser Leu Ala Tyr Ser Val Lys Lys Met Met Lys Asp Asn Asn Leu
465                 470                 475                 480

Val Arg His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala Thr Ala Ile
                485                 490                 495

Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Arg Met Thr Val Val
            500                 505                 510

Gln Ala Tyr Val Gly Asp Val His Tyr Lys Glu Ile Pro Asp Pro Ser
        515                 520                 525

Ser Ile Asn Thr Lys Thr Met Glu Leu Leu Ile Asn Ala Ile Ala Ile
    530                 535                 540

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

Leu Pro Arg Gln Val Gly Asn Lys Thr Glu Cys Gly Leu Leu Gly Phe
                565                 570                 575

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

Glu Glu Lys Leu Tyr Lys Val Tyr Thr Phe Asn Ser Val Arg Lys Ser
        595                 600                 605

Met Ser Thr Val Ile Lys Leu Pro Asp Glu Ser Phe Arg Met Tyr Ser
    610                 615                 620

Lys Gly Ala Ser Glu Ile Val Leu Lys Lys Cys Cys Lys Ile Leu Asn
625                 630                 635                 640

Gly Ala Gly Glu Pro Arg Val Phe Arg Pro Arg Asp Arg Asp Glu Met
                645                 650                 655
```

Val Lys Lys Val Ile Glu Pro Met Ala Cys Asp Gly Leu Arg Thr Ile
660 665 670

Cys Val Ala Tyr Arg Asp Phe Pro Ser Ser Pro Glu Pro Asp Trp Asp
675 680 685

Asn Glu Asn Asp Ile Leu Asn Glu Leu Thr Cys Ile Cys Val Val Gly
690 695 700

Ile Glu Asp Pro Val Arg Pro Glu Val Pro Glu Ala Ile Arg Lys Cys
705 710 715 720

Gln Arg Ala Gly Ile Thr Val Arg Met Val Thr Gly Asp Asn Ile Asn
725 730 735

Thr Ala Arg Ala Ile Ala Ile Lys Cys Gly Ile Ile His Pro Gly Glu
740 745 750

Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe Asn Arg Arg Ile Arg Asn
755 760 765

Glu Lys Gly Glu Ile Glu Gln Glu Arg Ile Asp Lys Ile Trp Pro Lys
770 775 780

Leu Arg Val Leu Ala Arg Ser Ser Pro Thr Asp Lys His Thr Leu Val
785 790 795 800

Lys Gly Ile Ile Asp Ser Thr His Thr Glu Gln Arg Gln Val Val Ala
805 810 815

Val Thr Gly Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys Lys Ala Asp
820 825 830

Val Gly Phe Ala Met Gly Ile Ala Gly Thr Asp Val Ala Lys Glu Ala
835 840 845

Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe Ser Ser Ile Val Lys Ala
850 855 860

Val Met Trp Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys Phe Leu Gln
865 870 875 880

```
Phe Gln Leu Thr Val Asn Val Val Ala Val Ile Val Ala Phe Thr Gly
                885                 890                 895

Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys Ala Val Gln Met Leu Trp
            900                 905                 910

Val Asn Leu Ile Met Asp Thr Phe Ala Ser Leu Ala Leu Ala Thr Glu
        915                 920                 925

Pro Pro Thr Glu Thr Leu Leu Leu Arg Lys Pro Tyr Gly Arg Asn Lys
    930                 935                 940

Pro Leu Ile Ser Arg Thr Met Met Lys Asn Ile Leu Gly His Ala Val
945                 950                 955                 960

Tyr Gln Leu Ala Leu Ile Phe Thr Leu Leu Phe Val Gly Glu Lys Met
                965                 970                 975

Phe Gln Ile Asp Ser Gly Arg Asn Ala Pro Leu His Ser Pro Pro Ser
            980                 985                 990

Glu His Tyr Thr Ile Ile Phe Asn  Thr Phe Val Met Met  Gln Leu
Phe
        995                 1000                1005

Asn Glu  Ile Asn Ala Arg Lys  Ile His Gly Glu Arg  Asn Val Phe
    1010                1015                1020

Asp Gly  Ile Phe Arg Asn Pro  Ile Phe Cys Thr Ile  Val Leu Gly
    1025                1030                1035

Thr Phe  Ala Ile Gln Ile Val  Ile Val Gln Phe Gly  Gly Lys Pro
    1040                1045                1050

Phe Ser  Cys Ser Pro Leu Gln  Leu Asp Gln Trp Met  Trp Cys Ile
    1055                1060                1065

Phe Ile  Gly Leu Gly Glu Leu  Val Trp Gly Gln Val  Ile Ala Thr
    1070                1075                1080

Ile Pro  Thr Ser Arg Leu Lys  Phe Leu Lys Glu Ala  Gly Arg Leu
    1085                1090                1095
```

```
Thr Gln  Lys Glu Glu Ile Pro  Glu Glu Glu Leu Asn  Glu Asp Val
    1100                1105                1110

Glu Glu  Ile Asp His Ala Glu  Arg Glu Leu Arg Arg  Gly Gln Ile
    1115                1120                1125

Leu Trp  Phe Arg Gly Leu Asn  Arg Ile Gln Thr Gln  Ile Arg Val
    1130                1135                1140

Val Lys  Ala Phe Arg Ser Ser  Leu Tyr Glu Gly Leu  Glu Lys Pro
    1145                1150                1155

Glu Ser  Arg Thr Ser Ile His  Asn Phe Met Ala His  Pro Glu Phe
    1160                1165                1170

Arg Ile  Glu Asp Ser Gln Pro  His Ile Pro Leu Ile  Asp Asp Thr
    1175                1180                1185

Asp Leu  Glu Glu Asp Ala Ala  Leu Lys Gln Asn Ser  Ser Pro Pro
    1190                1195                1200

Ser Ser  Leu Asn Lys Asn Asn  Ser Ala Ile Asp Ser  Gly Ile Asn
    1205                1210                1215

Leu Thr  Thr Asp Thr Ser Lys  Ser Ala Thr Ser Ser  Ser Pro Gly
    1220                1225                1230

Ser Pro  Ile His Ser Leu Glu  Thr Ser Leu
    1235                1240


<210> 7254
<211> 1243
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1545; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2B2; "

<220>
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<223> /note="Gene Name:
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ATPase, Ca++ transporting, plasma membrane 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q01814; "

<220>
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<223> /note="ENSP ID: ENSP00000353414"

<400> 7254

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

Glu Ser Ser His Gly Gly Glu Phe Gly Cys Thr Met Glu Glu Leu Arg
            20                  25                  30

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

Thr Tyr Gly Asp Thr Glu Ala Ile Cys Arg Arg Leu Lys Thr Ser Pro
    50                  55                  60

Val Glu Gly Leu Pro Gly Thr Ala Pro Asp Leu Glu Lys Arg Lys Gln
65                  70                  75                  80

Ile Phe Gly Gln Asn Phe Ile Pro Pro Lys Lys Pro Lys Thr Phe Leu
                85                  90                  95

Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu
            100                 105                 110

Ile Ala Ala Ile Ile Ser Leu Gly Leu Ser Phe Tyr His Pro Pro Gly
        115                 120                 125

Glu Gly Asn Glu Gly Cys Ala Thr Ala Gln Gly Gly Ala Glu Asp Glu
    130                 135                 140

Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Leu Ser
145                 150                 155                 160

Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu
                165                 170                 175

Lys Gln Phe Arg Gly Leu Gln Ser Arg Ile Glu Gln Glu Gln Lys Phe
            180                 185                 190
```

```
Thr Val Val Arg Ala Gly Gln Val Val Gln Ile Pro Val Ala Glu Ile
        195                 200                 205

Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala
    210                 215                 220

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

Leu Thr Gly Glu Ser Asp Gln Val Arg Lys Ser Val Asp Lys Asp Pro
                245                 250                 255

Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Leu
            260                 265                 270

Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe Thr Leu
        275                 280                 285

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

Lys Lys Gly Asp Gly Leu Gln Leu Pro Ala Ala Asp Gly Ala Ala Ala
305                 310                 315                 320

Ser Asn Ala Ala Asp Ser Ala Asn Ala Ser Leu Val Asn Gly Lys Met
                325                 330                 335

Gln Asp Gly Asn Val Asp Ala Ser Gln Ser Lys Ala Lys Gln Gln Asp
            340                 345                 350

Gly Ala Ala Ala Met Glu Met Gln Pro Leu Lys Ser Ala Glu Gly Gly
        355                 360                 365

Asp Ala Asp Asp Arg Lys Lys Ala Ser Met His Lys Lys Glu Lys Ser
    370                 375                 380

Val Leu Gln Gly Lys Leu Thr Lys Leu Ala Val Gln Ile Gly Lys Ala
385                 390                 395                 400

Gly Leu Val Met Ser Ala Ile Thr Val Ile Ile Leu Val Leu Tyr Phe
                405                 410                 415
```

```
Thr Val Asp Thr Phe Val Val Asn Lys Lys Pro Trp Leu Pro Glu Cys
            420                 425                 430

Thr Pro Val Tyr Val Gln Tyr Phe Val Lys Phe Phe Ile Ile Gly Val
        435                 440                 445

Thr Val Leu Val Val Ala Val Pro Glu Gly Leu Pro Leu Ala Val Thr
    450                 455                 460

Ile Ser Leu Ala Tyr Ser Val Lys Lys Met Met Lys Asp Asn Asn Leu
465                 470                 475                 480

Val Arg His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala Thr Ala Ile
                485                 490                 495

Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Arg Met Thr Val Val
            500                 505                 510

Gln Ala Tyr Val Gly Asp Val His Tyr Lys Glu Ile Pro Asp Pro Ser
        515                 520                 525

Ser Ile Asn Thr Lys Thr Met Glu Leu Leu Ile Asn Ala Ile Ala Ile
    530                 535                 540

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

Leu Pro Arg Gln Val Gly Asn Lys Thr Glu Cys Gly Leu Leu Gly Phe
                565                 570                 575

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

Glu Glu Lys Leu Tyr Lys Val Tyr Thr Phe Asn Ser Val Arg Lys Ser
        595                 600                 605

Met Ser Thr Val Ile Lys Leu Pro Asp Glu Ser Phe Arg Met Tyr Ser
    610                 615                 620

Lys Gly Ala Ser Glu Ile Val Leu Lys Lys Cys Cys Lys Ile Leu Asn
625                 630                 635                 640
```

```
Gly Ala Gly Glu Pro Arg Val Phe Arg Pro Arg Asp Arg Asp Glu Met
                645                 650                 655

Val Lys Lys Val Ile Glu Pro Met Ala Cys Asp Gly Leu Arg Thr Ile
            660                 665                 670

Cys Val Ala Tyr Arg Asp Phe Pro Ser Ser Pro Glu Pro Asp Trp Asp
        675                 680                 685

Asn Glu Asn Asp Ile Leu Asn Glu Leu Thr Cys Ile Cys Val Val Gly
    690                 695                 700

Ile Glu Asp Pro Val Arg Pro Glu Val Pro Glu Ala Ile Arg Lys Cys
705                 710                 715                 720

Gln Arg Ala Gly Ile Thr Val Arg Met Val Thr Gly Asp Asn Ile Asn
                725                 730                 735

Thr Ala Arg Ala Ile Ala Ile Lys Cys Gly Ile Ile His Pro Gly Glu
            740                 745                 750

Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe Asn Arg Arg Ile Arg Asn
        755                 760                 765

Glu Lys Gly Glu Ile Glu Gln Glu Arg Ile Asp Lys Ile Trp Pro Lys
    770                 775                 780

Leu Arg Val Leu Ala Arg Ser Ser Pro Thr Asp Lys His Thr Leu Val
785                 790                 795                 800

Lys Gly Ile Ile Asp Ser Thr His Thr Glu Gln Arg Gln Val Val Ala
                805                 810                 815

Val Thr Gly Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys Lys Ala Asp
            820                 825                 830

Val Gly Phe Ala Met Gly Ile Ala Gly Thr Asp Val Ala Lys Glu Ala
        835                 840                 845

Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe Ser Ser Ile Val Lys Ala
    850                 855                 860

Val Met Trp Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys Phe Leu Gln
```

865 870 875 880

Phe Gln Leu Thr Val Asn Val Val Ala Val Ile Val Ala Phe Thr Gly
885 890 895

Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys Ala Val Gln Met Leu Trp
900 905 910

Val Asn Leu Ile Met Asp Thr Phe Ala Ser Leu Ala Leu Ala Thr Glu
915 920 925

Pro Pro Thr Glu Thr Leu Leu Leu Arg Lys Pro Tyr Gly Arg Asn Lys
930 935 940

Pro Leu Ile Ser Arg Thr Met Met Lys Asn Ile Leu Gly His Ala Val
945 950 955 960

Tyr Gln Leu Ala Leu Ile Phe Thr Leu Leu Phe Val Gly Glu Lys Met
965 970 975

Phe Gln Ile Asp Ser Gly Arg Asn Ala Pro Leu His Ser Pro Pro Ser
980 985 990

Glu His Tyr Thr Ile Ile Phe Asn Thr Phe Val Met Met Gln Leu
Phe
995 1000 1005

Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg Asn Val Phe
1010 1015 1020

Asp Gly Ile Phe Arg Asn Pro Ile Phe Cys Thr Ile Val Leu Gly
1025 1030 1035

Thr Phe Ala Ile Gln Ile Val Ile Val Gln Phe Gly Gly Lys Pro
1040 1045 1050

Phe Ser Cys Ser Pro Leu Gln Leu Asp Gln Trp Met Trp Cys Ile
1055 1060 1065

Phe Ile Gly Leu Gly Glu Leu Val Trp Gly Gln Val Ile Ala Thr
1070 1075 1080

Ile Pro Thr Ser Arg Leu Lys Phe Leu Lys Glu Ala Gly Arg Leu

```
    1085                1090                1095

Thr Gln  Lys Glu Glu Ile Pro  Glu Glu Glu Leu Asn  Glu Asp Val
    1100                1105                1110

Glu Glu  Ile Asp His Ala Glu  Arg Glu Leu Arg Arg  Gly Gln Ile
    1115                1120                1125

Leu Trp  Phe Arg Gly Leu Asn  Arg Ile Gln Thr Gln  Ile Arg Val
    1130                1135                1140

Val Lys  Ala Phe Arg Ser Ser  Leu Tyr Glu Gly Leu  Glu Lys Pro
    1145                1150                1155

Glu Ser  Arg Thr Ser Ile His  Asn Phe Met Ala His  Pro Glu Phe
    1160                1165                1170

Arg Ile  Glu Asp Ser Gln Pro  His Ile Pro Leu Ile  Asp Asp Thr
    1175                1180                1185

Asp Leu  Glu Glu Asp Ala Ala  Leu Lys Gln Asn Ser  Ser Pro Pro
    1190                1195                1200

Ser Ser  Leu Asn Lys Asn Asn  Ser Ala Ile Asp Ser  Gly Ile Asn
    1205                1210                1215

Leu Thr  Thr Asp Thr Ser Lys  Ser Ala Thr Ser Ser  Ser Pro Gly
    1220                1225                1230

Ser Pro  Ile His Ser Leu Glu  Thr Ser Leu
    1235                1240


<210> 7255
<211> 1198
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP2B2; "

<220>
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<221> source
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ATPase, Ca++ transporting, plasma membrane 2; "

<220>
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<223> /note="Uniprot ID: Q01814; "

<220>
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<400> 7255

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

Glu Ser Ser His Gly Gly Glu Phe Gly Cys Thr Met Glu Glu Leu Arg
            20                  25                  30

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

Thr Tyr Gly Asp Thr Glu Ala Ile Cys Arg Arg Leu Lys Thr Ser Pro
    50                  55                  60

Val Glu Gly Leu Pro Gly Thr Ala Pro Asp Leu Glu Lys Arg Lys Gln
65                  70                  75                  80

Ile Phe Gly Gln Asn Phe Ile Pro Pro Lys Lys Pro Lys Thr Phe Leu
                85                  90                  95

Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu
            100                 105                 110

Ile Ala Ala Ile Ile Ser Leu Gly Leu Ser Phe Tyr His Pro Pro Gly
        115                 120                 125

Glu Gly Asn Glu Gly Cys Ala Thr Ala Gln Gly Gly Ala Glu Asp Glu
    130                 135                 140

Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Leu Ser
145                 150                 155                 160

Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu
                165                 170                 175
```

```
Lys Gln Phe Arg Gly Leu Gln Ser Arg Ile Glu Gln Glu Gln Lys Phe
            180                 185                 190

Thr Val Val Arg Ala Gly Gln Val Val Gln Ile Pro Val Ala Glu Ile
        195                 200                 205

Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala
    210                 215                 220

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

Leu Thr Gly Glu Ser Asp Gln Val Arg Lys Ser Val Asp Lys Asp Pro
                245                 250                 255

Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Leu
            260                 265                 270

Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe Thr Leu
        275                 280                 285

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

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

Glu Gly Gly Asp Ala Asp Asp Arg Lys Lys Ala Ser Met His Lys Lys
                325                 330                 335

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

Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr Val Ile Ile Leu Val
        355                 360                 365

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

Pro Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe Val Lys Phe Phe Ile
385                 390                 395                 400

Ile Gly Val Thr Val Leu Val Val Ala Val Pro Glu Gly Leu Pro Leu
```

```
                405                 410                 415

Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys Met Met Lys Asp
            420                 425                 430

Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala
        435                 440                 445

Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Arg Met
    450                 455                 460

Thr Val Val Gln Ala Tyr Val Gly Asp Val His Tyr Lys Glu Ile Pro
465                 470                 475                 480

Asp Pro Ser Ser Ile Asn Thr Lys Thr Met Glu Leu Leu Ile Asn Ala
                485                 490                 495

Ile Ala Ile Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro Pro Glu Lys
            500                 505                 510

Glu Gly Ala Leu Pro Arg Gln Val Gly Asn Lys Thr Glu Cys Gly Leu
        515                 520                 525

Leu Gly Phe Val Leu Asp Leu Lys Gln Asp Tyr Glu Pro Val Arg Ser
    530                 535                 540

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

Arg Lys Ser Met Ser Thr Val Ile Lys Leu Pro Asp Glu Ser Phe Arg
                565                 570                 575

Met Tyr Ser Lys Gly Ala Ser Glu Ile Val Leu Lys Lys Cys Cys Lys
            580                 585                 590

Ile Leu Asn Gly Ala Gly Glu Pro Arg Val Phe Arg Pro Arg Asp Arg
        595                 600                 605

Asp Glu Met Val Lys Lys Val Ile Glu Pro Met Ala Cys Asp Gly Leu
    610                 615                 620

Arg Thr Ile Cys Val Ala Tyr Arg Asp Phe Pro Ser Ser Pro Glu Pro
625                 630                 635                 640
```

```
Asp Trp Asp Asn Glu Asn Asp Ile Leu Asn Glu Leu Thr Cys Ile Cys
                645                 650                 655

Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu Val Pro Glu Ala Ile
            660                 665                 670

Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg Met Val Thr Gly Asp
        675                 680                 685

Asn Ile Asn Thr Ala Arg Ala Ile Ala Ile Lys Cys Gly Ile Ile His
    690                 695                 700

Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe Asn Arg Arg
705                 710                 715                 720

Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu Arg Ile Asp Lys Ile
                725                 730                 735

Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser Pro Thr Asp Lys His
            740                 745                 750

Thr Leu Val Lys Gly Ile Ile Asp Ser Thr His Thr Glu Gln Arg Gln
        755                 760                 765

Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys
    770                 775                 780

Lys Ala Asp Val Gly Phe Ala Met Gly Ile Ala Gly Thr Asp Val Ala
785                 790                 795                 800

Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe Ser Ser Ile
                805                 810                 815

Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys
            820                 825                 830

Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val Ala Val Ile Val Ala
        835                 840                 845

Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys Ala Val Gln
    850                 855                 860
```

```
Met Leu Trp Val Asn Leu Ile Met Asp Thr Phe Ala Ser Leu Ala Leu
865                 870                 875                 880

Ala Thr Glu Pro Pro Thr Glu Thr Leu Leu Leu Arg Lys Pro Tyr Gly
                885                 890                 895

Arg Asn Lys Pro Leu Ile Ser Arg Thr Met Met Lys Asn Ile Leu Gly
            900                 905                 910

His Ala Val Tyr Gln Leu Ala Leu Ile Phe Thr Leu Leu Phe Val Gly
        915                 920                 925

Glu Lys Met Phe Gln Ile Asp Ser Gly Arg Asn Ala Pro Leu His Ser
    930                 935                 940

Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn Thr Phe Val Met Met
945                 950                 955                 960

Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg Asn
                965                 970                 975

Val Phe Asp Gly Ile Phe Arg Asn Pro Ile Phe Cys Thr Ile Val Leu
            980                 985                 990

Gly Thr Phe Ala Ile Gln Ile Val  Ile Val Gln Phe Gly  Gly Lys
Pro
        995                 1000                1005

Phe Ser  Cys Ser Pro Leu Gln  Leu Asp Gln Trp Met  Trp Cys Ile
    1010                1015                1020

Phe Ile  Gly Leu Gly Glu Leu  Val Trp Gly Gln Val  Ile Ala Thr
    1025                1030                1035

Ile Pro  Thr Ser Arg Leu Lys  Phe Leu Lys Glu Ala  Gly Arg Leu
    1040                1045                1050

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

Glu Glu  Ile Asp His Ala Glu  Arg Glu Leu Arg Arg  Gly Gln Ile
    1070                1075                1080
```

```
Leu Trp  Phe Arg Gly Leu Asn  Arg Ile Gln Thr Gln  Ile Arg Val
    1085                1090                1095

Val Lys  Ala Phe Arg Ser Ser  Leu Tyr Glu Gly Leu  Glu Lys Pro
    1100                1105                1110

Glu Ser  Arg Thr Ser Ile His  Asn Phe Met Ala His  Pro Glu Phe
    1115                1120                1125

Arg Ile  Glu Asp Ser Gln Pro  His Ile Pro Leu Ile  Asp Asp Thr
    1130                1135                1140

Asp Leu  Glu Glu Asp Ala Ala  Leu Lys Gln Asn Ser  Ser Pro Pro
    1145                1150                1155

Ser Ser  Leu Asn Lys Asn Asn  Ser Ala Ile Asp Ser  Gly Ile Asn
    1160                1165                1170

Leu Thr  Thr Asp Thr Ser Lys  Ser Ala Thr Ser Ser  Ser Pro Gly
    1175                1180                1185

Ser Pro  Ile His Ser Leu Glu  Thr Ser Leu
    1190                1195


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<400> 7256

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

Glu Ser Ser His Gly Gly Glu Phe Gly Cys Thr Met Glu Glu Leu Arg
            20                  25                  30

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

Thr Tyr Gly Asp Thr Glu Ala Ile Cys Arg Arg Leu Lys Thr Ser Pro
    50                  55                  60

Val Glu Gly Leu Pro Gly Thr Ala Pro Asp Leu Glu Lys Arg Lys Gln
65                  70                  75                  80

Ile Phe Gly Gln Asn Phe Ile Pro Pro Lys Lys Pro Lys Thr Phe Leu
                85                  90                  95

Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu
            100                 105                 110

Ile Ala Ala Ile Ile Ser Leu Gly Leu Ser Phe Tyr His Pro Pro Gly
        115                 120                 125

Glu Gly Asn Glu Gly Cys Ala Thr Ala Gln Gly Gly Ala Glu Asp Glu
    130                 135                 140

Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Leu Ser
145                 150                 155                 160

Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu
                165                 170                 175

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

Thr Val Val Arg Ala Gly Gln Val Val Gln Ile Pro Val Ala Glu Ile
        195                 200                 205

Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala
    210                 215                 220
```

```
Asp Gly Leu Phe Ile Gln Gly Asn Asp Leu Lys Ile Asp Glu Ser Ser
225                 230                 235                 240

Leu Thr Gly Glu Ser Asp Gln Val Arg Lys Ser Val Asp Lys Asp Pro
                245                 250                 255

Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Leu
            260                 265                 270

Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe Thr Leu
        275                 280                 285

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

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

Glu Gly Gly Asp Ala Asp Asp Arg Lys Lys Ala Ser Met His Lys Lys
                325                 330                 335

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

Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr Val Ile Ile Leu Val
        355                 360                 365

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

Pro Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe Val Lys Phe Phe Ile
385                 390                 395                 400

Ile Gly Val Thr Val Leu Val Val Ala Val Pro Glu Gly Leu Pro Leu
                405                 410                 415

Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys Met Met Lys Asp
            420                 425                 430

Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala
        435                 440                 445
```

```
Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Arg Met
    450                 455                 460

Thr Val Val Gln Ala Tyr Val Gly Asp Val His Tyr Lys Glu Ile Pro
465                 470                 475                 480

Asp Pro Ser Ser Ile Asn Thr Lys Thr Met Glu Leu Leu Ile Asn Ala
                485                 490                 495

Ile Ala Ile Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro Pro Glu Lys
            500                 505                 510

Glu Gly Ala Leu Pro Arg Gln Val Gly Asn Lys Thr Glu Cys Gly Leu
        515                 520                 525

Leu Gly Phe Val Leu Asp Leu Lys Gln Asp Tyr Glu Pro Val Arg Ser
    530                 535                 540

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

Arg Lys Ser Met Ser Thr Val Ile Lys Leu Pro Asp Glu Ser Phe Arg
                565                 570                 575

Met Tyr Ser Lys Gly Ala Ser Glu Ile Val Leu Lys Lys Cys Cys Lys
            580                 585                 590

Ile Leu Asn Gly Ala Gly Glu Pro Arg Val Phe Arg Pro Arg Asp Arg
        595                 600                 605

Asp Glu Met Val Lys Lys Val Ile Glu Pro Met Ala Cys Asp Gly Leu
    610                 615                 620

Arg Thr Ile Cys Val Ala Tyr Arg Asp Phe Pro Ser Ser Pro Glu Pro
625                 630                 635                 640

Asp Trp Asp Asn Glu Asn Asp Ile Leu Asn Glu Leu Thr Cys Ile Cys
                645                 650                 655

Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu Val Pro Glu Ala Ile
            660                 665                 670
```

```
Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg Met Val Thr Gly Asp
        675                 680                 685

Asn Ile Asn Thr Ala Arg Ala Ile Ala Ile Lys Cys Gly Ile Ile His
    690                 695                 700

Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe Asn Arg Arg
705                 710                 715                 720

Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu Arg Ile Asp Lys Ile
                725                 730                 735

Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser Pro Thr Asp Lys His
            740                 745                 750

Thr Leu Val Lys Gly Ile Ile Asp Ser Thr His Thr Glu Gln Arg Gln
        755                 760                 765

Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys
    770                 775                 780

Lys Ala Asp Val Gly Phe Ala Met Gly Ile Ala Gly Thr Asp Val Ala
785                 790                 795                 800

Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe Ser Ser Ile
                805                 810                 815

Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys
            820                 825                 830

Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val Ala Val Ile Val Ala
        835                 840                 845

Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys Ala Val Gln
    850                 855                 860

Met Leu Trp Val Asn Leu Ile Met Asp Thr Phe Ala Ser Leu Ala Leu
865                 870                 875                 880

Ala Thr Glu Pro Pro Thr Glu Thr Leu Leu Leu Arg Lys Pro Tyr Gly
                885                 890                 895

Arg Asn Lys Pro Leu Ile Ser Arg Thr Met Met Lys Asn Ile Leu Gly
```

```
            900                 905                 910

His Ala Val Tyr Gln Leu Ala Leu Ile Phe Thr Leu Leu Phe Val Gly
        915                 920                 925

Glu Lys Met Phe Gln Ile Asp Ser Gly Arg Asn Ala Pro Leu His Ser
    930                 935                 940

Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn Thr Phe Val Met Met
945                 950                 955                 960

Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg Asn
                965                 970                 975

Val Phe Asp Gly Ile Phe Arg Asn Pro Ile Phe Cys Thr Ile Val Leu
            980                 985                 990

Gly Thr Phe Ala Ile Gln Ile Val  Ile Val Gln Phe Gly  Gly Lys
Pro
        995                 1000                1005

Phe Ser  Cys Ser Pro Leu Gln  Leu Asp Gln Trp Met  Trp Cys Ile
    1010                1015                1020

Phe Ile  Gly Leu Gly Glu Leu  Val Trp Gly Gln Val  Ile Ala Thr
    1025                1030                1035

Ile Pro  Thr Ser Arg Leu Lys  Phe Leu Lys Glu Ala  Gly Arg Leu
    1040                1045                1050

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

Glu Glu  Ile Asp His Ala Glu  Arg Glu Leu Arg Arg  Gly Gln Ile
    1070                1075                1080

Leu Trp  Phe Arg Gly Leu Asn  Arg Ile Gln Thr Gln  Ile Arg Val
    1085                1090                1095

Val Lys  Ala Phe Arg Ser Ser  Leu Tyr Glu Gly Leu  Glu Lys Pro
    1100                1105                1110

Glu Ser  Arg Thr Ser Ile His  Asn Phe Met Ala His  Pro Glu Phe
```

```
    1115                1120                1125

Arg Ile  Glu Asp Ser Gln Pro  His Ile Pro Leu Ile  Asp Asp Thr
    1130                1135                1140

Asp Leu  Glu Glu Asp Ala Ala  Leu Lys Gln Asn Ser  Ser Pro Pro
    1145                1150                1155

Ser Ser  Leu Asn Lys Asn Asn  Ser Ala Ile Asp Ser  Gly Ile Asn
    1160                1165                1170

Leu Thr  Thr Asp Thr Ser Lys  Ser Ala Thr Ser Ser  Ser Pro Gly
    1175                1180                1185

Ser Pro  Ile His Ser Leu Glu  Thr Ser Leu
    1190                1195


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<400> 7257
Ala Ala Ile Ile Ser Leu Gly Leu Ser Phe Tyr His Pro Pro Gly Glu
1               5                  10                  15

Gly Asn Glu Gly Cys Ala Thr Ala Gln Gly Gly Ala Glu Asp Glu Gly
            20                  25                  30

Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Leu Ser Val
        35                  40                  45
```

```
Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu Lys
    50                  55                  60

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

Val Val Arg Ala Gly Gln Val Val Gln Ile Pro Val Ala Glu Ile Val
                85                  90                  95

Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala Asp
            100                 105                 110

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

Thr Gly Glu Ser Asp Gln Val Arg Lys Ser Val Asp Lys Asp Pro Met
    130                 135                 140

Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Leu Val
145                 150                 155                 160

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

Gly Ala Gly Gly Glu Glu Glu Glu Lys Lys Asp Lys Lys Gly Lys Met
            180                 185                 190

Gln Asp Gly Asn Val Asp Ala Ser Gln Ser Lys Ala Lys Gln Gln Asp
        195                 200                 205

Gly Ala Ala Ala Met Glu Met Gln Pro Leu Lys Ser Ala Glu Gly Gly
    210                 215                 220

Asp Ala Asp Asp Arg Lys Lys Ala Ser Met His Lys Lys Glu Lys Ser
225                 230                 235                 240

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

Gly Leu Val Met Ser Ala Ile Thr Val Ile Ile Leu Val Leu Tyr Phe
            260                 265                 270
```

```
Thr Val Asp Thr Phe Val Val Asn Lys Lys Pro Trp Leu Pro Glu Cys
        275                 280                 285

Thr Pro Val Tyr Val Gln Tyr Phe Val Lys Phe Phe Ile Ile Gly Val
    290                 295                 300

Thr Val Leu Val Val Ala Val Pro Glu Gly Leu Pro Leu Ala Val Thr
305                 310                 315                 320

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

Val Arg His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala Thr Ala Ile
            340                 345                 350

Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Arg Met Thr Val Val
        355                 360                 365

Gln Ala Tyr Val Gly Asp Val His Tyr Lys Glu Ile Pro Asp Pro Ser
    370                 375                 380

Ser Ile Asn Thr Lys Thr Met Glu Leu Leu Ile Asn Ala Ile Ala Ile
385                 390                 395                 400

Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro Pro Glu Lys Glu Gly Ala
                405                 410                 415

Leu Pro Arg Gln Val Gly Asn Lys Thr Glu Cys Gly Leu Leu Gly Phe
            420                 425                 430

Val Leu Asp Leu Lys Gln Asp Tyr Glu Pro Val Arg Ser Gln Met Pro
        435                 440                 445

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

Met Ser Thr Val Ile Lys Leu Pro Asp Glu Ser Phe Arg Met Tyr Ser
465                 470                 475                 480

Lys Gly Ala Ser Glu Ile Val Leu Lys Lys Cys Cys Lys Ile Leu Asn
                485                 490                 495

Gly Ala Gly Glu Pro Arg Val Phe Arg Pro Arg Asp Arg Asp Glu Met
```

```
            500                 505                 510

Val Lys Lys Val Ile Glu Pro Met Ala Cys Asp Gly Leu Arg Thr Ile
        515                 520                 525

Cys Val Ala Tyr Arg Asp Phe Pro Ser Ser Pro Glu Pro Asp Trp Asp
    530                 535                 540

Asn Glu Asn Asp Ile Leu Asn Glu Leu Thr Cys Ile Cys Val Val Gly
545                 550                 555                 560

Ile Glu Asp Pro Val Arg Pro Glu Val Pro Glu Ala Ile Arg Lys Cys
                565                 570                 575

Gln Arg Ala Gly Ile Thr Val Arg Met Val Thr Gly Asp Asn Ile Asn
            580                 585                 590

Thr Ala Arg Ala Ile Ala Ile Lys Cys Gly Ile Ile His Pro Gly Glu
        595                 600                 605

Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe Asn Arg Arg Ile Arg Asn
    610                 615                 620

Glu Lys Gly Glu Ile Glu Gln Glu Arg Ile Asp Lys Ile Trp Pro Lys
625                 630                 635                 640

Leu Arg Val Leu Ala Arg Ser Ser Pro Thr Asp Lys His Thr Leu Val
                645                 650                 655

Lys Gly Ile Ile Asp Ser Thr His Thr Glu Gln Arg Gln Val Val Ala
            660                 665                 670

Val Thr Gly Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys Lys Ala Asp
        675                 680                 685

Val Gly Phe Ala Met Gly Ile Ala Gly Thr Asp Val Ala Lys Glu Ala
    690                 695                 700

Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe Ser Ser Ile Val Lys Ala
705                 710                 715                 720

Val Met Trp Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys Phe Leu Gln
                725                 730                 735
```

```
Phe Gln Leu Thr Val Asn Val Val Ala Val Ile Val Ala Phe Thr Gly
            740                 745                 750

Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys Ala Val Gln Met Leu Trp
        755                 760                 765

Val Asn Leu Ile Met Asp Thr Phe Ala Ser Leu Ala Leu Ala Thr Glu
    770                 775                 780

Pro Pro Thr Glu Thr Leu Leu Leu Arg Lys Pro Tyr Gly Arg Asn Lys
785                 790                 795                 800

Pro Leu Ile Ser Arg Thr Met Met Lys Asn Ile Leu Gly His Ala Val
                805                 810                 815

Tyr Gln Leu Ala Leu Ile Phe Thr Leu Leu Phe Val Gly Glu Lys Met
            820                 825                 830

Phe Gln Ile Asp Ser Gly Arg Asn Ala Pro Leu His Ser Pro Pro Ser
        835                 840                 845

Glu His Tyr Thr Ile Ile Phe Asn Thr Phe Val Met Met Gln Leu Phe
    850                 855                 860

Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg Asn Val Phe Asp
865                 870                 875                 880

Gly Ile Phe Arg Asn Pro Ile Phe Cys Thr Ile Val Leu Gly Thr Phe
                885                 890                 895

Ala Ile Gln Ile Val Ile Val Gln Phe Gly Gly Lys Pro Phe Ser Cys
            900                 905                 910

Ser Pro Leu Gln Leu Asp Gln Trp Met Trp Cys Ile Phe Ile Gly Leu
        915                 920                 925

Gly Glu Leu Val Trp Gly Gln Val Ile Ala Thr Ile Pro Thr Ser Arg
    930                 935                 940

Leu Lys Phe Leu Lys Glu Ala Gly Arg Leu Thr Gln Lys Glu Glu Ile
945                 950                 955                 960
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Pro Glu Glu Glu Leu Asn Glu Asp Val Glu Glu Ile Asp His Ala Glu
965 970 975

Arg Glu Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn Arg
980 985 990

Ile Gln Thr Gln Ile Arg Val Val Lys Ala Phe Arg Ser Ser Leu
Tyr
995 1000 1005

Glu Gly Leu Glu Lys Pro Glu Ser Arg Thr Ser Ile His Asn Phe
1010 1015 1020

Met Ala His Pro Glu Phe Arg Ile Glu Asp Ser Gln Pro His Ile
1025 1030 1035

Pro Leu Ile Asp Asp Thr Asp Leu Glu Glu Asp Ala Ala Leu Lys
1040 1045 1050

Gln Asn Ser Ser Pro Pro Ser Ser Leu Asn Lys Asn Asn Ser Ala
1055 1060 1065

Ile Asp Ser Gly Ile Asn Leu Thr Thr Asp Thr Ser Lys Ser Ala
1070 1075 1080

Thr Ser Ser Ser Pro Gly Ser Pro Ile His Ser Leu Glu Thr Ser
1085 1090 1095

Leu

<210> 7258
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Met Gly Asp Met Thr Asn Ser Asp Phe Tyr Ser Lys Asn Gln Arg Asn
1               5                  10                  15

Glu Ser Ser His Gly Gly Glu Phe Gly Cys Thr Met Glu Glu Leu Arg
            20                  25                  30

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

Thr Tyr Gly Asp Thr Glu Ala Ile Cys Arg Arg Leu Lys Thr Ser Pro
    50                  55                  60

Val Glu Gly Leu Pro Gly Thr Ala Pro Asp Leu Glu Lys Arg Lys Gln
65                  70                  75                  80

Ile Phe Gly Gln Asn Phe Ile Pro Pro Lys Lys Pro Lys Thr Phe Leu
                85                  90                  95

Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu
            100                 105                 110

Ile Ala Ala Ile Ile Ser Leu Gly Leu Ser Phe Tyr His Pro Pro Gly
        115                 120                 125

Glu Gly Asn Glu Gly Cys Ala Thr Ala Gln Gly Gly Ala Glu Asp Glu
    130                 135                 140

Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Leu Ser
145                 150                 155                 160

Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu
                165                 170                 175

Lys Gln Phe Arg Gly Leu Gln Ser Arg Ile Glu Gln Glu Gln Lys Phe
```

```
            180                 185                 190

Thr Val Val Arg Ala Gly Gln Val Val Gln Ile Pro Val Ala Glu Ile
        195                 200                 205

Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala
    210                 215                 220

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

Leu Thr Gly Glu Ser Asp Gln Val Arg Lys Ser Val Asp Lys Asp Pro
                245                 250                 255

Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Leu
            260                 265                 270

Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Phe Thr Leu
        275                 280                 285

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

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

Glu Gly Gly Asp Ala Asp Asp Arg Lys Lys Ala Ser Met His Lys Lys
                325                 330                 335

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

Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr Val Ile Ile Leu Val
        355                 360                 365

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

Pro Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe Val Lys Phe Phe Ile
385                 390                 395                 400

Ile Gly Val Thr Val Leu Val Val Ala Val Pro Glu Gly Leu Pro Leu
                405                 410                 415
```

```
Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys Met Met Lys Asp
            420                 425                 430

Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala
        435                 440                 445

Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr Asn Arg Met
    450                 455                 460

Thr Val Val Gln Ala Tyr Val Gly Asp Val His Tyr Lys Glu Ile Pro
465                 470                 475                 480

Asp Pro Ser Ser Ile Asn Thr Lys Thr Met Glu Leu Leu Ile Asn Ala
                485                 490                 495

Ile Ala Ile Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro Pro Glu Lys
            500                 505                 510

Glu Gly Ala Leu Pro Arg Gln Val Gly Asn Lys Thr Glu Cys Gly Leu
        515                 520                 525

Leu Gly Phe Val Leu Asp Leu Lys Gln Asp Tyr Glu Pro Val Arg Ser
    530                 535                 540

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

Arg Lys Ser Met Ser Thr Val Ile Lys Leu Pro Asp Glu Ser Phe Arg
                565                 570                 575

Met Tyr Ser Lys Gly Ala Ser Glu Ile Val Leu Lys Lys Cys Cys Lys
            580                 585                 590

Ile Leu Asn Gly Ala Gly Glu Pro Arg Val Phe Arg Pro Arg Asp Arg
        595                 600                 605

Asp Glu Met Val Lys Lys Val Ile Glu Pro Met Ala Cys Asp Gly Leu
    610                 615                 620

Arg Thr Ile Cys Val Ala Tyr Arg Asp Phe Pro Ser Ser Pro Glu Pro
625                 630                 635                 640
```

```
Asp Trp Asp Asn Glu Asn Asp Ile Leu Asn Glu Leu Thr Cys Ile Cys
                645                 650                 655

Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu Val Pro Glu Ala Ile
            660                 665                 670

Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg Met Val Thr Gly Asp
        675                 680                 685

Asn Ile Asn Thr Ala Arg Ala Ile Ala Ile Lys Cys Gly Ile Ile His
    690                 695                 700

Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe Asn Arg Arg
705                 710                 715                 720

Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu Arg Ile Asp Lys Ile
                725                 730                 735

Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser Pro Thr Asp Lys His
            740                 745                 750

Thr Leu Val Lys Gly Ile Ile Asp Ser Thr His Thr Glu Gln Arg Gln
        755                 760                 765

Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys
    770                 775                 780

Lys Ala Asp Val Gly Phe Ala Met Gly Ile Ala Gly Thr Asp Val Ala
785                 790                 795                 800

Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe Ser Ser Ile
                805                 810                 815

Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys
            820                 825                 830

Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val Ala Val Ile Val Ala
        835                 840                 845

Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys Ala Val Gln
    850                 855                 860
```

```
Met Leu Trp Val Asn Leu Ile Met Asp Thr Phe Ala Ser Leu Ala Leu
865                 870                 875                 880

Ala Thr Glu Pro Pro Thr Glu Thr Leu Leu Leu Arg Lys Pro Tyr Gly
                885                 890                 895

Arg Asn Lys Pro Leu Ile Ser Arg Thr Met Met Lys Asn Ile Leu Gly
            900                 905                 910

His Ala Val Tyr Gln Leu Ala Leu Ile Phe Thr Leu Leu Phe Val Gly
        915                 920                 925

Glu Lys Met Phe Gln Ile Asp Ser Gly Arg Asn Ala Pro Leu His Ser
    930                 935                 940

Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn Thr Phe Val Met Met
945                 950                 955                 960

Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly Glu Arg Asn
                965                 970                 975

Val Phe Asp Gly Ile Phe Arg Asn Pro Ile Phe Cys Thr Ile Val Leu
            980                 985                 990

Gly Thr Phe Ala Ile Gln Ile Val  Ile Val Gln Phe Gly  Gly Lys
Pro
        995                 1000                1005

Phe Ser  Cys Ser Pro Leu Gln  Leu Asp Gln Trp Met  Trp Cys Ile
    1010                1015                1020

Phe Ile  Gly Leu Gly Glu Leu  Val Trp Gly Gln Val  Ile Ala Thr
    1025                1030                1035

Ile Pro  Thr Ser Arg Leu Lys  Phe Leu Lys Glu Ala  Gly Arg Leu
    1040                1045                1050

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

Glu Glu  Ile Asp His Ala Glu  Arg Glu Leu Arg Arg  Gly Gln Ile
    1070                1075                1080
```

```
Leu Trp  Phe Arg Gly Leu Asn  Arg Ile Gln Thr Gln  Ile Glu Val
    1085                1090                1095


Val Asn  Thr Phe Lys Ser Gly  Ala Ser Phe Gln Gly  Ala Leu Arg
    1100                1105                1110


Arg Gln  Ser Ser Val Thr Ser  Gln Ser Gln Asp Val  Ala Asn Leu
    1115                1120                1125


Ser Ser  Pro Ser Arg Val Ser  Leu Ser Asn Ala Leu  Ser Ser Pro
    1130                1135                1140


Thr Ser  Leu Pro Pro Ala Ala  Ala Gly Gln Gly
    1145                1150


<210> 7259
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Met Gly Asp Met Ala Asn Ser Ser Ile Glu Phe His Pro Lys Pro Gln
1               5                  10                  15


Gln Gln Arg Asp Val Pro Gln Ala Gly Gly Phe Gly Cys Thr Leu Ala
            20                  25                  30


Glu Leu Arg Thr Leu Met Glu Leu Arg Gly Ala Glu Ala Leu Gln Lys
        35                  40                  45
```

```
Ile Glu Glu Ala Tyr Gly Asp Val Ser Gly Leu Cys Arg Arg Leu Lys
    50                  55                  60

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

Arg Arg Gln Ile Tyr Gly Gln Asn Phe Ile Pro Pro Lys Gln Pro Lys
                85                  90                  95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100                 105                 110

Ile Leu Glu Val Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Ala
        115                 120                 125

Pro Pro Gly Glu Glu Ser Glu Ala Cys Gly Asn Val Ser Gly Gly Ala
    130                 135                 140

Glu Asp Glu Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile
145                 150                 155                 160

Leu Leu Ser Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp
                165                 170                 175

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

Gln Lys Phe Thr Val Ile Arg Asn Gly Gln Leu Leu Gln Val Pro Val
        195                 200                 205

Ala Ala Leu Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu
    210                 215                 220

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

Glu Ser Ser Leu Thr Gly Glu Ser Asp His Val Arg Lys Ser Ala Asp
                245                 250                 255

Lys Asp Pro Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly
            260                 265                 270
```

```
Arg Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile
        275                 280                 285

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

Lys Gly Lys Gln Gln Asp Gly Ala Met Glu Ser Ser Gln Thr Lys Ala
305                 310                 315                 320

Lys Lys Gln Asp Gly Ala Val Ala Met Glu Met Gln Pro Leu Lys Ser
                325                 330                 335

Ala Glu Gly Gly Glu Met Glu Glu Arg Glu Lys Lys Lys Ala Asn Ala
            340                 345                 350

Pro Lys Lys Glu Lys Ser Val Leu Gln Gly Lys Leu Thr Lys Leu Ala
        355                 360                 365

Val Gln Ile Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr Val Ile
    370                 375                 380

Ile Leu Val Leu Tyr Phe Val Ile Glu Thr Phe Val Val Glu Gly Arg
385                 390                 395                 400

Thr Trp Leu Ala Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe Val Lys
                405                 410                 415

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

Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys Met
        435                 440                 445

Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr Met
    450                 455                 460

Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr
465                 470                 475                 480

Asn Arg Met Thr Val Val Gln Ser Tyr Leu Gly Asp Thr His Tyr Lys
                485                 490                 495
```

```
Glu Ile Pro Ala Pro Ser Ala Leu Thr Pro Lys Ile Leu Asp Leu Leu
            500                 505                 510

Val His Ala Ile Ser Ile Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro
        515                 520                 525

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

Cys Ala Leu Leu Gly Phe Val Leu Asp Leu Lys Arg Asp Phe Gln Pro
545                 550                 555                 560

Val Arg Glu Gln Ile Pro Glu Asp Lys Leu Tyr Lys Val Tyr Thr Phe
                565                 570                 575

Asn Ser Val Arg Lys Ser Met Ser Thr Val Ile Arg Met Pro Asp Gly
            580                 585                 590

Gly Phe Arg Leu Phe Ser Lys Gly Ala Ser Glu Ile Leu Leu Lys Lys
        595                 600                 605

Cys Thr Asn Ile Leu Asn Ser Asn Gly Glu Leu Arg Gly Phe Arg Pro
    610                 615                 620

Arg Asp Arg Asp Asp Met Val Arg Lys Ile Ile Glu Pro Met Ala Cys
625                 630                 635                 640

Asp Gly Leu Arg Thr Ile Cys Ile Ala Tyr Arg Asp Phe Ser Ala Gly
                645                 650                 655

Gln Glu Pro Asp Trp Asp Asn Glu Asn Glu Val Val Gly Asp Leu Thr
            660                 665                 670

Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu Val Pro
        675                 680                 685

Glu Ala Ile Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg Met Val
    690                 695                 700

Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Ala Lys Cys Gly
705                 710                 715                 720

Ile Ile Gln Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe
```

```
                725                 730                 735

Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu Arg Leu
            740                 745                 750

Asp Lys Val Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser Pro Thr
        755                 760                 765

Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr Thr Gly Glu
    770                 775                 780

Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp Gly Pro
785                 790                 795                 800

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

Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe
            820                 825                 830

Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr Asp Ser
        835                 840                 845

Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val Ala Val
    850                 855                 860

Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys
865                 870                 875                 880

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

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

Pro Tyr Gly Arg Asp Lys Pro Leu Ile Ser Arg Thr Met Met Lys Asn
        915                 920                 925

Ile Leu Gly His Ala Val Tyr Gln Leu Ala Ile Ile Phe Thr Leu Leu
    930                 935                 940

Phe Val Gly Glu Leu Phe Phe Asp Ile Asp Ser Gly Arg Asn Ala Pro
945                 950                 955                 960
```

```
Leu His Ser Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn Thr Phe
               965                 970                 975

Val Met Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly
           980                 985                 990

Glu Arg Asn Val Phe Asp Gly Ile  Phe Ser Asn Pro Ile  Phe Cys
Thr
       995                1000                1005

Ile Val  Leu Gly Thr Phe Gly  Ile Gln Ile Val Ile  Val Gln Phe
    1010                1015                1020

Gly Gly  Lys Pro Phe Ser Cys  Ser Pro Leu Ser Thr  Glu Gln Trp
    1025                1030                1035

Leu Trp  Cys Leu Phe Val Gly  Val Gly Glu Leu Val  Trp Gly Gln
    1040                1045                1050

Val Ile  Ala Thr Ile Pro Thr  Ser Gln Leu Lys Cys  Leu Lys Glu
    1055                1060                1065

Ala Gly  His Gly Pro Gly Lys  Asp Glu Met Thr Asp  Glu Glu Leu
    1070                1075                1080

Ala Glu  Gly Glu Glu Glu Ile  Asp His Ala Glu Arg  Glu Leu Arg
    1085                1090                1095

Arg Gly  Gln Ile Leu Trp Phe  Arg Gly Leu Asn Arg  Ile Gln Thr
    1100                1105                1110

Gln Ile  Arg Val Val Lys Ala  Phe Arg Ser Ser Leu  Tyr Glu Gly
    1115                1120                1125

Leu Glu  Lys Pro Glu Ser Lys  Thr Ser Ile His Asn  Phe Met Ala
    1130                1135                1140

Thr Pro  Glu Phe Leu Ile Asn  Asp Tyr Thr His Asn  Ile Pro Leu
    1145                1150                1155

Ile Asp  Asp Thr Asp Val Asp  Glu Asn Glu Glu Arg  Leu Arg Ala
    1160                1165                1170
```

```
Pro Pro  Pro Pro Ser Pro Asn  Gln Asn Asn Asn Ala  Ile Asp Ser
    1175                1180                1185


Gly Ile  Tyr Leu Thr Thr His  Val Thr Lys Ser Ala  Thr Ser Ser
    1190                1195                1200


Val Phe  Ser Ser Ser Pro Gly  Ser Pro Leu His Ser  Val Glu Thr
    1205                1210                1215


Ser Leu
    1220


<210> 7260
<211> 1220
<212> PRT
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<400> 7260
Met Gly Asp Met Ala Asn Ser Ser Ile Glu Phe His Pro Lys Pro Gln
1               5                   10                  15


Gln Gln Arg Asp Val Pro Gln Ala Gly Gly Phe Gly Cys Thr Leu Ala
            20                  25                  30


Glu Leu Arg Thr Leu Met Glu Leu Arg Gly Ala Glu Ala Leu Gln Lys
        35                  40                  45
```

```
Ile Glu Glu Ala Tyr Gly Asp Val Ser Gly Leu Cys Arg Arg Leu Lys
    50                  55                  60

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

Arg Arg Gln Ile Tyr Gly Gln Asn Phe Ile Pro Pro Lys Gln Pro Lys
                85                  90                  95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100                 105                 110

Ile Leu Glu Val Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Ala
        115                 120                 125

Pro Pro Gly Glu Glu Ser Glu Ala Cys Gly Asn Val Ser Gly Gly Ala
    130                 135                 140

Glu Asp Glu Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile
145                 150                 155                 160

Leu Leu Ser Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp
                165                 170                 175

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

Gln Lys Phe Thr Val Ile Arg Asn Gly Gln Leu Leu Gln Val Pro Val
        195                 200                 205

Ala Ala Leu Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu
    210                 215                 220

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

Glu Ser Ser Leu Thr Gly Glu Ser Asp His Val Arg Lys Ser Ala Asp
                245                 250                 255

Lys Asp Pro Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly
            260                 265                 270

Arg Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile
```

```
        275                 280                 285

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

Lys Gly Lys Gln Gln Asp Gly Ala Met Glu Ser Ser Gln Thr Lys Ala
305                 310                 315                 320

Lys Lys Gln Asp Gly Ala Val Ala Met Glu Met Gln Pro Leu Lys Ser
                325                 330                 335

Ala Glu Gly Gly Glu Met Glu Glu Arg Glu Lys Lys Lys Ala Asn Ala
            340                 345                 350

Pro Lys Lys Glu Lys Ser Val Leu Gln Gly Lys Leu Thr Lys Leu Ala
        355                 360                 365

Val Gln Ile Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr Val Ile
    370                 375                 380

Ile Leu Val Leu Tyr Phe Val Ile Glu Thr Phe Val Val Glu Gly Arg
385                 390                 395                 400

Thr Trp Leu Ala Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe Val Lys
                405                 410                 415

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

Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys Met
        435                 440                 445

Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr Met
    450                 455                 460

Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr
465                 470                 475                 480

Asn Arg Met Thr Val Val Gln Ser Tyr Leu Gly Asp Thr His Tyr Lys
                485                 490                 495

Glu Ile Pro Ala Pro Ser Ala Leu Thr Pro Lys Ile Leu Asp Leu Leu
            500                 505                 510
```

```
Val His Ala Ile Ser Ile Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro
        515                 520                 525

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

Cys Ala Leu Leu Gly Phe Val Leu Asp Leu Lys Arg Asp Phe Gln Pro
545                 550                 555                 560

Val Arg Glu Gln Ile Pro Glu Asp Lys Leu Tyr Lys Val Tyr Thr Phe
                565                 570                 575

Asn Ser Val Arg Lys Ser Met Ser Thr Val Ile Arg Met Pro Asp Gly
            580                 585                 590

Gly Phe Arg Leu Phe Ser Lys Gly Ala Ser Glu Ile Leu Leu Lys Lys
        595                 600                 605

Cys Thr Asn Ile Leu Asn Ser Asn Gly Glu Leu Arg Gly Phe Arg Pro
    610                 615                 620

Arg Asp Arg Asp Asp Met Val Arg Lys Ile Ile Glu Pro Met Ala Cys
625                 630                 635                 640

Asp Gly Leu Arg Thr Ile Cys Ile Ala Tyr Arg Asp Phe Ser Ala Gly
                645                 650                 655

Gln Glu Pro Asp Trp Asp Asn Glu Asn Glu Val Val Gly Asp Leu Thr
            660                 665                 670

Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu Val Pro
        675                 680                 685

Glu Ala Ile Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg Met Val
    690                 695                 700

Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Ala Lys Cys Gly
705                 710                 715                 720

Ile Ile Gln Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe
                725                 730                 735
```

```
Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu Arg Leu
            740                 745                 750

Asp Lys Val Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser Pro Thr
        755                 760                 765

Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr Thr Gly Glu
    770                 775                 780

Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp Gly Pro
785                 790                 795                 800

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

Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe
            820                 825                 830

Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr Asp Ser
        835                 840                 845

Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val Ala Val
    850                 855                 860

Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys
865                 870                 875                 880

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

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

Pro Tyr Gly Arg Asp Lys Pro Leu Ile Ser Arg Thr Met Met Lys Asn
        915                 920                 925

Ile Leu Gly His Ala Val Tyr Gln Leu Ala Ile Ile Phe Thr Leu Leu
    930                 935                 940

Phe Val Gly Glu Leu Phe Phe Asp Ile Asp Ser Gly Arg Asn Ala Pro
945                 950                 955                 960
```

```
Leu His Ser Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn Thr Phe
                965                 970                 975

Val Met Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly
            980                 985                 990

Glu Arg Asn Val Phe Asp Gly Ile  Phe Ser Asn Pro Ile  Phe Cys
Thr
        995                1000                1005

Ile Val  Leu Gly Thr Phe Gly  Ile Gln Ile Val Ile  Val Gln Phe
    1010                1015                1020

Gly Gly  Lys Pro Phe Ser Cys  Ser Pro Leu Ser Thr  Glu Gln Trp
    1025                1030                1035

Leu Trp  Cys Leu Phe Val Gly  Val Gly Glu Leu Val  Trp Gly Gln
    1040                1045                1050

Val Ile  Ala Thr Ile Pro Thr  Ser Gln Leu Lys Cys  Leu Lys Glu
    1055                1060                1065

Ala Gly  His Gly Pro Gly Lys  Asp Glu Met Thr Asp  Glu Glu Leu
    1070                1075                1080

Ala Glu  Gly Glu Glu Glu Ile  Asp His Ala Glu Arg  Glu Leu Arg
    1085                1090                1095

Arg Gly  Gln Ile Leu Trp Phe  Arg Gly Leu Asn Arg  Ile Gln Thr
    1100                1105                1110

Gln Ile  Arg Val Val Lys Ala  Phe Arg Ser Ser Leu  Tyr Glu Gly
    1115                1120                1125

Leu Glu  Lys Pro Glu Ser Lys  Thr Ser Ile His Asn  Phe Met Ala
    1130                1135                1140

Thr Pro  Glu Phe Leu Ile Asn  Asp Tyr Thr His Asn  Ile Pro Leu
    1145                1150                1155

Ile Asp  Asp Thr Asp Val Asp  Glu Asn Glu Glu Arg  Leu Arg Ala
    1160                1165                1170
```

```
Pro Pro  Pro Pro Ser Pro Asn  Gln Asn Asn Asn Ala  Ile Asp Ser
    1175                1180                1185


Gly Ile  Tyr Leu Thr Thr His  Val Thr Lys Ser Ala  Thr Ser Ser
    1190                1195                1200


Val Phe  Ser Ser Ser Pro Gly  Ser Pro Leu His Ser  Val Glu Thr
    1205                1210                1215


Ser Leu
    1220


<210> 7261
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Met Gly Asp Met Ala Asn Ser Ser Ile Glu Phe His Pro Lys Pro Gln
1               5                  10                  15


Gln Gln Arg Asp Val Pro Gln Ala Gly Gly Phe Gly Cys Thr Leu Ala
            20                  25                  30


Glu Leu Arg Thr Leu Met Glu Leu Arg Gly Ala Glu Ala Leu Gln Lys
        35                  40                  45


Ile Glu Glu Ala Tyr Gly Asp Val Ser Gly Leu Cys Arg Arg Leu Lys
    50                  55                  60
```

```
Thr Ser Pro Thr Glu Gly Leu Ala Asp Asn Thr Asn Asp Leu Glu Lys
65                  70                  75                  80

Arg Arg Gln Ile Tyr Gly Gln Asn Phe Ile Pro Pro Lys Gln Pro Lys
                85                  90                  95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100                 105                 110

Ile Leu Glu Val Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Ala
        115                 120                 125

Pro Pro Gly Glu Glu Ser Glu Ala Cys Gly Asn Val Ser Gly Gly Ala
    130                 135                 140

Glu Asp Glu Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile
145                 150                 155                 160

Leu Leu Ser Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp
                165                 170                 175

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

Gln Lys Phe Thr Val Ile Arg Asn Gly Gln Leu Leu Gln Val Pro Val
        195                 200                 205

Ala Ala Leu Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu
    210                 215                 220

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

Glu Ser Ser Leu Thr Gly Glu Ser Asp His Val Arg Lys Ser Ala Asp
                245                 250                 255

Lys Asp Pro Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly
            260                 265                 270

Arg Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile
        275                 280                 285
```

```
Phe Thr Leu Leu Gly Ala Gly Gly Glu Glu Glu Glu Lys Lys Asp Lys
    290                 295                 300

Lys Gly Lys Gln Gln Asp Gly Ala Met Glu Ser Ser Gln Thr Lys Ala
305                 310                 315                 320

Lys Lys Gln Asp Gly Ala Val Ala Met Glu Met Gln Pro Leu Lys Ser
                325                 330                 335

Ala Glu Gly Gly Glu Met Glu Glu Arg Glu Lys Lys Lys Ala Asn Ala
            340                 345                 350

Pro Lys Lys Glu Lys Ser Val Leu Gln Gly Lys Leu Thr Lys Leu Ala
        355                 360                 365

Val Gln Ile Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr Val Ile
    370                 375                 380

Ile Leu Val Leu Tyr Phe Val Ile Glu Thr Phe Val Val Glu Gly Arg
385                 390                 395                 400

Thr Trp Leu Ala Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe Val Lys
                405                 410                 415

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

Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys Lys Met
        435                 440                 445

Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu Thr Met
    450                 455                 460

Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Thr
465                 470                 475                 480

Asn Arg Met Thr Val Val Gln Ser Tyr Leu Gly Asp Thr His Tyr Lys
                485                 490                 495

Glu Ile Pro Ala Pro Ser Ala Leu Thr Pro Lys Ile Leu Asp Leu Leu
            500                 505                 510
```

```
Val His Ala Ile Ser Ile Asn Ser Ala Tyr Thr Thr Lys Ile Leu Pro
        515                 520                 525

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

Cys Ala Leu Leu Gly Phe Val Leu Asp Leu Lys Arg Asp Phe Gln Pro
545                 550                 555                 560

Val Arg Glu Gln Ile Pro Glu Asp Lys Leu Tyr Lys Val Tyr Thr Phe
                565                 570                 575

Asn Ser Val Arg Lys Ser Met Ser Thr Val Ile Arg Met Pro Asp Gly
            580                 585                 590

Gly Phe Arg Leu Phe Ser Lys Gly Ala Ser Glu Ile Leu Leu Lys Lys
        595                 600                 605

Cys Thr Asn Ile Leu Asn Ser Asn Gly Glu Leu Arg Gly Phe Arg Pro
    610                 615                 620

Arg Asp Arg Asp Asp Met Val Arg Lys Ile Ile Glu Pro Met Ala Cys
625                 630                 635                 640

Asp Gly Leu Arg Thr Ile Cys Ile Ala Tyr Arg Asp Phe Ser Ala Gly
                645                 650                 655

Gln Glu Pro Asp Trp Asp Asn Glu Asn Glu Val Val Gly Asp Leu Thr
            660                 665                 670

Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu Val Pro
        675                 680                 685

Glu Ala Ile Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg Met Val
    690                 695                 700

Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Ala Lys Cys Gly
705                 710                 715                 720

Ile Ile Gln Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys Glu Phe
                725                 730                 735

Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu Arg Leu
```

740 745 750

Asp Lys Val Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser Pro Thr
755 760 765

Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr Thr Gly Glu
770 775 780

Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp Gly Pro
785 790 795 800

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

Asp Val Ala Lys Glu Ala Ser Asp Ile Ile Leu Thr Asp Asp Asn Phe
820 825 830

Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr Asp Ser
835 840 845

Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val Ala Val
850 855 860

Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro Leu Lys
865 870 875 880

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

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

Pro Tyr Gly Arg Asp Lys Pro Leu Ile Ser Arg Thr Met Met Lys Asn
915 920 925

Ile Leu Gly His Ala Val Tyr Gln Leu Ala Ile Ile Phe Thr Leu Leu
930 935 940

Phe Val Gly Glu Leu Phe Phe Asp Ile Asp Ser Gly Arg Asn Ala Pro
945 950 955 960

Leu His Ser Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn Thr Phe
965 970 975

```
Val Met Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile His Gly
            980                 985                 990

Glu Arg Asn Val Phe Asp Gly Ile  Phe Ser Asn Pro Ile  Phe Cys
Thr
        995                 1000                1005

Ile Val  Leu Gly Thr Phe Gly  Ile Gln Ile Val Ile  Val Gln Phe
    1010                1015                1020

Gly Gly  Lys Pro Phe Ser Cys  Ser Pro Leu Ser Thr  Glu Gln Trp
    1025                1030                1035

Leu Trp  Cys Leu Phe Val Gly  Val Gly Glu Leu Val  Trp Gly Gln
    1040                1045                1050

Val Ile  Ala Thr Ile Pro Thr  Ser Gln Leu Lys Cys  Leu Lys Glu
    1055                1060                1065

Ala Gly  His Gly Pro Gly Lys  Asp Glu Met Thr Asp  Glu Glu Leu
    1070                1075                1080

Ala Glu  Gly Glu Glu Glu Ile  Asp His Ala Glu Arg  Glu Leu Arg
    1085                1090                1095

Arg Gly  Gln Ile Leu Trp Phe  Arg Gly Leu Asn Arg  Ile Gln Thr
    1100                1105                1110

Gln Met  Glu Val Val Ser Thr  Phe Lys Arg Ser Gly  Ser Val Gln
    1115                1120                1125

Gly Ala  Val Arg Arg Arg Ser  Ser Val Leu Ser Gln  Leu His Asp
    1130                1135                1140

Val Thr  Asn Leu Ser Thr Pro  Thr His Ala Ile Leu  Ser Ala Ala
    1145                1150                1155

Asn Pro  Thr Ser Ala Ala Gly  Asn Pro Gly Gly Glu  Ser Val Pro
    1160                1165                1170
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<210> 7262
<211> 1159

<212> PRT
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<223> /note="Gene Symbol: ATP2B3; "

<220>
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ATPase, Ca++ transporting, plasma membrane 3; "

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<400> 7262

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Met Gly Asp Met Ala Asn Ser Ser Ile Glu Phe His Pro Lys Pro Gln
1               5                  10                  15

Gln Gln Arg Asp Val Pro Gln Ala Gly Gly Phe Gly Cys Thr Leu Ala
            20                  25                  30

Glu Leu Arg Thr Leu Met Glu Leu Arg Gly Ala Glu Ala Leu Gln Lys
        35                  40                  45

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

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

Arg Arg Gln Ile Tyr Gly Gln Asn Phe Ile Pro Pro Lys Gln Pro Lys
                85                  90                  95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100                 105                 110

Ile Leu Glu Val Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Ala
        115                 120                 125
```

```
Pro Pro Gly Glu Glu Ser Glu Ala Cys Gly Asn Val Ser Gly Gly Ala
    130                 135                 140

Glu Asp Glu Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile
145                 150                 155                 160

Leu Leu Ser Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp
                165                 170                 175

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

Gln Lys Phe Thr Val Ile Arg Asn Gly Gln Leu Leu Gln Val Pro Val
        195                 200                 205

Ala Ala Leu Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu
    210                 215                 220

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

Glu Ser Ser Leu Thr Gly Glu Ser Asp His Val Arg Lys Ser Ala Asp
                245                 250                 255

Lys Asp Pro Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly
            260                 265                 270

Arg Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile
        275                 280                 285

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

Lys Ala Lys Lys Gln Asp Gly Ala Val Ala Met Glu Met Gln Pro Leu
305                 310                 315                 320

Lys Ser Ala Glu Gly Gly Glu Met Glu Glu Arg Glu Lys Lys Lys Ala
                325                 330                 335

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

Leu Ala Val Gln Ile Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr
```

```
        355                 360                 365

Val Ile Ile Leu Val Leu Tyr Phe Val Ile Glu Thr Phe Val Val Glu
    370                 375                 380

Gly Arg Thr Trp Leu Ala Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe
385                 390                 395                 400

Val Lys Phe Phe Ile Ile Gly Val Thr Val Leu Val Val Ala Val Pro
                405                 410                 415

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

Lys Met Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu
        435                 440                 445

Thr Met Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu
    450                 455                 460

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

Tyr Lys Glu Ile Pro Ala Pro Ser Ala Leu Thr Pro Lys Ile Leu Asp
                485                 490                 495

Leu Leu Val His Ala Ile Ser Ile Asn Ser Ala Tyr Thr Thr Lys Ile
            500                 505                 510

Leu Pro Pro Glu Lys Glu Gly Ala Leu Pro Arg Gln Val Gly Asn Lys
        515                 520                 525

Thr Glu Cys Ala Leu Leu Gly Phe Val Leu Asp Leu Lys Arg Asp Phe
    530                 535                 540

Gln Pro Val Arg Glu Gln Ile Pro Glu Asp Lys Leu Tyr Lys Val Tyr
545                 550                 555                 560

Thr Phe Asn Ser Val Arg Lys Ser Met Ser Thr Val Ile Arg Met Pro
                565                 570                 575

Asp Gly Gly Phe Arg Leu Phe Ser Lys Gly Ala Ser Glu Ile Leu Leu
            580                 585                 590
```

```
Lys Lys Cys Thr Asn Ile Leu Asn Ser Asn Gly Glu Leu Arg Gly Phe
        595                 600                 605

Arg Pro Arg Asp Arg Asp Asp Met Val Arg Lys Ile Ile Glu Pro Met
    610                 615                 620

Ala Cys Asp Gly Leu Arg Thr Ile Cys Ile Ala Tyr Arg Asp Phe Ser
625                 630                 635                 640

Ala Gly Gln Glu Pro Asp Trp Asp Asn Glu Asn Glu Val Val Gly Asp
                645                 650                 655

Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu
            660                 665                 670

Val Pro Glu Ala Ile Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg
        675                 680                 685

Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Ala Lys
    690                 695                 700

Cys Gly Ile Ile Gln Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys
705                 710                 715                 720

Glu Phe Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu
                725                 730                 735

Arg Leu Asp Lys Val Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser
            740                 745                 750

Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr Thr
        755                 760                 765

Gly Glu Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp
    770                 775                 780

Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe Ala Met Gly Ile Ala
785                 790                 795                 800

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

```
Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr
            820                 825                 830

Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val
        835                 840                 845

Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro
    850                 855                 860

Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu Ile Met Asp Thr Phe
865                 870                 875                 880

Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr Glu Ser Leu Leu Leu
                885                 890                 895

Arg Lys Pro Tyr Gly Arg Asp Lys Pro Leu Ile Ser Arg Thr Met Met
            900                 905                 910

Lys Asn Ile Leu Gly His Ala Val Tyr Gln Leu Ala Ile Ile Phe Thr
        915                 920                 925

Leu Leu Phe Val Gly Glu Leu Phe Phe Asp Ile Asp Ser Gly Arg Asn
    930                 935                 940

Ala Pro Leu His Ser Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn
945                 950                 955                 960

Thr Phe Val Met Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile
                965                 970                 975

His Gly Glu Arg Asn Val Phe Asp Gly Ile Phe Ser Asn Pro Ile Phe
            980                 985                 990

Cys Thr Ile Val Leu Gly Thr Phe  Gly Ile Gln Ile Val  Ile Val
Gln
        995                 1000                1005

Phe Gly  Gly Lys Pro Phe Ser  Cys Ser Pro Leu Ser  Thr Glu Gln
    1010                1015                1020

Trp Leu  Trp Cys Leu Phe Val  Gly Val Gly Glu Leu  Val Trp Gly
    1025                1030                1035
```

```
Gln Val  Ile Ala Thr Ile Pro  Thr Ser Gln Leu Lys  Cys Leu Lys
    1040                1045                1050

Glu Ala  Gly His Gly Pro Gly  Lys Asp Glu Met Thr  Asp Glu Glu
    1055                1060                1065

Leu Ala  Glu Gly Glu Glu Glu  Ile Asp His Ala Glu  Arg Glu Leu
    1070                1075                1080

Arg Arg  Gly Gln Ile Leu Trp  Phe Arg Gly Leu Asn  Arg Ile Gln
    1085                1090                1095

Thr Gln  Met Glu Val Val Ser  Thr Phe Lys Arg Ser  Gly Ser Val
    1100                1105                1110

Gln Gly  Ala Val Arg Arg Arg  Ser Ser Val Leu Ser  Gln Leu His
    1115                1120                1125

Asp Val  Thr Asn Leu Ser Thr  Pro Thr His Ala Ile  Leu Ser Ala
    1130                1135                1140

Ala Asn  Pro Thr Ser Ala Ala  Gly Asn Pro Gly Gly  Glu Ser Val
    1145                1150                1155

Pro
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<210> 7263
<211> 1154
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ATPase, Ca++ transporting, plasma membrane 3; "

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<223> /note="Uniprot ID: Q16720; "

<220>
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<400> 7263
Met Gly Asp Met Ala Asn Ser Ser Ile Glu Phe His Pro Lys Pro Gln
1   5   10   15

Gln Gln Arg Asp Val Pro Gln Ala Gly Gly Phe Gly Cys Thr Leu Ala
            20   25   30

Glu Leu Arg Thr Leu Met Glu Leu Arg Gly Ala Glu Ala Leu Gln Lys
        35   40   45

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

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

Arg Arg Gln Ile Tyr Gly Gln Asn Phe Ile Pro Pro Lys Gln Pro Lys
                85   90   95

Thr Phe Leu Gln Leu Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile
            100   105   110

Ile Leu Glu Val Ala Ala Ile Val Ser Leu Gly Leu Ser Phe Tyr Ala
        115   120   125

Pro Pro Gly Glu Glu Ser Glu Ala Cys Gly Asn Val Ser Gly Gly Ala
    130   135   140

Glu Asp Glu Gly Glu Ala Glu Ala Gly Trp Ile Glu Gly Ala Ala Ile
145   150   155   160

Leu Leu Ser Val Ile Cys Val Val Leu Val Thr Ala Phe Asn Asp Trp
                165   170   175

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

Gln Lys Phe Thr Val Ile Arg Asn Gly Gln Leu Leu Gln Val Pro Val
        195   200   205

```
Ala Ala Leu Val Val Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu
    210                 215                 220

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

Glu Ser Ser Leu Thr Gly Glu Ser Asp His Val Arg Lys Ser Ala Asp
                245                 250                 255

Lys Asp Pro Met Leu Leu Ser Gly Thr His Val Met Glu Gly Ser Gly
            260                 265                 270

Arg Met Val Val Thr Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile
        275                 280                 285

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

Lys Ala Lys Lys Gln Asp Gly Ala Val Ala Met Glu Met Gln Pro Leu
305                 310                 315                 320

Lys Ser Ala Glu Gly Gly Glu Met Glu Glu Arg Glu Lys Lys Lys Ala
                325                 330                 335

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

Leu Ala Val Gln Ile Gly Lys Ala Gly Leu Val Met Ser Ala Ile Thr
        355                 360                 365

Val Ile Ile Leu Val Leu Tyr Phe Val Ile Glu Thr Phe Val Val Glu
    370                 375                 380

Gly Arg Thr Trp Leu Ala Glu Cys Thr Pro Val Tyr Val Gln Tyr Phe
385                 390                 395                 400

Val Lys Phe Phe Ile Ile Gly Val Thr Val Leu Val Val Ala Val Pro
                405                 410                 415

Glu Gly Leu Pro Leu Ala Val Thr Ile Ser Leu Ala Tyr Ser Val Lys
            420                 425                 430
```

```
Lys Met Met Lys Asp Asn Asn Leu Val Arg His Leu Asp Ala Cys Glu
        435                 440                 445

Thr Met Gly Asn Ala Thr Ala Ile Cys Ser Asp Lys Thr Gly Thr Leu
    450                 455                 460

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

Tyr Lys Glu Ile Pro Ala Pro Ser Ala Leu Thr Pro Lys Ile Leu Asp
                485                 490                 495

Leu Leu Val His Ala Ile Ser Ile Asn Ser Ala Tyr Thr Thr Lys Ile
            500                 505                 510

Leu Pro Pro Glu Lys Glu Gly Ala Leu Pro Arg Gln Val Gly Asn Lys
        515                 520                 525

Thr Glu Cys Ala Leu Leu Gly Phe Val Leu Asp Leu Lys Arg Asp Phe
    530                 535                 540

Gln Pro Val Arg Glu Gln Ile Pro Glu Asp Lys Leu Tyr Lys Val Tyr
545                 550                 555                 560

Thr Phe Asn Ser Val Arg Lys Ser Met Ser Thr Val Ile Arg Met Pro
                565                 570                 575

Asp Gly Gly Phe Arg Leu Phe Ser Lys Gly Ala Ser Glu Ile Leu Leu
            580                 585                 590

Lys Lys Cys Thr Asn Ile Leu Asn Ser Asn Gly Glu Leu Arg Gly Phe
        595                 600                 605

Arg Pro Arg Asp Arg Asp Asp Met Val Arg Lys Ile Ile Glu Pro Met
    610                 615                 620

Ala Cys Asp Gly Leu Arg Thr Ile Cys Ile Ala Tyr Arg Asp Phe Ser
625                 630                 635                 640

Ala Gly Gln Glu Pro Asp Trp Asp Asn Glu Asn Glu Val Val Gly Asp
                645                 650                 655
```

```
Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp Pro Val Arg Pro Glu
            660                 665                 670

Val Pro Glu Ala Ile Arg Lys Cys Gln Arg Ala Gly Ile Thr Val Arg
        675                 680                 685

Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg Ala Ile Ala Ala Lys
    690                 695                 700

Cys Gly Ile Ile Gln Pro Gly Glu Asp Phe Leu Cys Leu Glu Gly Lys
705                 710                 715                 720

Glu Phe Asn Arg Arg Ile Arg Asn Glu Lys Gly Glu Ile Glu Gln Glu
                725                 730                 735

Arg Leu Asp Lys Val Trp Pro Lys Leu Arg Val Leu Ala Arg Ser Ser
            740                 745                 750

Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile Ile Asp Ser Thr Thr
        755                 760                 765

Gly Glu Gln Arg Gln Val Val Ala Val Thr Gly Asp Gly Thr Asn Asp
    770                 775                 780

Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe Ala Met Gly Ile Ala
785                 790                 795                 800

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

Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp Gly Arg Asn Val Tyr
            820                 825                 830

Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu Thr Val Asn Val Val
        835                 840                 845

Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile Thr Gln Asp Ser Pro
    850                 855                 860

Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu Ile Met Asp Thr Phe
865                 870                 875                 880

Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr Glu Ser Leu Leu Leu
```

885 890 895

Arg Lys Pro Tyr Gly Arg Asp Lys Pro Leu Ile Ser Arg Thr Met Met
900 905 910

Lys Asn Ile Leu Gly His Ala Val Tyr Gln Leu Ala Ile Ile Phe Thr
915 920 925

Leu Leu Phe Val Gly Glu Leu Phe Phe Asp Ile Asp Ser Gly Arg Asn
930 935 940

Ala Pro Leu His Ser Pro Pro Ser Glu His Tyr Thr Ile Ile Phe Asn
945 950 955 960

Thr Phe Val Met Met Gln Leu Phe Asn Glu Ile Asn Ala Arg Lys Ile
965 970 975

His Gly Glu Arg Asn Val Phe Asp Gly Ile Phe Ser Asn Pro Ile Phe
980 985 990

Cys Thr Ile Val Leu Gly Thr Phe Gly Ile Gln Ile Val Ile Val
Gln
995 1000 1005

Phe Gly Gly Lys Pro Phe Ser Cys Ser Pro Leu Ser Thr Glu Gln
1010 1015 1020

Trp Leu Trp Cys Leu Phe Val Gly Val Gly Glu Leu Val Trp Gly
1025 1030 1035

Gln Val Ile Ala Thr Ile Pro Thr Ser Gln Leu Lys Cys Leu Lys
1040 1045 1050

Glu Ala Gly His Gly Pro Gly Lys Asp Glu Met Thr Asp Glu Glu
1055 1060 1065

Leu Ala Glu Gly Glu Glu Glu Ile Asp His Ala Glu Arg Glu Leu
1070 1075 1080

Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn Arg Ile Gln
1085 1090 1095

Thr Gln Met Glu Val Val Ser Thr Phe Lys Arg Ser Gly Ser Val

```
    1100                1105                1110

Gln Gly  Ala Val Arg Arg Arg  Ser Ser Val Leu Ser  Gln Leu His
    1115                1120                1125

Asp Val  Thr Asn Leu Ser Thr  Pro Thr His Ala Ile  Leu Ser Ala
    1130                1135                1140

Ala Asn  Pro Thr Ser Ala Ala  Gly Ser Glu Ser
    1145                1150


<210> 7264
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<220>
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Met Thr Asn Pro Ser Asp Arg Val Leu Pro Ala Asn Ser Met Ala Glu
1               5                  10                  15

Ser Arg Glu Gly Asp Phe Gly Cys Thr Val Met Glu Leu Arg Lys Leu
            20                  25                  30

Met Glu Leu Arg Ser Arg Asp Ala Leu Thr Gln Ile Asn Val His Tyr
        35                  40                  45

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

```
Gly Leu Ser Gly Asn Pro Ala Asp Leu Glu Lys Arg Arg Gln Val Phe
65                  70                  75                  80

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

Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu Ile Ala
            100                 105                 110

Ala Ile Ile Ser Leu Val Leu Ser Phe Tyr Arg Pro Ala Gly Glu Glu
        115                 120                 125

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

Ala Gln Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Phe Ser Val Ile
145                 150                 155                 160

Ile Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu Lys Gln
                165                 170                 175

Phe Arg Gly Leu Gln Cys Arg Ile Glu Gln Glu Gln Lys Phe Ser Ile
            180                 185                 190

Ile Arg Asn Gly Gln Leu Ile Gln Leu Pro Val Ala Glu Ile Val Val
        195                 200                 205

Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala Asp Gly
    210                 215                 220

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

Gly Glu Ser Asp His Val Lys Lys Ser Leu Asp Lys Asp Pro Met Leu
                245                 250                 255

Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Val Val Thr
            260                 265                 270

Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Leu Thr Leu Leu Gly
        275                 280                 285
```

```
Val Asn Glu Asp Asp Glu Gly Glu Lys Lys Lys Lys Gly Lys Lys Gln
    290                 295                 300

Gly Val Pro Glu Asn Arg Asn Lys Ala Lys Thr Gln Asp Gly Val Ala
305                 310                 315                 320

Leu Glu Ile Gln Pro Leu Asn Ser Gln Glu Gly Ile Asp Asn Glu Glu
                325                 330                 335

Lys Asp Lys Lys Ala Val Lys Val Pro Lys Lys Glu Lys Ser Val Leu
            340                 345                 350

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

Leu Met Ser Ala Leu Thr Val Phe Ile Leu Ile Leu Tyr Phe Val Ile
    370                 375                 380

Asp Asn Phe Val Ile Asn Arg Arg Pro Trp Leu Pro Glu Cys Thr Pro
385                 390                 395                 400

Ile Tyr Ile Gln Tyr Phe Val Lys Phe Phe Ile Ile Gly Ile Thr Val
                405                 410                 415

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

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

His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala Thr Ala Ile Cys Ser
    450                 455                 460

Asp Lys Thr Gly Thr Leu Thr Met Asn Arg Met Thr Val Val Gln Ala
465                 470                 475                 480

Tyr Ile Gly Gly Ile His Tyr Arg Gln Ile Pro Ser Pro Asp Val Phe
                485                 490                 495

Leu Pro Lys Val Leu Asp Leu Ile Val Asn Gly Ile Ser Ile Asn Ser
            500                 505                 510

Ala Tyr Thr Ser Lys Ile Leu Pro Pro Glu Lys Glu Gly Gly Leu Pro
```

```
        515                 520                 525

Arg Gln Val Gly Asn Lys Thr Glu Cys Ala Leu Leu Gly Phe Val Thr
    530                 535                 540

Asp Leu Lys Gln Asp Tyr Gln Ala Val Arg Asn Glu Val Pro Glu Glu
545                 550                 555                 560

Lys Leu Tyr Lys Val Tyr Thr Phe Asn Ser Val Arg Lys Ser Met Ser
                565                 570                 575

Thr Val Ile Arg Asn Pro Asn Gly Gly Phe Arg Met Tyr Ser Lys Gly
            580                 585                 590

Ala Ser Glu Ile Ile Leu Arg Lys Cys Asn Arg Ile Leu Asp Arg Lys
        595                 600                 605

Gly Glu Ala Val Pro Phe Lys Asn Lys Asp Arg Asp Asp Met Val Arg
    610                 615                 620

Thr Val Ile Glu Pro Met Ala Cys Asp Gly Leu Arg Thr Ile Cys Ile
625                 630                 635                 640

Ala Tyr Arg Asp Phe Asp Asp Thr Glu Pro Ser Trp Asp Asn Glu Asn
                645                 650                 655

Glu Ile Leu Thr Glu Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp
            660                 665                 670

Pro Val Arg Pro Glu Val Pro Asp Ala Ile Ala Lys Cys Lys Gln Ala
        675                 680                 685

Gly Ile Thr Val Arg Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg
    690                 695                 700

Ala Ile Ala Thr Lys Cys Gly Ile Leu Thr Pro Gly Asp Asp Phe Leu
705                 710                 715                 720

Cys Leu Glu Gly Lys Glu Phe Asn Arg Leu Ile Arg Asn Glu Lys Gly
                725                 730                 735

Glu Val Glu Gln Glu Lys Leu Asp Lys Ile Trp Pro Lys Leu Arg Val
            740                 745                 750
```

```
Leu Ala Arg Ser Ser Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile
        755                 760                 765

Ile Asp Ser Thr Val Gly Glu His Arg Gln Val Val Ala Val Thr Gly
    770                 775                 780

Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe
785                 790                 795                 800

Ala Met Gly Ile Ala Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile
                805                 810                 815

Ile Leu Thr Asp Asp Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp
            820                 825                 830

Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu
        835                 840                 845

Thr Val Asn Val Val Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile
    850                 855                 860

Thr Gln Asp Ser Pro Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu
865                 870                 875                 880

Ile Met Asp Thr Phe Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr
                885                 890                 895

Glu Ser Leu Leu Lys Arg Arg Pro Tyr Gly Arg Asn Lys Pro Leu Ile
            900                 905                 910

Ser Arg Thr Met Met Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu
        915                 920                 925

Ile Val Ile Phe Ile Leu Val Phe Ala Gly Glu Lys Phe Phe Asp Ile
    930                 935                 940

Asp Ser Gly Arg Lys Ala Pro Leu His Ser Pro Pro Ser Gln His Tyr
945                 950                 955                 960

Thr Ile Val Phe Asn Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile
                965                 970                 975
```

```
Asn Ser Arg Lys Ile His Gly Glu Lys Asn Val Phe Ser Gly Ile Tyr
            980                 985                 990

Arg Asn Ile Ile Phe Cys Ser Val  Val Leu Gly Thr Phe  Ile Cys
Gln
        995                1000                1005

Ile Phe  Ile Val Glu Phe Gly  Gly Lys Pro Phe Ser  Cys Thr Ser
    1010                1015                1020

Leu Ser  Leu Ser Gln Trp Leu  Trp Cys Leu Phe Ile  Gly Ile Gly
    1025                1030                1035

Glu Leu  Leu Trp Gly Gln Phe  Ile Ser Ala Ile Pro  Thr Arg Ser
    1040                1045                1050

Leu Lys  Phe Leu Lys Glu Ala  Gly His Gly Thr Thr  Lys Glu Glu
    1055                1060                1065

Ile Thr  Lys Asp Ala Glu Gly  Leu Asp Glu Ile Asp  His Ala Glu
    1070                1075                1080

Met Glu  Leu Arg Arg Gly Gln  Ile Leu Trp Phe Arg  Gly Leu Asn
    1085                1090                1095

Arg Ile  Gln Thr Gln Ile Asp  Val Ile Asn Thr Phe  Gln Thr Gly
    1100                1105                1110

Ala Ser  Phe Lys Gly Val Leu  Arg Arg Gln Asn Met  Gly Gln His
    1115                1120                1125

Leu Asp  Val Lys Leu Val Pro  Ser Ser Ser Tyr Val  Ala Val Ala
    1130                1135                1140

Pro Val  Lys Ser Ser Pro Thr  Thr Ser Val Pro Ala  Val Ser Ser
    1145                1150                1155

Pro Pro  Met Gly Asn Gln Ser  Gly Gln Ser Val Pro
    1160                1165                1170
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<210> 7265
<211> 129
<212> PRT

<213> Homo sapiens

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<222> (1)..(1)
<223> Any amino acid

<400> 7265

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Xaa Ile Gly Glu Leu Leu Trp Gly Gln Phe Ile Ser Ala Ile Pro Thr
1               5                  10                  15

Arg Ser Leu Lys Phe Leu Lys Glu Ala Gly His Gly Thr Thr Lys Glu
            20                  25                  30

Glu Ile Thr Lys Asp Ala Glu Gly Leu Asp Glu Ile Asp His Ala Glu
        35                  40                  45

Met Glu Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn Arg
    50                  55                  60

Ile Gln Thr Gln Ile Asp Val Ile Asn Thr Phe Gln Thr Gly Ala Ser
65                  70                  75                  80

Phe Lys Gly Val Leu Arg Arg Gln Asn Met Gly Gln His Leu Asp Val
                85                  90                  95

Lys Leu Val Pro Ser Ser Ser Tyr Val Ala Val Ala Pro Val Lys Ser
            100                 105                 110

Ser Pro Thr Thr Ser Val Pro Ala Val Ser Ser Pro Pro Met Gly Ser
        115                 120                 125
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Glu

<210> 7266
<211> 1205
<212> PRT
<213> Homo sapiens

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<220>
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<400> 7266
Met Thr Asn Pro Ser Asp Arg Val Leu Pro Ala Asn Ser Met Ala Glu
1 5 10 15

Ser Arg Glu Gly Asp Phe Gly Cys Thr Val Met Glu Leu Arg Lys Leu
20 25 30

Met Glu Leu Arg Ser Arg Asp Ala Leu Thr Gln Ile Asn Val His Tyr
35 40 45

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

Gly Leu Ser Gly Asn Pro Ala Asp Leu Glu Lys Arg Arg Gln Val Phe
65 70 75 80

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

Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu Ile Ala

```
            100                 105                 110

Ala Ile Ile Ser Leu Val Leu Ser Phe Tyr Arg Pro Ala Gly Glu Glu
        115                 120                 125

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

Ala Gln Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Phe Ser Val Ile
145                 150                 155                 160

Ile Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu Lys Gln
                165                 170                 175

Phe Arg Gly Leu Gln Cys Arg Ile Glu Gln Glu Gln Lys Phe Ser Ile
            180                 185                 190

Ile Arg Asn Gly Gln Leu Ile Gln Leu Pro Val Ala Glu Ile Val Val
        195                 200                 205

Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala Asp Gly
    210                 215                 220

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

Gly Glu Ser Asp His Val Lys Lys Ser Leu Asp Lys Asp Pro Met Leu
                245                 250                 255

Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Val Val Thr
            260                 265                 270

Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Leu Thr Leu Leu Gly
        275                 280                 285

Val Asn Glu Asp Asp Glu Gly Glu Lys Lys Lys Lys Gly Lys Lys Gln
    290                 295                 300

Gly Val Pro Glu Asn Arg Asn Lys Ala Lys Thr Gln Asp Gly Val Ala
305                 310                 315                 320

Leu Glu Ile Gln Pro Leu Asn Ser Gln Glu Gly Ile Asp Asn Glu Glu
                325                 330                 335
```

```
Lys Asp Lys Lys Ala Val Lys Val Pro Lys Lys Glu Lys Ser Val Leu
            340                 345                 350

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

Leu Met Ser Ala Leu Thr Val Phe Ile Leu Ile Leu Tyr Phe Val Ile
    370                 375                 380

Asp Asn Phe Val Ile Asn Arg Arg Pro Trp Leu Pro Glu Cys Thr Pro
385                 390                 395                 400

Ile Tyr Ile Gln Tyr Phe Val Lys Phe Phe Ile Ile Gly Ile Thr Val
                405                 410                 415

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

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

His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala Thr Ala Ile Cys Ser
    450                 455                 460

Asp Lys Thr Gly Thr Leu Thr Met Asn Arg Met Thr Val Val Gln Ala
465                 470                 475                 480

Tyr Ile Gly Gly Ile His Tyr Arg Gln Ile Pro Ser Pro Asp Val Phe
                485                 490                 495

Leu Pro Lys Val Leu Asp Leu Ile Val Asn Gly Ile Ser Ile Asn Ser
            500                 505                 510

Ala Tyr Thr Ser Lys Ile Leu Pro Pro Glu Lys Glu Gly Gly Leu Pro
        515                 520                 525

Arg Gln Val Gly Asn Lys Thr Glu Cys Ala Leu Leu Gly Phe Val Thr
    530                 535                 540

Asp Leu Lys Gln Asp Tyr Gln Ala Val Arg Asn Glu Val Pro Glu Glu
545                 550                 555                 560
```

```
Lys Leu Tyr Lys Val Tyr Thr Phe Asn Ser Val Arg Lys Ser Met Ser
                565                 570                 575

Thr Val Ile Arg Asn Pro Asn Gly Gly Phe Arg Met Tyr Ser Lys Gly
            580                 585                 590

Ala Ser Glu Ile Ile Leu Arg Lys Cys Asn Arg Ile Leu Asp Arg Lys
        595                 600                 605

Gly Glu Ala Val Pro Phe Lys Asn Lys Asp Arg Asp Asp Met Val Arg
    610                 615                 620

Thr Val Ile Glu Pro Met Ala Cys Asp Gly Leu Arg Thr Ile Cys Ile
625                 630                 635                 640

Ala Tyr Arg Asp Phe Asp Asp Thr Glu Pro Ser Trp Asp Asn Glu Asn
                645                 650                 655

Glu Ile Leu Thr Glu Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp
            660                 665                 670

Pro Val Arg Pro Glu Val Pro Asp Ala Ile Ala Lys Cys Lys Gln Ala
        675                 680                 685

Gly Ile Thr Val Arg Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg
    690                 695                 700

Ala Ile Ala Thr Lys Cys Gly Ile Leu Thr Pro Gly Asp Asp Phe Leu
705                 710                 715                 720

Cys Leu Glu Gly Lys Glu Phe Asn Arg Leu Ile Arg Asn Glu Lys Gly
                725                 730                 735

Glu Val Glu Gln Glu Lys Leu Asp Lys Ile Trp Pro Lys Leu Arg Val
            740                 745                 750

Leu Ala Arg Ser Ser Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile
        755                 760                 765

Ile Asp Ser Thr Val Gly Glu His Arg Gln Val Val Ala Val Thr Gly
    770                 775                 780
```

```
Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe
785                 790                 795                 800

Ala Met Gly Ile Ala Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile
                805                 810                 815

Ile Leu Thr Asp Asp Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp
            820                 825                 830

Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu
        835                 840                 845

Thr Val Asn Val Val Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile
    850                 855                 860

Thr Gln Asp Ser Pro Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu
865                 870                 875                 880

Ile Met Asp Thr Phe Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr
                885                 890                 895

Glu Ser Leu Leu Lys Arg Arg Pro Tyr Gly Arg Asn Lys Pro Leu Ile
            900                 905                 910

Ser Arg Thr Met Met Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu
        915                 920                 925

Ile Val Ile Phe Ile Leu Val Phe Ala Gly Glu Lys Phe Phe Asp Ile
    930                 935                 940

Asp Ser Gly Arg Lys Ala Pro Leu His Ser Pro Pro Ser Gln His Tyr
945                 950                 955                 960

Thr Ile Val Phe Asn Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile
                965                 970                 975

Asn Ser Arg Lys Ile His Gly Glu Lys Asn Val Phe Ser Gly Ile Tyr
            980                 985                 990

Arg Asn Ile Ile Phe Cys Ser Val  Val Leu Gly Thr Phe  Ile Cys
Gln
        995                 1000                1005
```

Ile Phe Ile Val Glu Phe Gly Gly Lys Pro Phe Ser Cys Thr Ser
1010 1015 1020

Leu Ser Leu Ser Gln Trp Leu Trp Cys Leu Phe Ile Gly Ile Gly
1025 1030 1035

Glu Leu Leu Trp Gly Gln Phe Ile Ser Ala Ile Pro Thr Arg Ser
1040 1045 1050

Leu Lys Phe Leu Lys Glu Ala Gly His Gly Thr Thr Lys Glu Glu
1055 1060 1065

Ile Thr Lys Asp Ala Glu Gly Leu Asp Glu Ile Asp His Ala Glu
1070 1075 1080

Met Glu Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn
1085 1090 1095

Arg Ile Gln Thr Gln Ile Lys Val Val Lys Ala Phe His Ser Ser
1100 1105 1110

Leu His Glu Ser Ile Gln Lys Pro Tyr Asn Gln Lys Ser Ile His
1115 1120 1125

Ser Phe Met Thr His Pro Glu Phe Ala Ile Glu Glu Glu Leu Pro
1130 1135 1140

Arg Thr Pro Leu Leu Asp Glu Glu Glu Glu Glu Asn Pro Asp Lys
1145 1150 1155

Ala Ser Lys Phe Gly Thr Arg Val Leu Leu Leu Asp Gly Glu Val
1160 1165 1170

Thr Pro Tyr Ala Asn Thr Asn Asn Asn Ala Val Asp Cys Asn Gln
1175 1180 1185

Val Gln Leu Pro Gln Ser Asp Ser Ser Leu Gln Ser Leu Glu Thr
1190 1195 1200

Ser Val
1205

<210> 7267

<211> 1170
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000356187"

<400> 7267

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Met Thr Asn Pro Ser Asp Arg Val Leu Pro Ala Asn Ser Met Ala Glu
1               5                  10                  15

Ser Arg Glu Gly Asp Phe Gly Cys Thr Val Met Glu Leu Arg Lys Leu
            20                  25                  30

Met Glu Leu Arg Ser Arg Asp Ala Leu Thr Gln Ile Asn Val His Tyr
        35                  40                  45

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

Gly Leu Ser Gly Asn Pro Ala Asp Leu Glu Lys Arg Arg Gln Val Phe
65                  70                  75                  80

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

Val Trp Glu Ala Leu Gln Asp Val Thr Leu Ile Ile Leu Glu Ile Ala
            100                 105                 110

Ala Ile Ile Ser Leu Val Leu Ser Phe Tyr Arg Pro Ala Gly Glu Glu
        115                 120                 125
```

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

Ala Gln Ala Gly Trp Ile Glu Gly Ala Ala Ile Leu Phe Ser Val Ile
145                 150                 155                 160

Ile Val Val Leu Val Thr Ala Phe Asn Asp Trp Ser Lys Glu Lys Gln
                165                 170                 175

Phe Arg Gly Leu Gln Cys Arg Ile Glu Gln Glu Gln Lys Phe Ser Ile
            180                 185                 190

Ile Arg Asn Gly Gln Leu Ile Gln Leu Pro Val Ala Glu Ile Val Val
        195                 200                 205

Gly Asp Ile Ala Gln Val Lys Tyr Gly Asp Leu Leu Pro Ala Asp Gly
    210                 215                 220

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

Gly Glu Ser Asp His Val Lys Lys Ser Leu Asp Lys Asp Pro Met Leu
                245                 250                 255

Leu Ser Gly Thr His Val Met Glu Gly Ser Gly Arg Met Val Val Thr
            260                 265                 270

Ala Val Gly Val Asn Ser Gln Thr Gly Ile Ile Leu Thr Leu Leu Gly
        275                 280                 285

Val Asn Glu Asp Asp Glu Gly Glu Lys Lys Lys Lys Gly Lys Lys Gln
    290                 295                 300

Gly Val Pro Glu Asn Arg Asn Lys Ala Lys Thr Gln Asp Gly Val Ala
305                 310                 315                 320

Leu Glu Ile Gln Pro Leu Asn Ser Gln Glu Gly Ile Asp Asn Glu Glu
                325                 330                 335

Lys Asp Lys Lys Ala Val Lys Val Pro Lys Lys Glu Lys Ser Val Leu
            340                 345                 350
```

```
Gln Gly Lys Leu Thr Arg Leu Ala Val Gln Ile Gly Lys Ala Gly Leu
        355                 360                 365

Leu Met Ser Ala Leu Thr Val Phe Ile Leu Ile Leu Tyr Phe Val Ile
    370                 375                 380

Asp Asn Phe Val Ile Asn Arg Arg Pro Trp Leu Pro Glu Cys Thr Pro
385                 390                 395                 400

Ile Tyr Ile Gln Tyr Phe Val Lys Phe Phe Ile Ile Gly Ile Thr Val
                405                 410                 415

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

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

His Leu Asp Ala Cys Glu Thr Met Gly Asn Ala Thr Ala Ile Cys Ser
    450                 455                 460

Asp Lys Thr Gly Thr Leu Thr Met Asn Arg Met Thr Val Val Gln Ala
465                 470                 475                 480

Tyr Ile Gly Gly Ile His Tyr Arg Gln Ile Pro Ser Pro Asp Val Phe
                485                 490                 495

Leu Pro Lys Val Leu Asp Leu Ile Val Asn Gly Ile Ser Ile Asn Ser
            500                 505                 510

Ala Tyr Thr Ser Lys Ile Leu Pro Pro Glu Lys Glu Gly Gly Leu Pro
        515                 520                 525

Arg Gln Val Gly Asn Lys Thr Glu Cys Ala Leu Leu Gly Phe Val Thr
    530                 535                 540

Asp Leu Lys Gln Asp Tyr Gln Ala Val Arg Asn Glu Val Pro Glu Glu
545                 550                 555                 560

Lys Leu Tyr Lys Val Tyr Thr Phe Asn Ser Val Arg Lys Ser Met Ser
                565                 570                 575

Thr Val Ile Arg Asn Pro Asn Gly Gly Phe Arg Met Tyr Ser Lys Gly
```

580 585 590

Ala Ser Glu Ile Ile Leu Arg Lys Cys Asn Arg Ile Leu Asp Arg Lys
595 600 605

Gly Glu Ala Val Pro Phe Lys Asn Lys Asp Arg Asp Asp Met Val Arg
610 615 620

Thr Val Ile Glu Pro Met Ala Cys Asp Gly Leu Arg Thr Ile Cys Ile
625 630 635 640

Ala Tyr Arg Asp Phe Asp Asp Thr Glu Pro Ser Trp Asp Asn Glu Asn
645 650 655

Glu Ile Leu Thr Glu Leu Thr Cys Ile Ala Val Val Gly Ile Glu Asp
660 665 670

Pro Val Arg Pro Glu Val Pro Asp Ala Ile Ala Lys Cys Lys Gln Ala
675 680 685

Gly Ile Thr Val Arg Met Val Thr Gly Asp Asn Ile Asn Thr Ala Arg
690 695 700

Ala Ile Ala Thr Lys Cys Gly Ile Leu Thr Pro Gly Asp Asp Phe Leu
705 710 715 720

Cys Leu Glu Gly Lys Glu Phe Asn Arg Leu Ile Arg Asn Glu Lys Gly
725 730 735

Glu Val Glu Gln Glu Lys Leu Asp Lys Ile Trp Pro Lys Leu Arg Val
740 745 750

Leu Ala Arg Ser Ser Pro Thr Asp Lys His Thr Leu Val Lys Gly Ile
755 760 765

Ile Asp Ser Thr Val Gly Glu His Arg Gln Val Val Ala Val Thr Gly
770 775 780

Asp Gly Thr Asn Asp Gly Pro Ala Leu Lys Lys Ala Asp Val Gly Phe
785 790 795 800

Ala Met Gly Ile Ala Gly Thr Asp Val Ala Lys Glu Ala Ser Asp Ile
805 810 815

```
Ile Leu Thr Asp Asp Asn Phe Thr Ser Ile Val Lys Ala Val Met Trp
            820                 825                 830

Gly Arg Asn Val Tyr Asp Ser Ile Ser Lys Phe Leu Gln Phe Gln Leu
        835                 840                 845

Thr Val Asn Val Val Ala Val Ile Val Ala Phe Thr Gly Ala Cys Ile
    850                 855                 860

Thr Gln Asp Ser Pro Leu Lys Ala Val Gln Met Leu Trp Val Asn Leu
865                 870                 875                 880

Ile Met Asp Thr Phe Ala Ser Leu Ala Leu Ala Thr Glu Pro Pro Thr
                885                 890                 895

Glu Ser Leu Leu Lys Arg Arg Pro Tyr Gly Arg Asn Lys Pro Leu Ile
            900                 905                 910

Ser Arg Thr Met Met Lys Asn Ile Leu Gly His Ala Phe Tyr Gln Leu
        915                 920                 925

Ile Val Ile Phe Ile Leu Val Phe Ala Gly Glu Lys Phe Phe Asp Ile
    930                 935                 940

Asp Ser Gly Arg Lys Ala Pro Leu His Ser Pro Pro Ser Gln His Tyr
945                 950                 955                 960

Thr Ile Val Phe Asn Thr Phe Val Leu Met Gln Leu Phe Asn Glu Ile
                965                 970                 975

Asn Ser Arg Lys Ile His Gly Glu Lys Asn Val Phe Ser Gly Ile Tyr
            980                 985                 990

Arg Asn Ile Ile Phe Cys Ser Val  Val Leu Gly Thr Phe  Ile Cys
Gln
        995                 1000                1005

Ile Phe  Ile Val Glu Phe Gly  Gly Lys Pro Phe Ser  Cys Thr Ser
    1010                1015                1020

Leu Ser  Leu Ser Gln Trp Leu  Trp Cys Leu Phe Ile  Gly Ile Gly
    1025                1030                1035
```

```
Glu Leu  Leu Trp Gly Gln Phe  Ile Ser Ala Ile Pro  Thr Arg Ser
    1040                1045                1050

Leu Lys  Phe Leu Lys Glu Ala  Gly His Gly Thr Thr  Lys Glu Glu
    1055                1060                1065

Ile Thr  Lys Asp Ala Glu Gly  Leu Asp Glu Ile Asp  His Ala Glu
    1070                1075                1080

Met Glu  Leu Arg Arg Gly Gln  Ile Leu Trp Phe Arg  Gly Leu Asn
    1085                1090                1095

Arg Ile  Gln Thr Gln Ile Asp  Val Ile Asn Thr Phe  Gln Thr Gly
    1100                1105                1110

Ala Ser  Phe Lys Gly Val Leu  Arg Arg Gln Asn Met  Gly Gln His
    1115                1120                1125

Leu Asp  Val Lys Leu Val Pro  Ser Ser Ser Tyr Val  Ala Val Ala
    1130                1135                1140

Pro Val  Lys Ser Ser Pro Thr  Thr Ser Val Pro Ala  Val Ser Ser
    1145                1150                1155

Pro Pro  Met Gly Asn Gln Ser  Gly Gln Ser Val Pro
    1160                1165                1170


<210> 7268
<211> 117
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
      ATPase, Ca++ transporting, plasma membrane 4; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000391150"

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

<400> 7268
Xaa Gly Gly Lys Pro Phe Ser Cys Thr Ser Leu Ser Leu Ser Gln Trp
1 5 10 15

Leu Trp Cys Leu Phe Ile Gly Ile Gly Glu Leu Leu Trp Gly Gln Phe
20 25 30

Ile Ser Ala Ile Pro Thr Arg Ser Leu Lys Phe Leu Lys Glu Ala Gly
35 40 45

His Gly Thr Thr Lys Glu Glu Ile Thr Lys Asp Ala Glu Gly Leu Asp
50 55 60

Glu Ile Asp His Ala Glu Met Glu Leu Arg Arg Gly Gln Ile Leu Trp
65 70 75 80

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

Asp Leu Leu Pro Asp Lys Glu Glu Ala Ile Ile Ser Ser Ser Leu Phe
100 105 110

Pro Ser Cys Asn Phe
115

<210> 7269
<211> 102
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7269
Xaa Thr Lys Asp Ala Glu Gly Leu Asp Glu Ile Asp His Ala Glu Met
1 5 10 15

Glu Leu Arg Arg Gly Gln Ile Leu Trp Phe Arg Gly Leu Asn Arg Ile
20 25 30

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

Lys Gly Val Leu Arg Arg Gln Asn Met Gly Gln His Leu Asp Val Lys
50 55 60

Leu Val Pro Ser Ser Ser Tyr Val Ala Val Ala Pro Val Lys Ser Ser
65 70 75 80

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

Ser Gly Gln Ser Val Pro
100

<210> 7270
<211> 888
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP2C1; "

<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, type 2C,
member 1; "

<220>
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<223> /note="Uniprot ID: P98194; "

<220>
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<223> /note="ENSP ID: ENSP00000329664"

<400> 7270

```
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1               5                  10                  15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20                  25                  30

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50                  55                  60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65                  70                  75                  80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85                  90                  95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100                 105                 110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115                 120                 125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130                 135                 140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145                 150                 155                 160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165                 170                 175
```

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
        195                 200                 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
            260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
        275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305                 310                 315                 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
                325                 330                 335

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
        355                 360                 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
    370                 375                 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
385                 390                 395                 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
```

```
                405                 410                 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
            420                 425                 430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
        435                 440                 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
    450                 455                 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465                 470                 475                 480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
                485                 490                 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
            500                 505                 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
        515                 520                 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
    530                 535                 540

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

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
            580                 585                 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
        595                 600                 605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
    610                 615                 620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640
```

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
645 650 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
660 665 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
675 680 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
690 695 700

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705 710 715 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
725 730 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
740 745 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
755 760 765

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
770 775 780

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785 790 795 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
805 810 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
820 825 830

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
835 840 845

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
850 855 860

```
Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Gly Leu Ala Leu
865                 870                 875                 880


Gly Glu Glu Trp Thr Ala Ala Gly
                885


<210> 7271
<211> 949
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<220>
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Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1               5                   10                  15


Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20                  25                  30


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


Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50                  55                  60


Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65                  70                  75                  80
```

```
Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85                  90                  95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100                 105                 110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115                 120                 125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130                 135                 140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145                 150                 155                 160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165                 170                 175

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
        195                 200                 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
            260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
        275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
```

305 310 315 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
325 330 335

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
355 360 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
370 375 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
385 390 395 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
405 410 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
420 425 430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
435 440 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
450 455 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465 470 475 480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
485 490 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
500 505 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
515 520 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
530 535 540

```
Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr Leu Ile
545                 550                 555                 560

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
            580                 585                 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
        595                 600                 605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
    610                 615                 620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645                 650                 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
            660                 665                 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
        675                 680                 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
    690                 695                 700

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705                 710                 715                 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
                725                 730                 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
            740                 745                 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
        755                 760                 765
```

```
Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
    770                 775                 780

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785                 790                 795                 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
                805                 810                 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
            820                 825                 830

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
        835                 840                 845

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
    850                 855                 860

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

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
                885                 890                 895

Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr
            900                 905                 910

Ser Ser Ser Phe Leu Glu Val Trp Leu Trp Glu Arg Ser Gly Gln Gln
        915                 920                 925

Leu Val Glu Ile His Pro His Leu Glu Thr Gly Leu Pro Leu Thr Glu
    930                 935                 940

Asp Val Ser Cys Val
945


<210> 7272
<211> 919
<212> PRT
<213> Homo sapiens

<220>
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ATPase, Ca++ transporting, type 2C,
member 1; "

<220>
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<220>
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<400> 7272
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1   5   10   15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20   25   30

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50   55   60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65   70   75   80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85   90   95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100   105   110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115   120   125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130   135   140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr

145 150 155 160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
165 170 175

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
195 200 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
210 215 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
245 250 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
260 265 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
275 280 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
290 295 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305 310 315 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
325 330 335

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
355 360 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
370 375 380

```
Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
385                 390                 395                 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
                405                 410                 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
            420                 425                 430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
        435                 440                 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
    450                 455                 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465                 470                 475                 480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
                485                 490                 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
            500                 505                 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
        515                 520                 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
    530                 535                 540

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

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
            580                 585                 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
        595                 600                 605
```

```
Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
    610                 615                 620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645                 650                 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
            660                 665                 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
        675                 680                 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
    690                 695                 700

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705                 710                 715                 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
                725                 730                 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
            740                 745                 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
        755                 760                 765

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
    770                 775                 780

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785                 790                 795                 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
                805                 810                 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
            820                 825                 830
```

```
Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
        835                 840                 845

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
    850                 855                 860

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

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
                885                 890                 895

Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr
            900                 905                 910

Ser Ser Ser Phe Leu Glu Val
        915


<210> 7273
<211> 939
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1548; "

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<220>
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      member 1; "

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<220>
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<400> 7273
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1               5                   10                  15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
```

```
            20                  25                  30

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50                  55                  60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65                  70                  75                  80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85                  90                  95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100                 105                 110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115                 120                 125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130                 135                 140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145                 150                 155                 160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165                 170                 175

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
        195                 200                 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255
```

```
Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
            260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
        275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305                 310                 315                 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
                325                 330                 335

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
        355                 360                 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
    370                 375                 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
385                 390                 395                 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
                405                 410                 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
            420                 425                 430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
        435                 440                 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
    450                 455                 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465                 470                 475                 480
```

```
Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
                485                 490                 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
            500                 505                 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
        515                 520                 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
    530                 535                 540

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

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
            580                 585                 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
        595                 600                 605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
    610                 615                 620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645                 650                 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
            660                 665                 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
        675                 680                 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
    690                 695                 700
```

```
Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705                 710                 715                 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
                725                 730                 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
            740                 745                 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
        755                 760                 765

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
    770                 775                 780

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785                 790                 795                 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
                805                 810                 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
            820                 825                 830

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
        835                 840                 845

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
    850                 855                 860

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

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
                885                 890                 895

Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Trp Leu Trp
            900                 905                 910

Glu Arg Ser Gly Gln Gln Leu Val Glu Ile His Pro His Leu Glu Thr
        915                 920                 925

Gly Leu Pro Leu Thr Glu Asp Val Ser Cys Val
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930 935

<210> 7274
<211> 82
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1548; "

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ATPase, Ca++ transporting, type 2C,
member 1; "

<220>
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<400> 7274
Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
1 5 10 15

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
35 40 45

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
50 55 60

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
65 70 75 80

Met His

<210> 7275
<211> 973
<212> PRT
<213> Homo sapiens

<220>

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ATPase, Ca++ transporting, type 2C,
member 1; "

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<223> /note="Uniprot ID: P98194; "

<220>
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<223> /note="ENSP ID: ENSP00000421326"

<400> 7275
Met Asp Ser Leu Leu Pro Pro Ser Arg Phe Ser Tyr Phe Lys Lys Tyr
1   5   10   15

Pro Leu His Ala Ile Arg Arg Tyr Leu Ser Thr Leu Arg Asn Gln Arg
            20   25   30

Ala Glu Glu Gln Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn
        35   40   45

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

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

Asn Lys Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu
                85   90   95

Phe Asp Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln
            100   105   110

Phe Lys Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser
        115   120   125

Val Leu Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile
    130   135   140

```
Leu Ile Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys
145                 150                 155                 160

Ser Leu Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val
                165                 170                 175

Arg Glu Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly
            180                 185                 190

Asp Thr Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg
        195                 200                 205

Leu Phe Glu Ala Val Asp Leu Ser Ile Asp Glu Ser Ser Leu Thr Gly
    210                 215                 220

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

Asn Gly Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu
                245                 250                 255

Val Arg Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn
            260                 265                 270

Ser Glu Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro
        275                 280                 285

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

Phe Tyr Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu
305                 310                 315                 320

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

Val Ala Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu
            340                 345                 350

Ala Leu Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys
        355                 360                 365
```

```
Leu Pro Ile Val Glu Thr Leu Gly Cys Cys Asn Val Ile Cys Ser Asp
    370                 375                 380

Lys Thr Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe
385                 390                 395                 400

Thr Ser Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln
                405                 410                 415

Phe Gly Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn
            420                 425                 430

Pro Ala Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala
        435                 440                 445

Val Ile Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu
    450                 455                 460

Ile Ala Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr
465                 470                 475                 480

Ile Arg Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala
                485                 490                 495

Val Lys Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe
            500                 505                 510

Met Lys Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln
        515                 520                 525

Ser Lys Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr
    530                 535                 540

Gln Gln Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala
545                 550                 555                 560

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

Gly Ile Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr
            580                 585                 590

Leu Ile Ala Ser Gly Val Ser Ile Lys Met Ile Thr Gly Asp Ser Gln
```

595 600 605

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

Ser Gln Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln
625 630 635 640

Leu Ser Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro
645 650 655

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

Val Ala Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala
675 680 685

Ala Asp Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys
690 695 700

Glu Ala Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met
705 710 715 720

Ser Ala Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe
725 730 735

Val Arg Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser
740 745 750

Leu Ala Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile
755 760 765

Leu Trp Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly
770 775 780

Val Glu Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp
785 790 795 800

Lys Asp Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser
805 810 815

Ser Ile Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu
820 825 830

```
Arg Asp Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys
        835                 840                 845

Phe Val Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr
    850                 855                 860

Lys Ser Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr
865                 870                 875                 880

Ala Val Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro
                885                 890                 895

Pro Leu Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu
            900                 905                 910

Leu Phe Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile
        915                 920                 925

Ile Lys Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Trp
    930                 935                 940

Leu Trp Glu Arg Ser Gly Gln Gln Leu Val Glu Ile His Pro His Leu
945                 950                 955                 960

Glu Thr Gly Leu Pro Leu Thr Glu Asp Val Ser Cys Val
                965                 970
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<210> 7276
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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member 1; "

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<400> 7276
Val Thr Val Thr Leu Ala Leu Gly Val Met Arg Met Val Lys Lys Arg
1   5   10   15

Ala Ile Val Lys Lys Leu Pro Ile Val Glu Thr Leu Gly Cys Cys Asn
            20   25   30

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

Val Thr His Ile Phe Thr Ser Asp Gly Leu His Ala Glu Val Thr Gly
    50   55   60

Val Gly Tyr Asn Gln Phe Gly Glu Val Ile Val Asp Gly Asp Val Val
65   70   75   80

His Gly Phe Tyr Asn Pro Ala Val Ser Arg Ile Val Glu Ala Gly Cys
                85   90   95

Val Cys Asn Asp Ala Val Ile Arg Asn Asn Thr Leu Met Gly Lys Pro
            100   105   110

Thr Glu Gly Ala Leu Ile Ala Leu Ala Met Lys Met Gly Leu Asp Gly
        115   120   125

Leu Gln Gln Asp Tyr Ile Arg Lys Ala Glu Tyr Pro Phe Ser Ser Glu
    130   135   140

Gln Lys Trp Met Ala Val Lys Cys Val His Arg Thr Gln Gln Asp Arg
145   150   155   160

Pro Glu Ile Cys Phe Met Lys Gly Ala Tyr Glu Gln Val Ile Lys Tyr
                165   170   175

Cys Thr Thr Tyr Gln Ser Lys Gly Gln Thr Leu Thr Leu Thr Gln Gln
            180   185   190

Gln Arg Asp Val Tyr Gln Gln Glu Lys Ala Arg Met Gly Ser Ala Gly
        195   200   205

Leu Arg Val Tyr Leu Val Phe
210 215

<210> 7277
<211> 923
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<220>
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<400> 7277
Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
1 5 10 15

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
35 40 45

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
50 55 60

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
65 70 75 80

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
85 90 95

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu

```
            100                 105                 110

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
        115                 120                 125

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

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
145                 150                 155                 160

Glu Ala Val Asp Leu Ser Ile Asp Glu Ser Ser Leu Thr Gly Glu Thr
                165                 170                 175

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

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
        195                 200                 205

Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn Ser Glu
    210                 215                 220

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
225                 230                 235                 240

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
                245                 250                 255

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
            260                 265                 270

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
        275                 280                 285

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
    290                 295                 300

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
305                 310                 315                 320

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

```
Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
            340                 345                 350

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
        355                 360                 365

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
    370                 375                 380

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
385                 390                 395                 400

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
                405                 410                 415

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
            420                 425                 430

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
        435                 440                 445

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
    450                 455                 460

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
465                 470                 475                 480

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
                485                 490                 495

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
            500                 505                 510

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
        515                 520                 525

Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr Leu Ile
    530                 535                 540

Ala Ser Gly Val Ser Ile Lys Met Ile Thr Gly Asp Ser Gln Glu Thr
545                 550                 555                 560
```

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

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
            580                 585                 590

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
        595                 600                 605

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
    610                 615                 620

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

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
                645                 650                 655

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
            660                 665                 670

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
        675                 680                 685

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
    690                 695                 700

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
705                 710                 715                 720

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
                725                 730                 735

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
            740                 745                 750

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
        755                 760                 765

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
    770                 775                 780
```

```
Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
785                 790                 795                 800

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
                805                 810                 815

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
            820                 825                 830

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
        835                 840                 845

Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu Leu Phe
    850                 855                 860

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
865                 870                 875                 880

Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Trp Leu Trp
                885                 890                 895

Glu Arg Ser Gly Gln Gln Leu Val Glu Ile His Pro His Leu Glu Thr
            900                 905                 910

Gly Leu Pro Leu Thr Glu Asp Val Ser Cys Val
        915                 920


<210> 7278
<211> 131
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000422890"

<400> 7278
Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr Ser Phe Gly Ile Ile
1 5 10 15

Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly Lys Asp Ile Leu Glu
20 25 30

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

Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu Gly Val Met Arg Met
50 55 60

Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro Ile Val Glu Thr Leu
65 70 75 80

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

Asn Glu Met Thr Val Thr His Ile Phe Thr Ser Asp Gly Leu His Ala
100 105 110

Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly Glu Val Ile Val Asp
115 120 125

Gly Asp Val
130

<210> 7279
<211> 903
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: P98194; "

<220>
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<223> /note="ENSP ID: ENSP00000423330"

<400> 7279
Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
1   5   10   15

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
        35   40   45

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
    50   55   60

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
65   70   75   80

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
                85   90   95

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

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
        115   120   125

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

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
145   150   155   160

Glu Ala Val Asp Leu Ser Ile Asp Glu Ser Ser Leu Thr Gly Glu Thr
                165   170   175

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

```
Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
        195                 200                 205

Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn Ser Glu
    210                 215                 220

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
225                 230                 235                 240

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
                245                 250                 255

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
            260                 265                 270

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
        275                 280                 285

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
    290                 295                 300

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
305                 310                 315                 320

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
            340                 345                 350

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
        355                 360                 365

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
    370                 375                 380

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
385                 390                 395                 400

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
                405                 410                 415
```

```
Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
            420                 425                 430

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
        435                 440                 445

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
    450                 455                 460

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
465                 470                 475                 480

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
                485                 490                 495

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
            500                 505                 510

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
        515                 520                 525

Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr Leu Ile
    530                 535                 540

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

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

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
            580                 585                 590

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
        595                 600                 605

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
    610                 615                 620

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

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
```

645 650 655

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
660 665 670

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
675 680 685

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
690 695 700

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
705 710 715 720

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
725 730 735

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
740 745 750

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
755 760 765

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
770 775 780

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
785 790 795 800

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
805 810 815

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
820 825 830

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
835 840 845

Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu Leu Phe
850 855 860

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
865 870 875 880

```
Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr
                885                 890                 895


Ser Ser Ser Phe Leu Glu Val
            900


<210> 7280
<211> 953
<212> PRT
<213> Homo sapiens

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<223> /note="ENSP ID: ENSP00000423774"

<400> 7280
Met Asp Ser Leu Leu Pro Pro Ser Arg Phe Ser Tyr Phe Lys Lys Tyr
1               5                  10                  15


Pro Leu His Ala Ile Arg Arg Tyr Leu Ser Thr Leu Arg Asn Gln Arg
            20                  25                  30


Ala Glu Glu Gln Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn
        35                  40                  45


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


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


Asn Lys Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu
                85                  90                  95
```

```
Phe Asp Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln
            100                 105                 110

Phe Lys Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser
        115                 120                 125

Val Leu Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile
    130                 135                 140

Leu Ile Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys
145                 150                 155                 160

Ser Leu Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val
                165                 170                 175

Arg Glu Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly
            180                 185                 190

Asp Thr Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg
        195                 200                 205

Leu Phe Glu Ala Val Asp Leu Ser Ile Asp Glu Ser Ser Leu Thr Gly
    210                 215                 220

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

Asn Gly Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu
                245                 250                 255

Val Arg Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn
            260                 265                 270

Ser Glu Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro
        275                 280                 285

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

Phe Tyr Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu
305                 310                 315                 320
```

```
Leu Gly Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala
                325                 330                 335

Val Ala Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu
            340                 345                 350

Ala Leu Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys
        355                 360                 365

Leu Pro Ile Val Glu Thr Leu Gly Cys Cys Asn Val Ile Cys Ser Asp
    370                 375                 380

Lys Thr Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe
385                 390                 395                 400

Thr Ser Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln
                405                 410                 415

Phe Gly Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn
            420                 425                 430

Pro Ala Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala
        435                 440                 445

Val Ile Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu
    450                 455                 460

Ile Ala Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr
465                 470                 475                 480

Ile Arg Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala
                485                 490                 495

Val Lys Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe
            500                 505                 510

Met Lys Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln
        515                 520                 525

Ser Lys Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr
    530                 535                 540

Gln Gln Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala
```

545 550 555 560

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

Gly Ile Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr
580 585 590

Leu Ile Ala Ser Gly Val Ser Ile Lys Met Ile Thr Gly Asp Ser Gln
595 600 605

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

Ser Gln Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln
625 630 635 640

Leu Ser Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro
645 650 655

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

Val Ala Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala
675 680 685

Ala Asp Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys
690 695 700

Glu Ala Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met
705 710 715 720

Ser Ala Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe
725 730 735

Val Arg Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser
740 745 750

Leu Ala Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile
755 760 765

Leu Trp Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly
770 775 780

```
Val Glu Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp
785                 790                 795                 800

Lys Asp Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser
                805                 810                 815

Ser Ile Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu
            820                 825                 830

Arg Asp Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys
        835                 840                 845

Phe Val Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr
    850                 855                 860

Lys Ser Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr
865                 870                 875                 880

Ala Val Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro
                885                 890                 895

Pro Leu Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu
            900                 905                 910

Leu Phe Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile
        915                 920                 925

Ile Lys Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser
    930                 935                 940

Ser Thr Ser Ser Ser Phe Leu Glu Val
945                 950


<210> 7281
<211> 919
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATPase, Ca++ transporting, type 2C,
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P98194; "

<220>
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<223> /note="ENSP ID: ENSP00000424783"

<400> 7281

```
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1               5                   10                  15


Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20                  25                  30


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


Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50                  55                  60


Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65                  70                  75                  80


Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85                  90                  95


Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100                 105                 110


Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115                 120                 125


Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130                 135                 140


Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145                 150                 155                 160
```

```
Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165                 170                 175

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
        195                 200                 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
            260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
        275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305                 310                 315                 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
                325                 330                 335

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
        355                 360                 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
    370                 375                 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
```

385 390 395 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
405 410 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
420 425 430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
435 440 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
450 455 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465 470 475 480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
485 490 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
500 505 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
515 520 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
530 535 540

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

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
580 585 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
595 600 605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
610 615 620

```
Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645                 650                 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
            660                 665                 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
        675                 680                 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
    690                 695                 700

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705                 710                 715                 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
                725                 730                 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
            740                 745                 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
        755                 760                 765

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
    770                 775                 780

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785                 790                 795                 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
                805                 810                 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
            820                 825                 830

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
        835                 840                 845
```

```
Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
    850                 855                 860

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

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
                885                 890                 895

Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr
            900                 905                 910

Ser Ser Ser Phe Leu Glu Val
        915


<210> 7282
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
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<223> /note="Gene Name:
      ATPase, Ca++ transporting, type 2C,
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424930"


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

<400> 7282
Xaa Glu Gly Ala Leu Ile Ala Leu Ala Met Lys Met Gly Leu Asp Gly
1               5                   10                  15

Leu Gln Gln Asp Tyr Ile Arg Lys Ala Glu Tyr Pro Phe Ser Ser Glu
            20                  25                  30
```

```
Gln Lys Trp Met Ala Val Lys Cys Val His Arg Thr Gln Gln Asp Arg
        35                  40                  45

Pro Glu Ile Cys Phe Met Lys Gly Ala Tyr Glu Gln Val Ile Lys Tyr
    50                  55                  60

Cys Thr Thr Tyr Gln Ser Lys Gly Gln Thr Leu Thr Leu Thr Gln Gln
65                  70                  75                  80

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

Leu Arg Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln Ser Val
            100                 105                 110

Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser Gln Ile
        115                 120                 125

Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His Lys Met
    130                 135                 140

Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala Met Thr
145                 150                 155                 160

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

Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala Ala Asp
            180                 185                 190

Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala Ile Glu
        195                 200                 205

Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg Phe Gln
    210                 215                 220

Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala Thr Leu
225                 230                 235                 240

Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp Ile Asn
                245                 250                 255
```

```
Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu Pro Val
            260                 265                 270

Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp Ser Ile
        275                 280                 285

Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile Ile Ile
    290                 295                 300

Val Cys Gly Thr Leu Phe Val Phe Trp Arg
305                 310


<210> 7283
<211> 903
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, type 2C,
      member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000425228"


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

<400> 7283
Xaa Lys Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu
1               5                   10                  15

Phe Asp Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln
            20                  25                  30

Phe Lys Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser
        35                  40                  45
```

```
Val Leu Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile
    50                  55                  60

Leu Ile Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys
65                  70                  75                  80

Ser Leu Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val
                85                  90                  95

Arg Glu Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly
            100                 105                 110

Asp Thr Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg
        115                 120                 125

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

Glu Thr Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr
145                 150                 155                 160

Asn Gly Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu
                165                 170                 175

Val Arg Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn
            180                 185                 190

Ser Glu Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro
        195                 200                 205

Lys Thr Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser
    210                 215                 220

Phe Tyr Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu
225                 230                 235                 240

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

Val Ala Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu
            260                 265                 270
```

```
Ala Leu Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys
        275                 280                 285

Leu Pro Ile Val Glu Thr Leu Gly Cys Cys Asn Val Ile Cys Ser Asp
    290                 295                 300

Lys Thr Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe
305                 310                 315                 320

Thr Ser Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln
                325                 330                 335

Phe Gly Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn
            340                 345                 350

Pro Ala Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala
        355                 360                 365

Val Ile Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu
    370                 375                 380

Ile Ala Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr
385                 390                 395                 400

Ile Arg Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala
                405                 410                 415

Val Lys Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe
            420                 425                 430

Met Lys Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln
        435                 440                 445

Ser Lys Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr
    450                 455                 460

Gln Gln Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala
465                 470                 475                 480

Leu Ala Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val
                485                 490                 495
```

```
Gly Ile Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr
            500                 505                 510

Leu Ile Ala Ser Gly Val Ser Ile Lys Met Ile Thr Gly Asp Ser Gln
        515                 520                 525

Glu Thr Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr
    530                 535                 540

Ser Gln Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln
545                 550                 555                 560

Leu Ser Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro
                565                 570                 575

Arg His Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val
            580                 585                 590

Val Ala Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala
        595                 600                 605

Ala Asp Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys
    610                 615                 620

Glu Ala Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met
625                 630                 635                 640

Ser Ala Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe
                645                 650                 655

Val Arg Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser
            660                 665                 670

Leu Ala Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile
        675                 680                 685

Leu Trp Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly
    690                 695                 700

Val Glu Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp
705                 710                 715                 720

Lys Asp Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser
```

```
                725                 730                 735

Ser Ile Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu
            740                 745                 750

Arg Asp Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys
        755                 760                 765

Phe Val Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr
    770                 775                 780

Lys Ser Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr
785                 790                 795                 800

Ala Val Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro
                805                 810                 815

Pro Leu Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu
            820                 825                 830

Leu Phe Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile
        835                 840                 845

Ile Lys Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser
    850                 855                 860

Ser Thr Ser Ser Ser Phe Leu Glu Val Trp Leu Trp Glu Arg Ser Gly
865                 870                 875                 880

Gln Gln Leu Val Glu Ile His Pro His Leu Glu Thr Gly Leu Pro Leu
                885                 890                 895

Thr Glu Asp Val Ser Cys Val
            900


<210> 7284
<211> 944
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
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<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Ca++ transporting, type 2C,
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P98194; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425320"

<400> 7284

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Met Asp Ser Leu Leu Pro Pro Ser Arg Phe Ser Tyr Phe Lys Lys Tyr
1               5                  10                  15

Pro Leu His Ala Ile Arg Arg Tyr Leu Ser Thr Leu Arg Asn Gln Arg
            20                  25                  30

Ala Glu Glu Gln Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn
        35                  40                  45

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

Val Ser Glu Val Ala Ser Ile Leu Gln Phe Lys Asn Pro Leu Ile Met
65                  70                  75                  80

Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu Met His Gln Phe Asp
                85                  90                  95

Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile Val Val Thr Val Ala
            100                 105                 110

Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu Glu Glu Leu Ser Lys
        115                 120                 125

Leu Val Pro Pro Glu Cys His Cys Val Arg Glu Gly Lys Leu Glu His
    130                 135                 140

Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr Val Cys Leu Ser Val
145                 150                 155                 160
```

```
Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe Glu Ala Val Asp Leu
                165                 170                 175

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

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

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

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

Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr Pro Leu Gln Lys Ser
                245                 250                 255

Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr Ser Phe Gly Ile Ile
            260                 265                 270

Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly Lys Asp Ile Leu Glu
        275                 280                 285

Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala Ala Ile Pro Glu Gly
    290                 295                 300

Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu Gly Val Met Arg Met
305                 310                 315                 320

Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro Ile Val Glu Thr Leu
                325                 330                 335

Gly Cys Cys Asn Val Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Lys
            340                 345                 350

Asn Glu Met Thr Val Thr His Ile Phe Thr Ser Asp Gly Leu His Ala
        355                 360                 365

Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly Glu Val Ile Val Asp
    370                 375                 380
```

```
Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala Val Ser Arg Ile Val
385                 390                 395                 400

Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile Arg Asn Asn Thr Leu
                405                 410                 415

Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala Leu Ala Met Lys Met
            420                 425                 430

Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg Lys Ala Glu Tyr Pro
        435                 440                 445

Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys Cys Val His Arg Thr
    450                 455                 460

Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys Gly Ala Tyr Glu Gln
465                 470                 475                 480

Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys Gly Gln Thr Leu Thr
                485                 490                 495

Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln Glu Lys Ala Arg Met
            500                 505                 510

Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala Ser Gly Pro Glu Leu
        515                 520                 525

Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile Ile Asp Pro Pro Arg
    530                 535                 540

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

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

Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln Ser Val Ser Gly Glu
            580                 585                 590

Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser Gln Ile Val Pro Lys
        595                 600                 605

Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His Lys Met Lys Ile Ile
```

610 615 620

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

Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp Ile Gly Val Ala Met
645 650 655

Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala Ala Asp Met Ile Leu
660 665 670

Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala Ile Glu Glu Gly Lys
675 680 685

Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg Phe Gln Leu Ser Thr
690 695 700

Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala Thr Leu Met Asn Phe
705 710 715 720

Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp Ile Asn Ile Ile Met
725 730 735

Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu Pro Val Asp Lys Asp
740 745 750

Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp Ser Ile Leu Thr Lys
755 760 765

Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile Ile Ile Val Cys Gly
770 775 780

Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp Asn Val Ile Thr Pro
785 790 795 800

Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val Phe Phe Asp Met Phe
805 810 815

Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser Val Phe Glu Ile Gly
820 825 830

Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val Leu Gly Ser Ile Met
835 840 845

```
Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu Gln Lys Val Phe Gln
    850                 855                 860

Thr Glu Ser Leu Ser Ile Leu Asp Leu Leu Phe Leu Leu Gly Leu Thr
865                 870                 875                 880

Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys Lys Val Glu Arg Ser
                885                 890                 895

Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr Ser Ser Ser Phe Leu
            900                 905                 910

Glu Val Trp Leu Trp Glu Arg Ser Gly Gln Gln Leu Val Glu Ile His
        915                 920                 925

Pro His Leu Glu Thr Gly Leu Pro Leu Thr Glu Asp Val Ser Cys Val
    930                 935                 940


<210> 7285
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, type 2C,
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426849"

<400> 7285
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1               5                   10                  15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20                  25                  30
```

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50                  55                  60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65                  70                  75                  80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85                  90                  95

Met His Gln Phe Asp Asp
            100


<210> 7286
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, type 2C,
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427087"

<400> 7286
Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala Ile Glu Glu Gly
1               5                   10                  15

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

Thr Phe Cys Gly Ser Ile Leu Leu Trp Met Asp Pro Gln Leu Arg Ala
        35                  40                  45
```

Leu Glu
50

<210> 7287
<211> 919
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
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ATPase, Ca++ transporting, type 2C,
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P98194; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427461"

<400> 7287
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1 5 10 15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
20 25 30

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
50 55 60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65 70 75 80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
85 90 95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile

```
            100                 105                 110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115                 120                 125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130                 135                 140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145                 150                 155                 160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165                 170                 175

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
        195                 200                 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
            260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
        275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305                 310                 315                 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
                325                 330                 335
```

```
Ile Val Glu Thr Leu Gly Cys Cys Asn Val Ile Cys Ser Asp Lys Thr
            340                 345                 350

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
        355                 360                 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
    370                 375                 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
385                 390                 395                 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
                405                 410                 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
            420                 425                 430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
        435                 440                 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
    450                 455                 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465                 470                 475                 480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
                485                 490                 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
            500                 505                 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
        515                 520                 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
    530                 535                 540

Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr Leu Ile
545                 550                 555                 560
```

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
            580                 585                 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
        595                 600                 605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
    610                 615                 620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645                 650                 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
            660                 665                 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
        675                 680                 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
    690                 695                 700

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705                 710                 715                 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
                725                 730                 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
            740                 745                 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
        755                 760                 765

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
    770                 775                 780
```

```
Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785                 790                 795                 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
                805                 810                 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
            820                 825                 830

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
        835                 840                 845

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
    850                 855                 860

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

Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
                885                 890                 895

Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr
            900                 905                 910

Ser Ser Ser Phe Leu Glu Val
        915


<210> 7288
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C1; "

<220>
<221> source
<223> /note="Gene Name:
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      member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000427625"

<400> 7288
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1   5   10   15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20   25   30

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50   55   60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65   70   75   80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85   90   95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100   105   110

Val Val Thr Val Ala Phe Val Gln
        115   120

<210> 7289
<211> 888
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1548; "

<220>
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<220>
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      member 1; "

<220>
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<223> /note="Uniprot ID: P98194; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432956"

<400> 7289
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1   5   10   15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20   25   30

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

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50   55   60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65   70   75   80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
                85   90   95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100   105   110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
        115   120   125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130   135   140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145   150   155   160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165   170   175

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

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
        195   200   205

```
Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

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

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
            260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
        275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305                 310                 315                 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
                325                 330                 335

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

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
        355                 360                 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
    370                 375                 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
385                 390                 395                 400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
                405                 410                 415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
            420                 425                 430
```

```
Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
        435                 440                 445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
    450                 455                 460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465                 470                 475                 480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
                485                 490                 495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
            500                 505                 510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
        515                 520                 525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
    530                 535                 540

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

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

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
            580                 585                 590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
        595                 600                 605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
    610                 615                 620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625                 630                 635                 640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645                 650                 655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
```

660 665 670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
675 680 685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg
690 695 700

Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705 710 715 720

Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
725 730 735

Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
740 745 750

Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
755 760 765

Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
770 775 780

Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785 790 795 800

Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
805 810 815

Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
820 825 830

Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
835 840 845

Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
850 855 860

Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Gly Leu Ala Leu
865 870 875 880

Gly Glu Glu Trp Thr Ala Ala Gly
885

<210> 7290
<211> 946
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1549; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Ca++ transporting, type 2C,
member 2; "

<220>
<221> source
<223> /note="Uniprot ID: O75185; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262429"

<400> 7290
Met Val Glu Gly Arg Val Ser Glu Phe Leu Lys Lys Leu Gly Phe Ser
1   5   10   15

Gly Gly Gly Arg Gln Tyr Gln Ala Leu Glu Lys Asp Glu Glu Glu Ala
            20   25   30

Leu Ile Asp Glu Gln Ser Glu Leu Lys Ala Ile Glu Lys Glu Lys Lys
        35   40   45

Val Thr Ala Leu Pro Pro Lys Glu Ala Cys Lys Cys Gln Lys Glu Asp
    50   55   60

Leu Ala Arg Ala Phe Cys Val Asp Leu His Thr Gly Leu Ser Glu Phe
65   70   75   80

Ser Val Thr Gln Arg Arg Leu Ala His Gly Trp Asn Glu Phe Val Ala
                85   90   95

Asp Asn Ser Glu Pro Val Trp Lys Lys Tyr Leu Asp Gln Phe Lys Asn
            100   105   110

```
Pro Leu Ile Leu Leu Leu Leu Gly Ser Ala Leu Val Ser Val Leu Thr
        115                 120                 125

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

Val Thr Val Ala Phe Ile Gln Glu Tyr Arg Ser Glu Lys Ser Leu Glu
145                 150                 155                 160

Glu Leu Thr Lys Leu Val Pro Pro Glu Cys Asn Cys Leu Arg Glu Gly
                165                 170                 175

Lys Leu Gln His Leu Leu Ala Arg Glu Leu Val Pro Gly Asp Val Val
            180                 185                 190

Ser Leu Ser Ile Gly Asp Arg Ile Pro Ala Asp Ile Arg Leu Thr Glu
        195                 200                 205

Val Thr Asp Leu Leu Val Asp Glu Ser Ser Phe Thr Gly Glu Ala Glu
    210                 215                 220

Pro Cys Ser Lys Thr Asp Ser Pro Leu Thr Gly Gly Gly Asp Leu Thr
225                 230                 235                 240

Thr Leu Ser Asn Ile Val Phe Met Gly Thr Leu Val Gln Tyr Gly Arg
                245                 250                 255

Gly Gln Gly Val Val Ile Gly Thr Gly Glu Ser Ser Gln Phe Gly Glu
            260                 265                 270

Val Phe Lys Met Met Gln Ala Glu Glu Thr Pro Lys Thr Pro Leu Gln
        275                 280                 285

Lys Ser Met Asp Arg Leu Gly Lys Gln Leu Thr Leu Phe Ser Phe Gly
    290                 295                 300

Ile Ile Gly Leu Ile Met Leu Ile Gly Trp Ser Gln Gly Lys Gln Leu
305                 310                 315                 320

Leu Ser Met Phe Thr Ile Gly Val Ser Leu Ala Val Ala Ala Ile Pro
                325                 330                 335
```

```
Glu Gly Leu Pro Ile Val Val Met Val Thr Leu Val Leu Gly Val Leu
            340                 345                 350

Arg Met Ala Lys Lys Arg Val Ile Val Lys Lys Leu Pro Ile Val Glu
        355                 360                 365

Thr Leu Gly Cys Cys Ser Val Leu Cys Ser Asp Lys Thr Gly Thr Leu
    370                 375                 380

Thr Ala Asn Glu Met Thr Val Thr Gln Leu Val Thr Ser Asp Gly Leu
385                 390                 395                 400

Arg Ala Glu Val Ser Gly Val Gly Tyr Asp Gly Gln Gly Thr Val Cys
                405                 410                 415

Leu Leu Pro Ser Lys Glu Val Ile Lys Glu Phe Ser Asn Val Ser Val
            420                 425                 430

Gly Lys Leu Val Glu Ala Gly Cys Val Ala Asn Asn Ala Val Ile Arg
        435                 440                 445

Lys Asn Ala Val Met Gly Gln Pro Thr Glu Gly Ala Leu Met Ala Leu
    450                 455                 460

Ala Met Lys Met Asp Leu Ser Asp Ile Lys Asn Ser Tyr Ile Arg Lys
465                 470                 475                 480

Lys Glu Ile Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys Cys
                485                 490                 495

Ser Leu Lys Thr Glu Asp Gln Glu Asp Ile Tyr Phe Met Lys Gly Ala
            500                 505                 510

Leu Glu Glu Val Ile Arg Tyr Cys Thr Met Tyr Asn Asn Gly Gly Ile
        515                 520                 525

Pro Leu Pro Leu Thr Pro Gln Gln Arg Ser Phe Cys Leu Gln Glu Glu
    530                 535                 540

Lys Arg Met Gly Ser Leu Gly Leu Arg Val Leu Ala Leu Ala Ser Gly
545                 550                 555                 560

Pro Glu Leu Gly Arg Leu Thr Phe Leu Gly Leu Val Gly Ile Ile Asp
```

```
                565                 570                 575

Pro Pro Arg Val Gly Val Lys Glu Ala Val Gln Val Leu Ser Glu Ser
            580                 585                 590

Gly Val Ser Val Lys Met Ile Thr Gly Asp Ala Leu Glu Thr Ala Leu
        595                 600                 605

Ala Ile Gly Arg Asn Ile Gly Leu Cys Asn Gly Lys Leu Gln Ala Met
    610                 615                 620

Ser Gly Glu Glu Val Asp Ser Val Glu Lys Gly Glu Leu Ala Asp Arg
625                 630                 635                 640

Val Gly Lys Val Ser Val Phe Phe Arg Thr Ser Pro Lys His Lys Leu
                645                 650                 655

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

Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ser Ala Asp Ile Gly
        675                 680                 685

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

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

Glu Gly Lys Gly Ile Phe Tyr Asn Ile Lys Asn Phe Val Arg Phe Gln
                725                 730                 735

Leu Ser Thr Ser Ile Ser Ala Leu Ser Leu Ile Thr Leu Ser Thr Val
            740                 745                 750

Phe Asn Leu Pro Ser Pro Leu Asn Ala Met Gln Ile Leu Trp Ile Asn
        755                 760                 765

Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu Pro Val
    770                 775                 780

Asp Lys Asp Ala Phe Arg Gln Pro Pro Arg Ser Val Arg Asp Thr Ile
785                 790                 795                 800
```

```
Leu Ser Arg Ala Leu Ile Leu Lys Ile Leu Met Ser Ala Ala Ile Ile
                805                 810                 815

Ile Ser Gly Thr Leu Phe Ile Phe Trp Lys Glu Met Pro Glu Asp Arg
            820                 825                 830

Ala Ser Thr Pro Arg Thr Thr Thr Met Thr Phe Thr Cys Phe Val Phe
        835                 840                 845

Phe Asp Leu Phe Asn Ala Leu Thr Cys Arg Ser Gln Thr Lys Leu Ile
    850                 855                 860

Phe Glu Ile Gly Phe Leu Arg Asn His Met Phe Leu Tyr Ser Val Leu
865                 870                 875                 880

Gly Ser Ile Leu Gly Gln Leu Ala Val Ile Tyr Ile Pro Pro Leu Gln
                885                 890                 895

Arg Val Phe Gln Thr Glu Asn Leu Gly Ala Leu Asp Leu Leu Phe Leu
            900                 905                 910

Thr Gly Leu Ala Ser Ser Val Phe Ile Leu Ser Glu Leu Leu Lys Leu
        915                 920                 925

Cys Glu Lys Tyr Cys Cys Ser Pro Lys Arg Val Gln Met His Pro Glu
    930                 935                 940

Asp Val
945


<210> 7291
<211> 975
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1549; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C2; "

<220>
<221> source
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<223> /note="Gene Name:
ATPase, Ca++ transporting, type 2C,
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397925"

<400> 7291
Met Val Glu Gly Arg Val Ser Glu Phe Leu Lys Lys Leu Gly Phe Ser
1 5 10 15

Gly Gly Gly Arg Gln Tyr Gln Ala Leu Glu Lys Asp Glu Glu Glu Ala
20 25 30

Leu Ile Asp Glu Gln Ser Glu Leu Lys Ala Ile Glu Lys Glu Lys Lys
35 40 45

Val Thr Ala Leu Pro Pro Lys Glu Ala Cys Lys Cys Gln Lys Glu Asp
50 55 60

Leu Ala Arg Ala Phe Cys Val Asp Leu His Thr Gly Leu Ser Glu Phe
65 70 75 80

Ser Val Thr Gln Arg Arg Leu Ala His Gly Trp Asn Glu Phe Val Ala
85 90 95

Asp Asn Ser Glu Pro Val Trp Lys Lys Tyr Leu Asp Gln Phe Lys Asn
100 105 110

Pro Leu Ile Leu Leu Leu Leu Gly Ser Ala Leu Val Ser Val Leu Thr
115 120 125

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

Val Thr Val Ala Phe Ile Gln Glu Tyr Arg Ser Glu Lys Ser Leu Glu
145 150 155 160

Glu Leu Thr Lys Leu Val Pro Pro Glu Cys Asn Cys Leu Arg Glu Gly
165 170 175

Lys Leu Gln His Leu Leu Ala Arg Glu Leu Val Pro Gly Asp Val Val
180 185 190

```
Ser Leu Ser Ile Gly Asp Arg Ile Pro Ala Asp Ile Arg Leu Thr Glu
        195                 200                 205

Val Thr Asp Leu Leu Val Asp Glu Ser Ser Phe Thr Gly Glu Ala Glu
    210                 215                 220

Pro Cys Ser Lys Thr Asp Ser Pro Leu Thr Gly Gly Gly Asp Leu Thr
225                 230                 235                 240

Thr Leu Ser Asn Ile Val Phe Met Gly Thr Leu Val Gln Tyr Gly Arg
                245                 250                 255

Gly Gln Gly Val Val Ile Gly Thr Gly Glu Ser Ser Gln Phe Gly Glu
            260                 265                 270

Val Phe Lys Met Met Gln Ala Glu Glu Thr Pro Lys Thr Pro Leu Gln
        275                 280                 285

Lys Ser Met Asp Arg Leu Gly Lys Gln Leu Thr Leu Phe Ser Phe Gly
    290                 295                 300

Ile Ile Gly Leu Ile Met Leu Ile Gly Trp Ser Gln Gly Lys Gln Leu
305                 310                 315                 320

Leu Ser Met Phe Thr Ile Gly Val Ser Leu Ala Val Ala Ala Ile Pro
                325                 330                 335

Glu Gly Leu Pro Ile Val Val Met Val Thr Leu Val Leu Gly Val Leu
            340                 345                 350

Arg Met Ala Lys Lys Arg Val Ile Val Lys Lys Leu Pro Ile Val Glu
        355                 360                 365

Thr Leu Gly Cys Cys Ser Val Leu Cys Ser Asp Lys Thr Gly Thr Leu
    370                 375                 380

Thr Ala Asn Glu Met Thr Val Thr Gln Leu Val Thr Ser Asp Gly Leu
385                 390                 395                 400

Arg Ala Glu Val Ser Gly Val Gly Tyr Asp Gly Gln Gly Thr Val Cys
                405                 410                 415

Leu Leu Pro Ser Lys Glu Val Ile Lys Glu Phe Ser Asn Val Ser Val
```

```
            420                 425                 430

Gly Lys Leu Val Glu Ala Gly Cys Val Ala Asn Asn Ala Val Ile Arg
        435                 440                 445

Lys Asn Ala Val Met Gly Gln Pro Thr Glu Gly Ala Leu Met Ala Leu
    450                 455                 460

Ala Met Lys Met Asp Leu Ser Asp Ile Lys Asn Ser Tyr Ile Arg Lys
465                 470                 475                 480

Lys Glu Ile Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys Cys
                485                 490                 495

Ser Leu Lys Thr Glu Asp Gln Glu Asp Ile Tyr Phe Met Lys Gly Ala
            500                 505                 510

Leu Glu Glu Val Ile Arg Tyr Cys Thr Met Tyr Asn Asn Gly Gly Ile
        515                 520                 525

Pro Leu Pro Leu Thr Pro Gln Gln Arg Ser Phe Cys Leu Gln Glu Glu
    530                 535                 540

Lys Arg Met Gly Ser Leu Gly Leu Arg Val Leu Ala Leu Ala Ser Gly
545                 550                 555                 560

Pro Glu Leu Gly Arg Leu Thr Phe Leu Gly Leu Val Gly Ile Ile Asp
                565                 570                 575

Pro Pro Arg Val Gly Val Lys Glu Ala Val Gln Val Leu Ser Glu Ser
            580                 585                 590

Gly Val Ser Val Lys Met Ile Thr Gly Asp Ala Leu Glu Thr Ala Leu
        595                 600                 605

Ala Ile Gly Arg Asn Ile Gly Leu Cys Asn Gly Lys Leu Gln Ala Met
    610                 615                 620

Ser Gly Glu Glu Val Asp Ser Val Glu Lys Gly Glu Leu Ala Asp Arg
625                 630                 635                 640

Val Gly Lys Val Ser Val Phe Phe Arg Thr Ser Pro Lys His Lys Leu
                645                 650                 655
```

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

Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ser Ala Asp Ile Gly
        675                 680                 685

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

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

Glu Gly Lys Gly Ile Phe Tyr Asn Ile Lys Asn Phe Val Arg Phe Gln
                725                 730                 735

Leu Ser Thr Ser Ile Ser Ala Leu Ser Leu Ile Thr Leu Ser Thr Val
            740                 745                 750

Phe Asn Leu Pro Ser Pro Leu Asn Ala Met Gln Ile Leu Trp Ile Asn
        755                 760                 765

Ile Ile Met Asp Gly Pro Pro Ala Gln Arg Ser Ser Gln Lys Thr Glu
    770                 775                 780

Val Cys Cys Thr Ala Val Arg Leu Gly Val Glu Gly Arg Gly Glu Ser
785                 790                 795                 800

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

Ala Phe Arg Gln Pro Pro Arg Ser Val Arg Asp Thr Ile Leu Ser Arg
            820                 825                 830

Ala Leu Ile Leu Lys Ile Leu Met Ser Ala Ala Ile Ile Ile Ser Gly
        835                 840                 845

Thr Leu Phe Ile Phe Trp Lys Glu Met Pro Glu Asp Arg Ala Ser Thr
    850                 855                 860

Pro Arg Thr Thr Thr Met Thr Phe Thr Cys Phe Val Phe Phe Asp Leu
865                 870                 875                 880
```

```
Phe Asn Ala Leu Thr Cys Arg Ser Gln Thr Lys Leu Ile Phe Glu Ile
                885                 890                 895

Gly Phe Leu Arg Asn His Met Phe Leu Tyr Ser Val Leu Gly Ser Ile
            900                 905                 910

Leu Gly Gln Leu Ala Val Ile Tyr Ile Pro Pro Leu Gln Arg Val Phe
        915                 920                 925

Gln Thr Glu Asn Leu Gly Ala Leu Asp Leu Leu Phe Leu Thr Gly Leu
    930                 935                 940

Ala Ser Ser Val Phe Ile Leu Ser Glu Leu Leu Lys Leu Cys Glu Lys
945                 950                 955                 960

Tyr Cys Cys Ser Pro Lys Arg Val Gln Met His Pro Glu Asp Val
                965                 970                 975


<210> 7292
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1549; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2C2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Ca++ transporting, type 2C,
      member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456595"


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

<400> 7292
Xaa Val Trp Lys Lys Tyr Leu Asp Gln Phe Lys Asn Pro Leu Ile Leu
1               5                   10                  15
```

```
Leu Leu Leu Gly Ser Ala Leu Val Ser Val Leu Thr Lys Glu Tyr Glu
            20                  25                  30

Asp Ala Val Ser Ile Ala Thr Ala Val Leu Val Val Val Thr Val Ala
        35                  40                  45

Phe Ile Gln His Ile
    50
```

<210> 7293
<211> 1043
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1550; "

<220>
<221> source
<223> /note="Gene Symbol: ATP2A3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Ca++ transporting, ubiquitous; "

<220>
<221> source
<223> /note="Uniprot ID: Q93084; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301387"

<400> 7293

```
Met Glu Ala Ala His Leu Leu Pro Ala Ala Asp Val Leu Arg His Phe
1               5                  10                  15

Ser Val Thr Ala Glu Gly Gly Leu Ser Pro Ala Gln Val Thr Gly Ala
            20                  25                  30

Arg Glu Arg Tyr Gly Pro Asn Glu Leu Pro Ser Glu Glu Gly Lys Ser
        35                  40                  45

Leu Trp Glu Leu Val Leu Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60
```

```
Leu Leu Leu Ala Ala Leu Val Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Thr Thr Ala Phe Val Glu Pro Leu Val Ile Met Leu
                85                  90                  95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Ser Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Ile Arg Ser Asp Arg Lys Gly Val Gln Arg Ile Arg Ala Arg Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

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

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Thr Lys His Thr Glu
            180                 185                 190

Ala Ile Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

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

Ala Thr Gly Leu His Thr Glu Leu Gly Lys Ile Arg Ser Gln Met Ala
225                 230                 235                 240

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

Gly Arg Gln Leu Ser His Ala Ile Ser Val Ile Cys Val Ala Val Trp
            260                 265                 270

Val Ile Asn Ile Gly His Phe Ala Asp Pro Ala His Gly Gly Ser Trp
        275                 280                 285

Leu Arg Gly Ala Val Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
```

```
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Arg Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Val
        355                 360                 365

Val Ala Glu Ala Asp Ala Gly Ser Cys Leu Leu His Glu Phe Thr Ile
    370                 375                 380

Ser Gly Thr Thr Tyr Thr Pro Glu Gly Glu Val Arg Gln Gly Asp Gln
385                 390                 395                 400

Pro Val Arg Cys Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asp Thr Asp Leu Gln Ala Leu Ser Arg
    450                 455                 460

Val Glu Arg Ala Gly Ala Cys Asn Thr Val Ile Lys Gln Leu Met Arg
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Thr Pro Thr Arg Pro His Pro Thr Gly Gln Gly Ser Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Ser Val Ile Glu Arg Cys Ser Ser Val
        515                 520                 525
```

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

Ile Leu Ala Lys Ile Arg Asp Trp Gly Ser Gly Ser Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Ala Pro Pro Arg Lys Glu Asp Met
                565                 570                 575

Glu Leu Asp Asp Cys Ser Lys Phe Val Gln Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Pro Glu Val Ala
        595                 600                 605

Ala Cys Ile Thr Arg Cys Tyr Gln Ala Gly Ile Arg Val Val Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Leu Gly
625                 630                 635                 640

Ile Phe Gly Asp Thr Glu Asp Val Ala Gly Lys Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Ser Pro Glu Gln Gln Arg Gln Ala Cys Arg Thr
            660                 665                 670

Ala Arg Cys Phe Ala Arg Val Glu Pro Ala His Lys Ser Arg Ile Val
        675                 680                 685

Glu Asn Leu Gln Ser Phe Asn Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720

Gly Ser Gly Thr Ala Val Ala Lys Ser Ala Ala Glu Met Val Leu Ser
                725                 730                 735

Asp Asp Asn Phe Ala Ser Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750
```

```
Ile Tyr Ser Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ile Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Glu Lys Leu Pro Arg Ser Pro Arg Glu Ala Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Leu Ala Ile Gly Val Tyr Val Gly Leu Ala Thr
        835                 840                 845

Val Ala Ala Ala Thr Trp Trp Phe Val Tyr Asp Ala Glu Gly Pro His
    850                 855                 860

Ile Asn Phe Tyr Gln Leu Arg Asn Phe Leu Lys Cys Ser Glu Asp Asn
865                 870                 875                 880

Pro Leu Phe Ala Gly Ile Asp Cys Glu Val Phe Glu Ser Arg Phe Pro
                885                 890                 895

Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910

Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
        915                 920                 925

Met Asn Pro Trp Leu Leu Val Ala Val Ala Met Ser Met Ala Leu His
    930                 935                 940

Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu Ile Phe Gln Val Thr
945                 950                 955                 960

Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu Gln Ile Ser Leu Pro
                965                 970                 975
```

```
Val Ile Leu Leu Asp Glu Ala Leu Lys Tyr Leu Ser Arg Asn His Met
            980                 985                 990


His Ala Cys Leu Tyr Pro Gly Leu  Leu Arg Thr Val Ser  Gln Ala
Trp
        995                 1000                1005


Ser Arg  Gln Pro Leu Thr Thr  Ser Trp Thr Pro Asp  His Thr Gly
    1010                1015                1020


Arg Asn  Glu Pro Glu Val Ser  Ala Gly Asn Arg Val  Glu Ser Pro
    1025                1030                1035


Val Cys  Thr Ser Asp
    1040


<210> 7294
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<212> PRT
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Met Glu Ala Ala His Leu Leu Pro Ala Ala Asp Val Leu Arg His Phe
1               5                   10                  15


Ser Val Thr Ala Glu Gly Gly Leu Ser Pro Ala Gln Val Thr Gly Ala
            20                  25                  30


Arg Glu Arg Tyr Gly Pro Asn Glu Leu Pro Ser Glu Glu Gly Lys Ser
```

```
        35                  40                  45

Leu Trp Glu Leu Val Leu Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60

Leu Leu Leu Ala Ala Leu Val Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Thr Thr Ala Phe Val Glu Pro Leu Val Ile Met Leu
                85                  90                  95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Ser Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Ile Arg Ser Asp Arg Lys Gly Val Gln Arg Ile Arg Ala Arg Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

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

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Thr Lys His Thr Glu
            180                 185                 190

Ala Ile Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

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

Ala Thr Gly Leu His Thr Glu Leu Gly Lys Ile Arg Ser Gln Met Ala
225                 230                 235                 240

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

Gly Arg Gln Leu Ser His Ala Ile Ser Val Ile Cys Val Ala Val Trp
            260                 265                 270
```

```
Val Ile Asn Ile Gly His Phe Ala Asp Pro Ala His Gly Gly Ser Trp
        275                 280                 285

Leu Arg Gly Ala Val Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Arg Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Val
        355                 360                 365

Val Ala Glu Ala Asp Ala Gly Ser Cys Leu Leu His Glu Phe Thr Ile
    370                 375                 380

Ser Gly Thr Thr Tyr Thr Pro Glu Gly Glu Val Arg Gln Gly Asp Gln
385                 390                 395                 400

Pro Val Arg Cys Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asp Thr Asp Leu Gln Ala Leu Ser Arg
    450                 455                 460

Val Glu Arg Ala Gly Ala Cys Asn Thr Val Ile Lys Gln Leu Met Arg
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495
```

```
Tyr Cys Thr Pro Thr Arg Pro His Pro Thr Gly Gln Gly Ser Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Ser Val Ile Glu Arg Cys Ser Ser Val
        515                 520                 525

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

Ile Leu Ala Lys Ile Arg Asp Trp Gly Ser Gly Ser Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Ala Pro Pro Arg Lys Glu Asp Met
                565                 570                 575

Glu Leu Asp Asp Cys Ser Lys Phe Val Gln Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Pro Glu Val Ala
        595                 600                 605

Ala Cys Ile Thr Arg Cys Tyr Gln Ala Gly Ile Arg Val Val Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Leu Gly
625                 630                 635                 640

Ile Phe Gly Asp Thr Glu Asp Val Ala Gly Lys Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Ser Pro Glu Gln Gln Arg Gln Ala Cys Arg Thr
            660                 665                 670

Ala Arg Cys Phe Ala Arg Val Glu Pro Ala His Lys Ser Arg Ile Val
        675                 680                 685

Glu Asn Leu Gln Ser Phe Asn Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720
```

```
Gly Ser Gly Thr Ala Val Ala Lys Ser Ala Ala Glu Met Val Leu Ser
                725                 730                 735

Asp Asp Asn Phe Ala Ser Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750

Ile Tyr Ser Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ile Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Glu Lys Leu Pro Arg Ser Pro Arg Glu Ala Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Leu Ala Ile Gly Val Tyr Val Gly Leu Ala Thr
        835                 840                 845

Val Ala Ala Ala Thr Trp Trp Phe Val Tyr Asp Ala Glu Gly Pro His
    850                 855                 860

Ile Asn Phe Tyr Gln Leu Arg Asn Phe Leu Lys Cys Ser Glu Asp Asn
865                 870                 875                 880

Pro Leu Phe Ala Gly Ile Asp Cys Glu Val Phe Glu Ser Arg Phe Pro
                885                 890                 895

Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910

Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
        915                 920                 925

Met Asn Pro Trp Leu Leu Val Ala Val Ala Met Ser Met Ala Leu His
    930                 935                 940

Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu Ile Phe Gln Val Thr
```

945 950 955 960

Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu Gln Ile Ser Leu Pro
965 970 975

Val Ile Leu Leu Asp Glu Ala Leu Lys Tyr Leu Ser Arg Asn His Met
980 985 990

His Ala Cys Leu Tyr Pro Gly Leu Leu Arg Thr Val Ser Gln Ala Trp
995 1000 1005

Ser Arg Gln Pro Leu Thr Thr Ser Trp Thr Pro Asp His Thr Gly
1010 1015 1020

Leu Ala Ser Leu Lys Lys
1025

<210> 7295
<211> 1052
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ATP2A3; "

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<223> /note="Gene Name:
ATPase, Ca++ transporting, ubiquitous; "

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<223> /note="Uniprot ID: Q93084; "

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<400> 7295
Met Glu Ala Ala His Leu Leu Pro Ala Ala Asp Val Leu Arg His Phe
1 5 10 15

Ser Val Thr Ala Glu Gly Gly Leu Ser Pro Ala Gln Val Thr Gly Ala
20 25 30

```
Arg Glu Arg Tyr Gly Pro Asn Glu Leu Pro Ser Glu Glu Gly Lys Ser
        35                  40                  45

Leu Trp Glu Leu Val Leu Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60

Leu Leu Leu Ala Ala Leu Val Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Thr Thr Ala Phe Val Glu Pro Leu Val Ile Met Leu
                85                  90                  95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Ser Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Ile Arg Ser Asp Arg Lys Gly Val Gln Arg Ile Arg Ala Arg Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

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

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Thr Lys His Thr Glu
            180                 185                 190

Ala Ile Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

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

Ala Thr Gly Leu His Thr Glu Leu Gly Lys Ile Arg Ser Gln Met Ala
225                 230                 235                 240

Ala Val Glu Pro Glu Arg Thr Pro Leu Gln Arg Lys Leu Asp Glu Phe
                245                 250                 255
```

```
Gly Arg Gln Leu Ser His Ala Ile Ser Val Ile Cys Val Ala Val Trp
            260                 265                 270

Val Ile Asn Ile Gly His Phe Ala Asp Pro Ala His Gly Gly Ser Trp
        275                 280                 285

Leu Arg Gly Ala Val Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Arg Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Val
        355                 360                 365

Val Ala Glu Ala Asp Ala Gly Ser Cys Leu Leu His Glu Phe Thr Ile
    370                 375                 380

Ser Gly Thr Thr Tyr Thr Pro Glu Gly Glu Val Arg Gln Gly Asp Gln
385                 390                 395                 400

Pro Val Arg Cys Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asp Thr Asp Leu Gln Ala Leu Ser Arg
    450                 455                 460

Val Glu Arg Ala Gly Ala Cys Asn Thr Val Ile Lys Gln Leu Met Arg
465                 470                 475                 480
```

```
Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Thr Pro Thr Arg Pro His Pro Thr Gly Gln Gly Ser Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Ser Val Ile Glu Arg Cys Ser Ser Val
        515                 520                 525

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

Ile Leu Ala Lys Ile Arg Asp Trp Gly Ser Gly Ser Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Ala Pro Pro Arg Lys Glu Asp Met
                565                 570                 575

Glu Leu Asp Asp Cys Ser Lys Phe Val Gln Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Pro Glu Val Ala
        595                 600                 605

Ala Cys Ile Thr Arg Cys Tyr Gln Ala Gly Ile Arg Val Val Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Leu Gly
625                 630                 635                 640

Ile Phe Gly Asp Thr Glu Asp Val Ala Gly Lys Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Ser Pro Glu Gln Gln Arg Gln Ala Cys Arg Thr
            660                 665                 670

Ala Arg Cys Phe Ala Arg Val Glu Pro Ala His Lys Ser Arg Ile Val
        675                 680                 685

Glu Asn Leu Gln Ser Phe Asn Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
```

705 710 715 720

Gly Ser Gly Thr Ala Val Ala Lys Ser Ala Ala Glu Met Val Leu Ser
725 730 735

Asp Asp Asn Phe Ala Ser Ile Val Ala Ala Val Glu Glu Gly Arg Ala
740 745 750

Ile Tyr Ser Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
755 760 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ile Leu Gly Leu Pro
770 775 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785 790 795 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
805 810 815

Met Glu Lys Leu Pro Arg Ser Pro Arg Glu Ala Leu Ile Ser Gly Trp
820 825 830

Leu Phe Phe Arg Tyr Leu Ala Ile Gly Val Tyr Val Gly Leu Ala Thr
835 840 845

Val Ala Ala Ala Thr Trp Trp Phe Val Tyr Asp Ala Glu Gly Pro His
850 855 860

Ile Asn Phe Tyr Gln Leu Arg Asn Phe Leu Lys Cys Ser Glu Asp Asn
865 870 875 880

Pro Leu Phe Ala Gly Ile Asp Cys Glu Val Phe Glu Ser Arg Phe Pro
885 890 895

Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
900 905 910

Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
915 920 925

Met Asn Pro Trp Leu Leu Val Ala Val Ala Met Ser Met Ala Leu His
930 935 940

```
Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu Ile Phe Gln Val Thr
945                 950                 955                 960

Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu Gln Ile Ser Leu Pro
                965                 970                 975

Val Ile Leu Leu Asp Glu Ala Leu Lys Tyr Leu Ser Arg Asn His Met
            980                 985                 990

His Ala Cys Leu Tyr Pro Gly Leu  Leu Arg Thr Val Ser  Gln Ala
Trp
        995                 1000                1005

Ser Arg  Gln Pro Leu Thr Thr  Ser Trp Thr Pro Asp  His Thr Gly
    1010                1015                1020

Leu Ala  Ser Leu Gly Gln Gly  His Ser Ile Val Ser  Leu Ser Glu
    1025                1030                1035

Leu Leu  Arg Glu Gly Gly Ser  Arg Glu Glu Met Ser  Gln Lys
    1040                1045                1050


<210> 7296
<211> 1029
<212> PRT
<213> Homo sapiens

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Met Glu Ala Ala His Leu Leu Pro Ala Ala Asp Val Leu Arg His Phe
1 5 10 15

Ser Val Thr Ala Glu Gly Gly Leu Ser Pro Ala Gln Val Thr Gly Ala
20 25 30

Arg Glu Arg Tyr Gly Pro Asn Glu Leu Pro Ser Glu Glu Gly Lys Ser
35 40 45

Leu Trp Glu Leu Val Leu Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
50 55 60

Leu Leu Leu Ala Ala Leu Val Ser Phe Val Leu Ala Trp Phe Glu Glu
65 70 75 80

Gly Glu Glu Thr Thr Thr Ala Phe Val Glu Pro Leu Val Ile Met Leu
85 90 95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
100 105 110

Glu Ser Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
115 120 125

Val Ile Arg Ser Asp Arg Lys Gly Val Gln Arg Ile Arg Ala Arg Asp
130 135 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145 150 155 160

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

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Thr Lys His Thr Glu
180 185 190

Ala Ile Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
195 200 205

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

```
Ala Thr Gly Leu His Thr Glu Leu Gly Lys Ile Arg Ser Gln Met Ala
225                 230                 235                 240

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

Gly Arg Gln Leu Ser His Ala Ile Ser Val Ile Cys Val Ala Val Trp
            260                 265                 270

Val Ile Asn Ile Gly His Phe Ala Asp Pro Ala His Gly Gly Ser Trp
        275                 280                 285

Leu Arg Gly Ala Val Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Arg Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Val
        355                 360                 365

Val Ala Glu Ala Asp Ala Gly Ser Cys Leu Leu His Glu Phe Thr Ile
    370                 375                 380

Ser Gly Thr Thr Tyr Thr Pro Glu Gly Glu Val Arg Gln Gly Asp Gln
385                 390                 395                 400

Pro Val Arg Cys Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asp Thr Asp Leu Gln Ala Leu Ser Arg
```

```
    450                 455                 460

Val Glu Arg Ala Gly Ala Cys Asn Thr Val Ile Lys Gln Leu Met Arg
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Thr Pro Thr Arg Pro His Pro Thr Gly Gln Gly Ser Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Ser Val Ile Glu Arg Cys Ser Ser Val
        515                 520                 525

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

Ile Leu Ala Lys Ile Arg Asp Trp Gly Ser Gly Ser Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Ala Pro Pro Arg Lys Glu Asp Met
                565                 570                 575

Glu Leu Asp Asp Cys Ser Lys Phe Val Gln Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Pro Glu Val Ala
        595                 600                 605

Ala Cys Ile Thr Arg Cys Tyr Gln Ala Gly Ile Arg Val Val Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Leu Gly
625                 630                 635                 640

Ile Phe Gly Asp Thr Glu Asp Val Ala Gly Lys Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Ser Pro Glu Gln Gln Arg Gln Ala Cys Arg Thr
            660                 665                 670

Ala Arg Cys Phe Ala Arg Val Glu Pro Ala His Lys Ser Arg Ile Val
        675                 680                 685
```

```
Glu Asn Leu Gln Ser Phe Asn Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720

Gly Ser Gly Thr Ala Val Ala Lys Ser Ala Ala Glu Met Val Leu Ser
                725                 730                 735

Asp Asp Asn Phe Ala Ser Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750

Ile Tyr Ser Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ile Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Glu Lys Leu Pro Arg Ser Pro Arg Glu Ala Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Leu Ala Ile Gly Val Tyr Val Gly Leu Ala Thr
        835                 840                 845

Val Ala Ala Ala Thr Trp Trp Phe Val Tyr Asp Ala Glu Gly Pro His
    850                 855                 860

Ile Asn Phe Tyr Gln Leu Arg Asn Phe Leu Lys Cys Ser Glu Asp Asn
865                 870                 875                 880

Pro Leu Phe Ala Gly Ile Asp Cys Glu Val Phe Glu Ser Arg Phe Pro
                885                 890                 895

Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910
```

```
Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
        915                 920                 925

Met Asn Pro Trp Leu Leu Val Ala Val Ala Met Ser Met Ala Leu His
    930                 935                 940

Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu Ile Phe Gln Val Thr
945                 950                 955                 960

Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu Gln Ile Ser Leu Pro
                965                 970                 975

Val Ile Leu Leu Asp Glu Ala Leu Lys Tyr Leu Ser Arg Asn His Met
            980                 985                 990

His Ala Cys Leu Tyr Pro Gly Leu  Leu Arg Thr Val Ser  Gln Ala
Trp
        995                 1000                1005

Ser Arg  Gln Pro Leu Thr Thr  Ser Trp Thr Pro Asp  His Thr Gly
    1010                1015                1020

Leu Ala  Ser Leu Lys Lys
    1025


<210> 7297
<211> 999
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP2A3; "

<220>
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<223> /note="Gene Name:
      ATPase, Ca++ transporting, ubiquitous; "

<220>
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<223> /note="Uniprot ID:  Q93084; "

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<221> source
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<400> 7297
Met Glu Ala Ala His Leu Leu Pro Ala Ala Asp Val Leu Arg His Phe
1 5 10 15

Ser Val Thr Ala Glu Gly Gly Leu Ser Pro Ala Gln Val Thr Gly Ala
20 25 30

Arg Glu Arg Tyr Gly Pro Asn Glu Leu Pro Ser Glu Glu Gly Lys Ser
35 40 45

Leu Trp Glu Leu Val Leu Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
50 55 60

Leu Leu Leu Ala Ala Leu Val Ser Phe Val Leu Ala Trp Phe Glu Glu
65 70 75 80

Gly Glu Glu Thr Thr Thr Ala Phe Val Glu Pro Leu Val Ile Met Leu
85 90 95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
100 105 110

Glu Ser Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
115 120 125

Val Ile Arg Ser Asp Arg Lys Gly Val Gln Arg Ile Arg Ala Arg Asp
130 135 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145 150 155 160

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

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Thr Lys His Thr Glu
180 185 190

Ala Ile Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
195 200 205

Phe Ser Gly Thr Asn Ile Thr Ser Gly Lys Ala Val Gly Val Ala Val

```
    210                 215                 220

Ala Thr Gly Leu His Thr Glu Leu Gly Lys Ile Arg Ser Gln Met Ala
225                 230                 235                 240

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

Gly Arg Gln Leu Ser His Ala Ile Ser Val Ile Cys Val Ala Val Trp
            260                 265                 270

Val Ile Asn Ile Gly His Phe Ala Asp Pro Ala His Gly Gly Ser Trp
        275                 280                 285

Leu Arg Gly Ala Val Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Arg Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Val
        355                 360                 365

Val Ala Glu Ala Asp Ala Gly Ser Cys Leu Leu His Glu Phe Thr Ile
    370                 375                 380

Ser Gly Thr Thr Tyr Thr Pro Glu Gly Glu Val Arg Gln Gly Asp Gln
385                 390                 395                 400

Pro Val Arg Cys Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445
```

```
Val Glu Lys Met Asn Val Phe Asp Thr Asp Leu Gln Ala Leu Ser Arg
    450                 455                 460

Val Glu Arg Ala Gly Ala Cys Asn Thr Val Ile Lys Gln Leu Met Arg
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Thr Pro Thr Arg Pro His Pro Thr Gly Gln Gly Ser Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Ser Val Ile Glu Arg Cys Ser Ser Val
        515                 520                 525

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

Ile Leu Ala Lys Ile Arg Asp Trp Gly Ser Gly Ser Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Ala Pro Pro Arg Lys Glu Asp Met
                565                 570                 575

Glu Leu Asp Asp Cys Ser Lys Phe Val Gln Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Pro Glu Val Ala
        595                 600                 605

Ala Cys Ile Thr Arg Cys Tyr Gln Ala Gly Ile Arg Val Val Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Leu Gly
625                 630                 635                 640

Ile Phe Gly Asp Thr Glu Asp Val Ala Gly Lys Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Ser Pro Glu Gln Gln Arg Gln Ala Cys Arg Thr
            660                 665                 670
```

```
Ala Arg Cys Phe Ala Arg Val Glu Pro Ala His Lys Ser Arg Ile Val
        675                 680                 685

Glu Asn Leu Gln Ser Phe Asn Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720

Gly Ser Gly Thr Ala Val Ala Lys Ser Ala Ala Glu Met Val Leu Ser
                725                 730                 735

Asp Asp Asn Phe Ala Ser Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750

Ile Tyr Ser Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ile Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Glu Lys Leu Pro Arg Ser Pro Arg Glu Ala Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Leu Ala Ile Gly Val Tyr Val Gly Leu Ala Thr
        835                 840                 845

Val Ala Ala Ala Thr Trp Trp Phe Val Tyr Asp Ala Glu Gly Pro His
    850                 855                 860

Ile Asn Phe Tyr Gln Leu Arg Asn Phe Leu Lys Cys Ser Glu Asp Asn
865                 870                 875                 880

Pro Leu Phe Ala Gly Ile Asp Cys Glu Val Phe Glu Ser Arg Phe Pro
                885                 890                 895
```

```
Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910

Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
        915                 920                 925

Met Asn Pro Trp Leu Leu Val Ala Val Ala Met Ser Met Ala Leu His
    930                 935                 940

Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu Ile Phe Gln Val Thr
945                 950                 955                 960

Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu Gln Ile Ser Leu Pro
                965                 970                 975

Val Ile Leu Leu Asp Glu Ala Leu Lys Tyr Leu Ser Arg Asn His Met
            980                 985                 990

His Glu Glu Met Ser Gln Lys
        995


<210> 7298
<211> 998
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1550; "

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<221> source
<223> /note="Gene Symbol: ATP2A3; "

<220>
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<223> /note="Gene Name:
      ATPase, Ca++ transporting, ubiquitous; "

<220>
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<223> /note="Uniprot ID:  Q93084; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380236"

<400> 7298
Met Glu Ala Ala His Leu Leu Pro Ala Ala Asp Val Leu Arg His Phe
1               5                   10                  15
```

```
Ser Val Thr Ala Glu Gly Gly Leu Ser Pro Ala Gln Val Thr Gly Ala
            20                  25                  30

Arg Glu Arg Tyr Gly Pro Asn Glu Leu Pro Ser Glu Glu Gly Lys Ser
        35                  40                  45

Leu Trp Glu Leu Val Leu Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
    50                  55                  60

Leu Leu Leu Ala Ala Leu Val Ser Phe Val Leu Ala Trp Phe Glu Glu
65                  70                  75                  80

Gly Glu Glu Thr Thr Thr Ala Phe Val Glu Pro Leu Val Ile Met Leu
                85                  90                  95

Ile Leu Val Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
            100                 105                 110

Glu Ser Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
        115                 120                 125

Val Ile Arg Ser Asp Arg Lys Gly Val Gln Arg Ile Arg Ala Arg Asp
    130                 135                 140

Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

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

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Thr Lys His Thr Glu
            180                 185                 190

Ala Ile Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

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

Ala Thr Gly Leu His Thr Glu Leu Gly Lys Ile Arg Ser Gln Met Ala
225                 230                 235                 240
```

```
Ala Val Glu Pro Glu Arg Thr Pro Leu Gln Arg Lys Leu Asp Glu Phe
                245                 250                 255

Gly Arg Gln Leu Ser His Ala Ile Ser Val Ile Cys Val Ala Val Trp
            260                 265                 270

Val Ile Asn Ile Gly His Phe Ala Asp Pro Ala His Gly Gly Ser Trp
        275                 280                 285

Leu Arg Gly Ala Val Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Arg Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

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

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Arg Met Phe Val
        355                 360                 365

Val Ala Glu Ala Asp Ala Gly Ser Cys Leu Leu His Glu Phe Thr Ile
    370                 375                 380

Ser Gly Thr Thr Tyr Thr Pro Glu Gly Glu Val Arg Gln Gly Asp Gln
385                 390                 395                 400

Pro Val Arg Cys Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ala Leu Asp Tyr Asn Glu Ala Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Cys Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asp Thr Asp Leu Gln Ala Leu Ser Arg
    450                 455                 460
```

```
Val Glu Arg Ala Gly Ala Cys Asn Thr Val Ile Lys Gln Leu Met Arg
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Thr Pro Thr Arg Pro His Pro Thr Gly Gln Gly Ser Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Ser Val Ile Glu Arg Cys Ser Ser Val
        515                 520                 525

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

Ile Leu Ala Lys Ile Arg Asp Trp Gly Ser Gly Ser Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Ala Pro Pro Arg Lys Glu Asp Met
                565                 570                 575

Glu Leu Asp Asp Cys Ser Lys Phe Val Gln Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Cys Val Gly Met Leu Asp Pro Pro Arg Pro Glu Val Ala
        595                 600                 605

Ala Cys Ile Thr Arg Cys Tyr Gln Ala Gly Ile Arg Val Val Met Ile
    610                 615                 620

Thr Gly Asp Asn Lys Gly Thr Ala Val Ala Ile Cys Arg Arg Leu Gly
625                 630                 635                 640

Ile Phe Gly Asp Thr Glu Asp Val Ala Gly Lys Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Ser Pro Glu Gln Gln Arg Gln Ala Cys Arg Thr
            660                 665                 670

Ala Arg Cys Phe Ala Arg Val Glu Pro Ala His Lys Ser Arg Ile Val
        675                 680                 685

Glu Asn Leu Gln Ser Phe Asn Glu Ile Thr Ala Met Thr Gly Asp Gly
```

690 695 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705 710 715 720

Gly Ser Gly Thr Ala Val Ala Lys Ser Ala Ala Glu Met Val Leu Ser
725 730 735

Asp Asp Asn Phe Ala Ser Ile Val Ala Ala Val Glu Glu Gly Arg Ala
740 745 750

Ile Tyr Ser Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
755 760 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ile Leu Gly Leu Pro
770 775 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785 790 795 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
805 810 815

Met Glu Lys Leu Pro Arg Ser Pro Arg Glu Ala Leu Ile Ser Gly Trp
820 825 830

Leu Phe Phe Arg Tyr Leu Ala Ile Gly Val Tyr Val Gly Leu Ala Thr
835 840 845

Val Ala Ala Ala Thr Trp Trp Phe Val Tyr Asp Ala Glu Gly Pro His
850 855 860

Ile Asn Phe Tyr Gln Leu Arg Asn Phe Leu Lys Cys Ser Glu Asp Asn
865 870 875 880

Pro Leu Phe Ala Gly Ile Asp Cys Glu Val Phe Glu Ser Arg Phe Pro
885 890 895

Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
900 905 910

Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu Arg Met Pro Pro Trp
915 920 925

```
Met Asn Pro Trp Leu Leu Val Ala Val Ala Met Ser Met Ala Leu His
    930                 935                 940

Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu Ile Phe Gln Val Thr
945                 950                 955                 960

Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu Gln Ile Ser Leu Pro
                965                 970                 975

Val Ile Leu Leu Asp Glu Ala Leu Lys Tyr Leu Ser Arg Asn His Met
            980                 985                 990

His Glu Met Ser Gln Lys
        995
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<210> 7299
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1550; "

<220>
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<223> /note="Gene Symbol: ATP2A3; "

<220>
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<223> /note="Gene Name:
ATPase, Ca++ transporting, ubiquitous; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458865"

<400> 7299

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Glu Ser Arg Phe Pro Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile
1               5                   10                  15

Glu Met Cys Asn Ala Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu
            20                  25                  30

Arg Met Pro Pro Trp Met Asn Pro Trp Leu Leu Val Ala Val Ala Met
        35                  40                  45
```

```
Ser Met Ala Leu His Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu
    50                  55                  60

Ile Phe Gln Val Thr Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu
65                  70                  75                  80

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

Ser Arg Asn His Met His Gly Pro Gly Thr Gln His Arg Leu Ala Val
            100                 105                 110

Arg Ala Ala Gln Arg Gly Arg Lys Gln Gly Arg Asn Glu Pro Glu Val
        115                 120                 125

Ser Ala Gly Asn Arg Val Glu Ser Pro Val Cys Thr Ser Asp
    130                 135                 140


<210> 7300
<211> 153
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000461480"

<400> 7300
Glu Ser Arg Phe Pro Thr Thr Met Ala Leu Ser Val Leu Val Thr Ile
1               5                   10                  15

Glu Met Cys Asn Ala Leu Asn Ser Val Ser Glu Asn Gln Ser Leu Leu
            20                  25                  30

Arg Met Pro Pro Trp Met Asn Pro Trp Leu Leu Val Ala Val Ala Met
        35                  40                  45
```

```
Ser Met Ala Leu His Phe Leu Ile Leu Leu Val Pro Pro Leu Pro Leu
    50                  55                  60

Ile Phe Gln Val Thr Pro Leu Ser Gly Arg Gln Trp Val Val Val Leu
65                  70                  75                  80

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

Ser Arg Asn His Met His Ala Cys Leu Tyr Pro Gly Leu Leu Arg Thr
            100                 105                 110

Val Ser Gln Ala Trp Ser Arg Gln Pro Leu Thr Thr Ser Trp Thr Pro
        115                 120                 125

Asp His Thr Gly Ala Arg Asp Thr Ala Ser Ser Arg Cys Gln Ser Cys
    130                 135                 140

Ser Glu Arg Glu Glu Ala Gly Lys Lys
145                 150


<210> 7301
<211> 1192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

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<223> /note="Gene Symbol: ATP8B4; "

<220>
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<223> /note="Gene Name:
      ATPase,
      class I, type 8B,
      member 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8TF62; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284509"
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<400> 7301
Met Phe Cys Ser Glu Lys Lys Leu Arg Glu Val Glu Arg Ile Val Lys
1 5 10 15

Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Asp Asn Arg
20 25 30

Ile His Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Ile Asn Leu
35 40 45

Phe Glu Gln Phe Gln Arg Val Ala Asn Ala Tyr Phe Leu Cys Leu Leu
50 55 60

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

Ile Val Pro Leu Val Leu Val Ile Thr Met Thr Ala Val Lys Asp Ala
85 90 95

Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn Asn Arg
100 105 110

Gln Ser Glu Val Leu Ile Asn Ser Lys Leu Gln Asn Glu Lys Trp Met
115 120 125

Asn Val Lys Val Gly Asp Ile Ile Lys Leu Glu Asn Asn Gln Phe Val
130 135 140

Ala Ala Asp Leu Leu Leu Leu Ser Ser Ser Glu Pro His Gly Leu Cys
145 150 155 160

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

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

Ala Gly Phe Asp Gly Ile Val Val Cys Glu Val Pro Asn Asn Lys Leu
195 200 205

Asp Lys Phe Met Gly Ile Leu Ser Trp Lys Asp Ser Lys His Ser Leu
210 215 220

```
Asn Asn Glu Lys Ile Ile Leu Arg Gly Cys Ile Leu Arg Asn Thr Ser
225                 230                 235                 240

Trp Cys Phe Gly Met Val Ile Phe Ala Gly Pro Asp Thr Lys Leu Met
                245                 250                 255

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

Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Ile Cys Leu Gly
        275                 280                 285

Ile Ile Leu Ala Ile Gly Asn Ser Ile Trp Glu Ser Gln Thr Gly Asp
    290                 295                 300

Gln Phe Arg Thr Phe Leu Phe Trp Asn Glu Gly Glu Lys Ser Ser Val
305                 310                 315                 320

Phe Ser Gly Phe Leu Thr Phe Trp Ser Tyr Ile Ile Ile Leu Asn Thr
                325                 330                 335

Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly
            340                 345                 350

His Ser Tyr Phe Ile Asn Trp Asp Arg Lys Met Tyr Tyr Ser Arg Lys
        355                 360                 365

Ala Ile Pro Ala Val Ala Arg Thr Thr Thr Leu Asn Glu Glu Leu Gly
    370                 375                 380

Gln Ile Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn
385                 390                 395                 400

Ile Met Thr Phe Lys Arg Cys Ser Ile Asn Gly Arg Ile Tyr Gly Glu
                405                 410                 415

Val His Asp Asp Leu Asp Gln Lys Thr Glu Ile Thr Gln Glu Lys Glu
            420                 425                 430

Pro Val Asp Phe Ser Val Lys Ser Gln Ala Asp Arg Glu Phe Gln Phe
        435                 440                 445
```

```
Phe Asp His His Leu Met Glu Ser Ile Lys Met Gly Asp Pro Lys Val
    450                 455                 460

His Glu Phe Leu Arg Leu Leu Ala Leu Cys His Thr Val Met Ser Glu
465                 470                 475                 480

Glu Asn Ser Ala Gly Glu Leu Ile Tyr Gln Val Gln Ser Pro Asp Glu
                485                 490                 495

Gly Ala Leu Val Thr Ala Ala Arg Asn Phe Gly Phe Ile Phe Lys Ser
            500                 505                 510

Arg Thr Pro Glu Thr Ile Thr Ile Glu Glu Leu Gly Thr Leu Val Thr
        515                 520                 525

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

Ser Val Ile Val Arg Asn Pro Glu Gly Gln Ile Lys Leu Tyr Ser Lys
545                 550                 555                 560

Gly Ala Asp Thr Ile Leu Phe Glu Lys Leu His Pro Ser Asn Glu Val
                565                 570                 575

Leu Leu Ser Leu Thr Ser Asp His Leu Ser Glu Phe Ala Gly Glu Gly
            580                 585                 590

Leu Arg Thr Leu Ala Ile Ala Tyr Arg Asp Leu Asp Asp Lys Tyr Phe
        595                 600                 605

Lys Glu Trp His Lys Met Leu Glu Asp Ala Asn Ala Ala Thr Glu Glu
    610                 615                 620

Arg Asp Glu Arg Ile Ala Gly Leu Tyr Glu Glu Ile Glu Arg Asp Leu
625                 630                 635                 640

Met Leu Leu Gly Ala Thr Ala Val Glu Asp Lys Leu Gln Glu Gly Val
                645                 650                 655

Ile Glu Thr Val Thr Ser Leu Ser Leu Ala Asn Ile Lys Ile Trp Val
            660                 665                 670

Leu Thr Gly Asp Lys Gln Glu Thr Ala Ile Asn Ile Gly Tyr Ala Cys
```

675 680 685

Asn Met Leu Thr Asp Asp Met Asn Asp Val Phe Val Ile Ala Gly Asn
690 695 700

Asn Ala Val Glu Val Arg Glu Glu Leu Arg Lys Ala Lys Gln Asn Leu
705 710 715 720

Phe Gly Gln Asn Arg Asn Phe Ser Asn Gly His Val Val Cys Glu Lys
725 730 735

Lys Gln Gln Leu Glu Leu Asp Ser Ile Val Glu Glu Thr Ile Thr Gly
740 745 750

Asp Tyr Ala Leu Ile Ile Asn Gly His Ser Leu Ala His Ala Leu Glu
755 760 765

Ser Asp Val Lys Asn Asp Leu Leu Glu Leu Ala Cys Met Cys Lys Thr
770 775 780

Val Ile Cys Cys Arg Val Thr Pro Leu Gln Lys Ala Gln Val Val Glu
785 790 795 800

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

Ala Asn Asp Val Ser Met Ile Lys Ser Ala His Ile Gly Val Gly Ile
820 825 830

Ser Gly Gln Glu Gly Leu Gln Ala Val Leu Ala Ser Asp Tyr Ser Phe
835 840 845

Ala Gln Phe Arg Tyr Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp
850 855 860

Ser Tyr Phe Arg Met Cys Lys Phe Leu Cys Tyr Phe Phe Tyr Lys Asn
865 870 875 880

Phe Ala Phe Thr Leu Val His Phe Trp Phe Gly Phe Phe Cys Gly Phe
885 890 895

Ser Ala Gln Thr Val Tyr Asp Gln Trp Phe Ile Thr Leu Phe Asn Ile
900 905 910

```
Val Tyr Thr Ser Leu Pro Val Leu Ala Met Gly Ile Phe Asp Gln Asp
        915                 920                 925

Val Ser Asp Gln Asn Ser Val Asp Cys Pro Gln Leu Tyr Lys Pro Gly
    930                 935                 940

Gln Leu Asn Leu Leu Phe Asn Lys Arg Lys Phe Phe Ile Cys Val Leu
945                 950                 955                 960

His Gly Ile Tyr Thr Ser Leu Val Leu Phe Phe Ile Pro Tyr Gly Ala
                965                 970                 975

Phe Tyr Asn Val Ala Gly Glu Asp Gly Gln His Ile Ala Asp Tyr Gln
            980                 985                 990

Ser Phe Ala Val Thr Met Ala Thr  Ser Leu Val Ile Val  Val Ser
Val
        995                 1000                1005

Gln Ile  Ala Leu Asp Thr Ser  Tyr Trp Thr Phe Ile  Asn His Val
    1010                1015                1020

Phe Ile  Trp Gly Ser Ile Ala  Ile Tyr Phe Ser Ile  Leu Phe Thr
    1025                1030                1035

Met His  Ser Asn Gly Ile Phe  Gly Ile Phe Pro Asn  Gln Phe Pro
    1040                1045                1050

Phe Val  Gly Asn Ala Arg His  Ser Leu Thr Gln Lys  Cys Ile Trp
    1055                1060                1065

Leu Val  Ile Leu Leu Thr Thr  Val Ala Ser Val Met  Pro Val Val
    1070                1075                1080

Ala Phe  Arg Phe Leu Lys Val  Asp Leu Tyr Pro Thr  Leu Ser Asp
    1085                1090                1095

Gln Ile  Arg Arg Trp Gln Lys  Ala Gln Lys Lys Ala  Arg Pro Pro
    1100                1105                1110

Ser Ser  Arg Arg Pro Arg Thr  Arg Arg Ser Ser Ser  Arg Arg Ser
    1115                1120                1125
```

```
Gly Tyr  Ala Phe Ala His Gln  Glu Gly Tyr Gly Glu  Leu Ile Thr
    1130                1135                1140


Ser Gly  Lys Asn Met Arg Ala  Lys Asn Pro Pro Pro  Thr Ser Gly
    1145                1150                1155


Leu Glu  Lys Thr His Tyr Asn  Ser Thr Ser Trp Ile  Glu Asn Leu
    1160                1165                1170


Cys Lys  Lys Thr Thr Asp Thr  Val Ser Ser Phe Ser  Gln Asp Lys
    1175                1180                1185


Thr Val  Lys Leu
    1190
```

<210> 7302
<211> 122
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class I, type 8B,
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452956"

<400> 7302

```
Met Phe Cys Ser Glu Lys Lys Leu Arg Glu Val Glu Arg Ile Val Lys
1               5                  10                  15


Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Asp Asn Arg
            20                  25                  30


Ile His Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Ile Asn Leu
        35                  40                  45
```

```
Phe Glu Gln Phe Gln Arg Val Ala Asn Ala Tyr Phe Leu Cys Leu Leu
    50                  55                  60

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

Ile Val Pro Leu Val Leu Val Ile Thr Met Thr Ala Val Lys Asp Ala
                85                  90                  95

Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn Asn Arg
            100                 105                 110

Gln Ser Glu Val Leu Ile Asn Ser Lys Cys
        115                 120
```

<210> 7303
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class I, type 8B,
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453143"

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

<400> 7303
```
Xaa Ala Asn Ala Tyr Phe Leu Cys Leu Leu Ile Leu Gln Leu Ile Pro
1               5                   10                  15
```

```
Glu Ile Ser Ser Leu Thr Trp Phe Thr Thr Ile Val Pro Leu Val Leu
            20                  25                  30

Val Ile Thr Met Thr Ala Val Lys Asp Ala Thr Asp Asp Tyr Phe Arg
        35                  40                  45

His Lys Ser Asp Asn Gln Val Asn Asn Arg Gln Ser Glu Val Leu Ile
    50                  55                  60

Asn Ser Lys Leu Gln Asn Glu Lys Trp Met Asn Val Lys Val Gly Asp
65                  70                  75                  80

Ile Ile Lys Leu Glu Asn Asn Gln Phe Val Ala Leu Ile Lys Asp
                85                  90                  95


<210> 7304
<211> 1192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class I, type 8B,
      member 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8TF62; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453169"

<400> 7304
Met Phe Cys Ser Glu Lys Lys Leu Arg Glu Val Glu Arg Ile Val Lys
1               5                   10                  15

Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Asp Asn Arg
            20                  25                  30
```

```
Ile His Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Ile Asn Leu
        35                  40                  45

Phe Glu Gln Phe Gln Arg Val Ala Asn Ala Tyr Phe Leu Cys Leu Leu
    50                  55                  60

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

Ile Val Pro Leu Val Leu Val Ile Thr Met Thr Ala Val Lys Asp Ala
                85                  90                  95

Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn Asn Arg
            100                 105                 110

Gln Ser Glu Val Leu Ile Asn Ser Lys Leu Gln Asn Glu Lys Trp Met
        115                 120                 125

Asn Val Lys Val Gly Asp Ile Ile Lys Leu Glu Asn Asn Gln Phe Val
    130                 135                 140

Ala Ala Asp Leu Leu Leu Leu Ser Ser Ser Glu Pro His Gly Leu Cys
145                 150                 155                 160

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

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

Ala Gly Phe Asp Gly Ile Val Val Cys Glu Val Pro Asn Asn Lys Leu
        195                 200                 205

Asp Lys Phe Met Gly Ile Leu Ser Trp Lys Asp Ser Lys His Ser Leu
    210                 215                 220

Asn Asn Glu Lys Ile Ile Leu Arg Gly Cys Ile Leu Arg Asn Thr Ser
225                 230                 235                 240

Trp Cys Phe Gly Met Val Ile Phe Ala Gly Pro Asp Thr Lys Leu Met
                245                 250                 255

Gln Asn Ser Gly Lys Thr Lys Phe Lys Arg Thr Ser Ile Asp Arg Leu
```

```
            260                 265                 270

Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Ile Cys Leu Gly
        275                 280                 285

Ile Ile Leu Ala Ile Gly Asn Ser Ile Trp Glu Ser Gln Thr Gly Asp
    290                 295                 300

Gln Phe Arg Thr Phe Leu Phe Trp Asn Glu Gly Glu Lys Ser Ser Val
305                 310                 315                 320

Phe Ser Gly Phe Leu Thr Phe Trp Ser Tyr Ile Ile Ile Leu Asn Thr
                325                 330                 335

Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly
            340                 345                 350

His Ser Tyr Phe Ile Asn Trp Asp Arg Lys Met Tyr Tyr Ser Arg Lys
        355                 360                 365

Ala Ile Pro Ala Val Ala Arg Thr Thr Thr Leu Asn Glu Glu Leu Gly
    370                 375                 380

Gln Ile Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn
385                 390                 395                 400

Ile Met Thr Phe Lys Arg Cys Ser Ile Asn Gly Arg Ile Tyr Gly Glu
                405                 410                 415

Val His Asp Asp Leu Asp Gln Lys Thr Glu Ile Thr Gln Glu Lys Glu
            420                 425                 430

Pro Val Asp Phe Ser Val Lys Ser Gln Ala Asp Arg Glu Phe Gln Phe
        435                 440                 445

Phe Asp His His Leu Met Glu Ser Ile Lys Met Gly Asp Pro Lys Val
    450                 455                 460

His Glu Phe Leu Arg Leu Leu Ala Leu Cys His Thr Val Met Ser Glu
465                 470                 475                 480

Glu Asn Ser Ala Gly Glu Leu Ile Tyr Gln Val Gln Ser Pro Asp Glu
                485                 490                 495
```

```
Gly Ala Leu Val Thr Ala Ala Arg Asn Phe Gly Phe Ile Phe Lys Ser
            500                 505                 510

Arg Thr Pro Glu Thr Ile Thr Ile Glu Glu Leu Gly Thr Leu Val Thr
        515                 520                 525

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

Ser Val Ile Val Arg Asn Pro Glu Gly Gln Ile Lys Leu Tyr Ser Lys
545                 550                 555                 560

Gly Ala Asp Thr Ile Leu Phe Glu Lys Leu His Pro Ser Asn Glu Val
                565                 570                 575

Leu Leu Ser Leu Thr Ser Asp His Leu Ser Glu Phe Ala Gly Glu Gly
            580                 585                 590

Leu Arg Thr Leu Ala Ile Ala Tyr Arg Asp Leu Asp Asp Lys Tyr Phe
        595                 600                 605

Lys Glu Trp His Lys Met Leu Glu Asp Ala Asn Ala Ala Thr Glu Glu
    610                 615                 620

Arg Asp Glu Arg Ile Ala Gly Leu Tyr Glu Glu Ile Glu Arg Asp Leu
625                 630                 635                 640

Met Leu Leu Gly Ala Thr Ala Val Glu Asp Lys Leu Gln Glu Gly Val
                645                 650                 655

Ile Glu Thr Val Thr Ser Leu Ser Leu Ala Asn Ile Lys Ile Trp Val
            660                 665                 670

Leu Thr Gly Asp Lys Gln Glu Thr Ala Ile Asn Ile Gly Tyr Ala Cys
        675                 680                 685

Asn Met Leu Thr Asp Asp Met Asn Asp Val Phe Val Ile Ala Gly Asn
    690                 695                 700

Asn Ala Val Glu Val Arg Glu Glu Leu Arg Lys Ala Lys Gln Asn Leu
705                 710                 715                 720
```

```
Phe Gly Gln Asn Arg Asn Phe Ser Asn Gly His Val Val Cys Glu Lys
                725                 730                 735

Lys Gln Gln Leu Glu Leu Asp Ser Ile Val Glu Glu Thr Ile Thr Gly
            740                 745                 750

Asp Tyr Ala Leu Ile Ile Asn Gly His Ser Leu Ala His Ala Leu Glu
        755                 760                 765

Ser Asp Val Lys Asn Asp Leu Leu Glu Leu Ala Cys Met Cys Lys Thr
    770                 775                 780

Val Ile Cys Cys Arg Val Thr Pro Leu Gln Lys Ala Gln Val Val Glu
785                 790                 795                 800

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

Ala Asn Asp Val Ser Met Ile Lys Ser Ala His Ile Gly Val Gly Ile
            820                 825                 830

Ser Gly Gln Glu Gly Leu Gln Ala Val Leu Ala Ser Asp Tyr Ser Phe
        835                 840                 845

Ala Gln Phe Arg Tyr Leu Gln Arg Leu Leu Leu Val His Gly Arg Trp
    850                 855                 860

Ser Tyr Phe Arg Met Cys Lys Phe Leu Cys Tyr Phe Phe Tyr Lys Asn
865                 870                 875                 880

Phe Ala Phe Thr Leu Val His Phe Trp Phe Gly Phe Phe Cys Gly Phe
                885                 890                 895

Ser Ala Gln Thr Val Tyr Asp Gln Trp Phe Ile Thr Leu Phe Asn Ile
            900                 905                 910

Val Tyr Thr Ser Leu Pro Val Leu Ala Met Gly Ile Phe Asp Gln Asp
        915                 920                 925

Val Ser Asp Gln Asn Ser Val Asp Cys Pro Gln Leu Tyr Lys Pro Gly
    930                 935                 940
```

```
Gln Leu Asn Leu Leu Phe Asn Lys Arg Lys Phe Phe Ile Cys Val Leu
945                 950                 955                 960

His Gly Ile Tyr Thr Ser Leu Val Leu Phe Phe Ile Pro Tyr Gly Ala
                965                 970                 975

Phe Tyr Asn Val Ala Gly Glu Asp Gly Gln His Ile Ala Asp Tyr Gln
            980                 985                 990

Ser Phe Ala Val Thr Met Ala Thr  Ser Leu Val Ile Val  Val Ser
Val
        995                 1000                1005

Gln Ile  Ala Leu Asp Thr Ser  Tyr Trp Thr Phe Ile  Asn His Val
    1010                1015                1020

Phe Ile  Trp Gly Ser Ile Ala  Ile Tyr Phe Ser Ile  Leu Phe Thr
    1025                1030                1035

Met His  Ser Asn Gly Ile Phe  Gly Ile Phe Pro Asn  Gln Phe Pro
    1040                1045                1050

Phe Val  Gly Asn Ala Arg His  Ser Leu Thr Gln Lys  Cys Ile Trp
    1055                1060                1065

Leu Val  Ile Leu Leu Thr Thr  Val Ala Ser Val Met  Pro Val Val
    1070                1075                1080

Ala Phe  Arg Phe Leu Lys Val  Asp Leu Tyr Pro Thr  Leu Ser Asp
    1085                1090                1095

Gln Ile  Arg Arg Trp Gln Lys  Ala Gln Lys Lys Ala  Arg Pro Pro
    1100                1105                1110

Ser Ser  Arg Arg Pro Arg Thr  Arg Arg Ser Ser Ser  Arg Arg Ser
    1115                1120                1125

Gly Tyr  Ala Phe Ala His Gln  Glu Gly Tyr Gly Glu  Leu Ile Thr
    1130                1135                1140

Ser Gly  Lys Asn Met Arg Ala  Lys Asn Pro Pro Pro  Thr Ser Gly
    1145                1150                1155
```

```
Leu Glu  Lys Thr His Tyr Asn  Ser Thr Ser Trp Ile  Glu Asn Leu
    1160                1165                1170


Cys Lys  Lys Thr Thr Asp Thr  Val Ser Ser Phe Ser  Gln Asp Lys
    1175                1180                1185


Thr Val  Lys Leu
    1190


<210> 7305
<211> 122
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class I, type 8B,
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453229"

<400> 7305
Met Phe Cys Ser Glu Lys Lys Leu Arg Glu Val Glu Arg Ile Val Lys
1               5                   10                  15


Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Asp Asn Arg
            20                  25                  30


Ile His Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Ile Asn Leu
        35                  40                  45


Phe Glu Gln Phe Gln Arg Val Ala Asn Ala Tyr Phe Leu Cys Leu Leu
    50                  55                  60


Ile Leu Gln Leu Ile Pro Glu Ile Ser Ser Leu Thr Trp Phe Thr Thr
65                  70                  75                  80
```

```
Ile Val Pro Leu Val Leu Val Ile Thr Met Thr Ala Val Lys Asp Ala
                85                  90                  95

Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn Asn Arg
            100                 105                 110

Gln Ser Glu Val Leu Ile Asn Ser Lys Cys
        115                 120


<210> 7306
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class I, type 8B,
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453482"


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

<400> 7306
Xaa Phe Lys Ser Arg Thr Pro Glu Thr Ile Thr Ile Glu Glu Leu Gly
1               5                   10                  15

Thr Leu Val Thr Tyr Gln Leu Leu Ala Phe Leu Asp Phe Asn Asn Thr
            20                  25                  30

Arg Lys Arg Met Ser Val Ile Val Arg Asn Pro Glu Gly Gln Ile Lys
        35                  40                  45

Leu Tyr Ser Lys Gly Ala Asp Thr Ile Leu Phe Glu Lys Leu His Pro
    50                  55                  60
```

```
Ser Asn Glu Val Leu Leu Ser Leu Thr Ser Asp His Leu Ser Glu Ala
65                  70                  75                  80


Ser Met Val Phe



<210> 7307
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class I, type 8B,
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453539"

<400> 7307
Met Phe Cys Ser Glu Lys Lys Leu Arg Glu Val Glu Arg Ile Val Lys
1               5                   10                  15


Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Asp Asn Arg
            20                  25                  30


Ile His Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Ile Asn Leu
        35                  40                  45


Phe Glu Gln Phe Gln
    50


<210> 7308
<211> 717
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1551; "

<220>
<221> source
<223> /note="Gene Symbol: ATP8B4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class I, type 8B,
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453690"

<400> 7308

```
Met Phe Cys Ser Glu Lys Lys Leu Arg Glu Val Glu Arg Ile Val Lys
1               5                  10                  15

Ala Asn Asp Arg Glu Tyr Asn Glu Lys Phe Gln Tyr Ala Asp Asn Arg
            20                  25                  30

Ile His Thr Ser Lys Tyr Asn Ile Leu Thr Phe Leu Pro Ile Asn Leu
        35                  40                  45

Phe Glu Gln Phe Gln Arg Val Ala Asn Ala Tyr Phe Leu Cys Leu Leu
    50                  55                  60

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

Ile Val Pro Leu Val Leu Val Ile Thr Met Thr Ala Val Lys Asp Ala
                85                  90                  95

Thr Asp Asp Tyr Phe Arg His Lys Ser Asp Asn Gln Val Asn Asn Arg
            100                 105                 110

Gln Ser Glu Val Leu Ile Asn Ser Lys Leu Gln Asn Glu Lys Trp Met
        115                 120                 125

Asn Val Lys Val Gly Asp Ile Ile Lys Leu Glu Asn Asn Gln Phe Val
    130                 135                 140

Ala Ala Asp Leu Leu Leu Leu Ser Ser Ser Glu Pro His Gly Leu Cys
145                 150                 155                 160
```

```
Tyr Val Glu Thr Ala Glu Leu Asp Gly Glu Thr Asn Leu Lys Val Arg
                165                 170                 175

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

Ala Gly Phe Asp Gly Ile Val Val Cys Glu Val Pro Asn Asn Lys Leu
        195                 200                 205

Asp Lys Phe Met Gly Ile Leu Ser Trp Lys Asp Ser Lys His Ser Leu
    210                 215                 220

Asn Asn Glu Lys Ile Ile Leu Arg Gly Cys Ile Leu Arg Asn Thr Ser
225                 230                 235                 240

Trp Cys Phe Gly Met Val Ile Phe Ala Gly Pro Asp Thr Lys Leu Met
                245                 250                 255

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

Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Ile Cys Leu Gly
        275                 280                 285

Ile Ile Leu Ala Ile Gly Asn Ser Ile Trp Glu Ser Gln Thr Gly Asp
    290                 295                 300

Gln Phe Arg Thr Phe Leu Phe Trp Asn Glu Gly Glu Lys Ser Ser Val
305                 310                 315                 320

Phe Ser Gly Phe Leu Thr Phe Trp Ser Tyr Ile Ile Ile Leu Asn Thr
                325                 330                 335

Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly
            340                 345                 350

His Ser Tyr Phe Ile Asn Trp Asp Arg Lys Met Tyr Tyr Ser Arg Lys
        355                 360                 365

Ala Ile Pro Ala Val Ala Arg Thr Thr Thr Leu Asn Glu Glu Leu Gly
    370                 375                 380
```

```
Gln Ile Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn
385                 390                 395                 400

Ile Met Thr Phe Lys Arg Cys Ser Ile Asn Gly Arg Ile Tyr Gly Glu
                405                 410                 415

Val His Asp Asp Leu Asp Gln Lys Thr Glu Ile Thr Gln Glu Lys Glu
            420                 425                 430

Pro Val Asp Phe Ser Val Lys Ser Gln Ala Asp Arg Glu Phe Gln Phe
        435                 440                 445

Phe Asp His His Leu Met Glu Ser Ile Lys Met Gly Asp Pro Lys Val
    450                 455                 460

His Glu Phe Leu Arg Leu Leu Ala Leu Cys His Thr Val Met Ser Glu
465                 470                 475                 480

Glu Asn Ser Ala Gly Glu Leu Ile Tyr Gln Val Gln Ser Pro Asp Glu
                485                 490                 495

Gly Ala Leu Val Thr Ala Ala Arg Asn Phe Gly Phe Ile Phe Lys Ser
            500                 505                 510

Arg Thr Pro Glu Thr Ile Thr Ile Glu Glu Leu Gly Thr Leu Val Thr
        515                 520                 525

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

Ser Val Ile Val Arg Asn Pro Glu Gly Gln Ile Lys Leu Tyr Ser Lys
545                 550                 555                 560

Gly Ala Asp Thr Ile Leu Phe Glu Lys Leu His Pro Ser Asn Glu Val
                565                 570                 575

Leu Leu Ser Leu Thr Ser Asp His Leu Ser Glu Phe Ala Gly Glu Gly
            580                 585                 590

Leu Arg Thr Leu Ala Ile Ala Tyr Arg Asp Leu Asp Asp Lys Tyr Phe
        595                 600                 605
```

```
Lys Glu Trp His Lys Met Leu Glu Asp Ala Asn Ala Ala Thr Glu Glu
    610                 615                 620

Arg Asp Glu Arg Ile Ala Gly Leu Tyr Glu Glu Ile Glu Arg Asp Leu
625                 630                 635                 640

Met Leu Leu Gly Ala Thr Ala Val Glu Asp Lys Leu Gln Glu Gly Val
                645                 650                 655

Ile Glu Thr Val Thr Ser Leu Ser Leu Ala Asn Ile Lys Ile Trp Val
            660                 665                 670

Leu Thr Gly Asp Lys Gln Glu Thr Ala Ile Asn Ile Gly Tyr Ala Cys
        675                 680                 685

Asn Met Leu Thr Asp Asp Met Asn Asp Val Phe Val Ile Ala Gly Asn
    690                 695                 700

Asn Ala Val Glu Val Arg Glu Glu Leu Arg Leu Met Pro
705                 710                 715


<210> 7309
<211> 911
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1552; "

<220>
<221> source
<223> /note="Gene Symbol: ATP9A; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class II, type 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000309086"

<400> 7309
Met Asp Ser Arg Pro Arg Ala Gly Cys Cys Glu Trp Leu Arg Cys Cys
1               5                   10                  15

Gly Gly Gly Glu Ala Arg Pro Arg Thr Val Trp Leu Gly His Pro Glu
```

```
            20                  25                  30

Lys Arg Asp Gln Arg Tyr Pro Arg Asn Val Ile Asn Asn Gln Lys Tyr
        35                  40                  45

Asn Phe Phe Thr Phe Leu Pro Gly Val Leu Phe Asn Gln Phe Lys Tyr
    50                  55                  60

Phe Phe Asn Leu Tyr Phe Leu Leu Leu Ala Cys Ser Gln Phe Val Pro
65                  70                  75                  80

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

Val Leu Ala Val Thr Val Ile Arg Glu Ala Val Glu Glu Ile Arg Cys
            100                 105                 110

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

Ala Arg Gly Thr Val Val Gly Val Val Leu Tyr Thr Gly Arg Glu Leu
    130                 135                 140

Arg Ser Val Met Asn Thr Ser Asn Pro Arg Ser Lys Ile Gly Leu Phe
145                 150                 155                 160

Asp Leu Glu Val Asn Cys Leu Thr Lys Ile Leu Phe Gly Ala Leu Val
                165                 170                 175

Val Val Ser Leu Val Met Val Ala Leu Gln His Phe Ala Gly Arg Trp
            180                 185                 190

Tyr Leu Gln Ile Ile Arg Phe Leu Leu Leu Phe Ser Asn Ile Ile Pro
        195                 200                 205

Ile Ser Leu Arg Val Asn Leu Asp Met Gly Lys Ile Val Tyr Ser Trp
    210                 215                 220

Val Ile Arg Arg Asp Ser Lys Ile Pro Gly Thr Val Val Arg Ser Ser
225                 230                 235                 240

Thr Ile Pro Glu Gln Leu Gly Arg Ile Ser Tyr Leu Leu Thr Asp Lys
                245                 250                 255
```

```
Thr Gly Thr Leu Thr Gln Asn Glu Met Ile Phe Lys Arg Leu His Leu
            260                 265                 270

Gly Thr Val Ala Tyr Gly Leu Asp Ser Met Asp Glu Val Gln Ser His
        275                 280                 285

Ile Phe Ser Ile Tyr Thr Gln Gln Ser Gln Asp Pro Pro Ala Gln Lys
    290                 295                 300

Gly Pro Thr Leu Thr Thr Lys Val Arg Arg Thr Met Ser Ser Arg Val
305                 310                 315                 320

His Glu Ala Val Lys Ala Ile Ala Leu Cys His Asn Val Thr Pro Val
                325                 330                 335

Tyr Glu Ser Asn Gly Val Thr Asp Gln Ala Glu Ala Glu Lys Gln Tyr
            340                 345                 350

Glu Asp Ser Cys Arg Val Tyr Gln Ala Ser Ser Pro Asp Glu Val Ala
        355                 360                 365

Leu Val Gln Trp Thr Glu Ser Val Gly Leu Thr Leu Val Gly Arg Asp
    370                 375                 380

Gln Ser Ser Met Gln Leu Arg Thr Pro Gly Asp Gln Ile Leu Asn Phe
385                 390                 395                 400

Thr Ile Leu Gln Ile Phe Pro Phe Thr Tyr Glu Ser Lys Arg Met Gly
                405                 410                 415

Ile Ile Val Arg Asp Glu Ser Thr Gly Glu Ile Thr Phe Tyr Met Lys
            420                 425                 430

Gly Ala Asp Val Val Met Ala Gly Ile Val Gln Tyr Asn Asp Trp Leu
        435                 440                 445

Glu Glu Glu Cys Gly Asn Met Ala Arg Glu Gly Leu Arg Val Leu Val
    450                 455                 460

Val Ala Lys Lys Ser Leu Ala Glu Glu Gln Tyr Gln Asp Phe Glu Ala
465                 470                 475                 480
```

```
Arg Tyr Val Gln Ala Lys Leu Ser Val His Asp Arg Ser Leu Lys Val
                485                 490                 495

Ala Thr Val Ile Glu Ser Leu Glu Met Glu Met Glu Leu Leu Cys Leu
            500                 505                 510

Thr Gly Val Glu Asp Gln Leu Gln Ala Asp Val Arg Pro Thr Leu Glu
        515                 520                 525

Thr Leu Arg Asn Ala Gly Ile Lys Val Trp Met Leu Thr Gly Asp Lys
    530                 535                 540

Leu Glu Thr Ala Thr Cys Thr Ala Lys Asn Ala His Leu Val Thr Arg
545                 550                 555                 560

Asn Gln Asp Ile His Val Phe Arg Leu Val Thr Asn Arg Gly Glu Ala
                565                 570                 575

His Leu Glu Leu Asn Ala Phe Arg Arg Lys His Asp Cys Ala Leu Val
            580                 585                 590

Ile Ser Gly Asp Ser Leu Glu Val Cys Leu Lys Tyr Tyr Glu Tyr Glu
        595                 600                 605

Phe Met Glu Leu Ala Cys Gln Cys Pro Ala Val Val Cys Cys Arg Cys
    610                 615                 620

Ala Pro Thr Gln Lys Ala Gln Ile Val Arg Leu Leu Gln Glu Arg Thr
625                 630                 635                 640

Gly Lys Leu Thr Cys Ala Val Gly Asp Gly Gly Asn Asp Val Ser Met
                645                 650                 655

Ile Gln Glu Ser Asp Cys Gly Val Gly Val Glu Gly Lys Glu Gly Lys
            660                 665                 670

Gln Ala Ser Leu Ala Ala Asp Phe Ser Ile Thr Gln Phe Lys His Leu
        675                 680                 685

Gly Arg Leu Leu Met Val His Gly Arg Asn Ser Tyr Lys Arg Ser Ala
    690                 695                 700
```

```
Ala Leu Ser Gln Phe Val Ile His Arg Ser Leu Cys Ile Ser Thr Met
705                 710                 715                 720

Gln Ala Val Phe Ser Ser Val Phe Tyr Phe Ala Ser Val Pro Leu Tyr
                725                 730                 735

Gln Gly Phe Leu Ile Ile Gly Tyr Ser Thr Ile Tyr Thr Met Phe Pro
            740                 745                 750

Val Phe Ser Leu Val Leu Asp Lys Asp Val Lys Ser Glu Val Ala Met
        755                 760                 765

Leu Tyr Pro Glu Leu Tyr Lys Asp Leu Leu Lys Gly Arg Pro Leu Ser
    770                 775                 780

Tyr Lys Thr Phe Leu Ile Trp Val Leu Ile Ser Ile Tyr Gln Gly Ser
785                 790                 795                 800

Thr Ile Met Tyr Gly Ala Leu Leu Leu Phe Glu Ser Glu Phe Val His
                805                 810                 815

Ile Val Ala Ile Ser Phe Thr Ser Leu Ile Leu Thr Glu Leu Leu Met
            820                 825                 830

Val Ala Leu Thr Ile Gln Thr Trp His Trp Leu Met Thr Val Ala Glu
        835                 840                 845

Leu Leu Ser Leu Ala Cys Tyr Ile Ala Ser Leu Val Phe Leu His Glu
    850                 855                 860

Phe Ile Asp Val Tyr Phe Ile Ala Thr Leu Ser Phe Leu Trp Lys Val
865                 870                 875                 880

Ser Val Ile Thr Leu Val Ser Cys Leu Pro Leu Tyr Val Leu Lys Tyr
                885                 890                 895

Leu Arg Arg Arg Phe Ser Pro Pro Ser Tyr Ser Lys Leu Thr Ser
            900                 905                 910
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<210> 7310
<211> 1047
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1552; "

<220>
<221> source
<223> /note="Gene Symbol: ATP9A; "

<220>
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<223> /note="Gene Name:
ATPase,
class II, type 9A; "

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<220>
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<400> 7310
Met Thr Asp Asn Ile Pro Leu Gln Pro Val Arg Gln Lys Lys Arg Met
1   5   10   15

Asp Ser Arg Pro Arg Ala Gly Cys Cys Glu Trp Leu Arg Cys Cys Gly
            20   25   30

Gly Gly Glu Ala Arg Pro Arg Thr Val Trp Leu Gly His Pro Glu Lys
        35   40   45

Arg Asp Gln Arg Tyr Pro Arg Asn Val Ile Asn Asn Gln Lys Tyr Asn
    50   55   60

Phe Phe Thr Phe Leu Pro Gly Val Leu Phe Asn Gln Phe Lys Tyr Phe
65   70   75   80

Phe Asn Leu Tyr Phe Leu Leu Leu Ala Cys Ser Gln Phe Val Pro Glu
                85   90   95

Met Arg Leu Gly Ala Leu Tyr Thr Tyr Trp Val Pro Leu Gly Phe Val
            100   105   110

Leu Ala Val Thr Val Ile Arg Glu Ala Val Glu Glu Ile Arg Cys Tyr
        115   120   125

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

```
Arg Gly Thr Val Lys Val Lys Ser Ser Asn Ile Gln Val Gly Asp Leu
145                 150                 155                 160

Ile Ile Val Glu Lys Asn Gln Arg Val Pro Ala Asp Met Ile Phe Leu
                165                 170                 175

Arg Thr Ser Glu Lys Asn Gly Ser Cys Phe Leu Arg Thr Asp Gln Leu
            180                 185                 190

Asp Gly Glu Thr Asp Trp Lys Leu Arg Leu Pro Val Ala Cys Thr Gln
        195                 200                 205

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

Ala Glu Glu Pro Asn Ile Asp Ile His Asn Phe Val Gly Thr Phe Thr
225                 230                 235                 240

Arg Glu Asp Ser Asp Pro Pro Ile Ser Glu Ser Leu Ser Ile Glu Asn
                245                 250                 255

Thr Leu Trp Ala Gly Thr Val Val Ala Ser Gly Thr Val Val Gly Val
            260                 265                 270

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

Pro Arg Ser Lys Ile Gly Leu Phe Asp Leu Glu Val Asn Cys Leu Thr
    290                 295                 300

Lys Ile Leu Phe Gly Ala Leu Val Val Val Ser Leu Val Met Val Ala
305                 310                 315                 320

Leu Gln His Phe Ala Gly Arg Trp Tyr Leu Gln Ile Ile Arg Phe Leu
                325                 330                 335

Leu Leu Phe Ser Asn Ile Ile Pro Ile Ser Leu Arg Val Asn Leu Asp
            340                 345                 350

Met Gly Lys Ile Val Tyr Ser Trp Val Ile Arg Arg Asp Ser Lys Ile
        355                 360                 365
```

```
Pro Gly Thr Val Val Arg Ser Ser Thr Ile Pro Glu Gln Leu Gly Arg
    370                 375                 380

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

Met Ile Phe Lys Arg Leu His Leu Gly Thr Val Ala Tyr Gly Leu Asp
                405                 410                 415

Ser Met Asp Glu Val Gln Ser His Ile Phe Ser Ile Tyr Thr Gln Gln
            420                 425                 430

Ser Gln Asp Pro Pro Ala Gln Lys Gly Pro Thr Leu Thr Thr Lys Val
        435                 440                 445

Arg Arg Thr Met Ser Ser Arg Val His Glu Ala Val Lys Ala Ile Ala
    450                 455                 460

Leu Cys His Asn Val Thr Pro Val Tyr Glu Ser Asn Gly Val Thr Asp
465                 470                 475                 480

Gln Ala Glu Ala Glu Lys Gln Tyr Glu Asp Ser Cys Arg Val Tyr Gln
                485                 490                 495

Ala Ser Ser Pro Asp Glu Val Ala Leu Val Gln Trp Thr Glu Ser Val
            500                 505                 510

Gly Leu Thr Leu Val Gly Arg Asp Gln Ser Ser Met Gln Leu Arg Thr
        515                 520                 525

Pro Gly Asp Gln Ile Leu Asn Phe Thr Ile Leu Gln Ile Phe Pro Phe
    530                 535                 540

Thr Tyr Glu Ser Lys Arg Met Gly Ile Ile Val Arg Asp Glu Ser Thr
545                 550                 555                 560

Gly Glu Ile Thr Phe Tyr Met Lys Gly Ala Asp Val Val Met Ala Gly
                565                 570                 575

Ile Val Gln Tyr Asn Asp Trp Leu Glu Glu Glu Cys Gly Asn Met Ala
            580                 585                 590
```

```
Arg Glu Gly Leu Arg Val Leu Val Val Ala Lys Lys Ser Leu Ala Glu
        595                 600                 605

Glu Gln Tyr Gln Asp Phe Glu Ala Arg Tyr Val Gln Ala Lys Leu Ser
    610                 615                 620

Val His Asp Arg Ser Leu Lys Val Ala Thr Val Ile Glu Ser Leu Glu
625                 630                 635                 640

Met Glu Met Glu Leu Leu Cys Leu Thr Gly Val Glu Asp Gln Leu Gln
                645                 650                 655

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

Val Trp Met Leu Thr Gly Asp Lys Leu Glu Thr Ala Thr Cys Thr Ala
        675                 680                 685

Lys Asn Ala His Leu Val Thr Arg Asn Gln Asp Ile His Val Phe Arg
    690                 695                 700

Leu Val Thr Asn Arg Gly Glu Ala His Leu Glu Leu Asn Ala Phe Arg
705                 710                 715                 720

Arg Lys His Asp Cys Ala Leu Val Ile Ser Gly Asp Ser Leu Glu Val
                725                 730                 735

Cys Leu Lys Tyr Tyr Glu Tyr Glu Phe Met Glu Leu Ala Cys Gln Cys
            740                 745                 750

Pro Ala Val Val Cys Cys Arg Cys Ala Pro Thr Gln Lys Ala Gln Ile
        755                 760                 765

Val Arg Leu Leu Gln Glu Arg Thr Gly Lys Leu Thr Cys Ala Val Gly
    770                 775                 780

Asp Gly Gly Asn Asp Val Ser Met Ile Gln Glu Ser Asp Cys Gly Val
785                 790                 795                 800

Gly Val Glu Gly Lys Glu Gly Lys Gln Ala Ser Leu Ala Ala Asp Phe
                805                 810                 815

Ser Ile Thr Gln Phe Lys His Leu Gly Arg Leu Leu Met Val His Gly
```

820 825 830

Arg Asn Ser Tyr Lys Arg Ser Ala Ala Leu Ser Gln Phe Val Ile His
835 840 845

Arg Ser Leu Cys Ile Ser Thr Met Gln Ala Val Phe Ser Ser Val Phe
850 855 860

Tyr Phe Ala Ser Val Pro Leu Tyr Gln Gly Phe Leu Ile Ile Gly Tyr
865 870 875 880

Ser Thr Ile Tyr Thr Met Phe Pro Val Phe Ser Leu Val Leu Asp Lys
885 890 895

Asp Val Lys Ser Glu Val Ala Met Leu Tyr Pro Glu Leu Tyr Lys Asp
900 905 910

Leu Leu Lys Gly Arg Pro Leu Ser Tyr Lys Thr Phe Leu Ile Trp Val
915 920 925

Leu Ile Ser Ile Tyr Gln Gly Ser Thr Ile Met Tyr Gly Ala Leu Leu
930 935 940

Leu Phe Glu Ser Glu Phe Val His Ile Val Ala Ile Ser Phe Thr Ser
945 950 955 960

Leu Ile Leu Thr Glu Leu Leu Met Val Ala Leu Thr Ile Gln Thr Trp
965 970 975

His Trp Leu Met Thr Val Ala Glu Leu Leu Ser Leu Ala Cys Tyr Ile
980 985 990

Ala Ser Leu Val Phe Leu His Glu Phe Ile Asp Val Tyr Phe Ile
Ala
995 1000 1005

Thr Leu Ser Phe Leu Trp Lys Val Ser Val Ile Thr Leu Val Ser
1010 1015 1020

Cys Leu Pro Leu Tyr Val Leu Lys Tyr Leu Arg Arg Arg Phe Ser
1025 1030 1035

Pro Pro Ser Tyr Ser Lys Leu Thr Ser

1040 1045

<210> 7311
<211> 1136
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP9B; "

<220>
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<223> /note="Gene Name:
ATPase,
class II, type 9B; "

<220>
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<223> /note="Uniprot ID: O43861; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000304500"

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Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

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

His Leu Asp Glu Met Pro Leu Met Met Ser Glu Glu Gly Phe Glu Asn
50 55 60

Glu Glu Ser Asp Tyr His Thr Leu Pro Arg Ala Arg Ile Met Gln Arg
65 70 75 80

Lys Arg Gly Leu Glu Trp Phe Val Cys Asp Gly Trp Lys Phe Leu Cys
85 90 95

Thr Ser Cys Cys Gly Trp Leu Ile Asn Ile Cys Arg Arg Lys Lys Glu
100 105 110

```
Leu Lys Ala Arg Thr Val Trp Leu Gly Cys Pro Glu Lys Cys Glu Glu
        115                 120                 125

Lys His Pro Arg Asn Ser Ile Lys Asn Gln Lys Tyr Asn Val Phe Thr
    130                 135                 140

Phe Ile Pro Gly Val Leu Tyr Glu Gln Phe Lys Phe Phe Leu Asn Leu
145                 150                 155                 160

Tyr Phe Leu Val Ile Ser Cys Ser Gln Phe Val Pro Ala Leu Lys Ile
                165                 170                 175

Gly Tyr Leu Tyr Thr Tyr Trp Ala Pro Leu Gly Phe Val Leu Ala Val
            180                 185                 190

Thr Met Thr Arg Glu Ala Ile Asp Glu Phe Arg Arg Phe Gln Arg Asp
        195                 200                 205

Lys Glu Val Asn Ser Gln Leu Tyr Ser Lys Leu Thr Val Arg Gly Lys
    210                 215                 220

Val Gln Val Lys Ser Ser Asp Ile Gln Val Gly Asp Leu Ile Ile Val
225                 230                 235                 240

Glu Lys Asn Gln Arg Ile Pro Ser Asp Met Val Phe Leu Arg Thr Ser
                245                 250                 255

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

Thr Asp Trp Lys Leu Lys Val Ala Val Ser Cys Thr Gln Gln Leu Pro
        275                 280                 285

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

Pro Gln Met Asp Ile His Ser Phe Glu Gly Thr Phe Thr Arg Glu Asp
305                 310                 315                 320

Ser Asp Pro Pro Ile His Glu Ser Leu Ser Ile Glu Asn Thr Leu Trp
                325                 330                 335
```

```
Ala Ser Thr Ile Val Ala Ser Gly Thr Val Ile Gly Val Val Ile Tyr
            340                 345                 350

Thr Gly Lys Glu Thr Arg Ser Val Met Asn Thr Ser Asn Pro Lys Asn
        355                 360                 365

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

Phe Leu Ala Leu Val Ala Leu Ser Ile Val Met Val Thr Leu Gln Gly
385                 390                 395                 400

Phe Val Gly Pro Trp Tyr Arg Asn Leu Phe Arg Phe Leu Leu Leu Phe
                405                 410                 415

Ser Tyr Ile Ile Pro Ile Ser Leu Arg Val Asn Leu Asp Met Gly Lys
            420                 425                 430

Ala Val Tyr Gly Trp Met Met Met Lys Asp Glu Asn Ile Pro Gly Thr
        435                 440                 445

Val Val Arg Thr Ser Thr Ile Pro Glu Glu Leu Gly Arg Leu Val Tyr
    450                 455                 460

Leu Leu Thr Asp Lys Thr Gly Thr Leu Thr Gln Asn Glu Met Ile Phe
465                 470                 475                 480

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

Glu Ile Gln Ser His Val Arg Asp Ser Tyr Ser Gln Met Gln Ser Gln
            500                 505                 510

Ala Gly Gly Asn Asn Thr Gly Ser Thr Pro Leu Arg Lys Ala Gln Ser
        515                 520                 525

Ser Ala Pro Lys Val Arg Lys Ser Val Ser Ser Arg Ile His Glu Ala
    530                 535                 540

Val Lys Ala Ile Val Leu Cys His Asn Val Thr Pro Val Tyr Glu Ser
545                 550                 555                 560
```

```
Arg Ala Gly Val Thr Glu Glu Thr Glu Phe Ala Glu Ala Asp Gln Asp
                565                 570                 575

Phe Ser Asp Glu Asn Arg Thr Tyr Gln Ala Ser Ser Pro Asp Glu Val
            580                 585                 590

Ala Leu Val Gln Trp Thr Glu Ser Val Gly Leu Thr Leu Val Ser Arg
        595                 600                 605

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

Phe Cys Ile Leu Gln Leu Phe Pro Phe Thr Ser Glu Ser Lys Arg Met
625                 630                 635                 640

Gly Val Ile Val Arg Asp Glu Ser Thr Ala Glu Ile Thr Phe Tyr Met
                645                 650                 655

Lys Gly Ala Asp Val Ala Met Ser Pro Ile Val Gln Tyr Asn Asp Trp
            660                 665                 670

Leu Glu Glu Glu Cys Gly Asn Met Ala Arg Glu Gly Leu Arg Thr Leu
        675                 680                 685

Val Val Ala Lys Lys Ala Leu Thr Glu Glu Gln Tyr Gln Asp Phe Glu
    690                 695                 700

Ser Arg Tyr Thr Gln Ala Lys Leu Ser Met His Asp Arg Ser Leu Lys
705                 710                 715                 720

Val Ala Ala Val Val Glu Ser Leu Glu Arg Glu Met Glu Leu Leu Cys
                725                 730                 735

Leu Thr Gly Val Glu Asp Gln Leu Gln Ala Asp Val Arg Pro Thr Leu
            740                 745                 750

Glu Met Leu Arg Asn Ala Gly Ile Lys Ile Trp Met Leu Thr Gly Asp
        755                 760                 765

Lys Leu Glu Thr Ala Thr Cys Ile Ala Lys Ser Ser His Leu Val Ser
    770                 775                 780

Arg Thr Gln Asp Ile His Ile Phe Arg Gln Val Thr Ser Arg Gly Glu
```

785 790 795 800

Ala His Leu Glu Leu Asn Ala Phe Arg Arg Lys His Asp Cys Ala Leu
805 810 815

Val Ile Ser Gly Asp Ser Leu Glu Val Cys Leu Lys Tyr Tyr Glu His
820 825 830

Glu Phe Val Glu Leu Ala Cys Gln Cys Pro Ala Val Val Cys Cys Arg
835 840 845

Cys Ser Pro Thr Gln Lys Ala Arg Ile Val Thr Leu Leu Gln Gln His
850 855 860

Thr Gly Arg Arg Thr Cys Ala Ile Gly Asp Gly Gly Asn Asp Val Ser
865 870 875 880

Met Ile Gln Ala Ala Asp Cys Gly Ile Gly Ile Glu Gly Lys Glu Gly
885 890 895

Lys Gln Ala Ser Leu Ala Ala Asp Phe Ser Ile Thr Gln Phe Arg His
900 905 910

Ile Gly Arg Leu Leu Met Val His Gly Arg Asn Ser Tyr Lys Arg Ser
915 920 925

Ala Ala Leu Gly Gln Phe Val Met His Arg Gly Leu Ile Ile Ser Thr
930 935 940

Met Gln Ala Val Phe Ser Ser Val Phe Tyr Phe Ala Ser Val Pro Leu
945 950 955 960

Tyr Gln Gly Phe Leu Met Val Gly Tyr Ala Thr Ile Tyr Thr Met Phe
965 970 975

Pro Val Phe Ser Leu Val Leu Asp Gln Asp Val Lys Pro Glu Met Ala
980 985 990

Met Leu Tyr Pro Glu Leu Tyr Lys Asp Leu Thr Lys Gly Arg Ser
Leu
995 1000 1005

Ser Phe Lys Thr Phe Leu Ile Trp Val Leu Ile Ser Ile Tyr Gln

```
    1010                1015                1020

Gly Gly  Ile Leu Met Tyr Gly  Ala Leu Val Leu Phe  Glu Ser Glu
    1025                1030                1035

Phe Val  His Val Val Ala Ile  Ser Phe Thr Ala Leu  Ile Leu Thr
    1040                1045                1050

Glu Leu  Leu Met Val Ala Leu  Thr Val Arg Thr Trp  His Trp Leu
    1055                1060                1065

Met Val  Val Ala Glu Phe Leu  Ser Leu Gly Cys Tyr  Val Ser Ser
    1070                1075                1080

Leu Ala  Phe Leu Asn Glu Tyr  Phe Asp Val Ala Phe  Ile Thr Thr
    1085                1090                1095

Val Thr  Phe Leu Trp Lys Val  Ser Ala Ile Thr Val  Val Ser Cys
    1100                1105                1110

Leu Pro  Leu Tyr Val Leu Lys  Tyr Leu Arg Arg Lys  Leu Ser Pro
    1115                1120                1125

Pro Ser  Tyr Cys Lys Leu Ala  Ser
    1130                1135


<210> 7312
<211> 1147
<212> PRT
<213> Homo sapiens

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<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "

<220>
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<223> /note="Gene Name:
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      class II, type 9B; "

<220>
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<223> /note="Uniprot ID:  O43861; "
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<220>
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Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

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

His Leu Asp Glu Met Pro Leu Met Met Ser Glu Glu Gly Phe Glu Asn
50 55 60

Glu Glu Ser Asp Tyr His Thr Leu Pro Arg Ala Arg Ile Met Gln Arg
65 70 75 80

Lys Arg Gly Leu Glu Trp Phe Val Cys Asp Gly Trp Lys Phe Leu Cys
85 90 95

Thr Ser Cys Cys Gly Trp Leu Ile Asn Ile Cys Arg Arg Lys Lys Glu
100 105 110

Leu Lys Ala Arg Thr Val Trp Leu Gly Cys Pro Glu Lys Cys Glu Glu
115 120 125

Lys His Pro Arg Asn Ser Ile Lys Asn Gln Lys Tyr Asn Val Phe Thr
130 135 140

Phe Ile Pro Gly Val Leu Tyr Glu Gln Phe Lys Phe Phe Leu Asn Leu
145 150 155 160

Tyr Phe Leu Val Ile Ser Cys Ser Gln Phe Val Pro Ala Leu Lys Ile
165 170 175

Gly Tyr Leu Tyr Thr Tyr Trp Ala Pro Leu Gly Phe Val Leu Ala Val
180 185 190

Thr Met Thr Arg Glu Ala Ile Asp Glu Phe Arg Arg Phe Gln Arg Asp
195 200 205

```
Lys Glu Val Asn Ser Gln Leu Tyr Ser Lys Leu Thr Val Arg Gly Lys
    210                 215                 220

Val Gln Val Lys Ser Ser Asp Ile Gln Val Gly Asp Leu Ile Ile Val
225                 230                 235                 240

Glu Lys Asn Gln Arg Ile Pro Ser Asp Met Val Phe Leu Arg Thr Ser
                245                 250                 255

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

Thr Asp Trp Lys Leu Lys Val Ala Val Ser Cys Thr Gln Gln Leu Pro
        275                 280                 285

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

Pro Gln Met Asp Ile His Ser Phe Glu Gly Thr Phe Thr Arg Glu Asp
305                 310                 315                 320

Ser Asp Pro Pro Ile His Glu Ser Leu Ser Ile Glu Asn Thr Leu Trp
                325                 330                 335

Ala Ser Thr Ile Val Ala Ser Gly Thr Val Ile Gly Val Val Ile Tyr
            340                 345                 350

Thr Gly Lys Glu Thr Arg Ser Val Met Asn Thr Ser Asn Pro Lys Asn
        355                 360                 365

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

Phe Leu Ala Leu Val Ala Leu Ser Ile Val Met Val Thr Leu Gln Gly
385                 390                 395                 400

Phe Val Gly Pro Trp Tyr Arg Asn Leu Phe Arg Phe Leu Leu Leu Phe
                405                 410                 415

Ser Tyr Ile Ile Pro Ile Ser Leu Arg Val Asn Leu Asp Met Gly Lys
            420                 425                 430
```

```
Ala Val Tyr Gly Trp Met Met Met Lys Asp Glu Asn Ile Pro Gly Thr
        435                 440                 445

Val Val Arg Thr Ser Thr Ile Pro Glu Glu Leu Gly Arg Leu Val Tyr
    450                 455                 460

Leu Leu Thr Asp Lys Thr Gly Thr Leu Thr Gln Asn Glu Met Ile Phe
465                 470                 475                 480

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

Glu Ile Gln Ser His Val Arg Asp Ser Tyr Ser Gln Met Gln Ser Gln
            500                 505                 510

Ala Gly Gly Asn Asn Thr Gly Ser Thr Pro Leu Arg Lys Ala Gln Ser
        515                 520                 525

Ser Ala Pro Lys Val Arg Lys Ser Val Ser Ser Arg Ile His Glu Ala
    530                 535                 540

Val Lys Ala Ile Val Leu Cys His Asn Val Thr Pro Val Tyr Glu Ser
545                 550                 555                 560

Arg Ala Gly Val Thr Glu Glu Thr Glu Phe Ala Glu Ala Asp Gln Asp
                565                 570                 575

Phe Ser Asp Glu Asn Arg Thr Tyr Gln Ala Ser Ser Pro Asp Glu Val
            580                 585                 590

Ala Leu Val Gln Trp Thr Glu Ser Val Gly Leu Thr Leu Val Ser Arg
        595                 600                 605

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

Phe Cys Ile Leu Gln Leu Phe Pro Phe Thr Ser Glu Ser Lys Arg Met
625                 630                 635                 640

Gly Val Ile Val Arg Asp Glu Ser Thr Ala Glu Ile Thr Phe Tyr Met
                645                 650                 655

Lys Gly Ala Asp Val Ala Met Ser Pro Ile Val Gln Tyr Asn Asp Trp
```

660 665 670

Leu Glu Glu Glu Cys Gly Asn Met Ala Arg Glu Gly Leu Arg Thr Leu
675 680 685

Val Val Ala Lys Lys Ala Leu Thr Glu Glu Gln Tyr Gln Asp Phe Glu
690 695 700

Ser Arg Tyr Thr Gln Ala Lys Leu Ser Met His Asp Arg Ser Leu Lys
705 710 715 720

Val Ala Ala Val Val Glu Ser Leu Glu Arg Glu Met Glu Leu Leu Cys
725 730 735

Leu Thr Gly Val Glu Asp Gln Leu Gln Ala Asp Val Arg Pro Thr Leu
740 745 750

Glu Met Leu Arg Asn Ala Gly Ile Lys Ile Trp Met Leu Thr Gly Asp
755 760 765

Lys Leu Glu Thr Ala Thr Cys Ile Ala Lys Ser Ser His Leu Val Ser
770 775 780

Arg Thr Gln Asp Ile His Ile Phe Arg Gln Val Thr Ser Arg Gly Glu
785 790 795 800

Ala His Leu Glu Leu Asn Ala Phe Arg Arg Lys His Asp Cys Ala Leu
805 810 815

Val Ile Ser Gly Asp Ser Leu Glu Val Cys Leu Lys Tyr Tyr Glu His
820 825 830

Glu Phe Val Glu Leu Ala Cys Gln Cys Pro Ala Val Val Cys Cys Arg
835 840 845

Cys Ser Pro Thr Gln Lys Ala Arg Ile Val Thr Leu Leu Gln Gln His
850 855 860

Thr Gly Arg Arg Thr Cys Ala Ile Gly Asp Gly Gly Asn Asp Val Ser
865 870 875 880

Met Ile Gln Ala Ala Asp Cys Gly Ile Gly Ile Glu Gly Lys Glu Gly
885 890 895

```
Lys Gln Ala Ser Leu Ala Ala Asp Phe Ser Ile Thr Gln Phe Arg His
            900                 905                 910

Ile Gly Arg Leu Leu Met Val His Gly Arg Asn Ser Tyr Lys Arg Ser
        915                 920                 925

Ala Ala Leu Gly Gln Phe Val Met His Arg Gly Leu Ile Ile Ser Thr
    930                 935                 940

Met Gln Ala Val Phe Ser Ser Val Phe Tyr Phe Ala Ser Val Pro Leu
945                 950                 955                 960

Tyr Gln Gly Phe Leu Met Val Gly Tyr Ala Thr Ile Tyr Thr Met Phe
                965                 970                 975

Pro Val Phe Ser Leu Val Leu Asp Gln Asp Val Lys Pro Glu Met Ala
            980                 985                 990

Met Leu Tyr Pro Glu Leu Tyr Lys  Asp Leu Thr Lys Gly  Arg Ser
Leu
        995                 1000                1005

Ser Phe  Lys Thr Phe Leu Ile  Trp Val Leu Ile Ser  Ile Tyr Gln
    1010                1015                1020

Gly Gly  Ile Leu Met Tyr Gly  Ala Leu Val Leu Phe  Glu Ser Glu
    1025                1030                1035

Phe Val  His Val Val Ala Ile  Ser Phe Thr Ala Leu  Ile Leu Thr
    1040                1045                1050

Glu Leu  Leu Met Val Ala Leu  Thr Val Arg Thr Trp  His Trp Leu
    1055                1060                1065

Met Val  Val Ala Glu Phe Leu  Ser Leu Gly Cys Tyr  Val Ser Ser
    1070                1075                1080

Leu Ala  Phe Leu Asn Glu Tyr  Phe Gly Ile Gly Arg  Val Ser Phe
    1085                1090                1095

Gly Ala  Phe Leu Asp Val Ala  Phe Ile Thr Thr Val  Thr Phe Leu
    1100                1105                1110
```

```
Trp Lys  Val Ser Ala Ile Thr  Val Val Ser Cys Leu  Pro Leu Tyr
    1115                 1120                 1125


Val Leu  Lys Tyr Leu Arg Arg  Lys Leu Ser Pro Pro  Ser Tyr Cys
    1130                 1135                 1140


Lys Leu  Ala Ser
    1145


<210> 7313
<211> 471
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "

<220>
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<223> /note="Gene Name:
      ATPase,
      class II, type 9B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442794"

<400> 7313
Met Pro Leu Met Met Ser Glu Glu Gly Phe Glu Asn Glu Glu Ser Asp
1               5                  10                  15


Tyr His Thr Leu Pro Arg Ala Arg Ile Met Gln Arg Lys Arg Gly Leu
            20                  25                  30


Glu Trp Phe Val Cys Asp Gly Trp Lys Phe Leu Cys Thr Ser Cys Cys
        35                  40                  45


Gly Trp Leu Ile Asn Ile Cys Arg Arg Lys Lys Glu Leu Lys Ala Arg
    50                  55                  60


Thr Val Trp Leu Gly Cys Pro Glu Lys Cys Glu Glu Lys His Pro Arg
65                  70                  75                  80
```

```
Asn Ser Ile Lys Asn Gln Lys Tyr Asn Val Phe Thr Phe Ile Pro Gly
                85                  90                  95

Val Leu Tyr Glu Gln Phe Lys Phe Phe Leu Asn Leu Tyr Phe Leu Val
            100                 105                 110

Ile Ser Cys Ser Gln Phe Val Pro Ala Leu Lys Ile Gly Tyr Leu Tyr
        115                 120                 125

Thr Tyr Trp Ala Pro Leu Gly Phe Val Leu Ala Val Thr Met Thr Arg
    130                 135                 140

Glu Ala Ile Asp Glu Phe Arg Arg Phe Gln Arg Asp Lys Glu Val Asn
145                 150                 155                 160

Ser Gln Leu Tyr Ser Lys Leu Thr Val Arg Gly Lys Val Gln Val Lys
                165                 170                 175

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

Arg Ile Pro Ser Asp Met Val Phe Leu Arg Thr Ser Glu Lys Ala Gly
        195                 200                 205

Ser Cys Phe Ile Arg Thr Asp Gln Leu Asp Gly Glu Thr Asp Trp Lys
    210                 215                 220

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

Leu Phe Ser Ile Ser Ala Tyr Val Tyr Ala Gln Lys Pro Gln Met Asp
                245                 250                 255

Ile His Ser Phe Glu Gly Thr Phe Thr Arg Glu Asp Ser Asp Pro Pro
            260                 265                 270

Ile His Glu Ser Leu Ser Ile Glu Asn Thr Leu Trp Ala Ser Thr Ile
        275                 280                 285

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

```
Thr Arg Ser Val Met Asn Thr Ser Asn Pro Lys Asn Lys Val Gly Leu
305                 310                 315                 320

Leu Asp Leu Glu Leu Asn Arg Leu Thr Lys Ala Leu Phe Leu Ala Leu
                325                 330                 335

Val Ala Leu Ser Ile Val Met Val Thr Leu Gln Gly Phe Val Gly Pro
            340                 345                 350

Trp Tyr Arg Asn Leu Phe Arg Phe Leu Leu Leu Phe Ser Tyr Ile Ile
        355                 360                 365

Pro Ile Ser Leu Arg Val Asn Leu Asp Met Gly Lys Ala Val Tyr Gly
    370                 375                 380

Trp Met Met Met Lys Asp Glu Asn Ile Pro Gly Thr Val Val Arg Thr
385                 390                 395                 400

Ser Thr Ile Pro Glu Glu Leu Gly Arg Leu Val Tyr Leu Leu Thr Asp
                405                 410                 415

Lys Thr Gly Ala Ser Pro Leu Leu Phe Phe Leu Phe Leu Tyr Cys Gln
            420                 425                 430

Asn Cys Ile Ser Ile Leu Lys Gln Leu Glu Phe Leu Leu Lys Met Ser
        435                 440                 445

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

Leu Arg Ile Arg Leu Lys Val
465                 470


<210> 7314
<211> 145
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1553; "

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<221> source
<223> /note="Gene Symbol: ATP9B; "
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<220>
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<223> /note="Gene Name:
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class II, type 9B; "

<220>
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<223> /note="ENSP ID: ENSP00000464761"

<400> 7314
Cys His Asn Val Thr Pro Val Tyr Glu Ser Arg Ala Gly Val Thr Glu
1 5 10 15

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

Thr Tyr Gln Ala Ser Ser Pro Asp Glu Val Ala Leu Val Gln Trp Thr
35 40 45

Glu Ser Val Gly Leu Thr Leu Val Ser Arg Asp Leu Thr Ser Met Gln
50 55 60

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

Phe Pro Phe Thr Ser Glu Ser Lys Arg Met Gly Val Ile Val Arg Asp
85 90 95

Glu Ser Thr Ala Glu Ile Thr Phe Tyr Met Lys Gly Ala Asp Val Ala
100 105 110

Met Ser Pro Ile Val Gln Tyr Asn Asp Trp Leu Glu Glu Glu Arg Ser
115 120 125

Leu Phe Gln Phe Leu Asn Arg Arg Arg Glu Glu Thr Gln Leu Leu Asp
130 135 140

Ala
145

<210> 7315
<211> 100
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="Payload ID: 1553; "

<220>
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class II, type 9B; "

<220>
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<400> 7315
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

Pro Gly Ala Asp Arg His Ser Arg Asn Glu His Pro Ala Pro Leu Cys
35 40 45

Met Tyr Pro Thr Met Thr Ala Arg Leu Gly Trp Met Ser Pro Leu Leu
50 55 60

Thr Trp Ser Ala Leu Thr Pro Pro Gly Gln Trp Gly Glu Cys Leu Pro
65 70 75 80

Thr Ala Gly Ala Cys Gly Ser Pro Gly Phe Thr His Ser Leu Leu Phe
85 90 95

Asn Val Gly Thr
100

<210> 7316
<211> 140
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1553; "

<220>
<221> source

<223> /note="Gene Symbol: ATP9B; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000465269"

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

<400> 7316
Xaa Ile Ile Ser Thr Met Gln Ala Val Phe Ser Ser Val Phe Tyr Phe
1 5 10 15

Ala Ser Val Pro Leu Tyr Gln Gly Phe Leu Met Val Gly Tyr Ala Thr
20 25 30

Ile Tyr Thr Met Phe Pro Val Phe Ser Leu Val Leu Asp Gln Asp Val
35 40 45

Lys Pro Glu Met Ala Met Leu Tyr Pro Glu Leu Tyr Lys Asp Leu Thr
50 55 60

Lys Ser Gln Gln Asp Gly Arg Ser Asn Arg Arg Gln His Glu Arg Leu
65 70 75 80

Thr Ser Gly Thr Ser Gly His Val Trp Asp Pro Gly Ser Phe Phe Arg
85 90 95

Ile Arg Val Ser Gly Lys Gly Ala Arg Asn Ala Gly Lys Ile Leu Val
100 105 110

Leu Gln Asn Leu Pro His Leu Gly Phe Asn Lys Tyr Leu Pro Arg Arg
115 120 125

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

<210> 7317
<211> 18

<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "

<220>
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<223> /note="Gene Name:
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class II, type 9B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465300"

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

<400> 7317
Xaa Asn Thr Leu Trp Ala Ser Thr Ile Val Ala Ser Gly Trp Phe Val
1 5 10 15

Gly Pro

<210> 7318
<211> 80
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP9B; "

<220>
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<223> /note="Gene Name:
ATPase,
class II, type 9B; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000465928"

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

<400> 7318
Xaa Cys Gly Asn Met Ala Arg Glu Gly Leu Arg Thr Leu Val Val Ala
1 5 10 15

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

Gly Gly Arg Gly Ser Arg Glu Pro Gly Glu Gly Asp Gly Thr Ala Val
35 40 45

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

Gly Asp Ala Ala Gln Arg Arg Asp Gln Asp Met Asp Ala Asn Arg Arg
65 70 75 80

<210> 7319
<211> 188
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "

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<223> /note="Gene Name:
ATPase,
class II, type 9B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466992"

<400> 7319
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

```
Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
            20                  25                  30

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

His Leu Asp Glu Met Pro Leu Met Met Ser Glu Glu Gly Phe Glu Asn
    50                  55                  60

Glu Glu Ser Asp Tyr His Thr Leu Pro Arg Ala Arg Ile Met Gln Arg
65                  70                  75                  80

Lys Arg Gly Leu Glu Trp Phe Val Cys Asp Gly Trp Lys Phe Leu Cys
                85                  90                  95

Thr Ser Cys Cys Gly Trp Leu Ile Asn Ile Cys Arg Arg Lys Lys Glu
            100                 105                 110

Leu Lys Ala Arg Thr Val Trp Leu Gly Cys Pro Glu Lys Cys Glu Glu
        115                 120                 125

Lys His Pro Arg Asn Ser Ile Lys Asn Gln Lys Tyr Asn Val Phe Thr
    130                 135                 140

Phe Ile Pro Gly Val Leu Tyr Glu Gln Phe Lys Phe Phe Leu Asn Leu
145                 150                 155                 160

Tyr Phe Leu Val Ile Ser Cys Ser Gln Phe Val Pro Ala Leu Lys Ile
                165                 170                 175

Gly Tyr Leu Tyr Thr Tyr Trp Ala Pro Leu Met Thr
            180                 185


<210> 7320
<211> 289
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1553; "

<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000467386"

<400> 7320
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

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

His Leu Asp Glu Met Pro Leu Met Met Ser Glu Glu Gly Phe Glu Asn
50 55 60

Glu Glu Ser Asp Tyr His Thr Leu Pro Arg Ala Arg Ile Met Gln Arg
65 70 75 80

Lys Arg Gly Leu Glu Trp Phe Val Cys Asp Gly Trp Lys Phe Leu Cys
85 90 95

Thr Ser Cys Cys Gly Trp Leu Ile Asn Ile Cys Arg Arg Lys Lys Glu
100 105 110

Leu Lys Ala Arg Thr Val Trp Leu Gly Cys Pro Glu Lys Cys Glu Glu
115 120 125

Lys His Pro Arg Asn Ser Ile Lys Asn Gln Lys Tyr Asn Val Phe Thr
130 135 140

Phe Ile Pro Gly Val Leu Tyr Glu Gln Phe Lys Phe Phe Leu Asn Leu
145 150 155 160

Tyr Phe Leu Val Ile Ser Cys Ser Gln Phe Val Pro Ala Leu Lys Ile
165 170 175

Gly Tyr Leu Tyr Thr Tyr Trp Ala Pro Leu Gly Phe Val Leu Ala Val
180 185 190

```
Thr Met Thr Arg Glu Ala Ile Asp Glu Phe Arg Arg Phe Gln Arg Asp
        195                 200                 205

Lys Glu Val Asn Ser Gln Leu Tyr Ser Lys Leu Thr Val Arg Gly Lys
    210                 215                 220

Val Gln Val Lys Ser Ser Asp Ile Gln Val Gly Asp Leu Ile Ile Val
225                 230                 235                 240

Glu Lys Asn Gln Arg Ile Pro Ser Asp Met Val Phe Leu Arg Thr Ser
                245                 250                 255

Glu Lys Ala Gly Pro Phe Phe Tyr Gln Cys Leu Cys Leu Cys Ser Glu
            260                 265                 270

Thr Thr Asn Gly His Ser Gln Phe Arg Arg His Ile Tyr Gln Gly Arg
        275                 280                 285

Gln
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<210> 7321
<211> 37
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1553; "

<220>
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<223> /note="Gene Symbol: ATP9B; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000467657"

<220>
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<222> (1)..(1)

<223> Any amino acid

<400> 7321
Xaa Leu Asp Gln Asp Val Lys Pro Glu Met Ala Met Leu Tyr Pro Glu
1 5 10 15

Leu Tyr Lys Asp Leu Thr Lys Phe Ala Lys Val Ala Gln Thr Ala Ala
20 25 30

Leu Cys Val Val Val
35

<210> 7322
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1553; "

<220>
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<223> /note="Gene Symbol: ATP9B; "

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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000467935"

<400> 7322
Leu Val Ile Ser Gly Asp Ser Leu Glu Val Cys Leu Lys Tyr Tyr Glu
1 5 10 15

His Glu Phe Val Glu Leu Ala Cys Gln Cys Pro Ala Val Val Cys Cys
20 25 30

Arg Cys Ser Pro Thr Gln Lys Ala Arg Ile Val Thr Leu Leu Gln Gln
35 40 45

His Thr Gly Arg Arg Thr Cys Ala Ile Gly Asp Gly Gly Asn Asp Val
50 55 60

Ser Met Ile Gln Ala Ala Asp Cys Gly Ile Gly Ile Glu Gly Lys Glu
65 70 75 80

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

His Ile Gly Arg Leu Leu Met Val His Gly Arg Asn Ser Tyr Lys Arg
            100                 105                 110

Ser Ala Ala Leu Gly Gln Phe Val Met His Arg Gly Leu Ile Ile Ser
        115                 120                 125

Thr Met Gln Val Cys His His Ile His His Val Pro Ser Val Leu Leu
    130                 135                 140

Ser Ala Gly Pro Gly Arg Glu Ala Arg Asp Gly Asp Ala Leu Pro Gly
145                 150                 155                 160

Ala Val Gln Gly Pro His Gln Gly Lys Ile Leu Val Leu Gln Asn Leu
                165                 170                 175

Pro His Leu Gly Phe Asn Lys Tyr Leu Pro Arg Arg His Pro His Val
            180                 185                 190

Trp Gly Pro Gly Ala Leu Arg Val
        195                 200


<210> 7323
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1553; "

<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
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<220>
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<223> /note="ENSP ID: ENSP00000468218"
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<400> 7323
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

Pro Gly Ala Asp Arg His Ser Ser Cys Cys Gly Trp Leu Ile Asn Ile
35 40 45

Cys Arg Arg Lys Lys Glu Leu Lys Ala Arg Thr Val Trp Leu Gly Cys
50 55 60

Pro Glu Lys Cys Glu Glu Lys His Pro Arg Asn Ser Ile Lys Asn Gln
65 70 75 80

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

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

Val Pro Ala Leu Lys Ile Gly Tyr Leu Tyr Thr Tyr Trp Ala Pro Leu
115 120 125

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

Arg Arg Phe Gln Arg Asp Lys Glu Val Asn Ser Gln Leu Tyr Ser Lys
145 150 155 160

Leu Thr Val Arg Gly Lys Val Gln Val Lys Ser Ser Asp Ile Gln Val
165 170 175

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

<210> 7324
<211> 140
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1553; "

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<220>
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<220>
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<400> 7324
Phe Ser Asp Glu Asn Arg Thr Tyr Gln Ala Ser Ser Pro Asp Glu Val
1 5 10 15

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

Asp Leu Thr Ser Met Gln Leu Lys Thr Pro Ser Gly Gln Val Leu Ser
35 40 45

Phe Cys Ile Leu Gln Leu Phe Pro Phe Thr Ser Glu Ser Lys Arg Met
50 55 60

Gly Val Ile Val Arg Asp Glu Ser Thr Ala Glu Ile Thr Phe Tyr Met
65 70 75 80

Lys Gly Ala Asp Val Ala Met Ser Pro Ile Val Gln Tyr Asn Asp Trp
85 90 95

Leu Glu Glu Glu Glu Thr Gly Arg Asp Thr Ala Val Gly Cys Ile Lys
100 105 110

Lys Gly Ala Arg Pro Thr Pro Leu Leu Gln Pro Phe Leu Pro Ser Leu
115 120 125

Gln Pro Pro Val Gln Arg Gln Ile Gln Ser Thr Gly
130 135 140

<210> 7325
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000482146"

<400> 7325
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

Pro Gly Ala Asp Arg His Ser
35

<210> 7326
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1553; "

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<220>
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<223> /note="ENSP ID: ENSP00000487938"

<400> 7326
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
            20   25   30

Pro Gly Ala Asp Arg His Ser
        35

<210> 7327
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000488288"

<400> 7327
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1   5   10   15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
            20   25   30

Pro Gly Ala Asp Arg His Ser
        35

<210> 7328
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1553; "

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<223> /note="Gene Symbol: ATP9B; "

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<220>
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<223> /note="ENSP ID: ENSP00000488597"

<400> 7328
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

Pro Gly Ala Asp Arg His Ser
35

<210> 7329
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 7329
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

Pro Gly Ala Asp Arg His Ser
        35

<210> 7330
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<221> source
<223> /note="Gene Symbol: ATP9B; "

<220>
<221> source
<223> /note="Gene Name:
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      class II, type 9B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488793"

<400> 7330
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1   5   10   15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
            20   25   30

Pro Gly Ala Asp Arg His Ser Arg Asn Glu His Pro Ala Pro Leu Cys
        35   40   45

Met Tyr Pro Thr Met Thr Ala Arg Leu Gly Trp Met Ser Pro Leu Leu
    50   55   60

Thr Trp Ser Ala Leu Thr Pro Pro Gly Gln Trp Gly Glu Cys Leu Pro
65   70   75   80

Thr Ala Gly Ala Cys Gly Ser Pro Gly Phe Thr His Ser Leu Leu Phe
                85   90   95

Asn Val

<210> 7331

<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1553; "

<220>
<221> source
<223> /note="Gene Symbol: ATP9B; "

<220>
<221> source
<223> /note="Gene Name:
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class II, type 9B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488805"

<400> 7331
Met Ala Asp Gln Ile Pro Leu Tyr Pro Val Arg Ser Ala Ala Ala Ala
1 5 10 15

Ala Ala Asn Arg Lys Arg Ala Ala Tyr Tyr Ser Ala Ala Gly Pro Arg
20 25 30

Pro Gly Ala Asp Arg His Ser
35

<210> 7332
<211> 1499
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ATP10A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class V, type 10A; "

<220>
<221> source
<223> /note="Uniprot ID: O60312; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349325"

<400> 7332
Met Glu Arg Glu Pro Ala Gly Thr Glu Glu Pro Gly Pro Pro Gly Arg
1   5   10   15

Arg Arg Arg Arg Glu Gly Arg Thr Arg Thr Val Arg Ser Asn Leu Leu
            20   25   30

Pro Pro Pro Gly Ala Glu Asp Pro Ala Ala Gly Ala Ala Lys Gly Glu
        35   40   45

Arg Arg Arg Arg Arg Gly Cys Ala Gln His Leu Ala Asp Asn Arg Leu
    50   55   60

Lys Thr Thr Lys Tyr Thr Leu Leu Ser Phe Leu Pro Lys Asn Leu Phe
65   70   75   80

Glu Gln Phe His Arg Pro Ala Asn Val Tyr Phe Val Phe Ile Ala Leu
                85   90   95

Leu Asn Phe Val Pro Ala Val Asn Ala Phe Gln Pro Gly Leu Ala Leu
            100   105   110

Ala Pro Val Leu Phe Ile Leu Ala Ile Thr Ala Phe Arg Asp Leu Trp
        115   120   125

Glu Asp Tyr Ser Arg His Arg Ser Asp His Lys Ile Asn His Leu Gly
    130   135   140

Cys Leu Val Phe Ser Arg Glu Glu Lys Lys Tyr Val Asn Arg Phe Trp
145   150   155   160

Lys Glu Ile His Val Gly Asp Phe Val Arg Leu Arg Cys Asn Glu Ile
                165   170   175

Phe Pro Ala Asp Ile Leu Leu Leu Ser Ser Ser Asp Pro Asp Gly Leu
            180   185   190

Cys His Ile Glu Thr Ala Asn Leu Asp Gly Glu Thr Asn Leu Lys Arg
        195   200   205

```
Arg Gln Val Val Arg Gly Phe Ser Glu Leu Val Ser Glu Phe Asn Pro
    210                 215                 220

Leu Thr Phe Thr Ser Val Ile Glu Cys Glu Lys Pro Asn Asn Asp Leu
225                 230                 235                 240

Ser Arg Phe Arg Gly Cys Ile Ile His Asp Asn Gly Lys Lys Ala Gly
                245                 250                 255

Leu Tyr Lys Glu Asn Leu Leu Leu Arg Gly Cys Thr Leu Arg Asn Thr
            260                 265                 270

Asp Ala Val Val Gly Ile Val Ile Tyr Ala Gly His Glu Thr Lys Ala
        275                 280                 285

Leu Leu Asn Asn Ser Gly Pro Arg Tyr Lys Arg Ser Lys Leu Glu Arg
    290                 295                 300

Gln Met Asn Cys Asp Val Leu Trp Cys Val Leu Leu Leu Val Cys Met
305                 310                 315                 320

Ser Leu Phe Ser Ala Val Gly His Gly Leu Trp Ile Trp Arg Tyr Gln
                325                 330                 335

Glu Lys Lys Ser Leu Phe Tyr Val Pro Lys Ser Asp Gly Ser Ser Leu
            340                 345                 350

Ser Pro Val Thr Ala Ala Val Tyr Ser Phe Leu Thr Met Ile Ile Val
        355                 360                 365

Leu Gln Val Leu Ile Pro Ile Ser Leu Tyr Val Ser Ile Glu Ile Val
    370                 375                 380

Lys Ala Cys Gln Val Tyr Phe Ile Asn Gln Asp Met Gln Leu Tyr Asp
385                 390                 395                 400

Glu Glu Thr Asp Ser Gln Leu Gln Cys Arg Ala Leu Asn Ile Thr Glu
                405                 410                 415

Asp Leu Gly Gln Ile Gln Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu
            420                 425                 430
```

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Thr Glu Asn Lys Met Val Phe Arg Arg Cys Thr Val Ser Gly Val Glu
        435                 440                 445

Tyr Ser His Asp Ala Asn Ala Gln Arg Leu Ala Arg Tyr Gln Glu Ala
    450                 455                 460

Asp Ser Glu Glu Glu Glu Val Val Pro Arg Gly Gly Ser Val Ser Gln
465                 470                 475                 480

Arg Gly Ser Ile Gly Ser His Gln Ser Val Arg Val Val His Arg Thr
                485                 490                 495

Gln Ser Thr Lys Ser His Arg Arg Thr Gly Ser Arg Ala Glu Ala Lys
            500                 505                 510

Arg Ala Ser Met Leu Ser Lys His Thr Ala Phe Ser Ser Pro Met Glu
        515                 520                 525

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

Asp Lys Ser Leu Ala Val Ala Arg His Gln Glu His Leu Leu Ala His
545                 550                 555                 560

Leu Ser Pro Glu Leu Ser Asp Val Phe Asp Phe Phe Ile Ala Leu Thr
                565                 570                 575

Ile Cys Asn Thr Val Val Val Thr Ser Pro Asp Gln Pro Arg Thr Lys
            580                 585                 590

Val Arg Val Arg Phe Glu Leu Lys Ser Pro Val Lys Thr Ile Glu Asp
        595                 600                 605

Phe Leu Arg Arg Phe Thr Pro Ser Cys Leu Thr Ser Gly Cys Ser Ser
    610                 615                 620

Ile Gly Ser Leu Ala Ala Asn Lys Ser Ser His Lys Leu Gly Ser Ser
625                 630                 635                 640

Phe Pro Ser Thr Pro Ser Ser Asp Gly Met Leu Leu Arg Leu Glu Glu
                645                 650                 655

Arg Leu Gly Gln Pro Thr Ser Ala Ile Ala Ser Asn Gly Tyr Ser Ser
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660 665 670

Gln Ala Asp Asn Trp Ala Ser Glu Leu Ala Gln Glu Gln Glu Ser Glu
675 680 685

Arg Glu Leu Arg Tyr Glu Ala Glu Ser Pro Asp Glu Ala Ala Leu Val
690 695 700

Tyr Ala Ala Arg Ala Tyr Asn Cys Val Leu Val Glu Arg Leu His Asp
705 710 715 720

Gln Val Ser Val Glu Leu Pro His Leu Gly Arg Leu Thr Phe Glu Leu
725 730 735

Leu His Thr Leu Gly Phe Asp Ser Val Arg Lys Arg Met Ser Val Val
740 745 750

Ile Arg His Pro Leu Thr Asp Glu Ile Asn Val Tyr Thr Lys Gly Ala
755 760 765

Asp Ser Val Val Met Asp Leu Leu Gln Pro Cys Ser Ser Val Asp Ala
770 775 780

Arg Gly Arg His Gln Lys Lys Ile Arg Ser Lys Thr Gln Asn Tyr Leu
785 790 795 800

Asn Val Tyr Ala Ala Glu Gly Leu Arg Thr Leu Cys Ile Ala Lys Arg
805 810 815

Val Leu Ser Lys Glu Glu Tyr Ala Cys Trp Leu Gln Ser His Leu Glu
820 825 830

Ala Glu Ser Ser Leu Glu Asn Ser Glu Glu Leu Leu Phe Gln Ser Ala
835 840 845

Ile Arg Leu Glu Thr Asn Leu His Leu Leu Gly Ala Thr Gly Ile Glu
850 855 860

Asp Arg Leu Gln Asp Gly Val Pro Glu Thr Ile Ser Lys Leu Arg Gln
865 870 875 880

Ala Gly Leu Gln Ile Trp Val Leu Thr Gly Asp Lys Gln Glu Thr Ala
885 890 895

```
Val Asn Ile Ala Tyr Ala Cys Lys Leu Leu Asp His Asp Glu Glu Val
            900                 905                 910

Ile Thr Leu Asn Ala Thr Ser Gln Glu Ala Cys Ala Ala Leu Leu Asp
        915                 920                 925

Gln Cys Leu Cys Tyr Val Gln Ser Arg Gly Leu Gln Arg Ala Pro Glu
    930                 935                 940

Lys Thr Lys Gly Lys Val Ser Met Arg Phe Ser Ser Leu Cys Pro Pro
945                 950                 955                 960

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

Arg Ser Leu Ala Tyr Ala Leu Glu Lys Asn Leu Glu Asp Lys Phe Leu
            980                 985                 990

Phe Leu Ala Lys Gln Cys Arg Ser  Val Leu Cys Cys Arg  Ser Thr
Pro
        995                 1000                1005

Leu Gln  Lys Ser Met Val Val  Lys Leu Val Arg Ser  Lys Leu Lys
    1010                1015                1020

Ala Met  Thr Leu Ala Ile Gly  Asp Gly Ala Asn Asp  Val Ser Met
    1025                1030                1035

Ile Gln  Val Ala Asp Val Gly  Val Gly Ile Ser Gly  Gln Glu Gly
    1040                1045                1050

Met Gln  Ala Val Met Ala Ser  Asp Phe Ala Val Pro  Lys Phe Arg
    1055                1060                1065

Tyr Leu  Glu Arg Leu Leu Ile  Leu His Gly His Trp  Cys Tyr Ser
    1070                1075                1080

Arg Leu  Ala Asn Met Val Leu  Tyr Phe Phe Tyr Lys  Asn Thr Met
    1085                1090                1095

Phe Val  Gly Leu Leu Phe Trp  Phe Gln Phe Phe Cys  Gly Phe Ser
    1100                1105                1110
```

```
Ala Ser  Thr Met Ile Asp Gln  Trp Tyr Leu Ile Phe  Phe Asn Leu
    1115                1120                1125

Leu Phe  Ser Ser Leu Pro Pro  Leu Val Thr Gly Val  Leu Asp Arg
    1130                1135                1140

Asp Val  Pro Ala Asn Val Leu  Leu Thr Asn Pro Gln  Leu Tyr Lys
    1145                1150                1155

Ser Gly  Gln Asn Met Glu Glu  Tyr Arg Pro Arg Thr  Phe Trp Phe
    1160                1165                1170

Asn Met  Ala Asp Ala Ala Phe  Gln Ser Leu Val Cys  Phe Ser Ile
    1175                1180                1185

Pro Tyr  Leu Ala Tyr Tyr Asp  Ser Asn Val Asp Leu  Phe Thr Trp
    1190                1195                1200

Gly Thr  Pro Ile Val Thr Ile  Ala Leu Leu Thr Phe  Leu Leu His
    1205                1210                1215

Leu Gly  Ile Glu Thr Lys Thr  Trp Thr Trp Leu Asn  Trp Ile Thr
    1220                1225                1230

Cys Gly  Phe Ser Val Leu Leu  Phe Phe Thr Val Ala  Leu Ile Tyr
    1235                1240                1245

Asn Ala  Ser Cys Ala Thr Cys  Tyr Pro Pro Ser Asn  Pro Tyr Trp
    1250                1255                1260

Thr Met  Gln Ala Leu Leu Gly  Asp Pro Val Phe Tyr  Leu Thr Cys
    1265                1270                1275

Leu Met  Thr Pro Val Ala Ala  Leu Leu Pro Arg Leu  Phe Phe Arg
    1280                1285                1290

Ser Leu  Gln Gly Arg Val Phe  Pro Thr Gln Leu Gln  Leu Ala Arg
    1295                1300                1305

Gln Leu  Thr Arg Lys Ser Pro  Arg Arg Cys Ser Ala  Pro Lys Glu
    1310                1315                1320
```

```
Thr Phe  Ala Gln Gly Arg Leu  Pro Lys Asp Ser Gly  Thr Glu His
    1325                1330                1335

Ser Ser  Gly Arg Thr Val Lys  Thr Ser Val Pro Leu  Ser Gln Pro
    1340                1345                1350

Ser Trp  His Thr Gln Gln Pro  Val Cys Ser Leu Glu  Ala Ser Gly
    1355                1360                1365

Glu Pro  Ser Thr Val Asp Met  Ser Met Pro Val Arg  Glu His Thr
    1370                1375                1380

Leu Leu  Glu Gly Leu Ser Ala  Pro Ala Pro Met Ser  Ser Ala Pro
    1385                1390                1395

Gly Glu  Ala Val Leu Arg Ser  Pro Gly Gly Cys Pro  Glu Glu Ser
    1400                1405                1410

Lys Val  Arg Ala Ala Ser Thr  Gly Arg Val Thr Pro  Leu Ser Ser
    1415                1420                1425

Leu Phe  Ser Leu Pro Thr Phe  Ser Leu Leu Asn Trp  Ile Ser Ser
    1430                1435                1440

Trp Ser  Leu Val Ser Arg Leu  Gly Ser Val Leu Gln  Phe Ser Arg
    1445                1450                1455

Thr Glu  Gln Leu Ala Asp Gly  Gln Ala Gly Arg Gly  Leu Pro Val
    1460                1465                1470

Gln Pro  His Ser Gly Arg Ser  Gly Leu Gln Gly Pro  Asp His Arg
    1475                1480                1485

Leu Leu  Ile Gly Ala Ser Ser  Arg Arg Ser Gln
    1490                1495


<210> 7333
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1554; "
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<220>
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<223> /note="Gene Symbol: ATP10A; "

<220>
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<223> /note="Gene Name:
ATPase,
class V, type 10A; "

<220>
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<220>
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<400> 7333
Met Glu Arg Glu Pro Ala Gly Thr Glu Glu Pro Gly Pro Pro Gly Arg
1   5   10   15

Arg Arg Arg Arg Glu Gly Arg Thr Arg Thr Val Arg Ser Asn Leu Leu
            20   25   30

Pro Pro Pro Gly Ala Glu Asp Pro Ala Ala Gly Ala Ala Lys Gly Glu
        35   40   45

Arg Arg Arg Arg Arg Gly Cys Ala Gln His Leu Ala Asp Asn Arg Leu
    50   55   60

Lys Thr Thr Lys Tyr Thr Leu Leu Ser Phe Leu Pro Lys Asn Leu Phe
65   70   75   80

Glu Gln Phe His Arg Pro Ala Asn Val Tyr Phe Val Phe Ile Ala Leu
                85   90   95

Leu Asn Phe Val Pro Ala Val Asn Ala Phe Gln Pro Gly Leu Ala Leu
            100   105   110

Ala Pro Val Leu Phe Ile Leu Ala Ile Thr Ala Phe Arg Asp Leu Trp
        115   120   125

Glu Asp Tyr Ser Arg His Arg Ser Asp His Lys Ile Asn His Leu Gly
    130   135   140

Cys Leu Val Phe Ser Ser Arg Ser His Leu Lys

145 150 155

<210> 7334
<211> 594
<212> PRT
<213> Homo sapiens

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<220>
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<400> 7334
Met Glu Arg Glu Pro Ala Gly Thr Glu Glu Pro Gly Pro Pro Gly Arg
1 5 10 15

Arg Arg Arg Arg Glu Gly Arg Thr Arg Thr Val Arg Ser Asn Leu Leu
20 25 30

Pro Pro Pro Gly Ala Glu Asp Pro Ala Ala Gly Ala Ala Lys Gly Glu
35 40 45

Arg Arg Arg Arg Arg Gly Cys Ala Gln His Leu Ala Asp Asn Arg Leu
50 55 60

Lys Thr Thr Lys Tyr Thr Leu Leu Ser Phe Leu Pro Lys Asn Leu Phe
65 70 75 80

Glu Gln Phe His Arg Pro Ala Asn Val Tyr Phe Val Phe Ile Ala Leu
85 90 95

Leu Asn Phe Val Pro Ala Val Asn Ala Phe Gln Pro Gly Leu Ala Leu
100 105 110

Ala Pro Val Leu Phe Ile Leu Ala Ile Thr Ala Phe Arg Asp Leu Trp
115 120 125

```
Glu Asp Tyr Ser Arg His Arg Ser Asp His Lys Ile Asn His Leu Gly
    130                 135                 140

Cys Leu Val Phe Ser Arg Glu Glu Lys Lys Tyr Val Asn Arg Phe Trp
145                 150                 155                 160

Lys Glu Ile His Val Gly Asp Phe Val Arg Leu Arg Cys Asn Glu Ile
                165                 170                 175

Phe Pro Ala Asp Ile Leu Leu Leu Ser Ser Ser Asp Pro Asp Gly Leu
            180                 185                 190

Cys His Ile Glu Thr Ala Asn Leu Asp Gly Glu Thr Asn Leu Lys Arg
        195                 200                 205

Arg Gln Val Val Arg Gly Phe Ser Glu Leu Val Ser Glu Phe Asn Pro
    210                 215                 220

Leu Thr Phe Thr Ser Val Ile Glu Cys Glu Lys Pro Asn Asn Asp Leu
225                 230                 235                 240

Ser Arg Phe Arg Gly Cys Ile Ile His Asp Asn Gly Lys Lys Ala Gly
                245                 250                 255

Leu Tyr Lys Glu Asn Leu Leu Leu Arg Gly Cys Thr Leu Arg Asn Thr
            260                 265                 270

Asp Ala Val Val Gly Ile Val Ile Tyr Ala Gly His Glu Thr Lys Ala
        275                 280                 285

Leu Leu Asn Asn Ser Gly Pro Arg Tyr Lys Arg Ser Lys Leu Glu Arg
    290                 295                 300

Gln Met Asn Cys Asp Val Leu Trp Cys Val Leu Leu Leu Val Cys Met
305                 310                 315                 320

Ser Leu Phe Ser Ala Val Gly His Gly Leu Trp Ile Trp Arg Tyr Gln
                325                 330                 335

Glu Lys Lys Ser Leu Phe Tyr Val Pro Lys Ser Asp Gly Ser Ser Leu
            340                 345                 350
```

```
Ser Pro Val Thr Ala Ala Val Tyr Ser Phe Leu Thr Met Ile Ile Val
        355                 360                 365

Leu Gln Val Leu Ile Pro Ile Ser Leu Tyr Val Ser Ile Glu Ile Val
    370                 375                 380

Lys Ala Cys Gln Val Tyr Phe Ile Asn Gln Asp Met Gln Leu Tyr Asp
385                 390                 395                 400

Glu Glu Thr Asp Ser Gln Leu Gln Cys Arg Ala Leu Asn Ile Thr Glu
                405                 410                 415

Asp Leu Gly Gln Ile Gln Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu
            420                 425                 430

Thr Glu Asn Lys Met Val Phe Arg Arg Cys Thr Val Ser Gly Val Glu
        435                 440                 445

Tyr Ser His Asp Ala Asn Ala Gln Arg Leu Ala Arg Tyr Gln Glu Ala
    450                 455                 460

Asp Ser Glu Glu Glu Glu Val Val Pro Arg Gly Gly Ser Val Ser Gln
465                 470                 475                 480

Arg Gly Ser Ile Gly Ser His Gln Ser Val Arg Val Val His Arg Thr
                485                 490                 495

Gln Ser Thr Lys Ser His Arg Arg Thr Gly Ser Arg Ala Glu Ala Lys
            500                 505                 510

Arg Ala Ser Met Leu Ser Lys His Thr Ala Phe Ser Ser Pro Met Glu
        515                 520                 525

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

Asp Lys Ser Leu Ala Val Ala Arg His Gln Glu His Leu Leu Ala His
545                 550                 555                 560

Leu Ser Pro Glu Leu Ser Asp Val Phe Asp Phe Phe Ile Ala Leu Thr
                565                 570                 575
```

```
Ile Cys Asn Thr Val Val Val Thr Ser Pro Asp Gln Pro Arg Thr Lys
            580                 585                 590


Ala Arg



<210> 7335
<211> 139
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000451615"

<400> 7335
Ala Ile Gly Asp Gly Ala Asn Asp Val Ser Met Ile Gln Val Ala Asp
1               5                  10                  15


Val Gly Val Gly Ile Ser Gly Gln Glu Gly Met Gln Glu Met Leu Arg
            20                  25                  30


Glu Thr Thr Ala Met Glu Thr Leu Ala Gly His Ala Arg Thr Val Phe
        35                  40                  45


Arg Met Gly Ile Phe Leu Pro Cys Cys Val Pro Cys Ile Leu Arg Arg
    50                  55                  60


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


Leu Pro Leu Lys Ala Val Met Ala Ser Asp Phe Ala Val Pro Lys Phe
                85                  90                  95


Arg Tyr Leu Glu Arg Leu Leu Ile Leu His Gly His Trp Cys Tyr Ser
```

100 105 110

Arg Leu Ala Asn Met Val Leu Tyr Phe Phe Tyr Lys Asn Thr Met Phe
115 120 125

Val Gly Leu Leu Phe Trp Phe Gln Phe Phe Cys
130 135

<210> 7336
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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class V, type 10A; "

<220>
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<223> /note="Uniprot ID: O60312; "

<220>
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<400> 7336
Met Glu Arg Glu Pro Ala Gly Thr Glu Glu Pro Gly Pro Pro Gly Arg
1 5 10 15

Arg Arg Arg Arg Glu Gly Arg Thr Arg Thr Val Arg Ser Asn Leu Leu
20 25 30

Pro Pro Pro Gly Ala Glu Asp Pro Ala Ala Gly Ala Ala Lys Gly Glu
35 40 45

Arg Arg Arg Arg Arg Gly Cys Ala Gln His Leu Ala Asp Asn Arg Leu
50 55 60

Lys Thr Thr Lys Tyr Thr Leu Leu Ser Phe Leu Pro Lys Asn Leu Phe
65 70 75 80

```
Glu Gln Phe His Arg Pro Ala Asn Val Tyr Phe Val Phe Ile Ala Leu
                85                  90                  95

Leu Asn Phe Val Pro Ala Val Asn Ala Phe Gln Pro Gly Leu Ala Leu
            100                 105                 110

Ala Pro Val Leu Phe Ile Leu Ala Ile Thr Ala Phe Arg Asp Leu Trp
        115                 120                 125

Glu Asp Tyr Ser Arg His Arg Ser Asp His Lys Ile Asn His Leu Gly
    130                 135                 140

Cys Leu Val Phe Ser Ser Arg Ser His Leu Lys
145                 150                 155


<210> 7337
<211> 1461
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
<221> source
<223> /note="Uniprot ID:  O94823; "

<220>
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<223> /note="ENSP ID: ENSP00000313600"

<400> 7337
Met Ala Leu Ser Val Asp Ser Ser Trp His Arg Trp Gln Trp Arg Val
1               5                   10                  15

Arg Asp Gly Phe Pro His Cys Pro Ser Glu Thr Thr Pro Leu Leu Ser
            20                  25                  30
```

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

Phe Pro Asn Asn Ser Ile Phe His Gln Asp Trp Glu Glu Val Ser Arg
    50                  55                  60

Arg Tyr Pro Gly Asn Arg Thr Cys Thr Thr Lys Tyr Thr Leu Phe Thr
65                  70                  75                  80

Phe Leu Pro Arg Asn Leu Phe Glu Gln Phe His Arg Trp Ala Asn Leu
                85                  90                  95

Tyr Phe Leu Phe Leu Val Ile Leu Asn Trp Met Pro Ser Met Glu Val
            100                 105                 110

Phe His Arg Glu Ile Thr Met Leu Pro Leu Ala Ile Val Leu Phe Val
        115                 120                 125

Ile Met Ile Lys Asp Gly Met Glu Asp Phe Lys Arg His Arg Phe Asp
    130                 135                 140

Lys Ala Ile Asn Cys Ser Asn Ile Arg Ile Tyr Glu Arg Lys Glu Gln
145                 150                 155                 160

Thr Tyr Val Gln Lys Cys Trp Lys Asp Val Arg Val Gly Asp Phe Ile
                165                 170                 175

Gln Met Lys Cys Asn Glu Ile Val Pro Ala Asp Ile Leu Leu Leu Phe
            180                 185                 190

Ser Ser Asp Pro Asn Gly Ile Cys His Leu Glu Thr Ala Ser Leu Asp
        195                 200                 205

Gly Glu Thr Asn Leu Lys Gln Arg Cys Val Val Lys Gly Phe Ser Gln
    210                 215                 220

Gln Glu Val Gln Phe Glu Pro Glu Leu Phe His Asn Thr Ile Val Cys
225                 230                 235                 240

Glu Lys Pro Asn Asn His Leu Asn Lys Phe Lys Gly Tyr Met Glu His
                245                 250                 255
```

```
Pro Asp Gln Thr Arg Thr Gly Phe Gly Cys Glu Ser Leu Leu Leu Arg
            260                 265                 270

Gly Cys Thr Ile Arg Asn Thr Glu Met Ala Val Gly Ile Val Ile Tyr
        275                 280                 285

Ala Gly His Glu Thr Lys Ala Met Leu Asn Asn Ser Gly Pro Arg Tyr
    290                 295                 300

Lys Arg Ser Lys Ile Glu Arg Arg Met Asn Ile Asp Ile Phe Phe Cys
305                 310                 315                 320

Ile Gly Ile Leu Ile Leu Met Cys Leu Ile Gly Ala Val Gly His Ser
                325                 330                 335

Ile Trp Asn Gly Thr Phe Glu Glu His Pro Pro Phe Asp Val Pro Asp
            340                 345                 350

Ala Asn Gly Ser Phe Leu Pro Ser Ala Leu Gly Gly Phe Tyr Met Phe
        355                 360                 365

Leu Thr Met Ile Ile Leu Leu Gln Val Leu Ile Pro Ile Ser Leu Tyr
    370                 375                 380

Val Ser Ile Glu Leu Val Lys Leu Gly Gln Val Phe Phe Leu Ser Asn
385                 390                 395                 400

Asp Leu Asp Leu Tyr Asp Glu Glu Thr Asp Leu Ser Ile Gln Cys Arg
                405                 410                 415

Ala Leu Asn Ile Ala Glu Asp Leu Gly Gln Ile Gln Tyr Ile Phe Ser
            420                 425                 430

Asp Lys Thr Gly Thr Leu Thr Glu Asn Lys Met Val Phe Arg Arg Cys
        435                 440                 445

Thr Ile Met Gly Ser Glu Tyr Ser His Gln Glu Asn Ala Lys Arg Leu
    450                 455                 460

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

Gln Cys Leu Ser Phe Ser Ala Arg Trp Ala Gln Asp Pro Ala Thr Met
```

```
                485                 490                 495

Arg Ser Gln Lys Gly Ala Gln Pro Leu Arg Arg Ser Gln Ser Ala Arg
            500                 505                 510

Val Pro Ile Gln Gly His Tyr Arg Gln Arg Ser Met Gly His Arg Glu
        515                 520                 525

Ser Ser Gln Pro Pro Val Ala Phe Ser Ser Ser Ile Glu Lys Asp Val
    530                 535                 540

Thr Pro Asp Lys Asn Leu Leu Thr Lys Val Arg Asp Ala Ala Leu Trp
545                 550                 555                 560

Leu Glu Thr Leu Ser Asp Ser Arg Pro Ala Lys Ala Ser Leu Ser Thr
                565                 570                 575

Thr Ser Ser Ile Ala Asp Phe Phe Leu Ala Leu Thr Ile Cys Asn Ser
            580                 585                 590

Val Met Val Ser Thr Thr Thr Glu Pro Arg Gln Arg Val Thr Ile Lys
        595                 600                 605

Pro Ser Ser Lys Ala Leu Gly Thr Ser Leu Glu Lys Ile Gln Gln Leu
    610                 615                 620

Phe Gln Lys Leu Lys Leu Leu Ser Leu Ser Gln Ser Phe Ser Ser Thr
625                 630                 635                 640

Ala Pro Ser Asp Thr Asp Leu Gly Glu Ser Leu Gly Ala Asn Val Ala
                645                 650                 655

Thr Thr Asp Ser Asp Glu Arg Asp Asp Ala Ser Val Cys Ser Gly Gly
            660                 665                 670

Asp Ser Thr Asp Asp Gly Gly Tyr Arg Ser Ser Met Trp Asp Gln Gly
        675                 680                 685

Asp Ile Leu Glu Ser Gly Ser Gly Thr Ser Leu Glu Glu Ala Leu Glu
    690                 695                 700

Ala Pro Ala Thr Asp Leu Ala Arg Pro Glu Phe Cys Tyr Glu Ala Glu
705                 710                 715                 720
```

```
Ser Pro Asp Glu Ala Ala Leu Val His Ala Ala His Ala Tyr Ser Phe
                725                 730                 735

Thr Leu Val Ser Arg Thr Pro Glu Gln Val Thr Val Arg Leu Pro Gln
            740                 745                 750

Gly Thr Cys Leu Thr Phe Ser Leu Leu Cys Thr Leu Gly Phe Asp Ser
        755                 760                 765

Val Arg Lys Arg Met Ser Val Val Val Arg His Pro Leu Thr Gly Glu
    770                 775                 780

Ile Val Val Tyr Thr Lys Gly Ala Asp Ser Val Ile Met Asp Leu Leu
785                 790                 795                 800

Glu Asp Pro Ala Cys Val Pro Asp Ile Asn Met Glu Lys Lys Leu Arg
                805                 810                 815

Lys Ile Arg Ala Arg Thr Gln Lys His Leu Asp Leu Tyr Ala Arg Asp
            820                 825                 830

Gly Leu Arg Thr Leu Cys Ile Ala Lys Lys Val Val Ser Glu Glu Asp
        835                 840                 845

Phe Arg Arg Trp Ala Ser Phe Arg Arg Glu Ala Glu Ala Ser Leu Asp
    850                 855                 860

Asn Arg Asp Glu Leu Leu Met Glu Thr Ala Gln His Leu Glu Asn Gln
865                 870                 875                 880

Leu Thr Leu Leu Gly Ala Thr Gly Ile Glu Asp Arg Leu Gln Glu Gly
                885                 890                 895

Val Pro Asp Thr Ile Ala Thr Leu Arg Glu Ala Gly Ile Gln Leu Trp
            900                 905                 910

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

Cys Arg Leu Leu Asn Gln Thr Asp Thr Val Tyr Thr Ile Asn Thr Glu
    930                 935                 940
```

```
Asn Gln Glu Thr Cys Glu Ser Ile Leu Asn Cys Ala Leu Glu Glu Leu
945                 950                 955                 960

Lys Gln Phe Arg Glu Leu Gln Lys Pro Asp Arg Lys Leu Phe Gly Phe
                965                 970                 975

Arg Leu Pro Ser Lys Thr Pro Ser Ile Thr Ser Glu Ala Val Val Pro
            980                 985                 990

Glu Ala Gly Leu Val Ile Asp Gly  Lys Thr Leu Asn Ala  Ile Phe
Gln
        995                 1000                1005

Gly Lys  Leu Glu Lys Lys Phe  Leu Glu Leu Thr Gln  Tyr Cys Arg
    1010                1015                1020

Ser Val  Leu Cys Cys Arg Ser  Thr Pro Leu Gln Lys  Ser Met Ile
    1025                1030                1035

Val Lys  Leu Val Arg Asp Lys  Leu Arg Val Met Thr  Leu Ser Ile
    1040                1045                1050

Gly Asp  Gly Ala Asn Asp Val  Ser Met Ile Gln Ala  Ala Asp Ile
    1055                1060                1065

Gly Ile  Gly Ile Ser Gly Gln  Glu Gly Met Gln Ala  Val Met Ser
    1070                1075                1080

Ser Asp  Phe Ala Ile Thr Arg  Phe Lys His Leu Lys  Lys Leu Leu
    1085                1090                1095

Leu Val  His Gly His Trp Cys  Tyr Ser Arg Leu Ala  Arg Met Val
    1100                1105                1110

Val Tyr  Tyr Leu Tyr Lys Asn  Val Cys Tyr Val Asn  Leu Leu Phe
    1115                1120                1125

Trp Tyr  Gln Phe Phe Cys Gly  Phe Ser Ser Ser Thr  Met Ile Asp
    1130                1135                1140

Tyr Trp  Gln Met Ile Phe Phe  Asn Leu Phe Phe Thr  Ser Leu Pro
    1145                1150                1155
```

Pro Leu Val Phe Gly Val Leu Asp Lys Asp Ile Ser Ala Glu Thr
1160 1165 1170

Leu Leu Ala Leu Pro Glu Leu Tyr Lys Ser Gly Gln Asn Ser Glu
1175 1180 1185

Cys Tyr Asn Leu Ser Thr Phe Trp Ile Ser Met Val Asp Ala Phe
1190 1195 1200

Tyr Gln Ser Leu Ile Cys Phe Phe Ile Pro Tyr Leu Ala Tyr Lys
1205 1210 1215

Gly Ser Asp Ile Asp Val Phe Thr Phe Gly Thr Pro Ile Asn Thr
1220 1225 1230

Ile Ser Leu Thr Thr Ile Leu Leu His Gln Ala Met Glu Met Lys
1235 1240 1245

Thr Trp Thr Ile Phe His Gly Val Val Leu Leu Gly Ser Phe Leu
1250 1255 1260

Met Tyr Phe Leu Val Ser Leu Leu Tyr Asn Ala Thr Cys Val Ile
1265 1270 1275

Cys Asn Ser Pro Thr Asn Pro Tyr Trp Val Met Glu Gly Gln Leu
1280 1285 1290

Ser Asn Pro Thr Phe Tyr Leu Val Cys Phe Leu Thr Pro Val Val
1295 1300 1305

Ala Leu Leu Pro Arg Tyr Phe Phe Leu Ser Leu Gln Gly Thr Cys
1310 1315 1320

Gly Lys Ser Leu Ile Ser Lys Ala Gln Lys Ile Asp Lys Leu Pro
1325 1330 1335

Pro Asp Lys Arg Asn Leu Glu Ile Gln Ser Trp Arg Ser Arg Gln
1340 1345 1350

Arg Pro Ala Pro Val Pro Glu Val Ala Arg Pro Thr His His Pro
1355 1360 1365

```
Val Ser  Ser Ile Thr Gly Gln  Asp Phe Ser Ala Ser  Thr Pro Lys
    1370                1375                1380

Ser Ser  Asn Pro Pro Lys Arg  Lys His Val Glu Glu  Ser Val Leu
    1385                1390                1395

His Glu  Gln Arg Cys Gly Thr  Glu Cys Met Arg Asp  Asp Ser Cys
    1400                1405                1410

Ser Gly  Asp Ser Ser Ala Gln  Leu Ser Ser Gly Glu  His Leu Leu
    1415                1420                1425

Gly Pro  Asn Arg Ile Met Ala  Tyr Ser Arg Gly Gln  Thr Asp Met
    1430                1435                1440

Cys Arg  Cys Ser Lys Arg Ser  Ser His Arg Arg Ser  Gln Ser Ser
    1445                1450                1455

Leu Thr  Ile
    1460


<210> 7338
<211> 556
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1555; "

<220>
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<223> /note="Gene Symbol: ATP10B; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000431081"

<400> 7338
Gly Gln Val Phe Phe Leu Ser Asn Asp Leu Asp Leu Tyr Asp Glu Glu
1               5                  10                  15

Thr Asp Leu Ser Ile Gln Cys Arg Ala Leu Asn Ile Ala Glu Asp Leu
```

```
            20                  25                  30

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

Asn Lys Met Val Phe Arg Arg Cys Thr Ile Met Gly Ser Glu Tyr Ser
    50                  55                  60

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

Asp Gly Glu Glu Trp Thr Gln Tyr Gln Cys Leu Ser Phe Ser Ala Arg
                85                  90                  95

Trp Ala Gln Asp Pro Ala Thr Met Arg Ser Gln Lys Gly Ala Gln Pro
            100                 105                 110

Leu Arg Arg Ser Gln Ser Ala Arg Val Pro Ile Gln Gly His Tyr Arg
        115                 120                 125

Gln Arg Ser Met Gly His Arg Glu Ser Ser Gln Pro Pro Val Ala Phe
    130                 135                 140

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

Lys Val Arg Asp Ala Ala Leu Trp Leu Glu Thr Leu Ser Asp Ser Arg
                165                 170                 175

Pro Ala Lys Ala Ser Leu Ser Thr Thr Ser Ser Ile Ala Asp Phe Phe
            180                 185                 190

Leu Ala Leu Thr Ile Cys Asn Ser Val Met Val Ser Thr Thr Thr Glu
        195                 200                 205

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

Ser Leu Glu Lys Ile Gln Gln Leu Phe Gln Lys Leu Lys Leu Leu Ser
225                 230                 235                 240

Leu Ser Gln Ser Phe Ser Ser Thr Ala Pro Ser Asp Thr Asp Leu Gly
                245                 250                 255
```

```
Glu Ser Leu Gly Ala Asn Val Ala Thr Thr Asp Ser Asp Glu Arg Asp
            260                 265                 270

Asp Ala Ser Val Cys Ser Gly Gly Asp Ser Thr Asp Asp Gly Gly Tyr
        275                 280                 285

Arg Ser Ser Met Trp Asp Gln Gly Asp Ile Leu Glu Ser Gly Ser Gly
    290                 295                 300

Thr Ser Leu Glu Glu Ala Leu Glu Ala Pro Ala Thr Asp Leu Ala Arg
305                 310                 315                 320

Pro Glu Phe Cys Tyr Glu Ala Glu Ser Pro Asp Glu Ala Ala Leu Val
                325                 330                 335

His Ala Ala His Ala Tyr Ser Phe Thr Leu Val Ser Arg Thr Pro Glu
            340                 345                 350

Gln Val Thr Val Arg Leu Pro Gln Gly Thr Cys Leu Thr Phe Ser Leu
        355                 360                 365

Leu Cys Thr Leu Gly Phe Asp Ser Val Arg Lys Arg Met Ser Val Val
    370                 375                 380

Val Arg His Pro Leu Thr Gly Glu Ile Val Val Tyr Thr Lys Gly Ala
385                 390                 395                 400

Asp Ser Val Ile Met Asp Leu Leu Glu Asp Pro Ala Cys Val Pro Asp
                405                 410                 415

Ile Asn Met Glu Lys Lys Leu Arg Lys Ile Arg Ala Arg Thr Gln Lys
            420                 425                 430

His Leu Asp Leu Tyr Ala Arg Asp Gly Leu Arg Thr Leu Cys Ile Ala
        435                 440                 445

Lys Lys Val Val Ser Glu Glu Asp Phe Arg Arg Trp Ala Ser Phe Arg
    450                 455                 460

Arg Glu Ala Glu Ala Ser Leu Asp Asn Arg Asp Glu Leu Leu Met Glu
465                 470                 475                 480
```

```
Thr Ala Gln His Leu Glu Asn Gln Leu Thr Leu Leu Gly Ala Thr Gly
                485                 490                 495

Ile Glu Asp Arg Leu Gln Glu Gly Val Pro Asp Thr Ile Ala Thr Leu
            500                 505                 510

Arg Glu Ala Gly Ile Gln Leu Trp Val Leu Thr Gly Asp Lys Gln Glu
        515                 520                 525

Thr Ala Val Asn Ile Ala His Ser Cys Arg Leu Leu Asn Gln Thr Asp
    530                 535                 540

Thr Val Tyr Thr Ile Asn Thr Glu Asn Gln Val Arg
545                 550                 555


<210> 7339
<211> 1426
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1556; "

<220>
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<223> /note="Gene Symbol: ATP10D; "

<220>
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      class V, type 10D; "

<220>
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<220>
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<400> 7339
Met Thr Glu Ala Leu Gln Trp Ala Arg Tyr His Trp Arg Arg Leu Ile
1               5                   10                  15

Arg Gly Ala Thr Arg Asp Asp Asp Ser Gly Pro Tyr Asn Tyr Ser Ser
            20                  25                  30
```

```
Leu Leu Ala Cys Gly Arg Lys Ser Ser Gln Thr Pro Lys Leu Ser Gly
        35                  40                  45

Arg His Arg Ile Val Val Pro His Ile Gln Pro Phe Lys Asp Glu Tyr
    50                  55                  60

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

Tyr Thr Leu Leu Asn Phe Val Pro Arg Asn Leu Phe Glu Gln Phe His
                85                  90                  95

Arg Ala Ala Asn Leu Tyr Phe Leu Phe Leu Val Val Leu Asn Trp Val
            100                 105                 110

Pro Leu Val Glu Ala Phe Gln Lys Glu Ile Thr Met Leu Pro Leu Val
        115                 120                 125

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

Lys Tyr Lys Ile Asp Lys Gln Ile Asn Asn Leu Ile Thr Lys Val Tyr
145                 150                 155                 160

Ser Arg Lys Glu Lys Lys Tyr Ile Asp Arg Cys Trp Lys Asp Val Thr
                165                 170                 175

Val Gly Asp Phe Ile Arg Leu Ser Cys Asn Glu Val Ile Pro Ala Asp
            180                 185                 190

Met Val Leu Leu Phe Ser Thr Asp Pro Asp Gly Ile Cys His Ile Glu
        195                 200                 205

Thr Ser Gly Leu Asp Gly Glu Ser Asn Leu Lys Gln Arg Gln Val Val
    210                 215                 220

Arg Gly Tyr Ala Glu Gln Asp Ser Glu Val Asp Pro Glu Lys Phe Ser
225                 230                 235                 240

Ser Arg Ile Glu Cys Glu Ser Pro Asn Asn Asp Leu Ser Arg Phe Arg
                245                 250                 255

Gly Phe Leu Glu His Ser Asn Lys Glu Arg Val Gly Leu Ser Lys Glu
```

```
            260                 265                 270

Asn Leu Leu Leu Arg Gly Cys Thr Ile Arg Asn Thr Glu Ala Val Val
        275                 280                 285

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

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

Asp Val Leu Trp Cys Val Met Leu Leu Val Ile Met Cys Leu Thr Gly
                325                 330                 335

Ala Val Gly His Gly Ile Trp Leu Ser Arg Tyr Glu Lys Met His Phe
            340                 345                 350

Phe Asn Val Pro Glu Pro Asp Gly His Ile Ile Ser Pro Leu Leu Ala
        355                 360                 365

Gly Phe Tyr Met Phe Trp Thr Met Ile Ile Leu Leu Gln Val Leu Ile
    370                 375                 380

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

Tyr Phe Ile Gln Ser Asp Val Asp Phe Tyr Asn Glu Lys Met Asp Ser
                405                 410                 415

Ile Val Gln Cys Arg Ala Leu Asn Ile Ala Glu Asp Leu Gly Gln Ile
            420                 425                 430

Gln Tyr Leu Phe Ser Asp Lys Thr Gly Thr Leu Thr Glu Asn Lys Met
        435                 440                 445

Val Phe Arg Arg Cys Ser Val Ala Gly Phe Asp Tyr Cys His Glu Glu
    450                 455                 460

Asn Ala Arg Arg Leu Glu Ser Tyr Gln Glu Ala Val Ser Glu Asp Glu
465                 470                 475                 480

Asp Phe Ile Asp Thr Val Ser Gly Ser Leu Ser Asn Met Ala Lys Pro
                485                 490                 495
```

```
Arg Ala Pro Ser Cys Arg Thr Val His Asn Gly Pro Leu Gly Asn Lys
            500                 505                 510

Pro Ser Asn His Leu Ala Gly Ser Ser Phe Thr Leu Gly Ser Gly Glu
        515                 520                 525

Gly Ala Ser Glu Val Pro His Ser Arg Gln Ala Ala Phe Ser Ser Pro
    530                 535                 540

Ile Glu Thr Asp Val Val Pro Asp Thr Arg Leu Leu Asp Lys Phe Ser
545                 550                 555                 560

Gln Ile Thr Pro Arg Leu Phe Met Pro Leu Asp Glu Thr Ile Gln Asn
                565                 570                 575

Pro Pro Met Glu Thr Leu Tyr Ile Ile Asp Phe Phe Ile Ala Leu Ala
            580                 585                 590

Ile Cys Asn Thr Val Val Val Ser Ala Pro Asn Gln Pro Arg Gln Lys
        595                 600                 605

Ile Arg His Pro Ser Leu Gly Gly Leu Pro Ile Lys Ser Leu Glu Glu
    610                 615                 620

Ile Lys Ser Leu Phe Gln Arg Trp Ser Val Arg Arg Ser Ser Ser Pro
625                 630                 635                 640

Ser Leu Asn Ser Gly Lys Glu Pro Ser Ser Gly Val Pro Asn Ala Phe
                645                 650                 655

Val Ser Arg Leu Pro Leu Phe Ser Arg Met Lys Pro Ala Ser Pro Val
            660                 665                 670

Glu Glu Glu Val Ser Gln Val Cys Glu Ser Pro Gln Cys Ser Ser Ser
        675                 680                 685

Ser Ala Cys Cys Thr Glu Thr Glu Lys Gln His Gly Asp Ala Gly Leu
    690                 695                 700

Leu Asn Gly Lys Ala Glu Ser Leu Pro Gly Gln Pro Leu Ala Cys Asn
705                 710                 715                 720
```

```
Leu Cys Tyr Glu Ala Glu Ser Pro Asp Glu Ala Ala Leu Val Tyr Ala
                725                 730                 735

Ala Arg Ala Tyr Gln Cys Thr Leu Arg Ser Arg Thr Pro Glu Gln Val
            740                 745                 750

Met Val Asp Phe Ala Ala Leu Gly Pro Leu Thr Phe Gln Leu Leu His
        755                 760                 765

Ile Leu Pro Phe Asp Ser Val Arg Lys Arg Met Ser Val Val Val Arg
    770                 775                 780

His Pro Leu Ser Asn Gln Val Val Val Tyr Thr Lys Gly Ala Asp Ser
785                 790                 795                 800

Val Ile Met Glu Leu Leu Ser Val Ala Ser Pro Asp Gly Ala Ser Leu
                805                 810                 815

Glu Lys Gln Gln Met Ile Val Arg Glu Lys Thr Gln Lys His Leu Asp
            820                 825                 830

Asp Tyr Ala Lys Gln Gly Leu Arg Thr Leu Cys Ile Ala Lys Lys Val
        835                 840                 845

Met Ser Asp Thr Glu Tyr Ala Glu Trp Leu Arg Asn His Phe Leu Ala
    850                 855                 860

Glu Thr Ser Ile Asp Asn Arg Glu Glu Leu Leu Leu Glu Ser Ala Met
865                 870                 875                 880

Arg Leu Glu Asn Lys Leu Thr Leu Leu Gly Ala Thr Gly Ile Glu Asp
                885                 890                 895

Arg Leu Gln Glu Gly Val Pro Glu Ser Ile Glu Ala Leu His Lys Ala
            900                 905                 910

Gly Ile Lys Ile Trp Met Leu Thr Gly Asp Lys Gln Glu Thr Ala Val
        915                 920                 925

Asn Ile Ala Tyr Ala Cys Lys Leu Leu Glu Pro Asp Asp Lys Leu Phe
    930                 935                 940
```

```
Ile Leu Asn Thr Gln Ser Lys Asp Ala Cys Gly Met Leu Met Ser Thr
945                 950                 955                 960

Ile Leu Lys Glu Leu Gln Lys Lys Thr Gln Ala Leu Pro Glu Gln Val
                965                 970                 975

Ser Leu Ser Glu Asp Leu Leu Gln Pro Pro Val Pro Arg Asp Ser Gly
            980                 985                 990

Leu Arg Ala Gly Leu Ile Ile Thr  Gly Lys Thr Leu Glu  Phe Ala
Leu
        995                 1000                1005

Gln Glu  Ser Leu Gln Lys Gln  Phe Leu Glu Leu Thr  Ser Trp Cys
    1010                1015                1020

Gln Ala  Val Val Cys Cys Arg  Ala Thr Pro Leu Gln  Lys Ser Glu
    1025                1030                1035

Val Val  Lys Leu Val Arg Ser  His Leu Gln Val Met  Thr Leu Ala
    1040                1045                1050

Ile Gly  Asp Gly Ala Asn Asp  Val Ser Met Ile Gln  Val Ala Asp
    1055                1060                1065

Ile Gly  Ile Gly Val Ser Gly  Gln Glu Gly Met Gln  Ala Val Met
    1070                1075                1080

Ala Ser  Asp Phe Ala Val Ser  Gln Phe Lys His Leu  Ser Lys Leu
    1085                1090                1095

Leu Leu  Val His Gly His Trp  Cys Tyr Thr Arg Leu  Ser Asn Met
    1100                1105                1110

Ile Leu  Tyr Phe Phe Tyr Lys  Asn Val Ala Tyr Val  Asn Leu Leu
    1115                1120                1125

Phe Trp  Tyr Gln Phe Phe Cys  Gly Phe Ser Gly Thr  Ser Met Thr
    1130                1135                1140

Asp Tyr  Trp Val Leu Ile Phe  Phe Asn Leu Leu Phe  Thr Ser Ala
    1145                1150                1155
```

```
Pro Pro  Val Ile Tyr Gly Val  Leu Glu Lys Asp Val  Ser Ala Glu
    1160                1165                1170

Thr Leu  Met Gln Leu Pro Glu  Leu Tyr Arg Ser Gly  Gln Lys Ser
    1175                1180                1185

Glu Ala  Tyr Leu Pro His Thr  Phe Trp Ile Thr Leu  Leu Asp Ala
    1190                1195                1200

Phe Tyr  Gln Ser Leu Val Cys  Phe Phe Val Pro Tyr  Phe Thr Tyr
    1205                1210                1215

Gln Gly  Ser Asp Thr Asp Ile  Phe Ala Phe Gly Asn  Pro Leu Asn
    1220                1225                1230

Thr Ala  Ala Leu Phe Ile Val  Leu Leu His Leu Val  Ile Glu Ser
    1235                1240                1245

Lys Ser  Leu Thr Trp Ile His  Leu Leu Val Ile Ile  Gly Ser Ile
    1250                1255                1260

Leu Ser  Tyr Phe Leu Phe Ala  Ile Val Phe Gly Ala  Met Cys Val
    1265                1270                1275

Thr Cys  Asn Pro Pro Ser Asn  Pro Tyr Trp Ile Met  Gln Glu His
    1280                1285                1290

Met Leu  Asp Pro Val Phe Tyr  Leu Val Cys Ile Leu  Thr Thr Ser
    1295                1300                1305

Ile Ala  Leu Leu Pro Arg Phe  Val Tyr Arg Val Leu  Gln Gly Ser
    1310                1315                1320

Leu Phe  Pro Ser Pro Ile Leu  Arg Ala Lys His Phe  Asp Arg Leu
    1325                1330                1335

Thr Pro  Glu Glu Arg Thr Lys  Ala Leu Lys Lys Trp  Arg Gly Ala
    1340                1345                1350

Gly Lys  Met Asn Gln Val Thr  Ser Lys Tyr Ala Asn  Gln Ser Ala
    1355                1360                1365

Gly Lys  Ser Gly Arg Arg Pro  Met Pro Gly Pro Ser  Ala Val Phe
```

```
    1370                1375                1380

Ala Met  Lys Ser Ala Ser Ser  Cys Ala Ile Glu Gln  Gly Asn Leu
    1385                1390                1395

Ser Leu  Cys Glu Thr Ala Leu  Asp Gln Gly Tyr Ser  Glu Thr Lys
    1400                1405                1410

Ala Phe  Glu Met Ala Gly Pro  Ser Lys Gly Lys Glu  Ser
    1415                1420                1425


<210> 7340
<211> 535
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1556; "

<220>
<221> source
<223> /note="Gene Symbol: ATP10D; "

<220>
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<223> /note="Gene Name:
      ATPase,
      class V, type 10D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420909"

<400> 7340
Met Thr Glu Ala Leu Gln Trp Ala Arg Tyr His Trp Arg Arg Leu Ile
1               5                  10                  15

Arg Gly Ala Thr Arg Asp Asp Asp Ser Gly Pro Tyr Asn Tyr Ser Ser
            20                  25                  30

Leu Leu Ala Cys Gly Arg Lys Ser Ser Gln Thr Pro Lys Leu Ser Gly
        35                  40                  45

Arg His Arg Ile Val Val Pro His Ile Gln Pro Phe Lys Asp Glu Tyr
    50                  55                  60

Glu Lys Phe Ser Gly Ala Tyr Val Asn Asn Arg Ile Arg Thr Thr Lys
65                  70                  75                  80
```

```
Tyr Thr Leu Leu Asn Phe Val Pro Arg Asn Leu Phe Glu Gln Phe His
                85                  90                  95

Arg Ala Ala Asn Leu Tyr Phe Leu Phe Leu Val Val Leu Asn Trp Val
            100                 105                 110

Pro Leu Val Glu Ala Phe Gln Lys Glu Ile Thr Met Leu Pro Leu Val
        115                 120                 125

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

Lys Tyr Lys Ile Asp Lys Gln Ile Asn Asn Leu Ile Thr Lys Val Tyr
145                 150                 155                 160

Ser Arg Lys Glu Lys Lys Tyr Ile Asp Arg Cys Trp Lys Asp Val Thr
                165                 170                 175

Val Gly Asp Phe Ile Arg Leu Ser Cys Asn Glu Val Ile Pro Ala Asp
            180                 185                 190

Met Val Leu Leu Phe Ser Thr Asp Pro Asp Gly Ile Cys His Ile Glu
        195                 200                 205

Thr Ser Gly Leu Asp Gly Glu Ser Asn Leu Lys Gln Arg Gln Val Val
    210                 215                 220

Arg Gly Tyr Ala Glu Gln Asp Ser Glu Val Asp Pro Glu Lys Phe Ser
225                 230                 235                 240

Ser Arg Ile Glu Cys Glu Ser Pro Asn Asn Asp Leu Ser Arg Phe Arg
                245                 250                 255

Gly Phe Leu Glu His Ser Asn Lys Glu Arg Val Gly Leu Ser Lys Glu
            260                 265                 270

Asn Leu Leu Leu Arg Gly Cys Thr Ile Arg Asn Thr Glu Ala Val Val
        275                 280                 285

Gly Ile Val Val Tyr Ala Gly His Glu Thr Lys Ala Met Leu Asn Asn
    290                 295                 300
```

```
Ser Gly Pro Arg Tyr Lys Arg Ser Lys Leu Glu Arg Arg Ala Asn Thr
305                 310                 315                 320

Asp Val Leu Trp Cys Val Met Leu Leu Val Ile Met Cys Leu Thr Gly
                325                 330                 335

Ala Val Gly His Gly Ile Trp Leu Ser Arg Tyr Glu Lys Met His Phe
            340                 345                 350

Phe Asn Val Pro Glu Pro Asp Gly His Ile Ile Ser Pro Leu Leu Ala
        355                 360                 365

Gly Phe Tyr Met Phe Trp Thr Met Ile Ile Leu Leu Gln Leu Gly Gln
    370                 375                 380

Ile Tyr Phe Ile Gln Ser Asp Val Asp Phe Tyr Asn Glu Lys Met Asp
385                 390                 395                 400

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

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

Met Val Phe Arg Arg Cys Ser Val Ala Gly Phe Asp Tyr Cys His Glu
        435                 440                 445

Glu Asn Ala Arg Arg Leu Glu Ser Tyr Gln Glu Ala Val Ser Glu Asp
    450                 455                 460

Glu Asp Phe Ile Asp Thr Val Ser Gly Ser Leu Ser Asn Met Ala Lys
465                 470                 475                 480

Pro Arg Ala Pro Ser Cys Arg Thr Val His Asn Gly Pro Leu Gly Asn
                485                 490                 495

Lys Pro Ser Asn His Leu Ala Gly Ser Ser Phe Thr Leu Gly Ser Gly
            500                 505                 510

Glu Gly Ala Ser Glu Val Pro His Ser Arg Gln Ala Ala Phe Ser Ser
        515                 520                 525
```

Pro Ile Val Ser Met Asn Ala
530 535

<210> 7341
<211> 224
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP10D; "

<220>
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<223> /note="Gene Name:
ATPase,
class V, type 10D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421536"

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

<400> 7341
Xaa Asn Val Pro Glu Pro Asp Gly His Ile Ile Ser Pro Leu Leu Ala
1 5 10 15

Gly Phe Tyr Met Phe Trp Thr Met Ile Ile Leu Leu Gln Val Leu Ile
20 25 30

Pro Ile Ser Leu Tyr Val Ser Ile Glu Ile Val Lys Leu Gly Gln Ile
35 40 45

Tyr Phe Ile Gln Ser Asp Val Asp Phe Tyr Asn Glu Lys Met Asp Ser
50 55 60

Ile Val Gln Cys Arg Ala Leu Asn Ile Ala Glu Asp Leu Gly Gln Ile
65 70 75 80

Gln Tyr Leu Phe Ser Asp Lys Thr Gly Thr Leu Thr Glu Asn Lys Met
85 90 95

```
Val Phe Arg Arg Cys Ser Val Ala Gly Phe Asp Tyr Cys His Glu Glu
            100                 105                 110

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

Asp Phe Ile Asp Thr Val Ser Gly Ser Leu Ser Asn Met Ala Lys Pro
    130                 135                 140

Arg Ala Pro Ser Cys Arg Thr Val His Asn Gly Pro Leu Gly Asn Lys
145                 150                 155                 160

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

Gly Ala Ser Glu Val Pro His Ser Arg Gln Ala Ala Phe Ser Ser Pro
            180                 185                 190

Ile Glu Thr Asp Val Val Pro Asp Thr Arg Ala Gly His Gly Gly Leu
        195                 200                 205

Cys Cys Phe Gly Thr Ile Asn Ile Ser Thr Pro Thr His Pro Ala Leu
    210                 215                 220
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<210> 7342
<211> 1191
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ATPase,
class VI, type 11A; "

<220>
<221> source
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<400> 7342

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Met Asp Cys Ser Leu Val Arg Thr Leu Val His Arg Tyr Cys Ala Gly
1               5                  10                  15

Glu Glu Asn Trp Val Asp Ser Arg Thr Ile Tyr Val Gly His Arg Glu
            20                  25                  30

Pro Pro Pro Gly Ala Glu Ala Tyr Ile Pro Gln Arg Tyr Pro Asp Asn
        35                  40                  45

Arg Ile Val Ser Ser Lys Tyr Thr Phe Trp Asn Phe Ile Pro Lys Asn
    50                  55                  60

Leu Phe Glu Gln Phe Arg Arg Val Ala Asn Phe Tyr Phe Leu Ile Ile
65                  70                  75                  80

Phe Leu Val Gln Leu Ile Ile Asp Thr Pro Thr Ser Pro Val Thr Ser
                85                  90                  95

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

Tyr Glu Asp Trp Leu Arg His Lys Ala Asp Asn Ala Met Asn Gln Cys
        115                 120                 125

Pro Val His Phe Ile Gln His Gly Lys Leu Val Arg Lys Gln Ser Arg
    130                 135                 140

Lys Leu Arg Val Gly Asp Ile Val Met Val Lys Glu Asp Glu Thr Phe
145                 150                 155                 160

Pro Cys Asp Leu Ile Phe Leu Ser Ser Asn Arg Gly Asp Gly Thr Cys
                165                 170                 175

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

Tyr Ala Val Gln Asp Thr Lys Gly Phe His Thr Glu Glu Asp Ile Gly
        195                 200                 205

Gly Leu His Ala Thr Ile Glu Cys Glu Gln Pro Gln Pro Asp Leu Tyr
    210                 215                 220

Lys Phe Val Gly Arg Ile Asn Val Tyr Ser Asp Leu Asn Asp Pro Val
```

225 230 235 240

Val Arg Pro Leu Gly Ser Glu Asn Leu Leu Leu Arg Gly Ala Thr Leu
245 250 255

Lys Asn Thr Glu Lys Ile Phe Gly Val Ala Ile Tyr Thr Gly Met Glu
260 265 270

Thr Lys Met Ala Leu Asn Tyr Gln Ser Lys Ser Gln Lys Arg Ser Ala
275 280 285

Val Glu Lys Ser Met Asn Ala Phe Leu Ile Val Tyr Leu Cys Ile Leu
290 295 300

Ile Ser Lys Ala Leu Ile Asn Thr Val Leu Lys Tyr Met Trp Gln Ser
305 310 315 320

Glu Pro Phe Arg Asp Glu Pro Trp Tyr Asn Gln Lys Thr Glu Ser Glu
325 330 335

Arg Gln Arg Asn Leu Phe Leu Lys Ala Phe Thr Asp Phe Leu Ala Phe
340 345 350

Met Val Leu Phe Asn Tyr Ile Ile Pro Val Ser Met Tyr Val Thr Val
355 360 365

Glu Met Gln Lys Phe Leu Gly Ser Tyr Phe Ile Thr Trp Asp Glu Asp
370 375 380

Met Phe Asp Glu Glu Thr Gly Glu Gly Pro Leu Val Asn Thr Ser Asp
385 390 395 400

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

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

Gly His Val Tyr Val Pro His Val Ile Cys Asn Gly Gln Val Leu Pro
435 440 445

Glu Ser Ser Gly Ile Asp Met Ile Asp Ser Ser Pro Ser Val Asn Gly
450 455 460

```
Arg Glu Arg Glu Glu Leu Phe Phe Arg Ala Leu Cys Leu Cys His Thr
465                 470                 475                 480

Val Gln Val Lys Asp Asp Asp Ser Val Asp Gly Pro Arg Lys Ser Pro
                485                 490                 495

Asp Gly Gly Lys Ser Cys Val Tyr Ile Ser Ser Ser Pro Asp Glu Val
            500                 505                 510

Ala Leu Val Glu Gly Val Gln Arg Leu Gly Phe Thr Tyr Leu Arg Leu
        515                 520                 525

Lys Asp Asn Tyr Met Glu Ile Leu Asn Arg Glu Asn His Ile Glu Arg
    530                 535                 540

Phe Glu Leu Leu Glu Ile Leu Ser Phe Asp Ser Val Arg Arg Arg Met
545                 550                 555                 560

Ser Val Ile Val Lys Ser Ala Thr Gly Glu Ile Tyr Leu Phe Cys Lys
                565                 570                 575

Gly Ala Asp Ser Ser Ile Phe Pro Arg Val Ile Glu Gly Lys Val Asp
            580                 585                 590

Gln Ile Arg Ala Arg Val Glu Arg Asn Ala Val Glu Gly Leu Arg Thr
        595                 600                 605

Leu Cys Val Ala Tyr Lys Arg Leu Ile Gln Glu Glu Tyr Glu Gly Ile
    610                 615                 620

Cys Lys Leu Leu Gln Ala Ala Lys Val Ala Leu Gln Asp Arg Glu Lys
625                 630                 635                 640

Lys Leu Ala Glu Ala Tyr Glu Gln Ile Glu Lys Asp Leu Thr Leu Leu
                645                 650                 655

Gly Ala Thr Ala Val Glu Asp Arg Leu Gln Glu Lys Ala Ala Asp Thr
            660                 665                 670

Ile Glu Ala Leu Gln Lys Ala Gly Ile Lys Val Trp Val Leu Thr Gly
        675                 680                 685
```

```
Asp Lys Met Glu Thr Ala Ala Ala Thr Cys Tyr Ala Cys Lys Leu Phe
     690                 695                 700

Arg Arg Asn Thr Gln Leu Leu Glu Leu Thr Thr Lys Arg Ile Glu Glu
705                 710                 715                 720

Gln Ser Leu His Asp Val Leu Phe Glu Leu Ser Lys Thr Val Leu Arg
                725                 730                 735

His Ser Gly Ser Leu Thr Arg Asp Asn Leu Ser Gly Leu Ser Ala Asp
            740                 745                 750

Met Gln Asp Tyr Gly Leu Ile Ile Asp Gly Ala Ala Leu Ser Leu Ile
        755                 760                 765

Met Lys Pro Arg Glu Asp Gly Ser Ser Gly Asn Tyr Arg Glu Leu Phe
    770                 775                 780

Leu Glu Ile Cys Arg Ser Cys Ser Ala Val Leu Cys Cys Arg Met Ala
785                 790                 795                 800

Pro Leu Gln Lys Ala Gln Ile Val Lys Leu Ile Lys Phe Ser Lys Glu
                805                 810                 815

His Pro Ile Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Val Ser Met
            820                 825                 830

Ile Leu Glu Ala His Val Gly Ile Gly Val Ile Gly Lys Glu Gly Arg
        835                 840                 845

Gln Ala Ala Arg Asn Ser Asp Tyr Ala Ile Pro Lys Phe Lys His Leu
    850                 855                 860

Lys Lys Met Leu Leu Val His Gly His Phe Tyr Tyr Ile Arg Ile Ser
865                 870                 875                 880

Glu Leu Val Gln Tyr Phe Phe Tyr Lys Asn Val Cys Phe Ile Phe Pro
                885                 890                 895

Gln Phe Leu Tyr Gln Phe Phe Cys Gly Phe Ser Gln Gln Thr Leu Tyr
            900                 905                 910
```

```
Asp Thr Ala Tyr Leu Thr Leu Tyr Asn Ile Ser Phe Thr Ser Leu Pro
        915                 920                 925

Ile Leu Leu Tyr Ser Leu Met Glu Gln His Val Gly Ile Asp Val Leu
    930                 935                 940

Lys Arg Asp Pro Thr Leu Tyr Arg Asp Val Ala Lys Asn Ala Leu Leu
945                 950                 955                 960

Arg Trp Arg Val Phe Ile Tyr Trp Thr Leu Leu Gly Leu Phe Asp Ala
                965                 970                 975

Leu Val Phe Phe Phe Gly Ala Tyr Phe Val Phe Glu Asn Thr Thr Val
            980                 985                 990

Thr Ser Asn Gly Gln Ile Phe Gly  Asn Trp Thr Phe Gly  Thr Leu
Val
        995                 1000                1005

Phe Thr  Val Met Val Phe Thr  Val Thr Leu Lys Leu  Ala Leu Asp
    1010                1015                1020

Thr His  Tyr Trp Thr Trp Ile  Asn His Phe Val Ile  Trp Gly Ser
    1025                1030                1035

Leu Leu  Phe Tyr Val Val Phe  Ser Leu Leu Trp Gly  Gly Val Ile
    1040                1045                1050

Trp Pro  Phe Leu Asn Tyr Gln  Arg Met Tyr Tyr Val  Phe Ile Gln
    1055                1060                1065

Met Leu  Ser Ser Gly Pro Ala  Trp Leu Ala Ile Val  Leu Leu Val
    1070                1075                1080

Thr Ile  Ser Leu Leu Pro Asp  Val Leu Lys Lys Val  Leu Cys Arg
    1085                1090                1095

Gln Leu  Trp Pro Thr Ala Thr  Glu Arg Val Gln Asn  Gly Cys Ala
    1100                1105                1110

Gln Pro  Arg Asp Arg Asp Ser  Glu Phe Thr Pro Leu  Ala Ser Leu
    1115                1120                1125
```

```
Gln Ser  Pro Gly Tyr Gln Ser  Thr Cys Pro Ser Ala  Ala Trp Tyr
    1130                1135                1140


Ser Ser  His Ser Gln Gln Val  Thr Leu Ala Ala Trp  Lys Glu Lys
    1145                1150                1155


Val Ser  Thr Glu Pro Pro Pro  Ile Leu Gly Gly Ser  His His His
    1160                1165                1170


Cys Ser  Ser Ile Pro Ser His  Ser Cys Pro Arg Ser  Arg Val Gly
    1175                1180                1185


Met Leu  Val
    1190


<210> 7343
<211> 1134
<212> PRT
<213> Homo sapiens

<220>
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<400> 7343
Met Asp Cys Ser Leu Val Arg Thr Leu Val His Arg Tyr Cys Ala Gly
1               5                  10                  15


Glu Glu Asn Trp Val Asp Ser Arg Thr Ile Tyr Val Gly His Arg Glu
            20                  25                  30


Pro Pro Pro Gly Ala Glu Ala Tyr Ile Pro Gln Arg Tyr Pro Asp Asn
```

```
        35                  40                  45

Arg Ile Val Ser Ser Lys Tyr Thr Phe Trp Asn Phe Ile Pro Lys Asn
    50                  55                  60

Leu Phe Glu Gln Phe Arg Arg Val Ala Asn Phe Tyr Phe Leu Ile Ile
65                  70                  75                  80

Phe Leu Val Gln Leu Ile Ile Asp Thr Pro Thr Ser Pro Val Thr Ser
                85                  90                  95

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

Tyr Glu Asp Trp Leu Arg His Lys Ala Asp Asn Ala Met Asn Gln Cys
        115                 120                 125

Pro Val His Phe Ile Gln His Gly Lys Leu Val Arg Lys Gln Ser Arg
    130                 135                 140

Lys Leu Arg Val Gly Asp Ile Val Met Val Lys Glu Asp Glu Thr Phe
145                 150                 155                 160

Pro Cys Asp Leu Ile Phe Leu Ser Ser Asn Arg Gly Asp Gly Thr Cys
                165                 170                 175

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

Tyr Ala Val Gln Asp Thr Lys Gly Phe His Thr Glu Glu Asp Ile Gly
        195                 200                 205

Gly Leu His Ala Thr Ile Glu Cys Glu Gln Pro Gln Pro Asp Leu Tyr
    210                 215                 220

Lys Phe Val Gly Arg Ile Asn Val Tyr Ser Asp Leu Asn Asp Pro Val
225                 230                 235                 240

Val Arg Pro Leu Gly Ser Glu Asn Leu Leu Leu Arg Gly Ala Thr Leu
                245                 250                 255

Lys Asn Thr Glu Lys Ile Phe Gly Val Ala Ile Tyr Thr Gly Met Glu
            260                 265                 270
```

```
Thr Lys Met Ala Leu Asn Tyr Gln Ser Lys Ser Gln Lys Arg Ser Ala
        275                 280                 285

Val Glu Lys Ser Met Asn Ala Phe Leu Ile Val Tyr Leu Cys Ile Leu
    290                 295                 300

Ile Ser Lys Ala Leu Ile Asn Thr Val Leu Lys Tyr Met Trp Gln Ser
305                 310                 315                 320

Glu Pro Phe Arg Asp Glu Pro Trp Tyr Asn Gln Lys Thr Glu Ser Glu
                325                 330                 335

Arg Gln Arg Asn Leu Phe Leu Lys Ala Phe Thr Asp Phe Leu Ala Phe
            340                 345                 350

Met Val Leu Phe Asn Tyr Ile Ile Pro Val Ser Met Tyr Val Thr Val
        355                 360                 365

Glu Met Gln Lys Phe Leu Gly Ser Tyr Phe Ile Thr Trp Asp Glu Asp
    370                 375                 380

Met Phe Asp Glu Glu Thr Gly Glu Gly Pro Leu Val Asn Thr Ser Asp
385                 390                 395                 400

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

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

Gly His Val Tyr Val Pro His Val Ile Cys Asn Gly Gln Val Leu Pro
        435                 440                 445

Glu Ser Ser Gly Ile Asp Met Ile Asp Ser Ser Pro Ser Val Asn Gly
    450                 455                 460

Arg Glu Arg Glu Glu Leu Phe Phe Arg Ala Leu Cys Leu Cys His Thr
465                 470                 475                 480

Val Gln Val Lys Asp Asp Asp Ser Val Asp Gly Pro Arg Lys Ser Pro
                485                 490                 495
```

```
Asp Gly Gly Lys Ser Cys Val Tyr Ile Ser Ser Ser Pro Asp Glu Val
            500                 505                 510

Ala Leu Val Glu Gly Val Gln Arg Leu Gly Phe Thr Tyr Leu Arg Leu
        515                 520                 525

Lys Asp Asn Tyr Met Glu Ile Leu Asn Arg Glu Asn His Ile Glu Arg
    530                 535                 540

Phe Glu Leu Leu Glu Ile Leu Ser Phe Asp Ser Val Arg Arg Arg Met
545                 550                 555                 560

Ser Val Ile Val Lys Ser Ala Thr Gly Glu Ile Tyr Leu Phe Cys Lys
                565                 570                 575

Gly Ala Asp Ser Ser Ile Phe Pro Arg Val Ile Glu Gly Lys Val Asp
            580                 585                 590

Gln Ile Arg Ala Arg Val Glu Arg Asn Ala Val Glu Gly Leu Arg Thr
        595                 600                 605

Leu Cys Val Ala Tyr Lys Arg Leu Ile Gln Glu Glu Tyr Glu Gly Ile
    610                 615                 620

Cys Lys Leu Leu Gln Ala Ala Lys Val Ala Leu Gln Asp Arg Glu Lys
625                 630                 635                 640

Lys Leu Ala Glu Ala Tyr Glu Gln Ile Glu Lys Asp Leu Thr Leu Leu
                645                 650                 655

Gly Ala Thr Ala Val Glu Asp Arg Leu Gln Glu Lys Ala Ala Asp Thr
            660                 665                 670

Ile Glu Ala Leu Gln Lys Ala Gly Ile Lys Val Trp Val Leu Thr Gly
        675                 680                 685

Asp Lys Met Glu Thr Ala Ala Ala Thr Cys Tyr Ala Cys Lys Leu Phe
    690                 695                 700

Arg Arg Asn Thr Gln Leu Leu Glu Leu Thr Thr Lys Arg Ile Glu Glu
705                 710                 715                 720
```

```
Gln Ser Leu His Asp Val Leu Phe Glu Leu Ser Lys Thr Val Leu Arg
                725                 730                 735

His Ser Gly Ser Leu Thr Arg Asp Asn Leu Ser Gly Leu Ser Ala Asp
            740                 745                 750

Met Gln Asp Tyr Gly Leu Ile Ile Asp Gly Ala Ala Leu Ser Leu Ile
        755                 760                 765

Met Lys Pro Arg Glu Asp Gly Ser Ser Gly Asn Tyr Arg Glu Leu Phe
    770                 775                 780

Leu Glu Ile Cys Arg Ser Cys Ser Ala Val Leu Cys Cys Arg Met Ala
785                 790                 795                 800

Pro Leu Gln Lys Ala Gln Ile Val Lys Leu Ile Lys Phe Ser Lys Glu
                805                 810                 815

His Pro Ile Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Val Ser Met
            820                 825                 830

Ile Leu Glu Ala His Val Gly Ile Gly Val Ile Gly Lys Glu Gly Arg
        835                 840                 845

Gln Ala Ala Arg Asn Ser Asp Tyr Ala Ile Pro Lys Phe Lys His Leu
    850                 855                 860

Lys Lys Met Leu Leu Val His Gly His Phe Tyr Tyr Ile Arg Ile Ser
865                 870                 875                 880

Glu Leu Val Gln Tyr Phe Phe Tyr Lys Asn Val Cys Phe Ile Phe Pro
                885                 890                 895

Gln Phe Leu Tyr Gln Phe Phe Cys Gly Phe Ser Gln Gln Thr Leu Tyr
            900                 905                 910

Asp Thr Ala Tyr Leu Thr Leu Tyr Asn Ile Ser Phe Thr Ser Leu Pro
        915                 920                 925

Ile Leu Leu Tyr Ser Leu Met Glu Gln His Val Gly Ile Asp Val Leu
    930                 935                 940

Lys Arg Asp Pro Thr Leu Tyr Arg Asp Val Ala Lys Asn Ala Leu Leu
```

945 950 955 960

Arg Trp Arg Val Phe Ile Tyr Trp Thr Leu Leu Gly Leu Phe Asp Ala
965 970 975

Leu Val Phe Phe Phe Gly Ala Tyr Phe Val Phe Glu Asn Thr Thr Val
980 985 990

Thr Ser Asn Gly Gln Ile Phe Gly Asn Trp Thr Phe Gly Thr Leu
Val
995 1000 1005

Phe Thr Val Met Val Phe Thr Val Thr Leu Lys Leu Ala Leu Asp
1010 1015 1020

Thr His Tyr Trp Thr Trp Ile Asn His Phe Val Ile Trp Gly Ser
1025 1030 1035

Leu Leu Phe Tyr Val Val Phe Ser Leu Leu Trp Gly Gly Val Ile
1040 1045 1050

Trp Pro Phe Leu Asn Tyr Gln Arg Met Tyr Tyr Val Phe Ile Gln
1055 1060 1065

Met Leu Ser Ser Gly Pro Ala Trp Leu Ala Ile Val Leu Leu Val
1070 1075 1080

Thr Ile Ser Leu Leu Pro Asp Val Leu Lys Lys Val Leu Cys Arg
1085 1090 1095

Gln Leu Trp Pro Thr Ala Thr Glu Arg Val Gln Thr Lys Ser Gln
1100 1105 1110

Cys Leu Ser Val Glu Gln Ser Thr Ile Phe Met Leu Ser Gln Thr
1115 1120 1125

Ser Ser Ser Leu Ser Phe
1130

<210> 7344
<211> 935
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP11A; "

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class VI, type 11A; "

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<223> Any amino acid

<400> 7344
Xaa Tyr Val Gly His Arg Glu Pro Pro Pro Gly Ala Glu Ala Tyr Ile
1 5 10 15

Pro Gln Arg Tyr Pro Asp Asn Arg Ile Val Ser Ser Lys Tyr Thr Phe
20 25 30

Trp Asn Phe Ile Pro Lys Asn Leu Phe Glu Gln Phe Arg Arg Val Ala
35 40 45

Asn Phe Tyr Phe Leu Ile Ile Phe Leu Val Gln Leu Ile Ile Asp Thr
50 55 60

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

Val Thr Ala Ile Lys Gln Gly Tyr Glu Asp Trp Leu Arg His Lys Ala
85 90 95

Asp Asn Ala Met Asn Gln Cys Pro Val His Phe Ile Gln His Gly Lys
100 105 110

Leu Val Arg Lys Gln Ser Arg Lys Leu Arg Val Gly Asp Ile Val Met
115 120 125

```
Val Lys Glu Asp Glu Thr Phe Pro Cys Asp Leu Ile Phe Leu Ser Ser
    130                 135                 140

Asn Arg Gly Asp Gly Thr Cys His Val Thr Thr Ala Ser Leu Asp Gly
145                 150                 155                 160

Glu Ser Ser His Lys Thr His Tyr Ala Val Gln Asp Thr Lys Gly Phe
                165                 170                 175

His Thr Glu Glu Asp Ile Gly Gly Leu His Ala Thr Ile Glu Cys Glu
            180                 185                 190

Gln Pro Gln Pro Asp Leu Tyr Lys Phe Val Gly Arg Ile Asn Val Tyr
        195                 200                 205

Ser Asp Leu Asn Asp Pro Val Val Arg Pro Leu Gly Ser Glu Asn Leu
    210                 215                 220

Leu Leu Arg Gly Ala Thr Leu Lys Asn Thr Glu Lys Ile Phe Gly Val
225                 230                 235                 240

Ala Ile Tyr Thr Gly Met Glu Thr Lys Met Ala Leu Asn Tyr Gln Ser
                245                 250                 255

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

Ile Val Tyr Leu Cys Ile Leu Ile Ser Lys Ala Leu Ile Asn Thr Val
        275                 280                 285

Leu Lys Tyr Met Trp Gln Ser Glu Pro Phe Arg Asp Glu Pro Trp Tyr
    290                 295                 300

Asn Gln Lys Thr Glu Ser Glu Arg Gln Arg Asn Leu Phe Leu Lys Ala
305                 310                 315                 320

Phe Thr Asp Phe Leu Ala Phe Met Val Leu Phe Asn Tyr Ile Ile Pro
                325                 330                 335

Val Ser Met Tyr Val Thr Val Glu Met Gln Lys Phe Leu Gly Ser Tyr
            340                 345                 350

Phe Ile Thr Trp Asp Glu Asp Met Phe Asp Glu Glu Thr Gly Glu Gly
```

355 360 365

Pro Leu Val Asn Thr Ser Asp Leu Asn Glu Glu Leu Gly Gln Val Glu
370 375 380

Tyr Ile Phe Thr Asp Lys Thr Gly Thr Leu Thr Glu Asn Asn Met Glu
385 390 395 400

Phe Lys Glu Cys Cys Ile Glu Gly His Val Tyr Val Pro His Val Ile
405 410 415

Cys Asn Gly Gln Val Leu Pro Glu Ser Ser Gly Ile Asp Met Ile Asp
420 425 430

Ser Ser Pro Ser Val Asn Gly Arg Glu Arg Glu Glu Leu Phe Phe Arg
435 440 445

Ala Leu Cys Leu Cys His Thr Val Gln Val Lys Asp Asp Asp Ser Val
450 455 460

Asp Gly Pro Arg Lys Ser Pro Asp Gly Gly Lys Ser Cys Val Tyr Ile
465 470 475 480

Ser Ser Ser Pro Asp Glu Val Ala Leu Val Glu Gly Val Gln Arg Leu
485 490 495

Gly Phe Thr Tyr Leu Arg Leu Lys Asp Asn Tyr Met Glu Ile Leu Asn
500 505 510

Arg Glu Asn His Ile Glu Arg Phe Glu Leu Leu Glu Ile Leu Ser Phe
515 520 525

Asp Ser Val Arg Arg Arg Met Ser Val Ile Val Lys Ser Ala Thr Gly
530 535 540

Glu Ile Tyr Leu Phe Cys Lys Gly Ala Asp Ser Ser Ile Phe Pro Arg
545 550 555 560

Val Ile Glu Gly Lys Val Asp Gln Ile Arg Ala Arg Val Glu Arg Asn
565 570 575

Ala Val Glu Gly Leu Arg Thr Leu Cys Val Ala Tyr Lys Arg Leu Ile
580 585 590

```
Gln Glu Glu Tyr Glu Gly Ile Cys Lys Leu Leu Gln Ala Ala Lys Val
        595                 600                 605

Ala Leu Gln Asp Arg Glu Lys Lys Leu Ala Glu Ala Tyr Glu Gln Ile
    610                 615                 620

Glu Lys Asp Leu Thr Leu Leu Gly Ala Thr Ala Val Glu Asp Arg Leu
625                 630                 635                 640

Gln Glu Lys Ala Ala Asp Thr Ile Glu Ala Leu Gln Lys Ala Gly Ile
                645                 650                 655

Lys Val Trp Val Leu Thr Gly Asp Lys Met Glu Thr Ala Ala Ala Thr
            660                 665                 670

Cys Tyr Ala Cys Lys Leu Phe Arg Arg Asn Thr Gln Leu Leu Glu Leu
        675                 680                 685

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

Leu Ser Lys Thr Val Leu Arg His Ser Gly Ser Leu Thr Arg Asp Asn
705                 710                 715                 720

Leu Ser Gly Leu Ser Ala Asp Met Gln Asp Tyr Gly Leu Ile Ile Asp
                725                 730                 735

Gly Ala Ala Leu Ser Leu Ile Met Lys Pro Arg Glu Asp Gly Ser Ser
            740                 745                 750

Gly Asn Tyr Arg Glu Leu Phe Leu Glu Ile Cys Arg Ser Cys Ser Ala
        755                 760                 765

Val Leu Cys Cys Arg Met Ala Pro Leu Gln Lys Ala Gln Ile Val Lys
    770                 775                 780

Leu Ile Lys Phe Ser Lys Glu His Pro Ile Thr Leu Ala Ile Gly Asp
785                 790                 795                 800

Gly Ala Asn Asp Val Ser Met Ile Leu Glu Ala His Val Gly Ile Gly
                805                 810                 815
```

```
Val Ile Gly Lys Glu Gly Arg Gln Ala Ala Arg Asn Ser Asp Tyr Ala
            820                 825                 830

Ile Pro Lys Phe Lys His Leu Lys Lys Met Leu Leu Val His Gly His
        835                 840                 845

Phe Tyr Tyr Ile Arg Ile Ser Glu Leu Val Gln Tyr Phe Phe Tyr Lys
    850                 855                 860

Asn Val Cys Phe Ile Phe Pro Gln Phe Leu Tyr Gln Phe Phe Cys Gly
865                 870                 875                 880

Phe Ser Gln Gln Thr Leu Tyr Asp Thr Ala Tyr Leu Thr Leu Tyr Asn
                885                 890                 895

Ile Ser Phe Thr Ser Leu Pro Ile Leu Leu Tyr Ser Leu Met Glu Gln
            900                 905                 910

His Val Gly Ile Asp Val Leu Lys Arg Asp Pro Thr Leu Tyr Arg Tyr
        915                 920                 925

His Pro Pro Asn Ser Leu Ser
    930                 935


<210> 7345
<211> 75
<212> PRT
<213> Homo sapiens

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<222> (1)..(1)
<223> Any amino acid

<400> 7345
Xaa Phe Ile Gln Met Leu Ser Ser Gly Pro Ala Trp Leu Ala Ile Val
1   5   10   15

Leu Leu Val Thr Ile Ser Leu Leu Pro Asp Val Leu Lys Lys Val Leu
            20   25   30

Cys Arg Gln Leu Trp Pro Thr Ala Thr Glu Arg Val Gln Arg Gly Val
        35   40   45

Lys His Lys Ala Pro Val Gln Ala Ala Gln Ser Ser Asp Gly Pro Leu
    50   55   60

Leu Lys Asp Leu Leu Arg Arg Pro Arg Arg Ser
65   70   75

<210> 7346
<211> 183
<212> PRT
<213> Homo sapiens

<220>
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ATPase,
class VI, type 11A; "

<220>
<221> source
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<400> 7346
Phe Thr Val Met Val Phe Thr Val Thr Leu Lys Leu Ala Leu Asp Thr
1   5   10   15

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

```
Phe Tyr Val Val Phe Ser Leu Leu Trp Gly Gly Val Ile Trp Pro Phe
        35                  40                  45

Leu Asn Tyr Gln Arg Met Tyr Tyr Val Phe Ile Gln Met Leu Ser Ser
    50                  55                  60

Gly Pro Ala Trp Leu Ala Ile Val Leu Leu Val Thr Ile Ser Leu Leu
65                  70                  75                  80

Pro Asp Val Leu Lys Lys Val Leu Cys Arg Gln Leu Trp Pro Thr Ala
                85                  90                  95

Thr Glu Arg Val Gln Asn Gly Cys Ala Gln Pro Arg Asp Arg Asp Ser
            100                 105                 110

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

Cys Pro Ser Ala Ala Trp Tyr Ser Ser His Ser Gln Gln Val Thr Leu
    130                 135                 140

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

Gly Ser His His His Cys Ser Ser Ile Pro Ser His Ser Cys Pro Arg
                165                 170                 175

Ser Arg Val Gly Met Leu Val
            180


<210> 7347
<211> 1134
<212> PRT
<213> Homo sapiens

<220>
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ATPase,
class VI, type 11A; "

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<400> 7347

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Met Asp Cys Ser Leu Val Arg Thr Leu Val His Arg Tyr Cys Ala Gly
1               5                  10                  15

Glu Glu Asn Trp Val Asp Ser Arg Thr Ile Tyr Val Gly His Arg Glu
            20                  25                  30

Pro Pro Pro Gly Ala Glu Ala Tyr Ile Pro Gln Arg Tyr Pro Asp Asn
        35                  40                  45

Arg Ile Val Ser Ser Lys Tyr Thr Phe Trp Asn Phe Ile Pro Lys Asn
    50                  55                  60

Leu Phe Glu Gln Phe Arg Arg Val Ala Asn Phe Tyr Phe Leu Ile Ile
65                  70                  75                  80

Phe Leu Val Gln Leu Ile Ile Asp Thr Pro Thr Ser Pro Val Thr Ser
                85                  90                  95

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

Tyr Glu Asp Trp Leu Arg His Lys Ala Asp Asn Ala Met Asn Gln Cys
        115                 120                 125

Pro Val His Phe Ile Gln His Gly Lys Leu Val Arg Lys Gln Ser Arg
    130                 135                 140

Lys Leu Arg Val Gly Asp Ile Val Met Val Lys Glu Asp Glu Thr Phe
145                 150                 155                 160

Pro Cys Asp Leu Ile Phe Leu Ser Ser Asn Arg Gly Asp Gly Thr Cys
                165                 170                 175

His Val Thr Thr Ala Ser Leu Asp Gly Glu Ser Ser His Lys Thr His
```

```
            180                 185                 190

Tyr Ala Val Gln Asp Thr Lys Gly Phe His Thr Glu Glu Asp Ile Gly
        195                 200                 205

Gly Leu His Ala Thr Ile Glu Cys Glu Gln Pro Gln Pro Asp Leu Tyr
    210                 215                 220

Lys Phe Val Gly Arg Ile Asn Val Tyr Ser Asp Leu Asn Asp Pro Val
225                 230                 235                 240

Val Arg Pro Leu Gly Ser Glu Asn Leu Leu Leu Arg Gly Ala Thr Leu
                245                 250                 255

Lys Asn Thr Glu Lys Ile Phe Gly Val Ala Ile Tyr Thr Gly Met Glu
            260                 265                 270

Thr Lys Met Ala Leu Asn Tyr Gln Ser Lys Ser Gln Lys Arg Ser Ala
        275                 280                 285

Val Glu Lys Ser Met Asn Ala Phe Leu Ile Val Tyr Leu Cys Ile Leu
    290                 295                 300

Ile Ser Lys Ala Leu Ile Asn Thr Val Leu Lys Tyr Met Trp Gln Ser
305                 310                 315                 320

Glu Pro Phe Arg Asp Glu Pro Trp Tyr Asn Gln Lys Thr Glu Ser Glu
                325                 330                 335

Arg Gln Arg Asn Leu Phe Leu Lys Ala Phe Thr Asp Phe Leu Ala Phe
            340                 345                 350

Met Val Leu Phe Asn Tyr Ile Ile Pro Val Ser Met Tyr Val Thr Val
        355                 360                 365

Glu Met Gln Lys Phe Leu Gly Ser Tyr Phe Ile Thr Trp Asp Glu Asp
    370                 375                 380

Met Phe Asp Glu Glu Thr Gly Glu Gly Pro Leu Val Asn Thr Ser Asp
385                 390                 395                 400

Leu Asn Glu Glu Leu Gly Gln Val Glu Tyr Ile Phe Thr Asp Lys Thr
                405                 410                 415
```

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

Gly His Val Tyr Val Pro His Val Ile Cys Asn Gly Gln Val Leu Pro
        435                 440                 445

Glu Ser Ser Gly Ile Asp Met Ile Asp Ser Ser Pro Ser Val Asn Gly
    450                 455                 460

Arg Glu Arg Glu Glu Leu Phe Phe Arg Ala Leu Cys Leu Cys His Thr
465                 470                 475                 480

Val Gln Val Lys Asp Asp Asp Ser Val Asp Gly Pro Arg Lys Ser Pro
                485                 490                 495

Asp Gly Gly Lys Ser Cys Val Tyr Ile Ser Ser Ser Pro Asp Glu Val
            500                 505                 510

Ala Leu Val Glu Gly Val Gln Arg Leu Gly Phe Thr Tyr Leu Arg Leu
        515                 520                 525

Lys Asp Asn Tyr Met Glu Ile Leu Asn Arg Glu Asn His Ile Glu Arg
    530                 535                 540

Phe Glu Leu Leu Glu Ile Leu Ser Phe Asp Ser Val Arg Arg Arg Met
545                 550                 555                 560

Ser Val Ile Val Lys Ser Ala Thr Gly Glu Ile Tyr Leu Phe Cys Lys
                565                 570                 575

Gly Ala Asp Ser Ser Ile Phe Pro Arg Val Ile Glu Gly Lys Val Asp
            580                 585                 590

Gln Ile Arg Ala Arg Val Glu Arg Asn Ala Val Glu Gly Leu Arg Thr
        595                 600                 605

Leu Cys Val Ala Tyr Lys Arg Leu Ile Gln Glu Glu Tyr Glu Gly Ile
    610                 615                 620

Cys Lys Leu Leu Gln Ala Ala Lys Val Ala Leu Gln Asp Arg Glu Lys
625                 630                 635                 640
```

```
Lys Leu Ala Glu Ala Tyr Glu Gln Ile Glu Lys Asp Leu Thr Leu Leu
                645                 650                 655

Gly Ala Thr Ala Val Glu Asp Arg Leu Gln Glu Lys Ala Ala Asp Thr
            660                 665                 670

Ile Glu Ala Leu Gln Lys Ala Gly Ile Lys Val Trp Val Leu Thr Gly
        675                 680                 685

Asp Lys Met Glu Thr Ala Ala Ala Thr Cys Tyr Ala Cys Lys Leu Phe
    690                 695                 700

Arg Arg Asn Thr Gln Leu Leu Glu Leu Thr Thr Lys Arg Ile Glu Glu
705                 710                 715                 720

Gln Ser Leu His Asp Val Leu Phe Glu Leu Ser Lys Thr Val Leu Arg
                725                 730                 735

His Ser Gly Ser Leu Thr Arg Asp Asn Leu Ser Gly Leu Ser Ala Asp
            740                 745                 750

Met Gln Asp Tyr Gly Leu Ile Ile Asp Gly Ala Ala Leu Ser Leu Ile
        755                 760                 765

Met Lys Pro Arg Glu Asp Gly Ser Ser Gly Asn Tyr Arg Glu Leu Phe
    770                 775                 780

Leu Glu Ile Cys Arg Ser Cys Ser Ala Val Leu Cys Cys Arg Met Ala
785                 790                 795                 800

Pro Leu Gln Lys Ala Gln Ile Val Lys Leu Ile Lys Phe Ser Lys Glu
                805                 810                 815

His Pro Ile Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Val Ser Met
            820                 825                 830

Ile Leu Glu Ala His Val Gly Ile Gly Val Ile Gly Lys Glu Gly Arg
        835                 840                 845

Gln Ala Ala Arg Asn Ser Asp Tyr Ala Ile Pro Lys Phe Lys His Leu
    850                 855                 860
```

```
Lys Lys Met Leu Leu Val His Gly His Phe Tyr Tyr Ile Arg Ile Ser
865                 870                 875                 880

Glu Leu Val Gln Tyr Phe Phe Tyr Lys Asn Val Cys Phe Ile Phe Pro
                885                 890                 895

Gln Phe Leu Tyr Gln Phe Phe Cys Gly Phe Ser Gln Gln Thr Leu Tyr
            900                 905                 910

Asp Thr Ala Tyr Leu Thr Leu Tyr Asn Ile Ser Phe Thr Ser Leu Pro
        915                 920                 925

Ile Leu Leu Tyr Ser Leu Met Glu Gln His Val Gly Ile Asp Val Leu
    930                 935                 940

Lys Arg Asp Pro Thr Leu Tyr Arg Asp Val Ala Lys Asn Ala Leu Leu
945                 950                 955                 960

Arg Trp Arg Val Phe Ile Tyr Trp Thr Leu Leu Gly Leu Phe Asp Ala
                965                 970                 975

Leu Val Phe Phe Phe Gly Ala Tyr Phe Val Phe Glu Asn Thr Thr Val
            980                 985                 990

Thr Ser Asn Gly Gln Ile Phe Gly  Asn Trp Thr Phe Gly  Thr Leu
Val
        995                 1000                1005

Phe Thr  Val Met Val Phe Thr  Val Thr Leu Lys Leu  Ala Leu Asp
    1010                1015                1020

Thr His  Tyr Trp Thr Trp Ile  Asn His Phe Val Ile  Trp Gly Ser
    1025                1030                1035

Leu Leu  Phe Tyr Val Val Phe  Ser Leu Leu Trp Gly  Gly Val Ile
    1040                1045                1050

Trp Pro  Phe Leu Asn Tyr Gln  Arg Met Tyr Tyr Val  Phe Ile Gln
    1055                1060                1065

Met Leu  Ser Ser Gly Pro Ala  Trp Leu Ala Ile Val  Leu Leu Val
    1070                1075                1080
```

```
Thr Ile  Ser Leu Leu Pro Asp  Val Leu Lys Lys Val  Leu Cys Arg
    1085                1090                1095


Gln Leu  Trp Pro Thr Ala Thr  Glu Arg Val Gln Thr  Lys Ser Gln
    1100                1105                1110


Cys Leu  Ser Val Glu Gln Ser  Thr Ile Phe Met Leu  Ser Gln Thr
    1115                1120                1125


Ser Ser  Ser Leu Ser Phe
    1130


<210> 7348
<211> 352
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
      ATPase,
      class VI, type 11A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420696"


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

<400> 7348
Xaa Ser Ile Phe Pro Arg Val Ile Glu Gly Lys Val Asp Gln Ile Arg
1               5                  10                  15


Ala Arg Val Glu Arg Asn Ala Val Glu Gly Leu Arg Thr Leu Cys Val
            20                  25                  30


Ala Tyr Lys Arg Leu Ile Gln Glu Glu Tyr Glu Gly Ile Cys Lys Leu
        35                  40                  45
```

```
Leu Gln Ala Ala Lys Val Ala Leu Gln Asp Arg Glu Lys Lys Leu Ala
    50                  55                  60

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

Ala Val Glu Asp Arg Leu Gln Glu Lys Ala Ala Asp Thr Ile Glu Ala
                85                  90                  95

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

Glu Thr Ala Ala Ala Thr Cys Tyr Ala Cys Lys Leu Phe Arg Arg Asn
        115                 120                 125

Thr Gln Leu Leu Glu Leu Thr Thr Lys Arg Ile Glu Glu Gln Ser Leu
    130                 135                 140

His Asp Val Leu Phe Glu Leu Ser Lys Thr Val Leu Arg His Ser Gly
145                 150                 155                 160

Ser Leu Thr Arg Asp Asn Leu Ser Gly Leu Ser Ala Asp Met Gln Asp
                165                 170                 175

Tyr Gly Leu Ile Ile Asp Gly Ala Ala Leu Ser Leu Ile Met Lys Pro
            180                 185                 190

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

Cys Arg Ser Cys Ser Ala Val Leu Cys Cys Arg Met Ala Pro Leu Gln
    210                 215                 220

Lys Ala Gln Ile Val Lys Leu Ile Lys Phe Ser Lys Glu His Pro Ile
225                 230                 235                 240

Thr Leu Ala Ile Gly Asp Gly Ala Asn Asp Val Ser Met Ile Leu Glu
                245                 250                 255

Ala His Val Gly Ile Gly Val Ile Gly Lys Glu Gly Arg Gln Ala Ala
            260                 265                 270
```

```
Arg Asn Ser Asp Tyr Ala Ile Pro Lys Phe Lys His Leu Lys Lys Met
        275                 280                 285

Leu Leu Val His Gly His Phe Tyr Tyr Ile Arg Ile Ser Glu Leu Val
    290                 295                 300

Gln Tyr Phe Phe Tyr Lys Asn Val Cys Phe Ile Phe Pro Gln Phe Leu
305                 310                 315                 320

Tyr Gln Phe Phe Cys Gly Phe Ser Gln Gln Gly Arg Arg Gln Glu Cys
                325                 330                 335

Pro Ala Ala Leu Ala Arg Val His Leu Leu Asp Ala Pro Gly Thr Val
            340                 345                 350


<210> 7349
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1557; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11A; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class VI, type 11A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479392"

<400> 7349
Asp Met Gln Asp Tyr Gly Leu Ile Ile Asp Gly Ala Ala Leu Ser Leu
1               5                   10                  15

Ile Met Lys Pro Arg Glu Asp Gly Ser Ser Gly Asn Tyr Arg Glu Leu
            20                  25                  30

Phe Leu Glu Ile Cys Arg Ser Cys Ser Ala Val Leu Cys Cys Arg Met
        35                  40                  45

Ala Pro Leu Gln Lys Ala Gln Val Leu Pro Ala Arg Pro Arg
```

50 55 60

<210> 7350
<211> 1177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class VI, type 11B; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y2G3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000321195"

<400> 7350
Met Trp Arg Trp Ile Arg Gln Gln Leu Gly Phe Asp Pro Pro His Gln
1 5 10 15

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

Leu Tyr Thr Pro Gln Lys Phe Ile Asp Asn Arg Ile Ile Ser Ser Lys
35 40 45

Tyr Thr Val Trp Asn Phe Val Pro Lys Asn Leu Phe Glu Gln Phe Arg
50 55 60

Arg Val Ala Asn Phe Tyr Phe Leu Ile Ile Phe Leu Val Gln Leu Met
65 70 75 80

Ile Asp Thr Pro Thr Ser Pro Val Thr Ser Gly Leu Pro Leu Phe Phe
85 90 95

Val Ile Thr Val Thr Ala Ile Lys Gln Gly Tyr Glu Asp Trp Leu Arg
100 105 110

```
His Asn Ser Asp Asn Glu Val Asn Gly Ala Pro Val Tyr Val Val Arg
        115                 120                 125

Ser Gly Gly Leu Val Lys Thr Arg Ser Lys Asn Ile Arg Val Gly Asp
    130                 135                 140

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

Leu Ser Ser Asp Arg Leu Asp Gly Ser Cys His Val Thr Thr Ala Ser
                165                 170                 175

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

Ala Leu Leu Gln Thr Val Ala Asn Leu Asp Thr Leu Val Ala Val Ile
        195                 200                 205

Glu Cys Gln Gln Pro Glu Ala Asp Leu Tyr Arg Phe Met Gly Arg Met
    210                 215                 220

Ile Ile Thr Gln Gln Met Glu Glu Ile Val Arg Pro Leu Gly Pro Glu
225                 230                 235                 240

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

Gly Val Ala Val Tyr Thr Gly Met Glu Thr Lys Met Ala Leu Asn Tyr
            260                 265                 270

Lys Ser Lys Ser Gln Lys Arg Ser Ala Val Glu Lys Ser Met Asn Thr
        275                 280                 285

Phe Leu Ile Ile Tyr Leu Val Ile Leu Ile Ser Glu Ala Val Ile Ser
    290                 295                 300

Thr Ile Leu Lys Tyr Thr Trp Gln Ala Glu Glu Lys Trp Asp Glu Pro
305                 310                 315                 320

Trp Tyr Asn Gln Lys Thr Glu His Gln Arg Asn Ser Ser Lys Ile Leu
                325                 330                 335
```

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

Ile Pro Ile Ser Leu Tyr Val Thr Val Glu Met Gln Lys Phe Leu Gly
        355                 360                 365

Ser Phe Phe Ile Gly Trp Asp Leu Asp Leu Tyr His Glu Glu Ser Asp
    370                 375                 380

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

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

Met Gln Phe Arg Glu Cys Ser Ile Asn Gly Met Lys Tyr Gln Glu Ile
            420                 425                 430

Asn Gly Arg Leu Val Pro Glu Gly Pro Thr Pro Asp Ser Ser Glu Gly
        435                 440                 445

Asn Leu Ser Tyr Leu Ser Ser Leu Ser His Leu Asn Asn Leu Ser His
    450                 455                 460

Leu Thr Thr Ser Ser Ser Phe Arg Thr Ser Pro Glu Asn Glu Thr Glu
465                 470                 475                 480

Leu Ile Lys Glu His Asp Leu Phe Phe Lys Ala Val Ser Leu Cys His
                485                 490                 495

Thr Val Gln Ile Ser Asn Val Gln Thr Asp Cys Thr Gly Asp Gly Pro
            500                 505                 510

Trp Gln Ser Asn Leu Ala Pro Ser Gln Leu Glu Tyr Tyr Ala Ser Ser
        515                 520                 525

Pro Asp Glu Lys Ala Leu Val Glu Ala Ala Ala Arg Ile Gly Ile Val
    530                 535                 540

Phe Ile Gly Asn Ser Glu Glu Thr Met Glu Val Lys Thr Leu Gly Lys
545                 550                 555                 560
```

```
Leu Glu Arg Tyr Lys Leu Leu His Ile Leu Glu Phe Asp Ser Asp Arg
                565                 570                 575

Arg Arg Met Ser Val Ile Val Gln Ala Pro Ser Gly Glu Lys Leu Leu
            580                 585                 590

Phe Ala Lys Gly Ala Glu Ser Ser Ile Leu Pro Lys Cys Ile Gly Gly
        595                 600                 605

Glu Ile Glu Lys Thr Arg Ile His Val Asp Glu Phe Ala Leu Lys Gly
    610                 615                 620

Leu Arg Thr Leu Cys Ile Ala Tyr Arg Lys Phe Thr Ser Lys Glu Tyr
625                 630                 635                 640

Glu Glu Ile Asp Lys Arg Ile Phe Glu Ala Arg Thr Ala Leu Gln Gln
                645                 650                 655

Arg Glu Glu Lys Leu Ala Ala Val Phe Gln Phe Ile Glu Lys Asp Leu
            660                 665                 670

Ile Leu Leu Gly Ala Thr Ala Val Glu Asp Arg Leu Gln Asp Lys Val
        675                 680                 685

Arg Glu Thr Ile Glu Ala Leu Arg Met Ala Gly Ile Lys Val Trp Val
    690                 695                 700

Leu Thr Gly Asp Lys His Glu Thr Ala Val Ser Val Ser Leu Ser Cys
705                 710                 715                 720

Gly His Phe His Arg Thr Met Asn Ile Leu Glu Leu Ile Asn Gln Lys
                725                 730                 735

Ser Asp Ser Glu Cys Ala Glu Gln Leu Arg Gln Leu Ala Arg Arg Ile
            740                 745                 750

Thr Glu Asp His Val Ile Gln His Gly Leu Val Val Asp Gly Thr Ser
        755                 760                 765

Leu Ser Leu Ala Leu Arg Glu His Glu Lys Leu Phe Met Glu Val Cys
    770                 775                 780

Arg Asn Cys Ser Ala Val Leu Cys Cys Arg Met Ala Pro Leu Gln Lys
```

785 790 795 800

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

Leu Ala Val Gly Asp Gly Ala Asn Asp Val Ser Met Ile Gln Glu Ala
820 825 830

His Val Gly Ile Gly Ile Met Gly Lys Glu Gly Arg Gln Ala Ala Arg
835 840 845

Asn Ser Asp Tyr Ala Ile Ala Arg Phe Lys Phe Leu Ser Lys Leu Leu
850 855 860

Phe Val His Gly His Phe Tyr Tyr Ile Arg Ile Ala Thr Leu Val Gln
865 870 875 880

Tyr Phe Phe Tyr Lys Asn Val Cys Phe Ile Thr Pro Gln Phe Leu Tyr
885 890 895

Gln Phe Tyr Cys Leu Phe Ser Gln Gln Thr Leu Tyr Asp Ser Val Tyr
900 905 910

Leu Thr Leu Tyr Asn Ile Cys Phe Thr Ser Leu Pro Ile Leu Ile Tyr
915 920 925

Ser Leu Leu Glu Gln His Val Asp Pro His Val Leu Gln Asn Lys Pro
930 935 940

Thr Leu Tyr Arg Asp Ile Ser Lys Asn Arg Leu Leu Ser Ile Lys Thr
945 950 955 960

Phe Leu Tyr Trp Thr Ile Leu Gly Phe Ser His Ala Phe Ile Phe Phe
965 970 975

Phe Gly Ser Tyr Leu Leu Ile Gly Lys Asp Thr Ser Leu Leu Gly Asn
980 985 990

Gly Gln Met Phe Gly Asn Trp Thr Phe Gly Thr Leu Val Phe Thr
Val
995 1000 1005

Met Val Ile Thr Val Thr Val Lys Met Ala Leu Glu Thr His Phe

1010 1015 1020

Trp Thr Trp Ile Asn His Leu Val Thr Trp Gly Ser Ile Ile Phe
1025 1030 1035

Tyr Phe Val Phe Ser Leu Phe Tyr Gly Gly Ile Leu Trp Pro Phe
1040 1045 1050

Leu Gly Ser Gln Asn Met Tyr Phe Val Phe Ile Gln Leu Leu Ser
1055 1060 1065

Ser Gly Ser Ala Trp Phe Ala Ile Ile Leu Met Val Val Thr Cys
1070 1075 1080

Leu Phe Leu Asp Ile Ile Lys Lys Val Phe Asp Arg His Leu His
1085 1090 1095

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

Ile Lys Cys Leu Asp Ser Met Cys Cys Phe Pro Glu Gly Glu Ala
1115 1120 1125

Ala Cys Ala Ser Val Gly Arg Met Leu Glu Arg Val Ile Gly Arg
1130 1135 1140

Cys Ser Pro Thr His Ile Ser Arg Ser Trp Ser Ala Ser Asp Pro
1145 1150 1155

Phe Tyr Thr Asn Asp Arg Ser Ile Leu Thr Leu Ser Thr Met Asp
1160 1165 1170

Ser Ser Thr Cys
1175

<210> 7351
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>

<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class VI, type 11B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417124"

<400> 7351

```
Gly Thr Ser Leu Ser Leu Ala Leu Arg Glu His Glu Lys Leu Phe Met
1               5                  10                  15


Glu Val Cys Arg Asn Cys Ser Ala Val Leu Cys Cys Arg Met Ala Pro
            20                  25                  30


Leu Gln Lys Ala Lys Val Ile Arg Leu Ile Lys Ile Ser Pro Glu Lys
        35                  40                  45


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


Gln Glu Ala His Val Gly Ile Gly Ile Met Gly Lys Glu Gly Arg Gln
65                  70                  75                  80


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


Lys Leu Leu Phe Val His Gly His Phe Tyr Tyr Ile Arg Ile Ala Thr
            100                 105                 110


Leu Val Gln Tyr Phe Phe Tyr Lys Thr Leu Tyr Asp Ser Val Tyr Leu
        115                 120                 125


Thr Leu Tyr Asn Ile Cys Phe Thr Ser Leu Pro Ile Leu Ile Tyr Ser
    130                 135                 140


Leu Leu Glu Gln His Val Asp Pro His Val Leu Gln Asn Lys Pro Thr
145                 150                 155                 160


Leu Tyr Arg Asp Ile Ser Lys Asn Arg Leu Leu Ser Ile Lys Thr Phe
                165                 170                 175
```

```
Leu Tyr Trp Thr Ile Leu Gly Phe Ser His Ala Phe Ile Phe Phe Phe
            180                 185                 190

Gly Ser Tyr Leu Leu Ile Gly Lys Asp Thr Ser Leu Leu Gly Asn Gly
        195                 200                 205

Gln Met Phe Gly Asn Trp Thr Phe Gly Thr Leu Val Phe Thr Val Met
    210                 215                 220

Val Ile Thr Val Thr Val Lys Met Ala Leu Glu Thr His Phe
225                 230                 235


<210> 7352
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class VI, type 11B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417406"

<400> 7352
Gln Lys Ser Asp Ser Glu Cys Ala Glu Gln Leu Arg Gln Leu Ala Arg
1               5                   10                  15

Arg Ile Thr Glu Asp His Val Ile Gln His Gly Leu Val Val Asp Gly
            20                  25                  30

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

Val Cys Arg Asn Cys Ser Ala Val Leu Cys Cys Arg Met Ala Pro Leu
    50                  55                  60
```

```
Gln Lys Ala Lys Val Ile Arg Leu Ile Lys Ile Ser Pro Glu Lys Pro
65                  70                  75                  80


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


Lys Glu Asp Arg Leu Gln Glu Thr Val Thr Met Gln
            100                 105


<210> 7353
<211> 970
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class VI, type 11B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418421"


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

<400> 7353
Xaa Leu Asp Thr Leu Val Ala Val Ile Glu Cys Gln Gln Pro Glu Ala
1               5                   10                  15


Asp Leu Tyr Arg Phe Met Gly Arg Met Ile Ile Thr Gln Gln Met Glu
            20                  25                  30


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


Arg Leu Lys Asn Thr Lys Glu Ile Phe Gly Val Ala Val Tyr Thr Gly
    50                  55                  60
```

```
Met Glu Thr Lys Met Ala Leu Asn Tyr Lys Ser Lys Ser Gln Lys Arg
65                  70                  75                  80

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

Ile Leu Ile Ser Glu Ala Val Ile Ser Thr Ile Leu Lys Tyr Thr Trp
            100                 105                 110

Gln Ala Glu Glu Lys Trp Asp Glu Pro Trp Tyr Asn Gln Lys Thr Glu
        115                 120                 125

His Gln Arg Asn Ser Ser Lys Ile Leu Arg Phe Ile Ser Asp Phe Leu
    130                 135                 140

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

Thr Val Glu Met Gln Lys Phe Leu Gly Ser Phe Phe Ile Gly Trp Asp
                165                 170                 175

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

Ser Asp Leu Asn Glu Glu Leu Gly Gln Val Glu Tyr Val Phe Thr Asp
        195                 200                 205

Lys Thr Gly Thr Leu Thr Glu Asn Glu Met Gln Phe Arg Glu Cys Ser
    210                 215                 220

Ile Asn Gly Met Lys Tyr Gln Glu Ile Asn Gly Arg Leu Val Pro Glu
225                 230                 235                 240

Gly Pro Thr Pro Asp Ser Ser Glu Gly Asn Leu Ser Tyr Leu Ser Ser
                245                 250                 255

Leu Ser His Leu Asn Asn Leu Ser His Leu Thr Thr Ser Ser Ser Phe
            260                 265                 270

Arg Thr Ser Pro Glu Asn Glu Thr Glu Leu Ile Lys Glu His Asp Leu
        275                 280                 285
```

```
Phe Phe Lys Ala Val Ser Leu Cys His Thr Val Gln Ile Ser Asn Val
    290                 295                 300

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

Ser Gln Leu Glu Tyr Tyr Ala Ser Ser Pro Asp Glu Lys Ala Leu Val
                325                 330                 335

Glu Ala Ala Ala Arg Ile Gly Ile Val Phe Ile Gly Asn Ser Glu Glu
            340                 345                 350

Thr Met Glu Val Lys Thr Leu Gly Lys Leu Glu Arg Tyr Lys Leu Leu
        355                 360                 365

His Ile Leu Glu Phe Asp Ser Asp Arg Arg Arg Met Ser Val Ile Val
    370                 375                 380

Gln Ala Pro Ser Gly Glu Lys Leu Leu Phe Ala Lys Gly Ala Glu Ser
385                 390                 395                 400

Ser Ile Leu Pro Lys Cys Ile Gly Gly Glu Ile Glu Lys Thr Arg Ile
                405                 410                 415

His Val Asp Glu Phe Ala Leu Lys Gly Leu Arg Thr Leu Cys Ile Ala
            420                 425                 430

Tyr Arg Lys Phe Thr Ser Lys Glu Tyr Glu Glu Ile Asp Lys Arg Ile
        435                 440                 445

Phe Glu Ala Arg Thr Ala Leu Gln Gln Arg Glu Glu Lys Leu Ala Ala
    450                 455                 460

Val Phe Gln Phe Ile Glu Lys Asp Leu Ile Leu Leu Gly Ala Thr Ala
465                 470                 475                 480

Val Glu Asp Arg Leu Gln Asp Lys Val Arg Glu Thr Ile Glu Ala Leu
                485                 490                 495

Arg Met Ala Gly Ile Lys Val Trp Val Leu Thr Gly Asp Lys His Glu
            500                 505                 510

Thr Ala Val Ser Val Ser Leu Ser Cys Gly His Phe His Arg Thr Met
```

```
        515                 520                 525

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

Gln Leu Arg Gln Leu Ala Arg Arg Ile Thr Glu Asp His Val Ile Gln
545                 550                 555                 560

His Gly Leu Val Val Asp Gly Thr Ser Leu Ser Leu Ala Leu Arg Glu
                565                 570                 575

His Glu Lys Leu Phe Met Glu Val Cys Arg Asn Cys Ser Ala Val Leu
            580                 585                 590

Cys Cys Arg Met Ala Pro Leu Gln Lys Ala Lys Val Ile Arg Leu Ile
        595                 600                 605

Lys Ile Ser Pro Glu Lys Pro Ile Thr Leu Ala Val Gly Asp Gly Ala
    610                 615                 620

Asn Asp Val Ser Met Ile Gln Glu Ala His Val Gly Ile Gly Ile Met
625                 630                 635                 640

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

Arg Phe Lys Phe Leu Ser Lys Leu Leu Phe Val His Gly His Phe Tyr
            660                 665                 670

Tyr Ile Arg Ile Ala Thr Leu Val Gln Tyr Phe Phe Tyr Lys Asn Val
        675                 680                 685

Cys Phe Ile Thr Pro Gln Phe Leu Tyr Gln Phe Tyr Cys Leu Phe Ser
    690                 695                 700

Gln Gln Thr Leu Tyr Asp Ser Val Tyr Leu Thr Leu Tyr Asn Ile Cys
705                 710                 715                 720

Phe Thr Ser Leu Pro Ile Leu Ile Tyr Ser Leu Leu Glu Gln His Val
                725                 730                 735

Asp Pro His Val Leu Gln Asn Lys Pro Thr Leu Tyr Arg Asp Ile Ser
            740                 745                 750
```

```
Lys Asn Arg Leu Leu Ser Ile Lys Thr Phe Leu Tyr Trp Thr Ile Leu
        755                 760                 765

Gly Phe Ser His Ala Phe Ile Phe Phe Phe Gly Ser Tyr Leu Leu Ile
    770                 775                 780

Gly Lys Asp Thr Ser Leu Leu Gly Asn Gly Gln Met Phe Gly Asn Trp
785                 790                 795                 800

Thr Phe Gly Thr Leu Val Phe Thr Val Met Val Ile Thr Val Thr Val
                805                 810                 815

Lys Met Ala Leu Glu Thr His Phe Trp Thr Trp Ile Asn His Leu Val
            820                 825                 830

Thr Trp Gly Ser Ile Ile Phe Tyr Phe Val Phe Ser Leu Phe Tyr Gly
        835                 840                 845

Gly Ile Leu Trp Pro Phe Leu Gly Ser Gln Asn Met Tyr Phe Val Phe
    850                 855                 860

Ile Gln Leu Leu Ser Ser Gly Ser Ala Trp Phe Ala Ile Ile Leu Met
865                 870                 875                 880

Val Val Thr Cys Leu Phe Leu Asp Ile Ile Lys Lys Val Phe Asp Arg
                885                 890                 895

His Leu His Pro Thr Ser Thr Glu Lys Ala Gln Met Tyr Ser Asn Thr
            900                 905                 910

Val Ala Leu Ser Asp Glu Phe Ile Ala Leu Gln Pro Leu Ser Arg Ala
        915                 920                 925

Arg Asn Gln Leu Ser Lys Leu Ser Leu Leu Lys Gln Met Gln Val Ser
    930                 935                 940

Ser Ala Trp Thr Pro Cys Ala Val Ser Arg Lys Glu Lys Gln Arg Val
945                 950                 955                 960

His Leu Leu Glu Glu Cys Trp Asn Glu Leu
                965                 970
```

<210> 7354
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
ATPase,
class VI, type 11B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419032"

<400> 7354
Met Trp Arg Trp Ile Arg Gln Gln Leu Gly Phe Asp Pro Pro His Gln
1 5 10 15

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

Leu Tyr Thr Pro Gln Lys Phe Ile Asp Asn Arg Ile Ile Ser Ser Lys
35 40 45

Tyr Thr Val Trp Asn Phe Val Pro Lys Asn Leu Phe Glu Gln Phe Arg
50 55 60

Arg Val Ala Asn Phe Tyr Phe Leu Ile Ile Phe Leu Val Gln Leu Met
65 70 75 80

Ile Asp Thr Pro Thr Ser Pro Val Thr Ser Gly Leu Pro Leu Phe Phe
85 90 95

Val Ile Thr Val Thr Ala Ile Lys Gln Gly Tyr Glu Asp Trp Leu Arg
100 105 110

His Asn Ser Asp Asn Glu Val Asn Gly Ala Pro Val Tyr Val Val Arg
115 120 125

```
Ser Gly Gly Leu Val Lys Thr Arg Ser Lys Asn Ile Arg Val Gly Asp
    130                 135                 140

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

Leu Ser Ser Asp Arg Leu Asp Gly Ser Cys His Val Thr Thr Ala Ser
                165                 170                 175

Leu Asp Gly Glu Thr Asn Leu Lys Val Cys Leu His Met Phe Glu Tyr
            180                 185                 190

Cys Ser Trp
        195


<210> 7355
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class VI, type 11B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419152"


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

<400> 7355
Xaa Pro Phe Leu Gly Ser Gln Asn Met Tyr Phe Val Phe Ile Gln Leu
1               5                   10                  15

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

```
Cys Leu Phe Leu Asp Ile Ile Lys Lys Val Phe Asp Arg His Leu His
        35                  40                  45

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

Ser Asp Glu Phe Ile Ala Leu Gln Pro Leu Ser Arg Ala Arg Asn Gln
65                  70                  75                  80

Leu Ser Lys Leu Ser Leu Leu Lys Gln Met Gln Val Ser Ser Ala Trp
                85                  90                  95

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

Glu Glu Cys Trp Asn Glu Leu
        115


<210> 7356
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1558; "

<220>
<221> source
<223> /note="Gene Symbol: ATP11B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase,
      class VI, type 11B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419768"


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

<400> 7356
Xaa Met Ala Leu Glu Thr His Phe Trp Thr Trp Ile Asn His Leu Val
1               5                   10                  15
```

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

Gly Ile Leu Trp Pro Phe Leu Gly Ser Gln Asn Met Tyr Phe Val Phe
        35                  40                  45

Ile Gln Leu Leu Ser Ser Gly Ser Ala Trp Phe Ala Ile Ile Leu Met
    50                  55                  60

Val Val Thr Cys Leu Phe Leu Asp Ile Ile Lys Lys Val Phe Asp Arg
65                  70                  75                  80

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

Ala Gly Ile Lys Cys Leu Asp Ser Met Cys Cys Phe Pro Glu Gly Glu
            100                 105                 110

Ala Ala Cys Ala Ser Val Gly Arg Met Leu Glu Arg Val Ile Gly Arg
        115                 120                 125

Cys Ser Pro Thr His Ile Ser Arg Cys Glu Ile Ser Leu Ser Ser Leu
    130                 135                 140

Cys Cys Arg
145
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<210> 7357
<211> 1132
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<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP11C; "

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<223> /note="Gene Name:
ATPase,
class VI, type 11C; "

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<400> 7357
Met Gln Met Val Pro Ser Leu Pro Pro Ala Ser Glu Cys Ala Gly Glu
1   5   10   15

Glu Lys Arg Val Gly Thr Arg Thr Val Phe Val Gly Asn His Pro Val
            20   25   30

Ser Glu Thr Glu Ala Tyr Ile Ala Gln Arg Phe Cys Asp Asn Arg Ile
        35   40   45

Val Ser Ser Lys Tyr Thr Leu Trp Asn Phe Leu Pro Lys Asn Leu Phe
    50   55   60

Glu Gln Phe Arg Arg Ile Ala Asn Phe Tyr Phe Leu Ile Ile Phe Leu
65   70   75   80

Val Gln Val Thr Val Asp Thr Pro Thr Ser Pro Val Thr Ser Gly Leu
                85   90   95

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

Asp Cys Leu Arg His Arg Ala Asp Asn Glu Val Asn Lys Ser Thr Val
        115   120   125

Tyr Ile Ile Glu Asn Ala Lys Arg Val Arg Lys Glu Ser Glu Lys Ile
    130   135   140

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

Asp Leu Ile Leu Leu Ser Ser Cys Thr Thr Asp Gly Thr Cys Tyr Val
                165   170   175

Thr Thr Ala Ser Leu Asp Gly Glu Ser Asn Cys Lys Thr His Tyr Ala
            180   185   190

```
Val Arg Asp Thr Ile Ala Leu Cys Thr Ala Glu Ser Ile Asp Thr Leu
        195                 200                 205

Arg Ala Ala Ile Glu Cys Glu Gln Pro Gln Pro Asp Leu Tyr Lys Phe
    210                 215                 220

Val Gly Arg Ile Asn Ile Tyr Ser Asn Ser Leu Glu Ala Val Ala Arg
225                 230                 235                 240

Ser Leu Gly Pro Glu Asn Leu Leu Leu Lys Gly Ala Thr Leu Lys Asn
                245                 250                 255

Thr Glu Lys Ile Tyr Gly Val Ala Val Tyr Thr Gly Met Glu Thr Lys
            260                 265                 270

Met Ala Leu Asn Tyr Gln Gly Lys Ser Gln Lys Arg Ser Ala Val Glu
        275                 280                 285

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

Lys Ala Ala Val Cys Thr Thr Leu Lys Tyr Val Trp Gln Ser Thr Pro
305                 310                 315                 320

Tyr Asn Asp Glu Pro Trp Tyr Asn Gln Lys Thr Gln Lys Glu Arg Glu
                325                 330                 335

Thr Leu Lys Val Leu Lys Met Phe Thr Asp Phe Leu Ser Phe Met Val
            340                 345                 350

Leu Phe Asn Phe Ile Ile Pro Val Ser Met Tyr Val Thr Val Glu Met
        355                 360                 365

Gln Lys Phe Leu Gly Ser Phe Phe Ile Ser Trp Asp Lys Asp Phe Tyr
    370                 375                 380

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

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

Leu Thr Glu Asn Ser Met Glu Phe Ile Glu Cys Cys Ile Asp Gly His
```

```
            420                 425                 430

Lys Tyr Lys Gly Val Thr Gln Glu Val Asp Gly Leu Ser Gln Thr Asp
        435                 440                 445

Gly Thr Leu Thr Tyr Phe Asp Lys Val Asp Lys Asn Arg Glu Glu Leu
    450                 455                 460

Phe Leu Arg Ala Leu Cys Leu Cys His Thr Val Glu Ile Lys Thr Asn
465                 470                 475                 480

Asp Ala Val Asp Gly Ala Thr Glu Ser Ala Glu Leu Thr Tyr Ile Ser
                485                 490                 495

Ser Ser Pro Asp Glu Ile Ala Leu Val Lys Gly Ala Lys Arg Tyr Gly
            500                 505                 510

Phe Thr Phe Leu Gly Asn Arg Asn Gly Tyr Met Arg Val Glu Asn Gln
        515                 520                 525

Arg Lys Glu Ile Glu Glu Tyr Glu Leu Leu His Thr Leu Asn Phe Asp
    530                 535                 540

Ala Val Arg Arg Arg Met Ser Val Ile Val Lys Thr Gln Glu Gly Asp
545                 550                 555                 560

Ile Leu Leu Phe Cys Lys Gly Ala Asp Ser Ala Val Phe Pro Arg Val
                565                 570                 575

Gln Asn His Glu Ile Glu Leu Thr Lys Val His Val Glu Arg Asn Ala
            580                 585                 590

Met Asp Gly Tyr Arg Thr Leu Cys Val Ala Phe Lys Glu Ile Ala Pro
        595                 600                 605

Asp Asp Tyr Glu Arg Ile Asn Arg Gln Leu Ile Glu Ala Lys Met Ala
    610                 615                 620

Leu Gln Asp Arg Glu Glu Lys Met Glu Lys Val Phe Asp Asp Ile Glu
625                 630                 635                 640

Thr Asn Met Asn Leu Ile Gly Ala Thr Ala Val Glu Asp Lys Leu Gln
                645                 650                 655
```

```
Asp Gln Ala Ala Glu Thr Ile Glu Ala Leu His Ala Ala Gly Leu Lys
            660                 665                 670

Val Trp Val Leu Thr Gly Asp Lys Met Glu Thr Ala Lys Ser Thr Cys
        675                 680                 685

Tyr Ala Cys Arg Leu Phe Gln Thr Asn Thr Glu Leu Leu Glu Leu Thr
    690                 695                 700

Thr Lys Thr Ile Glu Glu Ser Glu Arg Lys Glu Asp Arg Leu His Glu
705                 710                 715                 720

Leu Leu Ile Glu Tyr Arg Lys Lys Leu Leu His Glu Phe Pro Lys Ser
                725                 730                 735

Thr Arg Ser Phe Lys Lys Ala Trp Thr Glu His Gln Glu Tyr Gly Leu
            740                 745                 750

Ile Ile Asp Gly Ser Thr Leu Ser Leu Ile Leu Asn Ser Ser Gln Asp
        755                 760                 765

Ser Ser Ser Asn Asn Tyr Lys Ser Ile Phe Leu Gln Ile Cys Met Lys
    770                 775                 780

Cys Thr Ala Val Leu Cys Cys Arg Met Ala Pro Leu Gln Lys Ala Gln
785                 790                 795                 800

Ile Val Arg Met Val Lys Asn Leu Lys Gly Ser Pro Ile Thr Leu Ser
                805                 810                 815

Ile Gly Asp Gly Ala Asn Asp Val Ser Met Ile Leu Glu Ser His Val
            820                 825                 830

Gly Ile Gly Ile Lys Gly Lys Glu Gly Arg Gln Ala Ala Arg Asn Ser
        835                 840                 845

Asp Tyr Ser Val Pro Lys Phe Lys His Leu Lys Lys Leu Leu Leu Ala
    850                 855                 860

His Gly His Leu Tyr Tyr Val Arg Ile Ala His Leu Val Gln Tyr Phe
865                 870                 875                 880
```

```
Phe Tyr Lys Asn Leu Cys Phe Ile Leu Pro Gln Phe Leu Tyr Gln Phe
                885                 890                 895

Phe Cys Gly Phe Ser Gln Gln Pro Leu Tyr Asp Ala Ala Tyr Leu Thr
            900                 905                 910

Met Tyr Asn Ile Cys Phe Thr Ser Leu Pro Ile Leu Ala Tyr Ser Leu
        915                 920                 925

Leu Glu Gln His Ile Asn Ile Asp Thr Leu Thr Ser Asp Pro Arg Leu
    930                 935                 940

Tyr Met Lys Ile Ser Gly Asn Ala Met Leu Gln Leu Gly Pro Phe Leu
945                 950                 955                 960

Tyr Trp Thr Phe Leu Ala Ala Phe Glu Gly Thr Val Phe Phe Phe Gly
                965                 970                 975

Thr Tyr Phe Leu Phe Gln Thr Ala Ser Leu Glu Glu Asn Gly Lys Val
            980                 985                 990

Tyr Gly Asn Trp Thr Phe Gly Thr  Ile Val Phe Thr Val  Leu Val
Phe
        995                 1000                1005

Thr Val  Thr Leu Lys Leu Ala  Leu Asp Thr Arg Phe  Trp Thr Trp
    1010                1015                1020

Ile Asn  His Phe Val Ile Trp  Gly Ser Leu Ala Phe  Tyr Val Phe
    1025                1030                1035

Phe Ser  Phe Phe Trp Gly Gly  Ile Ile Trp Pro Phe  Leu Lys Gln
    1040                1045                1050

Gln Arg  Met Tyr Phe Val Phe  Ala Gln Met Leu Ser  Ser Val Ser
    1055                1060                1065

Thr Trp  Leu Ala Ile Ile Leu  Leu Ile Phe Ile Ser  Leu Phe Pro
    1070                1075                1080

Glu Ile  Leu Leu Ile Val Leu  Lys Asn Val Arg Arg  Arg Ser Ala
    1085                1090                1095
```

```
Arg Arg  Asn Leu Ser Cys Arg  Arg Ala Ser Asp Ser  Leu Ser Ala
    1100                1105                1110

Arg Pro  Ser Val Arg Pro Leu  Leu Leu Arg Thr Phe  Ser Asp Glu
    1115                1120                1125

Ser Asn  Val Leu
    1130
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<210> 7358
<211> 1119
<212> PRT
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ATPase,
class VI, type 11C; "

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<400> 7358

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Met Gln Met Val Pro Ser Leu Pro Pro Ala Ser Glu Cys Ala Gly Glu
1               5                  10                  15

Glu Lys Arg Val Gly Thr Arg Thr Val Phe Val Gly Asn His Pro Val
            20                  25                  30

Ser Glu Thr Glu Ala Tyr Ile Ala Gln Arg Phe Cys Asp Asn Arg Ile
        35                  40                  45

Val Ser Ser Lys Tyr Thr Leu Trp Asn Phe Leu Pro Lys Asn Leu Phe
    50                  55                  60
```

```
Glu Gln Phe Arg Arg Ile Ala Asn Phe Tyr Phe Leu Ile Ile Phe Leu
65                  70                  75                  80

Val Gln Val Thr Val Asp Thr Pro Thr Ser Pro Val Thr Ser Gly Leu
                85                  90                  95

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

Asp Cys Leu Arg His Arg Ala Asp Asn Glu Val Asn Lys Ser Thr Val
        115                 120                 125

Tyr Ile Ile Glu Asn Ala Lys Arg Val Arg Lys Glu Ser Glu Lys Ile
    130                 135                 140

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

Asp Leu Ile Leu Leu Ser Ser Cys Thr Thr Asp Gly Thr Cys Tyr Val
                165                 170                 175

Thr Thr Ala Ser Leu Asp Gly Glu Ser Asn Cys Lys Thr His Tyr Ala
            180                 185                 190

Val Arg Asp Thr Ile Ala Leu Cys Thr Ala Glu Ser Ile Asp Thr Leu
        195                 200                 205

Arg Ala Ala Ile Glu Cys Glu Gln Pro Gln Pro Asp Leu Tyr Lys Phe
    210                 215                 220

Val Gly Arg Ile Asn Ile Tyr Ser Asn Ser Leu Glu Ala Val Ala Arg
225                 230                 235                 240

Ser Leu Gly Pro Glu Asn Leu Leu Leu Lys Gly Ala Thr Leu Lys Asn
                245                 250                 255

Thr Glu Lys Ile Tyr Gly Val Ala Val Tyr Thr Gly Met Glu Thr Lys
            260                 265                 270

Met Ala Leu Asn Tyr Gln Gly Lys Ser Gln Lys Arg Ser Ala Val Glu
        275                 280                 285

Lys Ser Ile Asn Ala Phe Leu Ile Val Tyr Leu Phe Ile Leu Leu Thr
```

```
    290                 295                 300

Lys Ala Ala Val Cys Thr Thr Leu Lys Tyr Val Trp Gln Ser Thr Pro
305                 310                 315                 320

Tyr Asn Asp Glu Pro Trp Tyr Asn Gln Lys Thr Gln Lys Glu Arg Glu
                325                 330                 335

Thr Leu Lys Val Leu Lys Met Phe Thr Asp Phe Leu Ser Phe Met Val
            340                 345                 350

Leu Phe Asn Phe Ile Ile Pro Val Ser Met Tyr Val Thr Val Glu Met
        355                 360                 365

Gln Lys Phe Leu Gly Ser Phe Phe Ile Ser Trp Asp Lys Asp Phe Tyr
    370                 375                 380

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

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

Leu Thr Glu Asn Ser Met Glu Phe Ile Glu Cys Cys Ile Asp Gly His
            420                 425                 430

Lys Tyr Lys Gly Val Thr Gln Glu Val Asp Gly Leu Ser Gln Thr Asp
        435                 440                 445

Gly Thr Leu Thr Tyr Phe Asp Lys Val Asp Lys Asn Arg Glu Glu Leu
    450                 455                 460

Phe Leu Arg Ala Leu Cys Leu Cys His Thr Val Glu Ile Lys Thr Asn
465                 470                 475                 480

Asp Ala Val Asp Gly Ala Thr Glu Ser Ala Glu Leu Thr Tyr Ile Ser
                485                 490                 495

Ser Ser Pro Asp Glu Ile Ala Leu Val Lys Gly Ala Lys Arg Tyr Gly
            500                 505                 510

Phe Thr Phe Leu Gly Asn Arg Asn Gly Tyr Met Arg Val Glu Asn Gln
        515                 520                 525
```

```
Arg Lys Glu Ile Glu Glu Tyr Glu Leu Leu His Thr Leu Asn Phe Asp
    530                 535                 540

Ala Val Arg Arg Arg Met Ser Val Ile Val Lys Thr Gln Glu Gly Asp
545                 550                 555                 560

Ile Leu Leu Phe Cys Lys Gly Ala Asp Ser Ala Val Phe Pro Arg Val
                565                 570                 575

Gln Asn His Glu Ile Glu Leu Thr Lys Val His Val Glu Arg Asn Ala
            580                 585                 590

Met Asp Gly Tyr Arg Thr Leu Cys Val Ala Phe Lys Glu Ile Ala Pro
        595                 600                 605

Asp Asp Tyr Glu Arg Ile Asn Arg Gln Leu Ile Glu Ala Lys Met Ala
    610                 615                 620

Leu Gln Asp Arg Glu Glu Lys Met Glu Lys Val Phe Asp Asp Ile Glu
625                 630                 635                 640

Thr Asn Met Asn Leu Ile Gly Ala Thr Ala Val Glu Asp Lys Leu Gln
                645                 650                 655

Asp Gln Ala Ala Glu Thr Ile Glu Ala Leu His Ala Ala Gly Leu Lys
            660                 665                 670

Val Trp Val Leu Thr Gly Asp Lys Met Glu Thr Ala Lys Ser Thr Cys
        675                 680                 685

Tyr Ala Cys Arg Leu Phe Gln Thr Asn Thr Glu Leu Leu Glu Leu Thr
    690                 695                 700

Thr Lys Thr Ile Glu Glu Ser Glu Arg Lys Glu Asp Arg Leu His Glu
705                 710                 715                 720

Leu Leu Ile Glu Tyr Arg Lys Lys Leu Leu His Glu Phe Pro Lys Ser
                725                 730                 735

Thr Arg Ser Phe Lys Lys Ala Trp Thr Glu His Gln Glu Tyr Gly Leu
            740                 745                 750
```

```
Ile Ile Asp Gly Ser Thr Leu Ser Leu Ile Leu Asn Ser Ser Gln Asp
        755                 760                 765

Ser Ser Ser Asn Asn Tyr Lys Ser Ile Phe Leu Gln Ile Cys Met Lys
    770                 775                 780

Cys Thr Ala Val Leu Cys Cys Arg Met Ala Pro Leu Gln Lys Ala Gln
785                 790                 795                 800

Ile Val Arg Met Val Lys Asn Leu Lys Gly Ser Pro Ile Thr Leu Ser
                805                 810                 815

Ile Gly Asp Gly Ala Asn Asp Val Ser Met Ile Leu Glu Ser His Val
            820                 825                 830

Gly Ile Gly Ile Lys Gly Lys Glu Gly Arg Gln Ala Ala Arg Asn Ser
        835                 840                 845

Asp Tyr Ser Val Pro Lys Phe Lys His Leu Lys Lys Leu Leu Leu Ala
    850                 855                 860

His Gly His Leu Tyr Tyr Val Arg Ile Ala His Leu Val Gln Tyr Phe
865                 870                 875                 880

Phe Tyr Lys Asn Leu Cys Phe Ile Leu Pro Gln Phe Leu Tyr Gln Phe
                885                 890                 895

Phe Cys Gly Phe Ser Gln Gln Pro Leu Tyr Asp Ala Ala Tyr Leu Thr
            900                 905                 910

Met Tyr Asn Ile Cys Phe Thr Ser Leu Pro Ile Leu Ala Tyr Ser Leu
        915                 920                 925

Leu Glu Gln His Ile Asn Ile Asp Thr Leu Thr Ser Asp Pro Arg Leu
    930                 935                 940

Tyr Met Lys Ile Ser Gly Asn Ala Met Leu Gln Leu Gly Pro Phe Leu
945                 950                 955                 960

Tyr Trp Thr Phe Leu Ala Ala Phe Glu Gly Thr Val Phe Phe Phe Gly
                965                 970                 975
```

```
Thr Tyr Phe Leu Phe Gln Thr Ala Ser Leu Glu Glu Asn Gly Lys Val
            980                 985                 990


Tyr Gly Asn Trp Thr Phe Gly Thr  Ile Val Phe Thr Val  Leu Val
Phe
        995                 1000                1005


Thr Val  Thr Leu Lys Leu Ala  Leu Asp Thr Arg Phe  Trp Thr Trp
    1010                1015                1020


Ile Asn  His Phe Val Ile Trp  Gly Ser Leu Ala Phe  Tyr Val Phe
    1025                1030                1035


Phe Ser  Phe Phe Trp Gly Gly  Ile Ile Trp Pro Phe  Leu Lys Gln
    1040                1045                1050


Gln Arg  Met Tyr Phe Val Phe  Ala Gln Met Leu Ser  Ser Val Ser
    1055                1060                1065


Thr Trp  Leu Ala Ile Ile Leu  Leu Ile Phe Ile Ser  Leu Phe Pro
    1070                1075                1080


Glu Ile  Leu Leu Ile Val Leu  Lys Asn Val Arg Arg  Arg Ser Ala
    1085                1090                1095


Arg Asn  Pro Asn Leu Glu Leu  Pro Met Leu Leu Ser  Tyr Lys His
    1100                1105                1110


Thr Asp  Ser Gly Tyr Ser
    1115


<210> 7359
<211> 1113
<212> PRT
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ATPase,
class VI, type 11C; "

<220>
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<223> /note="ENSP ID: ENSP00000359588"

<400> 7359

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Met Phe Arg Arg Ser Leu Asn Arg Phe Cys Ala Gly Glu Glu Lys Arg
1               5                  10                  15

Val Gly Thr Arg Thr Val Phe Val Gly Asn His Pro Val Ser Glu Thr
            20                  25                  30

Glu Ala Tyr Ile Ala Gln Arg Phe Cys Asp Asn Arg Ile Val Ser Ser
        35                  40                  45

Lys Tyr Thr Leu Trp Asn Phe Leu Pro Lys Asn Leu Phe Glu Gln Phe
    50                  55                  60

Arg Arg Ile Ala Asn Phe Tyr Phe Leu Ile Ile Phe Leu Val Gln Val
65                  70                  75                  80

Thr Val Asp Thr Pro Thr Ser Pro Val Thr Ser Gly Leu Pro Leu Phe
                85                  90                  95

Phe Val Ile Thr Val Thr Ala Ile Lys Gln Gly Tyr Glu Asp Cys Leu
            100                 105                 110

Arg His Arg Ala Asp Asn Glu Val Asn Lys Ser Thr Val Tyr Ile Ile
        115                 120                 125

Glu Asn Ala Lys Arg Val Arg Lys Glu Ser Glu Lys Ile Lys Val Gly
    130                 135                 140

Asp Val Val Glu Val Gln Ala Asp Glu Thr Phe Pro Cys Asp Leu Ile
145                 150                 155                 160

Leu Leu Ser Ser Cys Thr Thr Asp Gly Thr Cys Tyr Val Thr Thr Ala
                165                 170                 175

Ser Leu Asp Gly Glu Ser Asn Cys Lys Thr His Tyr Ala Val Arg Asp
            180                 185                 190

Thr Ile Ala Leu Cys Thr Ala Glu Ser Ile Asp Thr Leu Arg Ala Ala
```

```
        195                 200                 205

Ile Glu Cys Glu Gln Pro Gln Pro Asp Leu Tyr Lys Phe Val Gly Arg
    210                 215                 220

Ile Asn Ile Tyr Ser Asn Ser Leu Glu Ala Val Ala Arg Ser Leu Gly
225                 230                 235                 240

Pro Glu Asn Leu Leu Leu Lys Gly Ala Thr Leu Lys Asn Thr Glu Lys
                245                 250                 255

Ile Tyr Gly Val Ala Val Tyr Thr Gly Met Glu Thr Lys Met Ala Leu
            260                 265                 270

Asn Tyr Gln Gly Lys Ser Gln Lys Arg Ser Ala Val Glu Lys Ser Ile
        275                 280                 285

Asn Ala Phe Leu Ile Val Tyr Leu Phe Ile Leu Leu Thr Lys Ala Ala
    290                 295                 300

Val Cys Thr Thr Leu Lys Tyr Val Trp Gln Ser Thr Pro Tyr Asn Asp
305                 310                 315                 320

Glu Pro Trp Tyr Asn Gln Lys Thr Gln Lys Glu Arg Glu Thr Leu Lys
                325                 330                 335

Val Leu Lys Met Phe Thr Asp Phe Leu Ser Phe Met Val Leu Phe Asn
            340                 345                 350

Phe Ile Ile Pro Val Ser Met Tyr Val Thr Val Glu Met Gln Lys Phe
        355                 360                 365

Leu Gly Ser Phe Phe Ile Ser Trp Asp Lys Asp Phe Tyr Asp Glu Glu
    370                 375                 380

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

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

Asn Ser Met Glu Phe Ile Glu Cys Cys Ile Asp Gly His Lys Tyr Lys
            420                 425                 430
```

```
Gly Val Thr Gln Glu Val Asp Gly Leu Ser Gln Thr Asp Gly Thr Leu
        435                 440                 445

Thr Tyr Phe Asp Lys Val Asp Lys Asn Arg Glu Glu Leu Phe Leu Arg
    450                 455                 460

Ala Leu Cys Leu Cys His Thr Val Glu Ile Lys Thr Asn Asp Ala Val
465                 470                 475                 480

Asp Gly Ala Thr Glu Ser Ala Glu Leu Thr Tyr Ile Ser Ser Ser Pro
                485                 490                 495

Asp Glu Ile Ala Leu Val Lys Gly Ala Lys Arg Tyr Gly Phe Thr Phe
            500                 505                 510

Leu Gly Asn Arg Asn Gly Tyr Met Arg Val Glu Asn Gln Arg Lys Glu
        515                 520                 525

Ile Glu Glu Tyr Glu Leu Leu His Thr Leu Asn Phe Asp Ala Val Arg
    530                 535                 540

Arg Arg Met Ser Val Ile Val Lys Thr Gln Glu Gly Asp Ile Leu Leu
545                 550                 555                 560

Phe Cys Lys Gly Ala Asp Ser Ala Val Phe Pro Arg Val Gln Asn His
                565                 570                 575

Glu Ile Glu Leu Thr Lys Val His Val Glu Arg Asn Ala Met Asp Gly
            580                 585                 590

Tyr Arg Thr Leu Cys Val Ala Phe Lys Glu Ile Ala Pro Asp Asp Tyr
        595                 600                 605

Glu Arg Ile Asn Arg Gln Leu Ile Glu Ala Lys Met Ala Leu Gln Asp
    610                 615                 620

Arg Glu Glu Lys Met Glu Lys Val Phe Asp Asp Ile Glu Thr Asn Met
625                 630                 635                 640

Asn Leu Ile Gly Ala Thr Ala Val Glu Asp Lys Leu Gln Asp Gln Ala
                645                 650                 655
```

```
Ala Glu Thr Ile Glu Ala Leu His Ala Ala Gly Leu Lys Val Trp Val
            660                 665                 670

Leu Thr Gly Asp Lys Met Glu Thr Ala Lys Ser Thr Cys Tyr Ala Cys
        675                 680                 685

Arg Leu Phe Gln Thr Asn Thr Glu Leu Leu Glu Leu Thr Thr Lys Thr
    690                 695                 700

Ile Glu Glu Ser Glu Arg Lys Glu Asp Arg Leu His Glu Leu Leu Ile
705                 710                 715                 720

Glu Tyr Arg Lys Lys Leu Leu His Glu Phe Pro Lys Ser Thr Arg Ser
                725                 730                 735

Phe Lys Lys Ala Trp Thr Glu His Gln Glu Tyr Gly Leu Ile Ile Asp
            740                 745                 750

Gly Ser Thr Leu Ser Leu Ile Leu Asn Ser Ser Gln Asp Ser Ser Ser
        755                 760                 765

Asn Asn Tyr Lys Ser Ile Phe Leu Gln Ile Cys Met Lys Cys Thr Ala
    770                 775                 780

Val Leu Cys Cys Arg Met Ala Pro Leu Gln Lys Ala Gln Ile Val Arg
785                 790                 795                 800

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

Gly Ala Asn Asp Val Ser Met Ile Leu Glu Ser His Val Gly Ile Gly
            820                 825                 830

Lys Glu Gly Arg Gln Ala Ala Arg Asn Ser Asp Tyr Ser Val Pro Lys
        835                 840                 845

Phe Lys His Leu Lys Lys Leu Leu Leu Ala His Gly His Leu Tyr Tyr
    850                 855                 860

Val Arg Ile Ala His Leu Val Gln Tyr Phe Phe Tyr Lys Asn Leu Cys
865                 870                 875                 880
```

```
Phe Ile Leu Pro Gln Phe Leu Tyr Gln Phe Phe Cys Gly Phe Ser Gln
                885                 890                 895

Gln Pro Leu Tyr Asp Ala Ala Tyr Leu Thr Met Tyr Asn Ile Cys Phe
            900                 905                 910

Thr Ser Leu Pro Ile Leu Ala Tyr Ser Leu Leu Glu Gln His Ile Asn
        915                 920                 925

Ile Asp Thr Leu Thr Ser Asp Pro Arg Leu Tyr Met Lys Ile Ser Gly
    930                 935                 940

Asn Ala Met Leu Gln Leu Gly Pro Phe Leu Tyr Trp Thr Phe Leu Ala
945                 950                 955                 960

Ala Phe Glu Gly Thr Val Phe Phe Phe Gly Thr Tyr Phe Leu Phe Gln
                965                 970                 975

Thr Ala Ser Leu Glu Glu Asn Gly Lys Val Tyr Gly Asn Trp Thr Phe
            980                 985                 990

Gly Thr Ile Val Phe Thr Val Leu  Val Phe Thr Val Thr  Leu Lys
Leu
        995                 1000                1005

Ala Leu  Asp Thr Arg Phe Trp  Thr Trp Ile Asn His  Phe Val Ile
    1010                1015                1020

Trp Gly  Ser Leu Ala Phe Tyr  Val Phe Phe Ser Phe  Phe Trp Gly
    1025                1030                1035

Gly Ile  Ile Trp Pro Phe Leu  Lys Gln Gln Arg Met  Tyr Phe Val
    1040                1045                1050

Phe Ala  Gln Met Leu Ser Ser  Val Ser Thr Trp Leu  Ala Ile Ile
    1055                1060                1065

Leu Leu  Ile Phe Ile Ser Leu  Phe Pro Glu Ile Leu  Leu Ile Val
    1070                1075                1080

Leu Lys  Asn Val Arg Arg Arg  Ser Ala Arg Asn Pro  Asn Leu Glu
    1085                1090                1095
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Leu Pro Met Leu Leu Ser Tyr Lys His Thr Asp Ser Gly Tyr Ser
1100 1105 1110

<210> 7360
<211> 172
<212> PRT
<213> Homo sapiens

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<220>
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class VI, type 11C; "

<220>
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<400> 7360
Thr Leu Thr Ser Asp Pro Arg Leu Tyr Met Lys Ile Ser Gly Asn Ala
1 5 10 15

Met Leu Gln Leu Gly Pro Phe Leu Tyr Trp Thr Phe Leu Ala Ala Phe
20 25 30

Glu Gly Thr Val Phe Phe Phe Gly Thr Tyr Phe Leu Phe Gln Thr Ala
35 40 45

Ser Leu Glu Glu Asn Gly Lys Val Tyr Gly Asn Trp Thr Phe Gly Thr
50 55 60

Ile Val Phe Thr Val Leu Val Phe Thr Val Thr Leu Lys Leu Ala Leu
65 70 75 80

Asp Thr Arg Phe Trp Thr Trp Ile Asn His Phe Val Ile Trp Gly Ser
85 90 95

Leu Ala Phe Tyr Val Phe Phe Ser Phe Phe Trp Gly Gly Ile Ile Trp
100 105 110

Pro Phe Leu Lys Gln Gln Arg Met Tyr Phe Val Phe Ala Gln Met Leu

```
        115                 120                 125

Ser Ser Val Ser Thr Trp Leu Ala Ile Ile Leu Leu Ile Phe Ile Ser
    130                 135                 140

Leu Phe Pro Glu Ile Leu Leu Ile Val Leu Lys Asn Val Arg Arg Arg
145                 150                 155                 160

Ser Ala Arg Val His His Leu Ile Ser Ser Ser Ala
                165                 170


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<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
      ATPase,
      class VI, type 11C; "

<220>
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<223> /note="ENSP ID: ENSP00000394573"


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

<400> 7361
Xaa Glu Cys Cys Ile Asp Gly His Lys Tyr Lys Gly Val Thr Gln Glu
1               5                   10                  15

Val Asp Gly Leu Ser Gln Thr Asp Gly Thr Leu Thr Tyr Phe Asp Lys
            20                  25                  30

Val Asp Lys Asn Arg Glu Glu Leu Phe Leu Arg Ala Leu Cys Leu Cys
        35                  40                  45
```

```
His Thr Val Glu Ile Lys Thr Asn Asp Ala Val Asp Gly Ala Thr Glu
    50                  55                  60

Ser Ala Glu Leu Thr Tyr Ile Ser Ser Ser Pro Asp Glu Ile Ala Leu
65                  70                  75                  80

Val Lys Gly Ala Lys Arg Tyr Glu Leu Leu His Thr Leu Asn Phe Asp
                85                  90                  95

Ala Val Arg Arg Arg Met Ser Val Ile Val Lys Thr Gln Glu Gly Asp
            100                 105                 110

Ile Leu Leu Phe Cys Lys Gly Ala Asp Ser Ala Val Phe Pro Arg Val
        115                 120                 125

Gln Asn His Glu Ile Glu Leu Thr Lys Val His Val Glu Arg Asn Ala
    130                 135                 140

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

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

Leu Gln Asp Arg Glu Glu Lys Met Glu Lys Val Phe Asp Asp Ile Glu
            180                 185                 190

Thr Asn Met Asn Leu Ile Gly Ala Thr Ala
        195                 200
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<210> 7362
<211> 165
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ATPase,

class VI, type 11C; "

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

<400> 7362

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Xaa Glu Gly Thr Val Phe Phe Phe Gly Thr Tyr Phe Leu Phe Gln Thr
1               5                  10                  15

Ala Ser Leu Glu Glu Asn Gly Lys Val Tyr Gly Asn Trp Thr Phe Gly
            20                  25                  30

Thr Ile Val Phe Thr Val Leu Val Phe Thr Val Thr Leu Lys Leu Ala
        35                  40                  45

Leu Asp Thr Arg Phe Trp Thr Trp Ile Asn His Phe Val Ile Trp Gly
    50                  55                  60

Ser Leu Ala Phe Tyr Val Phe Phe Ser Phe Phe Trp Gly Gly Ile Ile
65                  70                  75                  80

Trp Pro Phe Leu Lys Gln Gln Arg Met Tyr Phe Val Phe Ala Gln Met
                85                  90                  95

Leu Ser Ser Val Ser Thr Trp Leu Ala Ile Ile Leu Leu Ile Phe Ile
            100                 105                 110

Ser Leu Phe Pro Glu Ile Leu Leu Ile Val Leu Lys Asn Val Arg Arg
        115                 120                 125

Arg Ser Ala Arg Arg Asn Leu Ser Cys Arg Arg Ala Ser Asp Ser Leu
    130                 135                 140

Ser Ala Arg Pro Ser Val Arg Pro Leu Leu Leu Arg Thr Phe Ser Asp
145                 150                 155                 160

Glu Ser Asn Val Leu
                165
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<210> 7363
<211> 1422
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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ATPase, Cu++ transporting, alpha
polypeptide; "

<220>
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<223> /note="Uniprot ID: Q04656; "

<220>
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<400> 7363
Met Asp Pro Ser Met Gly Val Asn Ser Val Thr Ile Ser Val Glu Gly
1   5   10   15

Met Thr Cys Asn Ser Cys Val Trp Thr Ile Glu Gln Gln Ile Gly Lys
            20   25   30

Val Asn Gly Val His His Ile Lys Val Ser Leu Glu Glu Lys Asn Ala
        35   40   45

Thr Ile Ile Tyr Asp Pro Lys Leu Gln Thr Pro Lys Thr Leu Gln Glu
    50   55   60

Ala Ile Asp Asp Met Gly Phe Asp Ala Val Ile His Asn Pro Asp Pro
65   70   75   80

Leu Pro Val Leu Thr Asp Thr Leu Phe Leu Thr Val Thr Ala Ser Leu
                85   90   95

Thr Leu Pro Trp Asp His Ile Gln Ser Thr Leu Leu Lys Thr Lys Gly
            100   105   110

Val Thr Asp Ile Lys Ile Tyr Pro Gln Lys Arg Thr Val Ala Val Thr

```
        115                 120                 125

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

Glu Leu Ser Leu Asp Thr Gly Thr Leu Glu Lys Lys Ser Gly Ala Cys
145                 150                 155                 160

Glu Asp His Ser Met Ala Gln Ala Gly Glu Val Val Leu Lys Met Lys
                165                 170                 175

Val Glu Gly Met Thr Cys His Ser Cys Thr Ser Thr Ile Glu Gly Lys
            180                 185                 190

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

Gln Glu Ala Thr Ile Val Tyr Gln Pro His Leu Ile Ser Val Glu Glu
    210                 215                 220

Met Lys Lys Gln Ile Glu Ala Met Gly Phe Pro Ala Phe Val Lys Lys
225                 230                 235                 240

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

Asn Thr Pro Val Lys Ser Ser Glu Gly Ser Gln Gln Arg Ser Pro Ser
            260                 265                 270

Tyr Thr Asn Asp Ser Thr Ala Thr Phe Ile Ile Asp Gly Met His Cys
        275                 280                 285

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

Val Ser Ser Ile Val Val Ser Leu Glu Asn Arg Ser Ala Ile Val Lys
305                 310                 315                 320

Tyr Asn Ala Ser Ser Val Thr Pro Glu Ser Leu Arg Lys Ala Ile Glu
                325                 330                 335

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

```
Ser Thr Ser Asn Ser Pro Ser Ser Ser Ser Leu Gln Lys Ile Pro Leu
        355                 360                 365

Asn Val Val Ser Gln Pro Leu Thr Gln Glu Thr Val Ile Asn Ile Asp
    370                 375                 380

Gly Met Thr Cys Asn Ser Cys Val Gln Ser Ile Glu Gly Val Ile Ser
385                 390                 395                 400

Lys Lys Pro Gly Val Lys Ser Ile Arg Val Ser Leu Ala Asn Ser Asn
                405                 410                 415

Gly Thr Val Glu Tyr Asp Pro Leu Leu Thr Ser Pro Glu Thr Leu Arg
            420                 425                 430

Gly Ala Ile Glu Asp Met Gly Phe Asp Ala Thr Leu Ser Asp Thr Asn
        435                 440                 445

Glu Pro Leu Val Val Ile Ala Gln Pro Ser Ser Glu Met Pro Leu Leu
    450                 455                 460

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

Lys Glu Glu Gly Lys Asn Ser Ser Lys Cys Tyr Ile Gln Val Thr Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ala Asn Ile Glu Arg Asn Leu Arg Arg
            500                 505                 510

Glu Glu Gly Ile Tyr Ser Ile Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Val Arg Tyr Asn Pro Ala Val Ile Gln Pro Pro Met Ile Ala Glu
    530                 535                 540

Phe Ile Arg Glu Leu Gly Phe Gly Ala Thr Val Ile Glu Asn Ala Asp
545                 550                 555                 560

Glu Gly Asp Gly Val Leu Glu Leu Val Val Arg Gly Met Thr Cys Ala
                565                 570                 575
```

```
Ser Cys Val His Lys Ile Glu Ser Ser Leu Thr Lys His Arg Gly Ile
            580                 585                 590

Leu Tyr Cys Ser Val Ala Leu Ala Thr Asn Lys Ala His Ile Lys Tyr
        595                 600                 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile His Thr Ile Glu Ser
    610                 615                 620

Leu Gly Phe Glu Ala Ser Leu Val Lys Lys Asp Arg Ser Ala Ser His
625                 630                 635                 640

Leu Asp His Lys Arg Glu Ile Arg Gln Trp Arg Arg Ser Phe Leu Val
                645                 650                 655

Ser Leu Phe Phe Cys Ile Pro Val Met Gly Leu Met Ile Tyr Met Met
            660                 665                 670

Val Met Asp His His Phe Ala Thr Leu His His Asn Gln Asn Met Ser
        675                 680                 685

Lys Glu Glu Met Ile Asn Leu His Ser Ser Met Phe Leu Glu Arg Gln
    690                 695                 700

Ile Leu Pro Gly Leu Ser Val Met Asn Leu Leu Ser Phe Leu Leu Cys
705                 710                 715                 720

Val Pro Val Gln Gly Lys Thr Ser Glu Ala Leu Ala Lys Leu Ile Ser
                725                 730                 735

Leu Gln Ala Thr Glu Ala Thr Ile Val Thr Leu Asp Ser Asp Asn Ile
            740                 745                 750

Leu Leu Ser Glu Glu Gln Val Asp Val Glu Leu Val Gln Arg Gly Asp
        755                 760                 765

Ile Ile Lys Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Arg Val
    770                 775                 780

Ile Glu Gly His Ser Met Val Asp Glu Ser Leu Ile Thr Gly Glu Ala
785                 790                 795                 800
```

```
Met Pro Val Ala Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile
                805                 810                 815

Asn Gln Asn Gly Ser Leu Leu Ile Cys Ala Thr His Val Gly Ala Asp
            820                 825                 830

Thr Thr Leu Ser Gln Ile Val Lys Leu Val Glu Glu Ala Gln Thr Ser
        835                 840                 845

Lys Ala Pro Ile Gln Gln Phe Ala Asp Lys Leu Ser Gly Tyr Phe Val
    850                 855                 860

Pro Phe Ile Val Phe Val Ser Ile Ala Thr Leu Leu Val Trp Ile Val
865                 870                 875                 880

Ile Gly Phe Leu Asn Phe Glu Ile Val Glu Thr Tyr Phe Pro Gly Tyr
                885                 890                 895

Asn Arg Ser Ile Ser Arg Thr Glu Thr Ile Ile Arg Phe Ala Phe Gln
            900                 905                 910

Ala Ser Ile Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu
        915                 920                 925

Ala Thr Pro Thr Ala Val Met Val Gly Thr Gly Val Gly Ala Gln Asn
    930                 935                 940

Gly Ile Leu Ile Lys Gly Gly Glu Pro Leu Glu Met Ala His Lys Val
945                 950                 955                 960

Lys Val Val Val Phe Asp Lys Thr Gly Thr Ile Thr His Gly Thr Pro
                965                 970                 975

Val Val Asn Gln Val Lys Val Leu Thr Glu Ser Asn Arg Ile Ser His
            980                 985                 990

His Lys Ile Leu Ala Ile Val Gly  Thr Ala Glu Ser Asn  Ser Glu
His
        995                 1000                1005

Pro Leu  Gly Thr Ala Ile Thr  Lys Tyr Cys Lys Gln  Glu Leu Asp
    1010                1015                1020
```

```
Thr Glu  Thr Leu Gly Thr Cys  Ile Asp Phe Gln Val  Val Pro Gly
    1025                1030                1035

Cys Gly  Ile Ser Cys Lys Val  Thr Asn Ile Glu Gly  Leu Leu His
    1040                1045                1050

Lys Asn  Asn Trp Asn Ile Glu  Asp Asn Asn Ile Lys  Asn Ala Ser
    1055                1060                1065

Leu Val  Gln Ile Asp Ala Ser  Asn Glu Gln Ser Ser  Thr Ser Ser
    1070                1075                1080

Ser Met  Ile Ile Asp Ala Gln  Ile Ser Asn Ala Leu  Asn Ala Gln
    1085                1090                1095

Gln Tyr  Lys Val Leu Ile Gly  Asn Arg Glu Trp Met  Ile Arg Asn
    1100                1105                1110

Gly Leu  Val Ile Asn Asn Asp  Val Asn Asp Phe Met  Thr Glu His
    1115                1120                1125

Glu Arg  Lys Gly Arg Thr Ala  Val Leu Val Ala Val  Asp Asp Glu
    1130                1135                1140

Leu Cys  Gly Leu Ile Ala Ile  Ala Asp Thr Val Lys  Pro Glu Ala
    1145                1150                1155

Glu Leu  Ala Ile His Ile Leu  Lys Ser Met Gly Leu  Glu Val Val
    1160                1165                1170

Leu Met  Thr Gly Asp Asn Ser  Lys Thr Ala Arg Ser  Ile Ala Ser
    1175                1180                1185

Gln Val  Gly Ile Thr Lys Val  Phe Ala Glu Val Leu  Pro Ser His
    1190                1195                1200

Lys Val  Ala Lys Val Lys Gln  Leu Gln Glu Glu Gly  Lys Arg Val
    1205                1210                1215

Ala Met  Val Gly Asp Gly Ile  Asn Asp Ser Pro Ala  Leu Ala Met
    1220                1225                1230

Ala Asn  Val Gly Ile Ala Ile  Gly Thr Gly Thr Asp  Val Ala Ile
```

1235 1240 1245

Glu Ala Ala Asp Val Val Leu Ile Arg Asn Asp Leu Leu Asp Val
1250 1255 1260

Val Ala Ser Ile Asp Leu Ser Arg Lys Thr Val Lys Arg Ile Arg
1265 1270 1275

Ile Asn Phe Val Phe Ala Leu Ile Tyr Asn Leu Val Gly Ile Pro
1280 1285 1290

Ile Ala Ala Gly Val Phe Met Pro Ile Gly Leu Val Leu Gln Pro
1295 1300 1305

Trp Met Gly Ser Ala Ala Met Ala Ala Ser Ser Val Ser Val Val
1310 1315 1320

Leu Ser Ser Leu Phe Leu Lys Leu Tyr Arg Lys Pro Thr Tyr Glu
1325 1330 1335

Ser Tyr Glu Leu Pro Ala Arg Ser Gln Ile Gly Gln Lys Ser Pro
1340 1345 1350

Ser Glu Ile Ser Val His Val Gly Ile Asp Asp Thr Ser Arg Asn
1355 1360 1365

Ser Pro Lys Leu Gly Leu Leu Asp Arg Ile Val Asn Tyr Ser Arg
1370 1375 1380

Ala Ser Ile Asn Ser Leu Leu Ser Asp Lys Arg Ser Leu Asn Ser
1385 1390 1395

Val Val Thr Ser Glu Pro Asp Lys His Ser Leu Leu Val Gly Asp
1400 1405 1410

Phe Arg Glu Asp Asp Asp Thr Ala Leu
1415 1420

<210> 7364
<211> 274
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1560; "

<220>
<221> source
<223> /note="Gene Symbol: ATP7A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Cu++ transporting, alpha
polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: Q04656; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000343678"

<400> 7364

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Met Asp Pro Ser Met Gly Val Asn Ser Val Thr Ile Ser Val Glu Gly
1               5                   10                  15


Met Thr Cys Asn Ser Cys Val Trp Thr Ile Glu Gln Gln Ile Gly Lys
            20                  25                  30


Val Asn Gly Val His His Ile Lys Val Ser Leu Glu Glu Lys Asn Ala
        35                  40                  45


Thr Ile Ile Tyr Asp Pro Lys Leu Gln Thr Pro Lys Thr Leu Gln Glu
    50                  55                  60


Ala Ile Asp Asp Met Gly Phe Asp Ala Val Ile His Asn Pro Asp Pro
65                  70                  75                  80


Leu Pro Val Leu Thr Asp Thr Leu Phe Leu Thr Val Thr Ala Ser Leu
                85                  90                  95


Thr Leu Pro Trp Asp His Ile Gln Ser Thr Leu Leu Lys Thr Lys Gly
            100                 105                 110


Val Thr Asp Ile Lys Ile Tyr Pro Gln Lys Arg Thr Val Ala Val Thr
        115                 120                 125


Ile Ile Pro Ser Ile Val Asn Ala Asn Gln Ile Lys Glu Leu Val Pro
    130                 135                 140
```

```
Glu Leu Ser Leu Asp Thr Gly Thr Leu Glu Lys Lys Ser Gly Ala Cys
145                 150                 155                 160

Glu Asp His Ser Met Ala Gln Ala Gly Glu Val Val Leu Lys Met Lys
                165                 170                 175

Val Glu Gly Met Thr Cys His Ser Cys Thr Ser Thr Ile Glu Gly Lys
            180                 185                 190

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

Gln Glu Ala Thr Ile Val Tyr Gln Pro His Leu Ile Ser Val Glu Glu
    210                 215                 220

Met Lys Lys Gln Ile Glu Ala Met Gly Phe Pro Ala Phe Val Lys Lys
225                 230                 235                 240

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

Asn Thr Pro Val Lys Ser Ser Glu Gly Ser Gln Gln Arg Ser Pro Ser
            260                 265                 270

Tyr Gln
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<210> 7365
<211> 1500
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATPase, Cu++ transporting, alpha
polypeptide; "

<220>

<221> source
<223> /note="Uniprot ID: Q04656; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000345728"

<400> 7365

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Met Asp Pro Ser Met Gly Val Asn Ser Val Thr Ile Ser Val Glu Gly
1               5                  10                  15

Met Thr Cys Asn Ser Cys Val Trp Thr Ile Glu Gln Gln Ile Gly Lys
            20                  25                  30

Val Asn Gly Val His His Ile Lys Val Ser Leu Glu Glu Lys Asn Ala
        35                  40                  45

Thr Ile Ile Tyr Asp Pro Lys Leu Gln Thr Pro Lys Thr Leu Gln Glu
    50                  55                  60

Ala Ile Asp Asp Met Gly Phe Asp Ala Val Ile His Asn Pro Asp Pro
65                  70                  75                  80

Leu Pro Val Leu Thr Asp Thr Leu Phe Leu Thr Val Thr Ala Ser Leu
                85                  90                  95

Thr Leu Pro Trp Asp His Ile Gln Ser Thr Leu Leu Lys Thr Lys Gly
            100                 105                 110

Val Thr Asp Ile Lys Ile Tyr Pro Gln Lys Arg Thr Val Ala Val Thr
        115                 120                 125

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

Glu Leu Ser Leu Asp Thr Gly Thr Leu Glu Lys Lys Ser Gly Ala Cys
145                 150                 155                 160

Glu Asp His Ser Met Ala Gln Ala Gly Glu Val Val Leu Lys Met Lys
                165                 170                 175

Val Glu Gly Met Thr Cys His Ser Cys Thr Ser Thr Ile Glu Gly Lys
            180                 185                 190

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

```
        195                 200                 205

Gln Glu Ala Thr Ile Val Tyr Gln Pro His Leu Ile Ser Val Glu Glu
    210                 215                 220

Met Lys Lys Gln Ile Glu Ala Met Gly Phe Pro Ala Phe Val Lys Lys
225                 230                 235                 240

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

Asn Thr Pro Val Lys Ser Ser Glu Gly Ser Gln Gln Arg Ser Pro Ser
            260                 265                 270

Tyr Thr Asn Asp Ser Thr Ala Thr Phe Ile Ile Asp Gly Met His Cys
        275                 280                 285

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

Val Ser Ser Ile Val Val Ser Leu Glu Asn Arg Ser Ala Ile Val Lys
305                 310                 315                 320

Tyr Asn Ala Ser Ser Val Thr Pro Glu Ser Leu Arg Lys Ala Ile Glu
                325                 330                 335

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

Ser Thr Ser Asn Ser Pro Ser Ser Ser Ser Leu Gln Lys Ile Pro Leu
        355                 360                 365

Asn Val Val Ser Gln Pro Leu Thr Gln Glu Thr Val Ile Asn Ile Asp
    370                 375                 380

Gly Met Thr Cys Asn Ser Cys Val Gln Ser Ile Glu Gly Val Ile Ser
385                 390                 395                 400

Lys Lys Pro Gly Val Lys Ser Ile Arg Val Ser Leu Ala Asn Ser Asn
                405                 410                 415

Gly Thr Val Glu Tyr Asp Pro Leu Leu Thr Ser Pro Glu Thr Leu Arg
            420                 425                 430
```

```
Gly Ala Ile Glu Asp Met Gly Phe Asp Ala Thr Leu Ser Asp Thr Asn
        435                 440                 445

Glu Pro Leu Val Val Ile Ala Gln Pro Ser Ser Glu Met Pro Leu Leu
    450                 455                 460

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

Lys Glu Glu Gly Lys Asn Ser Ser Lys Cys Tyr Ile Gln Val Thr Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ala Asn Ile Glu Arg Asn Leu Arg Arg
            500                 505                 510

Glu Glu Gly Ile Tyr Ser Ile Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Val Arg Tyr Asn Pro Ala Val Ile Gln Pro Pro Met Ile Ala Glu
    530                 535                 540

Phe Ile Arg Glu Leu Gly Phe Gly Ala Thr Val Ile Glu Asn Ala Asp
545                 550                 555                 560

Glu Gly Asp Gly Val Leu Glu Leu Val Val Arg Gly Met Thr Cys Ala
                565                 570                 575

Ser Cys Val His Lys Ile Glu Ser Ser Leu Thr Lys His Arg Gly Ile
            580                 585                 590

Leu Tyr Cys Ser Val Ala Leu Ala Thr Asn Lys Ala His Ile Lys Tyr
        595                 600                 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile His Thr Ile Glu Ser
    610                 615                 620

Leu Gly Phe Glu Ala Ser Leu Val Lys Lys Asp Arg Ser Ala Ser His
625                 630                 635                 640

Leu Asp His Lys Arg Glu Ile Arg Gln Trp Arg Arg Ser Phe Leu Val
                645                 650                 655
```

```
Ser Leu Phe Phe Cys Ile Pro Val Met Gly Leu Met Ile Tyr Met Met
            660                 665                 670

Val Met Asp His His Phe Ala Thr Leu His His Asn Gln Asn Met Ser
        675                 680                 685

Lys Glu Glu Met Ile Asn Leu His Ser Ser Met Phe Leu Glu Arg Gln
    690                 695                 700

Ile Leu Pro Gly Leu Ser Val Met Asn Leu Leu Ser Phe Leu Leu Cys
705                 710                 715                 720

Val Pro Val Gln Phe Phe Gly Gly Trp Tyr Phe Tyr Ile Gln Ala Tyr
                725                 730                 735

Lys Ala Leu Lys His Lys Thr Ala Asn Met Asp Val Leu Ile Val Leu
            740                 745                 750

Ala Thr Thr Ile Ala Phe Ala Tyr Ser Leu Ile Ile Leu Leu Val Ala
        755                 760                 765

Met Tyr Glu Arg Ala Lys Val Asn Pro Ile Thr Phe Phe Asp Thr Pro
    770                 775                 780

Pro Met Leu Phe Val Phe Ile Ala Leu Gly Arg Trp Leu Glu His Ile
785                 790                 795                 800

Ala Lys Gly Lys Thr Ser Glu Ala Leu Ala Lys Leu Ile Ser Leu Gln
                805                 810                 815

Ala Thr Glu Ala Thr Ile Val Thr Leu Asp Ser Asp Asn Ile Leu Leu
            820                 825                 830

Ser Glu Glu Gln Val Asp Val Glu Leu Val Gln Arg Gly Asp Ile Ile
        835                 840                 845

Lys Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Arg Val Ile Glu
    850                 855                 860

Gly His Ser Met Val Asp Glu Ser Leu Ile Thr Gly Glu Ala Met Pro
865                 870                 875                 880
```

```
Val Ala Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn Gln
                885                 890                 895

Asn Gly Ser Leu Leu Ile Cys Ala Thr His Val Gly Ala Asp Thr Thr
            900                 905                 910

Leu Ser Gln Ile Val Lys Leu Val Glu Glu Ala Gln Thr Ser Lys Ala
        915                 920                 925

Pro Ile Gln Gln Phe Ala Asp Lys Leu Ser Gly Tyr Phe Val Pro Phe
    930                 935                 940

Ile Val Phe Val Ser Ile Ala Thr Leu Leu Val Trp Ile Val Ile Gly
945                 950                 955                 960

Phe Leu Asn Phe Glu Ile Val Glu Thr Tyr Phe Pro Gly Tyr Asn Arg
                965                 970                 975

Ser Ile Ser Arg Thr Glu Thr Ile Ile Arg Phe Ala Phe Gln Ala Ser
            980                 985                 990

Ile Thr Val Leu Cys Ile Ala Cys  Pro Cys Ser Leu Gly  Leu Ala
Thr
        995                 1000                1005

Pro Thr  Ala Val Met Val Gly  Thr Gly Val Gly Ala  Gln Asn Gly
    1010                1015                1020

Ile Leu  Ile Lys Gly Gly Glu  Pro Leu Glu Met Ala  His Lys Val
    1025                1030                1035

Lys Val  Val Val Phe Asp Lys  Thr Gly Thr Ile Thr  His Gly Thr
    1040                1045                1050

Pro Val  Val Asn Gln Val Lys  Val Leu Thr Glu Ser  Asn Arg Ile
    1055                1060                1065

Ser His  His Lys Ile Leu Ala  Ile Val Gly Thr Ala  Glu Ser Asn
    1070                1075                1080

Ser Glu  His Pro Leu Gly Thr  Ala Ile Thr Lys Tyr  Cys Lys Gln
    1085                1090                1095
```

```
Glu Leu  Asp Thr Glu Thr Leu  Gly Thr Cys Ile Asp  Phe Gln Val
    1100                1105                1110

Val Pro  Gly Cys Gly Ile Ser  Cys Lys Val Thr Asn  Ile Glu Gly
    1115                1120                1125

Leu Leu  His Lys Asn Asn Trp  Asn Ile Glu Asp Asn  Asn Ile Lys
    1130                1135                1140

Asn Ala  Ser Leu Val Gln Ile  Asp Ala Ser Asn Glu  Gln Ser Ser
    1145                1150                1155

Thr Ser  Ser Ser Met Ile Ile  Asp Ala Gln Ile Ser  Asn Ala Leu
    1160                1165                1170

Asn Ala  Gln Gln Tyr Lys Val  Leu Ile Gly Asn Arg  Glu Trp Met
    1175                1180                1185

Ile Arg  Asn Gly Leu Val Ile  Asn Asn Asp Val Asn  Asp Phe Met
    1190                1195                1200

Thr Glu  His Glu Arg Lys Gly  Arg Thr Ala Val Leu  Val Ala Val
    1205                1210                1215

Asp Asp  Glu Leu Cys Gly Leu  Ile Ala Ile Ala Asp  Thr Val Lys
    1220                1225                1230

Pro Glu  Ala Glu Leu Ala Ile  His Ile Leu Lys Ser  Met Gly Leu
    1235                1240                1245

Glu Val  Val Leu Met Thr Gly  Asp Asn Ser Lys Thr  Ala Arg Ser
    1250                1255                1260

Ile Ala  Ser Gln Val Gly Ile  Thr Lys Val Phe Ala  Glu Val Leu
    1265                1270                1275

Pro Ser  His Lys Val Ala Lys  Val Lys Gln Leu Gln  Glu Glu Gly
    1280                1285                1290

Lys Arg  Val Ala Met Val Gly  Asp Gly Ile Asn Asp  Ser Pro Ala
    1295                1300                1305

Leu Ala  Met Ala Asn Val Gly  Ile Ala Ile Gly Thr  Gly Thr Asp
```

1310 1315 1320

Val Ala Ile Glu Ala Ala Asp Val Val Leu Ile Arg Asn Asp Leu
1325 1330 1335

Leu Asp Val Val Ala Ser Ile Asp Leu Ser Arg Lys Thr Val Lys
1340 1345 1350

Arg Ile Arg Ile Asn Phe Val Phe Ala Leu Ile Tyr Asn Leu Val
1355 1360 1365

Gly Ile Pro Ile Ala Ala Gly Val Phe Met Pro Ile Gly Leu Val
1370 1375 1380

Leu Gln Pro Trp Met Gly Ser Ala Ala Met Ala Ala Ser Ser Val
1385 1390 1395

Ser Val Val Leu Ser Ser Leu Phe Leu Lys Leu Tyr Arg Lys Pro
1400 1405 1410

Thr Tyr Glu Ser Tyr Glu Leu Pro Ala Arg Ser Gln Ile Gly Gln
1415 1420 1425

Lys Ser Pro Ser Glu Ile Ser Val His Val Gly Ile Asp Asp Thr
1430 1435 1440

Ser Arg Asn Ser Pro Lys Leu Gly Leu Leu Asp Arg Ile Val Asn
1445 1450 1455

Tyr Ser Arg Ala Ser Ile Asn Ser Leu Leu Ser Asp Lys Arg Ser
1460 1465 1470

Leu Asn Ser Val Val Thr Ser Glu Pro Asp Lys His Ser Leu Leu
1475 1480 1485

Val Gly Asp Phe Arg Glu Asp Asp Asp Thr Ala Leu
1490 1495 1500

<210> 7366
<211> 1465
<212> PRT
<213> Homo sapiens

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ATPase, Cu++ transporting, beta
polypeptide; "

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<223> /note="Uniprot ID: P35670; "

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<400> 7366

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Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                   10                  15

Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20                  25                  30

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

Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60

Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80

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

Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140
```

```
Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

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

Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

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

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320

Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350

Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365
```

```
Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys Ser
            420                 425                 430

Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln Thr
        435                 440                 445

Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr Gly
    450                 455                 460

Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro Gln
465                 470                 475                 480

Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln Lys
            500                 505                 510

Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala Gln
    530                 535                 540

Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr Ala
545                 550                 555                 560

Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys Ala
                565                 570                 575

Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly Ile
            580                 585                 590

Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys Phe
```

595 600 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu Glu
610 615 620

Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn Ala His His
625 630 635 640

Leu Asp His Lys Met Glu Ile Lys Gln Trp Lys Lys Ser Phe Leu Cys
645 650 655

Ser Leu Val Phe Gly Ile Pro Val Met Ala Leu Met Ile Tyr Met Leu
660 665 670

Ile Pro Ser Asn Glu Pro His Gln Ser Met Val Leu Asp His Asn Ile
675 680 685

Ile Pro Gly Leu Ser Ile Leu Asn Leu Ile Phe Phe Ile Leu Cys Thr
690 695 700

Phe Val Gln Leu Leu Gly Gly Trp Tyr Phe Tyr Val Gln Ala Tyr Lys
705 710 715 720

Ser Leu Arg His Arg Ser Ala Asn Met Asp Val Leu Ile Val Leu Ala
725 730 735

Thr Ser Ile Ala Tyr Val Tyr Ser Leu Val Ile Leu Val Val Ala Val
740 745 750

Ala Glu Lys Ala Glu Arg Ser Pro Val Thr Phe Phe Asp Thr Pro Pro
755 760 765

Met Leu Phe Val Phe Ile Ala Leu Gly Arg Trp Leu Glu His Leu Ala
770 775 780

Lys Ser Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu Gln Ala
785 790 795 800

Thr Glu Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile Ile Arg
805 810 815

Glu Glu Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile Val Lys
820 825 830

```
Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu Glu Gly
        835                 840                 845

Asn Thr Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met Pro Val
    850                 855                 860

Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn Ala His
865                 870                 875                 880

Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr Thr Leu
                885                 890                 895

Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys Ala Pro
            900                 905                 910

Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro Phe Ile
        915                 920                 925

Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile Gly Phe
    930                 935                 940

Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Asn Pro Asn Lys His
945                 950                 955                 960

Ile Ser Gln Thr Glu Val Ile Ile Arg Phe Ala Phe Gln Thr Ser Ile
                965                 970                 975

Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu Ala Thr Pro
            980                 985                 990

Thr Ala Val Met Val Gly Thr Gly  Val Ala Ala Gln Asn  Gly Ile
Leu
        995                 1000                1005

Ile Lys  Gly Gly Lys Pro Leu  Glu Met Ala His Lys  Ile Lys Thr
    1010                1015                1020

Val Met  Phe Asp Lys Thr Gly  Thr Ile Thr His Gly  Val Pro Arg
    1025                1030                1035

Val Met  Arg Val Leu Leu Leu  Gly Asp Val Ala Thr  Leu Pro Leu
    1040                1045                1050
```

```
Arg Lys  Val Leu Ala Val Val  Gly Thr Ala Glu Ala  Ser Ser Glu
    1055                1060                1065

His Pro  Leu Gly Val Ala Val  Thr Lys Tyr Cys Lys  Glu Glu Leu
    1070                1075                1080

Gly Thr  Glu Thr Leu Gly Tyr  Cys Thr Asp Phe Gln  Ala Val Pro
    1085                1090                1095

Gly Cys  Gly Ile Gly Cys Lys  Val Ser Asn Val Glu  Gly Ile Leu
    1100                1105                1110

Ala His  Ser Glu Arg Pro Leu  Ser Ala Pro Ala Ser  His Leu Asn
    1115                1120                1125

Glu Ala  Gly Ser Leu Pro Ala  Glu Lys Asp Ala Val  Pro Gln Thr
    1130                1135                1140

Phe Ser  Val Leu Ile Gly Asn  Arg Glu Trp Leu Arg  Arg Asn Gly
    1145                1150                1155

Leu Thr  Ile Ser Ser Asp Val  Ser Asp Ala Met Thr  Asp His Glu
    1160                1165                1170

Met Lys  Gly Gln Thr Ala Ile  Leu Val Ala Ile Asp  Gly Val Leu
    1175                1180                1185

Cys Gly  Met Ile Ala Ile Ala  Asp Ala Val Lys Gln  Glu Ala Ala
    1190                1195                1200

Leu Ala  Val His Thr Leu Gln  Ser Met Gly Val Asp  Val Val Leu
    1205                1210                1215

Ile Thr  Gly Asp Asn Arg Lys  Thr Ala Arg Ala Ile  Ala Thr Gln
    1220                1225                1230

Val Gly  Ile Asn Lys Val Phe  Ala Glu Val Leu Pro  Ser His Lys
    1235                1240                1245

Val Ala  Lys Val Gln Glu Leu  Gln Asn Lys Gly Lys  Lys Val Ala
    1250                1255                1260
```

```
Met Val  Gly Asp Gly Val Asn  Asp Ser Pro Ala Leu  Ala Gln Ala
    1265                1270                1275

Asp Met  Gly Val Ala Ile Gly  Thr Gly Thr Asp Val  Ala Ile Glu
    1280                1285                1290

Ala Ala  Asp Val Val Leu Ile  Arg Asn Asp Leu Leu  Asp Val Val
    1295                1300                1305

Ala Ser  Ile His Leu Ser Lys  Arg Thr Val Arg Arg  Ile Arg Ile
    1310                1315                1320

Asn Leu  Val Leu Ala Leu Ile  Tyr Asn Leu Val Gly  Ile Pro Ile
    1325                1330                1335

Ala Ala  Gly Val Phe Met Pro  Ile Gly Ile Val Leu  Gln Pro Trp
    1340                1345                1350

Met Gly  Ser Ala Ala Met Ala  Ala Ser Ser Val Ser  Val Val Leu
    1355                1360                1365

Ser Ser  Leu Gln Leu Lys Cys  Tyr Lys Lys Pro Asp  Leu Glu Arg
    1370                1375                1380

Tyr Glu  Ala Gln Ala His Gly  His Met Lys Pro Leu  Thr Ala Ser
    1385                1390                1395

Gln Val  Ser Val His Ile Gly  Met Asp Asp Arg Trp  Arg Asp Ser
    1400                1405                1410

Pro Arg  Ala Thr Pro Trp Asp  Gln Val Ser Tyr Val  Ser Gln Val
    1415                1420                1425

Ser Leu  Ser Ser Leu Thr Ser  Asp Lys Pro Ser Arg  His Ser Ala
    1430                1435                1440

Ala Ala  Asp Asp Asp Gly Asp  Lys Trp Ser Leu Leu  Leu Asn Gly
    1445                1450                1455

Arg Asp  Glu Glu Gln Tyr Ile
    1460                1465
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<210> 7367
<211> 1258
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Symbol: ATP7B; "

<220>
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<223> /note="Gene Name:
ATPase, Cu++ transporting, beta
polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: P35670; "

<220>
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<400> 7367
Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1   5   10   15

Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20   25   30

Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35   40   45

Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50   55   60

Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65   70   75   80

Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85   90   95

Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100   105   110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly

```
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190

Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320

Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350
```

```
Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365

Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys Ser
            420                 425                 430

Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln Thr
        435                 440                 445

Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr Gly
    450                 455                 460

Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro Gln
465                 470                 475                 480

Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln Lys
            500                 505                 510

Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala Gln
    530                 535                 540

Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr Ala
545                 550                 555                 560

Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys Ala
                565                 570                 575
```

```
Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly Ile
            580                 585                 590

Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys Phe
        595                 600                 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu Ser
    610                 615                 620

Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu Gln Ala Thr Glu
625                 630                 635                 640

Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile Ile Arg Glu Glu
                645                 650                 655

Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile Val Lys Val Val
            660                 665                 670

Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu Glu Gly Asn Thr
        675                 680                 685

Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met Pro Val Thr Lys
    690                 695                 700

Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn Ala His Gly Ser
705                 710                 715                 720

Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr Thr Leu Ala Gln
                725                 730                 735

Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys Asn Pro Asn Lys
            740                 745                 750

His Ile Ser Gln Thr Glu Val Ile Ile Arg Phe Ala Phe Gln Thr Ser
        755                 760                 765

Ile Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu Ala Thr
    770                 775                 780

Pro Thr Ala Val Met Val Gly Thr Gly Val Ala Ala Gln Asn Gly Ile
785                 790                 795                 800
```

```
Leu Ile Lys Gly Gly Lys Pro Leu Glu Met Ala His Lys Ile Lys Thr
                805                 810                 815

Val Met Phe Asp Lys Thr Gly Thr Ile Thr His Gly Val Pro Arg Val
            820                 825                 830

Met Arg Val Leu Leu Leu Gly Asp Val Ala Thr Leu Pro Leu Arg Lys
        835                 840                 845

Val Leu Ala Val Val Gly Thr Ala Glu Ala Ser Ser Glu His Pro Leu
    850                 855                 860

Gly Val Ala Val Thr Lys Tyr Cys Lys Glu Glu Leu Gly Thr Glu Thr
865                 870                 875                 880

Leu Gly Tyr Cys Thr Asp Phe Gln Ala Val Pro Gly Cys Gly Ile Gly
                885                 890                 895

Cys Lys Val Ser Asn Val Glu Gly Ile Leu Ala His Ser Glu Arg Pro
            900                 905                 910

Leu Ser Ala Pro Ala Ser His Leu Asn Glu Ala Gly Ser Leu Pro Ala
        915                 920                 925

Glu Lys Asp Ala Val Pro Gln Thr Phe Ser Val Leu Ile Gly Asn Arg
    930                 935                 940

Glu Trp Leu Arg Arg Asn Gly Leu Thr Ile Ser Ser Asp Val Ser Asp
945                 950                 955                 960

Ala Met Thr Asp His Glu Met Lys Gly Gln Thr Ala Ile Leu Val Ala
                965                 970                 975

Ile Asp Gly Val Leu Cys Gly Met Ile Ala Ile Ala Asp Ala Val Lys
            980                 985                 990

Gln Glu Ala Ala Leu Ala Val His  Thr Leu Gln Ser Met  Gly Val
Asp
        995                 1000                1005

Val Val  Leu Ile Thr Gly Asp  Asn Arg Lys Thr Ala  Arg Ala Ile
    1010                1015                1020
```

```
Ala Thr  Gln Val Gly Ile Asn  Lys Val Phe Ala Glu  Val Leu Pro
    1025                1030                1035

Ser His  Lys Val Ala Lys Val  Gln Glu Leu Gln Asn  Lys Gly Lys
    1040                1045                1050

Lys Val  Ala Met Val Gly Asp  Gly Val Asn Asp Ser  Pro Ala Leu
    1055                1060                1065

Ala Gln  Ala Asp Met Gly Val  Ala Ile Gly Thr Gly  Thr Asp Val
    1070                1075                1080

Ala Ile  Glu Ala Ala Asp Val  Val Leu Ile Arg Asn  Asp Leu Leu
    1085                1090                1095

Asp Val  Val Ala Ser Ile His  Leu Ser Lys Arg Thr  Val Arg Arg
    1100                1105                1110

Ile Arg  Ile Asn Leu Val Leu  Ala Leu Ile Tyr Asn  Leu Val Gly
    1115                1120                1125

Ile Pro  Ile Ala Ala Gly Val  Phe Met Pro Ile Gly  Ile Val Leu
    1130                1135                1140

Gln Pro  Trp Met Gly Ser Ala  Ala Met Ala Ala Ser  Ser Val Ser
    1145                1150                1155

Val Val  Leu Ser Ser Leu Gln  Leu Lys Cys Tyr Lys  Lys Pro Asp
    1160                1165                1170

Leu Glu  Arg Tyr Glu Ala Gln  Ala His Gly His Met  Lys Pro Leu
    1175                1180                1185

Thr Ala  Ser Gln Val Ser Val  His Ile Gly Met Asp  Asp Arg Trp
    1190                1195                1200

Arg Asp  Ser Pro Arg Ala Thr  Pro Trp Asp Gln Val  Ser Tyr Val
    1205                1210                1215

Ser Gln  Val Ser Leu Ser Ser  Leu Thr Ser Asp Lys  Pro Ser Arg
    1220                1225                1230

His Ser  Ala Ala Ala Asp Asp  Asp Gly Asp Lys Trp  Ser Leu Leu
```

```
    1235                1240                1245


Leu Asn  Gly Arg Asp Glu Glu  Gln Tyr Ile
    1250                1255


<210> 7368
<211> 1354
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1561; "

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Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                  10                  15


Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20                  25                  30


Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35                  40                  45


Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60


Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80


Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85                  90                  95
```

```
Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190

Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Met Ile Ser Gln
            260                 265                 270

Leu Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala
        275                 280                 285

Thr Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala
    290                 295                 300

Ala Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys
305                 310                 315                 320
```

```
Ser Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln
                325                 330                 335

Thr Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr
            340                 345                 350

Gly Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro
        355                 360                 365

Gln Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys
    370                 375                 380

Gly Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln
385                 390                 395                 400

Lys Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys
                405                 410                 415

Ala Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala
            420                 425                 430

Gln Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr
        435                 440                 445

Ala Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys
    450                 455                 460

Ala Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly
465                 470                 475                 480

Ile Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys
                485                 490                 495

Phe Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu
            500                 505                 510

Glu Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn Ala His
        515                 520                 525

His Leu Asp His Lys Met Glu Ile Lys Gln Trp Lys Lys Ser Phe Leu
    530                 535                 540
```

```
Cys Ser Leu Val Phe Gly Ile Pro Val Met Ala Leu Met Ile Tyr Met
545                 550                 555                 560

Leu Ile Pro Ser Asn Glu Pro His Gln Ser Met Val Leu Asp His Asn
                565                 570                 575

Ile Ile Pro Gly Leu Ser Ile Leu Asn Leu Ile Phe Phe Ile Leu Cys
            580                 585                 590

Thr Phe Val Gln Leu Leu Gly Gly Trp Tyr Phe Tyr Val Gln Ala Tyr
        595                 600                 605

Lys Ser Leu Arg His Arg Ser Ala Asn Met Asp Val Leu Ile Val Leu
    610                 615                 620

Ala Thr Ser Ile Ala Tyr Val Tyr Ser Leu Val Ile Leu Val Val Ala
625                 630                 635                 640

Val Ala Glu Lys Ala Glu Arg Ser Pro Val Thr Phe Phe Asp Thr Pro
                645                 650                 655

Pro Met Leu Phe Val Phe Ile Ala Leu Gly Arg Trp Leu Glu His Leu
            660                 665                 670

Ala Lys Ser Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu Gln
        675                 680                 685

Ala Thr Glu Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile Ile
    690                 695                 700

Arg Glu Glu Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile Val
705                 710                 715                 720

Lys Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu Glu
                725                 730                 735

Gly Asn Thr Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met Pro
            740                 745                 750

Val Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn Ala
        755                 760                 765

His Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr Thr
```

770 775 780

Leu Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys Ala
785 790 795 800

Pro Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro Phe
805 810 815

Ile Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile Gly
820 825 830

Phe Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Asn Pro Asn Lys
835 840 845

His Ile Ser Gln Thr Glu Val Ile Ile Arg Phe Ala Phe Gln Thr Ser
850 855 860

Ile Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu Ala Thr
865 870 875 880

Pro Thr Ala Val Met Val Gly Thr Gly Val Ala Ala Gln Asn Gly Ile
885 890 895

Leu Ile Lys Gly Gly Lys Pro Leu Glu Met Ala His Lys Ile Lys Thr
900 905 910

Val Met Phe Asp Lys Thr Gly Thr Ile Thr His Gly Val Pro Arg Val
915 920 925

Met Arg Val Leu Leu Leu Gly Asp Val Ala Thr Leu Pro Leu Arg Lys
930 935 940

Val Leu Ala Val Val Gly Thr Ala Glu Ala Ser Ser Glu His Pro Leu
945 950 955 960

Gly Val Ala Val Thr Lys Tyr Cys Lys Glu Glu Leu Gly Thr Glu Thr
965 970 975

Leu Gly Tyr Cys Thr Asp Phe Gln Ala Val Pro Gly Cys Gly Ile Gly
980 985 990

Cys Lys Val Ser Asn Val Glu Gly Ile Leu Ala His Ser Glu Arg
Pro

995 1000 1005

Leu Ser Ala Pro Ala Ser His Leu Asn Glu Ala Gly Ser Leu Pro
1010 1015 1020

Ala Glu Lys Asp Ala Val Pro Gln Thr Phe Ser Val Leu Ile Gly
1025 1030 1035

Asn Arg Glu Trp Leu Arg Arg Asn Gly Leu Thr Ile Ser Ser Asp
1040 1045 1050

Val Ser Asp Ala Met Thr Asp His Glu Met Lys Gly Gln Thr Ala
1055 1060 1065

Ile Leu Val Ala Ile Asp Gly Val Leu Cys Gly Met Ile Ala Ile
1070 1075 1080

Ala Asp Ala Val Lys Gln Glu Ala Ala Leu Ala Val His Thr Leu
1085 1090 1095

Gln Ser Met Gly Val Asp Val Val Leu Ile Thr Gly Asp Asn Arg
1100 1105 1110

Lys Thr Ala Arg Ala Ile Ala Thr Gln Val Gly Ile Asn Lys Val
1115 1120 1125

Phe Ala Glu Val Leu Pro Ser His Lys Val Ala Lys Val Gln Glu
1130 1135 1140

Leu Gln Asn Lys Gly Lys Lys Val Ala Met Val Gly Asp Gly Val
1145 1150 1155

Asn Asp Ser Pro Ala Leu Ala Gln Ala Asp Met Gly Val Ala Ile
1160 1165 1170

Gly Thr Gly Thr Asp Val Ala Ile Glu Ala Ala Asp Val Val Leu
1175 1180 1185

Ile Arg Asn Asp Leu Leu Asp Val Val Ala Ser Ile His Leu Ser
1190 1195 1200

Lys Arg Thr Val Arg Arg Ile Arg Ile Asn Leu Val Leu Ala Leu
1205 1210 1215

```
Ile Tyr  Asn Leu Val Gly Ile  Pro Ile Ala Ala Gly  Val Phe Met
    1220                1225                1230

Pro Ile  Gly Ile Val Leu Gln  Pro Trp Met Gly Ser  Ala Ala Met
    1235                1240                1245

Ala Ala  Ser Ser Val Ser Val  Val Leu Ser Ser Leu  Gln Leu Lys
    1250                1255                1260

Cys Tyr  Lys Lys Pro Asp Leu  Glu Arg Tyr Glu Ala  Gln Ala His
    1265                1270                1275

Gly His  Met Lys Pro Leu Thr  Ala Ser Gln Val Ser  Val His Ile
    1280                1285                1290

Gly Met  Asp Asp Arg Trp Arg  Asp Ser Pro Arg Ala  Thr Pro Trp
    1295                1300                1305

Asp Gln  Val Ser Tyr Val Ser  Gln Val Ser Leu Ser  Ser Leu Thr
    1310                1315                1320

Ser Asp  Lys Pro Ser Arg His  Ser Ala Ala Ala Asp  Asp Asp Gly
    1325                1330                1335

Asp Lys  Trp Ser Leu Leu Leu  Asn Gly Arg Asp Glu  Glu Gln Tyr
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Ile
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<210> 7369
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<223> /note="Gene Name:
ATPase, Cu++ transporting, beta
polypeptide; "

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<400> 7369

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Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                  10                  15

Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20                  25                  30

Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35                  40                  45

Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60

Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80

Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85                  90                  95

Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190
```

```
Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320

Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350

Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365

Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Gly Glu Ala Met
```

```
            420                 425                 430

Pro Val Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn
        435                 440                 445

Ala His Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr
    450                 455                 460

Thr Leu Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys
465                 470                 475                 480

Ala Pro Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro
                485                 490                 495

Phe Ile Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile
            500                 505                 510

Gly Phe Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Asn Pro Asn
        515                 520                 525

Lys His Ile Ser Gln Thr Glu Val Ile Ile Arg Phe Ala Phe Gln Thr
    530                 535                 540

Ser Ile Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu Ala
545                 550                 555                 560

Thr Pro Thr Ala Val Met Val Gly Thr Gly Val Ala Ala Gln Asn Gly
                565                 570                 575

Ile Leu Ile Lys Gly Gly Lys Pro Leu Glu Met Ala His Lys Ile Lys
            580                 585                 590

Thr Val Met Phe Asp Lys Thr Gly Thr Ile Thr His Gly Val Pro Arg
        595                 600                 605

Val Met Arg Val Leu Leu Leu Gly Asp Val Ala Thr Leu Pro Leu Arg
    610                 615                 620

Lys Val Leu Ala Val Val Gly Thr Ala Glu Ala Ser Ser Glu His Pro
625                 630                 635                 640

Leu Gly Val Ala Val Thr Lys Tyr Cys Lys Glu Glu Leu Gly Thr Glu
                645                 650                 655
```

```
Thr Leu Gly Tyr Cys Thr Asp Phe Gln Ala Val Pro Gly Cys Gly Ile
            660                 665                 670

Gly Cys Lys Val Ser Asn Val Glu Gly Ile Leu Ala His Ser Glu Arg
        675                 680                 685

Pro Leu Ser Ala Pro Ala Ser His Leu Asn Glu Ala Gly Ser Leu Pro
    690                 695                 700

Ala Glu Lys Asp Ala Val Pro Gln Thr Phe Ser Val Leu Ile Gly Asn
705                 710                 715                 720

Arg Glu Trp Leu Arg Arg Asn Gly Leu Thr Ile Ser Ser Asp Val Ser
                725                 730                 735

Asp Ala Met Thr Asp His Glu Met Lys Gly Gln Thr Ala Ile Leu Val
            740                 745                 750

Ala Ile Asp Gly Val Leu Cys Gly Met Ile Ala Ile Ala Asp Ala Val
        755                 760                 765

Lys Gln Glu Ala Ala Leu Ala Val His Thr Leu Gln Ser Met Gly Val
    770                 775                 780

Asp Val Val Leu Ile Thr Gly Asp Asn Arg Lys Thr Ala Arg Ala Ile
785                 790                 795                 800

Ala Thr Gln Val Gly Ile Asn Lys Val Phe Ala Glu Val Leu Pro Ser
                805                 810                 815

His Lys Val Ala Lys Val Gln Glu Leu Gln Asn Lys Gly Lys Lys Val
            820                 825                 830

Ala Met Val Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Ala Gln Ala
        835                 840                 845

Asp Met Gly Val Ala Ile Gly Thr Gly Thr Asp Val Ala Ile Glu Ala
    850                 855                 860

Ala Asp Val Val Leu Ile Arg Asn Asp Leu Leu Asp Val Val Ala Ser
865                 870                 875                 880
```

```
Ile His Leu Ser Lys Arg Thr Val Arg Arg Ile Arg Ile Asn Leu Val
                885                 890                 895

Leu Ala Leu Ile Tyr Asn Leu Val Gly Ile Pro Ile Ala Ala Gly Val
            900                 905                 910

Phe Met Pro Ile Gly Ile Val Leu Gln Pro Trp Met Gly Ser Ala Ala
        915                 920                 925

Met Ala Ala Ser Ser Val Ser Val Val Leu Ser Ser Leu Gln Leu Lys
    930                 935                 940

Cys Tyr Lys Lys Pro Asp Leu Glu Arg Tyr Glu Ala Gln Ala His Gly
945                 950                 955                 960

His Met Lys Pro Leu Thr Ala Ser Gln Val Ser Val His Ile Gly Met
                965                 970                 975

Asp Asp Arg Trp Arg Asp Ser Pro Arg Ala Thr Pro Trp Asp Gln Val
            980                 985                 990

Ser Tyr Val Ser Gln Val Ser Leu  Ser Ser Leu Thr Ser  Asp Lys
Pro
        995                 1000                1005

Ser Arg  His Ser Ala Ala Ala  Asp Asp Asp Gly Asp  Lys Trp Ser
    1010                1015                1020

Leu Leu  Leu Asn Gly Arg Asp  Glu Glu Gln Tyr Ile
    1025                1030                1035


<210> 7370
<211> 1400
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
ATPase, Cu++ transporting, beta
polypeptide; "

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<400> 7370

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Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                  10                  15

Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20                  25                  30

Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35                  40                  45

Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60

Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80

Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85                  90                  95

Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190
```

```
Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320

Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350

Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365

Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys Ser
```

```
            420                 425                 430

Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln Thr
        435                 440                 445

Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr Gly
    450                 455                 460

Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro Gln
465                 470                 475                 480

Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln Lys
            500                 505                 510

Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala Gln
    530                 535                 540

Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr Ala
545                 550                 555                 560

Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys Ala
                565                 570                 575

Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly Ile
            580                 585                 590

Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys Phe
        595                 600                 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu Glu
    610                 615                 620

Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn Ala His His
625                 630                 635                 640

Leu Asp His Lys Met Glu Ile Lys Gln Trp Lys Lys Ser Phe Leu Cys
                645                 650                 655
```

```
Ser Leu Val Phe Gly Ile Pro Val Met Ala Leu Met Ile Tyr Met Leu
            660                 665                 670

Ile Pro Ser Asn Glu Pro His Gln Ser Met Val Leu Asp His Asn Ile
        675                 680                 685

Ile Pro Gly Leu Ser Ile Leu Asn Leu Ile Phe Phe Ile Leu Cys Thr
    690                 695                 700

Phe Val Gln Leu Leu Gly Gly Trp Tyr Phe Tyr Val Gln Ala Tyr Lys
705                 710                 715                 720

Ser Leu Arg His Arg Ser Ala Asn Met Asp Val Leu Ile Val Leu Ala
                725                 730                 735

Thr Ser Ile Ala Tyr Val Tyr Ser Leu Val Ile Leu Val Val Ala Val
            740                 745                 750

Ala Glu Lys Ala Glu Arg Ser Pro Val Thr Phe Phe Asp Thr Pro Pro
        755                 760                 765

Met Leu Phe Val Phe Ile Ala Leu Gly Arg Trp Leu Glu His Leu Ala
    770                 775                 780

Lys Ser Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu Gln Ala
785                 790                 795                 800

Thr Glu Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile Ile Arg
                805                 810                 815

Glu Glu Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile Val Lys
            820                 825                 830

Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu Glu Gly
        835                 840                 845

Asn Thr Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met Pro Val
    850                 855                 860

Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn Ala His
865                 870                 875                 880
```

```
Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr Thr Leu
                885                 890                 895

Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys Ala Pro
            900                 905                 910

Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro Phe Ile
        915                 920                 925

Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile Gly Phe
    930                 935                 940

Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Ile Lys Thr Val Met
945                 950                 955                 960

Phe Asp Lys Thr Gly Thr Ile Thr His Gly Val Pro Arg Val Met Arg
                965                 970                 975

Val Leu Leu Leu Gly Asp Val Ala Thr Leu Pro Leu Arg Lys Val Leu
            980                 985                 990

Ala Val Val Gly Thr Ala Glu Ala  Ser Ser Glu His Pro  Leu Gly
Val
        995                 1000                1005

Ala Val  Thr Lys Tyr Cys Lys  Glu Glu Leu Gly Thr  Glu Thr Leu
    1010                1015                1020

Gly Tyr  Cys Thr Asp Phe Gln  Ala Val Pro Gly Cys  Gly Ile Gly
    1025                1030                1035

Cys Lys  Val Ser Asn Val Glu  Gly Ile Leu Ala His  Ser Glu Arg
    1040                1045                1050

Pro Leu  Ser Ala Pro Ala Ser  His Leu Asn Glu Ala  Gly Ser Leu
    1055                1060                1065

Pro Ala  Glu Lys Asp Ala Val  Pro Gln Thr Phe Ser  Val Leu Ile
    1070                1075                1080

Gly Asn  Arg Glu Trp Leu Arg  Arg Asn Gly Leu Thr  Ile Ser Ser
    1085                1090                1095
```

```
Asp Val  Ser Asp Ala Met Thr  Asp His Glu Met Lys  Gly Gln Thr
    1100                1105                1110

Ala Ile  Leu Val Ala Ile Asp  Gly Val Leu Cys Gly  Met Ile Ala
    1115                1120                1125

Ile Ala  Asp Ala Val Lys Gln  Glu Ala Ala Leu Ala  Val His Thr
    1130                1135                1140

Leu Gln  Ser Met Gly Val Asp  Val Val Leu Ile Thr  Gly Asp Asn
    1145                1150                1155

Arg Lys  Thr Ala Arg Ala Ile  Ala Thr Gln Val Gly  Ile Asn Lys
    1160                1165                1170

Val Phe  Ala Glu Val Leu Pro  Ser His Lys Val Ala  Lys Val Gln
    1175                1180                1185

Glu Leu  Gln Asn Lys Gly Lys  Lys Val Ala Met Val  Gly Asp Gly
    1190                1195                1200

Val Asn  Asp Ser Pro Ala Leu  Ala Gln Ala Asp Met  Gly Val Ala
    1205                1210                1215

Ile Gly  Thr Gly Thr Asp Val  Ala Ile Glu Ala Ala  Asp Val Val
    1220                1225                1230

Leu Ile  Arg Asn Asp Leu Leu  Asp Val Val Ala Ser  Ile His Leu
    1235                1240                1245

Ser Lys  Arg Thr Val Arg Arg  Ile Arg Ile Asn Leu  Val Leu Ala
    1250                1255                1260

Leu Ile  Tyr Asn Leu Val Gly  Ile Pro Ile Ala Ala  Gly Val Phe
    1265                1270                1275

Met Pro  Ile Gly Ile Val Leu  Gln Pro Trp Met Gly  Ser Ala Ala
    1280                1285                1290

Met Ala  Ala Ser Ser Val Ser  Val Val Leu Ser Ser  Leu Gln Leu
    1295                1300                1305
```

```
Lys Cys  Tyr Lys Lys Pro Asp  Leu Glu Arg Tyr Glu  Ala Gln Ala
    1310                1315                1320

His Gly  His Met Lys Pro Leu  Thr Ala Ser Gln Val  Ser Val His
    1325                1330                1335

Ile Gly  Met Asp Asp Arg Trp  Arg Asp Ser Pro Arg  Ala Thr Pro
    1340                1345                1350

Trp Asp  Gln Val Ser Tyr Val  Ser Gln Val Ser Leu  Ser Ser Leu
    1355                1360                1365

Thr Ser  Asp Lys Pro Ser Arg  His Ser Ala Ala Ala  Asp Asp Asp
    1370                1375                1380

Gly Asp  Lys Trp Ser Leu Leu  Leu Asn Gly Arg Asp  Glu Glu Gln
    1385                1390                1395

Tyr Ile
    1400


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      polypeptide; "

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Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                  10                  15

Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
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```
            20                  25                  30

Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35                  40                  45

Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60

Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80

Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85                  90                  95

Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190

Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255
```

```
Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320

Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350

Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365

Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys Ser
            420                 425                 430

Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln Thr
        435                 440                 445

Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr Gly
    450                 455                 460

Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro Gln
465                 470                 475                 480
```

```
Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln Lys
            500                 505                 510

Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala Gln
    530                 535                 540

Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr Ala
545                 550                 555                 560

Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys Ala
                565                 570                 575

Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly Ile
            580                 585                 590

Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys Phe
        595                 600                 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu Glu
    610                 615                 620

Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn Ala His His
625                 630                 635                 640

Leu Asp His Lys Met Glu Ile Lys Gln Trp Lys Lys Ser Phe Leu Cys
                645                 650                 655

Ser Leu Val Phe Gly Ile Pro Val Met Ala Leu Met Ile Tyr Met Leu
            660                 665                 670

Ile Pro Ser Asn Glu Pro His Gln Ser Met Val Leu Asp His Asn Ile
        675                 680                 685

Ile Pro Gly Leu Ser Ile Leu Asn Leu Ile Phe Phe Ile Leu Cys Thr
    690                 695                 700
```

```
Phe Val Gln Ser Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu
705                 710                 715                 720

Gln Ala Thr Glu Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile
                725                 730                 735

Ile Arg Glu Glu Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile
            740                 745                 750

Val Lys Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu
        755                 760                 765

Glu Gly Asn Thr Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met
    770                 775                 780

Pro Val Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn
785                 790                 795                 800

Ala His Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr
                805                 810                 815

Thr Leu Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys
            820                 825                 830

Ala Pro Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro
        835                 840                 845

Phe Ile Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile
    850                 855                 860

Gly Phe Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Asn Pro Asn
865                 870                 875                 880

Lys His Ile Ser Gln Thr Glu Val Ile Ile Arg Phe Ala Phe Gln Thr
                885                 890                 895

Ser Ile Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu Ala
            900                 905                 910

Thr Pro Thr Ala Val Met Val Gly Thr Gly Val Ala Ala Gln Asn Gly
        915                 920                 925

Ile Leu Ile Lys Gly Gly Lys Pro Leu Glu Met Ala His Lys Ile Lys
```

930 935 940

Thr Val Met Phe Asp Lys Thr Gly Thr Ile Thr His Gly Val Pro Arg
945 950 955 960

Val Met Arg Val Leu Leu Leu Gly Asp Val Ala Thr Leu Pro Leu Arg
965 970 975

Lys Val Leu Ala Val Val Gly Thr Ala Glu Ala Ser Ser Glu His Pro
980 985 990

Leu Gly Val Ala Val Thr Lys Tyr Cys Lys Glu Glu Leu Gly Thr
Glu
995 1000 1005

Thr Leu Gly Tyr Cys Thr Asp Phe Gln Ala Val Pro Gly Cys Gly
1010 1015 1020

Ile Gly Cys Lys Val Ser Asn Val Glu Gly Ile Leu Ala His Ser
1025 1030 1035

Glu Arg Pro Leu Ser Ala Pro Ala Ser His Leu Asn Glu Ala Gly
1040 1045 1050

Ser Leu Pro Ala Glu Lys Asp Ala Val Pro Gln Thr Phe Ser Val
1055 1060 1065

Leu Ile Gly Asn Arg Glu Trp Leu Arg Arg Asn Gly Leu Thr Ile
1070 1075 1080

Ser Ser Asp Val Ser Asp Ala Met Thr Asp His Glu Met Lys Gly
1085 1090 1095

Gln Thr Ala Ile Leu Val Ala Ile Asp Gly Val Leu Cys Gly Met
1100 1105 1110

Ile Ala Ile Ala Asp Ala Val Lys Gln Glu Ala Ala Leu Ala Val
1115 1120 1125

His Thr Leu Gln Ser Met Gly Val Asp Val Val Leu Ile Thr Gly
1130 1135 1140

Asp Asn Arg Lys Thr Ala Arg Ala Ile Ala Thr Gln Val Gly Ile

1145 1150 1155

Asn Lys Val Phe Ala Glu Val Leu Pro Ser His Lys Val Ala Lys
1160 1165 1170

Val Gln Glu Leu Gln Asn Lys Gly Lys Lys Val Ala Met Val Gly
1175 1180 1185

Asp Gly Val Asn Asp Ser Pro Ala Leu Ala Gln Ala Asp Met Gly
1190 1195 1200

Val Ala Ile Gly Thr Gly Thr Asp Val Ala Ile Glu Ala Ala Asp
1205 1210 1215

Val Val Leu Ile Arg Asn Asp Leu Leu Asp Val Val Ala Ser Ile
1220 1225 1230

His Leu Ser Lys Arg Thr Val Arg Arg Ile Arg Ile Asn Leu Val
1235 1240 1245

Leu Ala Leu Ile Tyr Asn Leu Val Gly Ile Pro Ile Ala Ala Gly
1250 1255 1260

Val Phe Met Pro Ile Gly Ile Val Leu Gln Pro Trp Met Gly Ser
1265 1270 1275

Ala Ala Met Ala Ala Ser Ser Val Ser Val Val Leu Ser Ser Leu
1280 1285 1290

Gln Leu Lys Cys Tyr Lys Lys Pro Asp Leu Glu Arg Tyr Glu Ala
1295 1300 1305

Gln Ala His Gly His Met Lys Pro Leu Thr Ala Ser Gln Val Ser
1310 1315 1320

Val His Ile Gly Met Asp Asp Arg Trp Arg Asp Ser Pro Arg Ala
1325 1330 1335

Thr Pro Trp Asp Gln Val Ser Tyr Val Ser Gln Val Ser Leu Ser
1340 1345 1350

Ser Leu Thr Ser Asp Lys Pro Ser Arg His Ser Ala Ala Ala Asp
1355 1360 1365

```
Asp Asp  Gly Asp Lys Trp Ser  Leu Leu Leu Asn Gly  Arg Asp Glu
    1370                 1375                 1380


Glu Gln  Tyr Ile
    1385


<210> 7372
<211> 894
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP7B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Cu++ transporting, beta
      polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000489234"

<400> 7372
Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                  10                  15


Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20                  25                  30


Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35                  40                  45


Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60


Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80


Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85                  90                  95
```

```
Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190

Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240

Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320
```

```
Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350

Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365

Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys Ser
            420                 425                 430

Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln Thr
        435                 440                 445

Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr Gly
    450                 455                 460

Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro Gln
465                 470                 475                 480

Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys Gly
                485                 490                 495

Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln Lys
            500                 505                 510

Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys Ala
        515                 520                 525

Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala Gln
    530                 535                 540

Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr Ala
```

545 550 555 560

Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys Ala
565 570 575

Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly Ile
580 585 590

Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys Phe
595 600 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu Glu
610 615 620

Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn Ala His His
625 630 635 640

Leu Asp His Lys Met Glu Ile Lys Gln Trp Lys Lys Ser Phe Leu Cys
645 650 655

Ser Leu Val Phe Gly Ile Pro Val Met Ala Leu Met Ile Tyr Met Leu
660 665 670

Ile Pro Ser Asn Glu Pro His Gln Ser Met Val Leu Asp His Asn Ile
675 680 685

Ile Pro Gly Leu Ser Ile Leu Asn Leu Ile Phe Phe Ile Leu Cys Thr
690 695 700

Phe Val Gln Ser Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu
705 710 715 720

Gln Ala Thr Glu Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile
725 730 735

Ile Arg Glu Glu Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile
740 745 750

Val Lys Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu
755 760 765

Glu Gly Asn Thr Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met
770 775 780

```
Pro Val Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn
785                 790                 795                 800

Ala His Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr
                805                 810                 815

Thr Leu Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys
            820                 825                 830

Ala Pro Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro
        835                 840                 845

Phe Ile Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile
    850                 855                 860

Gly Phe Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Gly Gly Cys
865                 870                 875                 880

Trp Gln Met Arg Thr Pro Thr Ser Thr Ser Pro Arg Gln Arg
                885                 890
```

<210> 7373
<211> 1417
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1561; "

<220>
<221> source
<223> /note="Gene Symbol: ATP7B; "

<220>
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<223> /note="Gene Name:
ATPase, Cu++ transporting, beta
polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000489398"

<400> 7373

```
Met Pro Glu Gln Glu Arg Gln Ile Thr Ala Arg Glu Gly Ala Ser Arg
1               5                   10                  15
```

```
Lys Ile Leu Ser Lys Leu Ser Leu Pro Thr Arg Ala Trp Glu Pro Ala
            20                  25                  30

Met Lys Lys Ser Phe Ala Phe Asp Asn Val Gly Tyr Glu Gly Gly Leu
        35                  40                  45

Asp Gly Leu Gly Pro Ser Ser Gln Val Ala Thr Ser Thr Val Arg Ile
    50                  55                  60

Leu Gly Met Thr Cys Gln Ser Cys Val Lys Ser Ile Glu Asp Arg Ile
65                  70                  75                  80

Ser Asn Leu Lys Gly Ile Ile Ser Met Lys Val Ser Leu Glu Gln Gly
                85                  90                  95

Ser Ala Thr Val Lys Tyr Val Pro Ser Val Val Cys Leu Gln Gln Val
            100                 105                 110

Cys His Gln Ile Gly Asp Met Gly Phe Glu Ala Ser Ile Ala Glu Gly
        115                 120                 125

Lys Ala Ala Ser Trp Pro Ser Arg Ser Leu Pro Ala Gln Glu Ala Val
    130                 135                 140

Val Lys Leu Arg Val Glu Gly Met Thr Cys Gln Ser Cys Val Ser Ser
145                 150                 155                 160

Ile Glu Gly Lys Val Arg Lys Leu Gln Gly Val Val Arg Val Lys Val
                165                 170                 175

Ser Leu Ser Asn Gln Glu Ala Val Ile Thr Tyr Gln Pro Tyr Leu Ile
            180                 185                 190

Gln Pro Glu Asp Leu Arg Asp His Val Asn Asp Met Gly Phe Glu Ala
        195                 200                 205

Ala Ile Lys Ser Lys Val Ala Pro Leu Ser Leu Gly Pro Ile Asp Ile
    210                 215                 220

Glu Arg Leu Gln Ser Thr Asn Pro Lys Arg Pro Leu Ser Ser Ala Asn
225                 230                 235                 240
```

```
Gln Asn Phe Asn Asn Ser Glu Thr Leu Gly His Gln Gly Ser His Val
                245                 250                 255

Val Thr Leu Gln Leu Arg Ile Asp Gly Met His Cys Lys Ser Cys Val
            260                 265                 270

Leu Asn Ile Glu Glu Asn Ile Gly Gln Leu Leu Gly Val Gln Ser Ile
        275                 280                 285

Gln Val Ser Leu Glu Asn Lys Thr Ala Gln Val Lys Tyr Asp Pro Ser
    290                 295                 300

Cys Thr Ser Pro Val Ala Leu Gln Arg Ala Ile Glu Ala Leu Pro Pro
305                 310                 315                 320

Gly Asn Phe Lys Val Ser Leu Pro Asp Gly Ala Glu Gly Ser Gly Thr
                325                 330                 335

Asp His Arg Ser Ser Ser Ser Ser His Ser Pro Gly Ser Pro Pro Arg Asn
            340                 345                 350

Gln Val Gln Gly Thr Cys Ser Thr Thr Leu Ile Ala Ile Ala Gly Met
        355                 360                 365

Thr Cys Ala Ser Cys Val His Ser Ile Glu Gly Met Ile Ser Gln Leu
    370                 375                 380

Glu Gly Val Gln Gln Ile Ser Val Ser Leu Ala Glu Gly Thr Ala Thr
385                 390                 395                 400

Val Leu Tyr Asn Pro Ser Val Ile Ser Pro Glu Glu Leu Arg Ala Ala
                405                 410                 415

Ile Glu Asp Met Gly Phe Glu Ala Ser Val Val Ser Glu Ser Cys Ser
            420                 425                 430

Thr Asn Pro Leu Gly Asn His Ser Ala Gly Asn Ser Met Val Gln Thr
        435                 440                 445

Thr Asp Gly Thr Pro Thr Ser Val Gln Glu Val Ala Pro His Thr Gly
    450                 455                 460

Arg Leu Pro Ala Asn His Ala Pro Asp Ile Leu Ala Lys Ser Pro Gln
```

465 470 475 480

Ser Thr Arg Ala Val Ala Pro Gln Lys Cys Phe Leu Gln Ile Lys Gly
485 490 495

Met Thr Cys Ala Ser Cys Val Ser Asn Ile Glu Arg Asn Leu Gln Lys
500 505 510

Glu Ala Gly Val Leu Ser Val Leu Val Ala Leu Met Ala Gly Lys Ala
515 520 525

Glu Ile Lys Tyr Asp Pro Glu Val Ile Gln Pro Leu Glu Ile Ala Gln
530 535 540

Phe Ile Gln Asp Leu Gly Phe Glu Ala Ala Val Met Glu Asp Tyr Ala
545 550 555 560

Gly Ser Asp Gly Asn Ile Glu Leu Thr Ile Thr Gly Met Thr Cys Ala
565 570 575

Ser Cys Val His Asn Ile Glu Ser Lys Leu Thr Arg Thr Asn Gly Ile
580 585 590

Thr Tyr Ala Ser Val Ala Leu Ala Thr Ser Lys Ala Leu Val Lys Phe
595 600 605

Asp Pro Glu Ile Ile Gly Pro Arg Asp Ile Ile Lys Ile Ile Glu Glu
610 615 620

Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn Ala His His
625 630 635 640

Leu Asp His Lys Met Glu Ile Lys Gln Trp Lys Lys Ser Phe Leu Cys
645 650 655

Ser Leu Val Phe Gly Ile Pro Val Met Ala Leu Met Ile Tyr Met Leu
660 665 670

Ile Pro Ser Asn Glu Pro His Gln Ser Met Val Leu Asp His Asn Ile
675 680 685

Ile Pro Gly Leu Ser Ile Leu Asn Leu Ile Phe Phe Ile Leu Cys Thr
690 695 700

```
Phe Val Gln Ala Glu Arg Ser Pro Val Thr Phe Phe Asp Thr Pro Pro
705                 710                 715                 720

Met Leu Phe Val Phe Ile Ala Leu Gly Arg Trp Leu Glu His Leu Ala
                725                 730                 735

Lys Ser Lys Thr Ser Glu Ala Leu Ala Lys Leu Met Ser Leu Gln Ala
            740                 745                 750

Thr Glu Ala Thr Val Val Thr Leu Gly Glu Asp Asn Leu Ile Ile Arg
        755                 760                 765

Glu Glu Gln Val Pro Met Glu Leu Val Gln Arg Gly Asp Ile Val Lys
    770                 775                 780

Val Val Pro Gly Gly Lys Phe Pro Val Asp Gly Lys Val Leu Glu Gly
785                 790                 795                 800

Asn Thr Met Ala Asp Glu Ser Leu Ile Thr Gly Glu Ala Met Pro Val
                805                 810                 815

Thr Lys Lys Pro Gly Ser Thr Val Ile Ala Gly Ser Ile Asn Ala His
            820                 825                 830

Gly Ser Val Leu Ile Lys Ala Thr His Val Gly Asn Asp Thr Thr Leu
        835                 840                 845

Ala Gln Ile Val Lys Leu Val Glu Glu Ala Gln Met Ser Lys Ala Pro
    850                 855                 860

Ile Gln Gln Leu Ala Asp Arg Phe Ser Gly Tyr Phe Val Pro Phe Ile
865                 870                 875                 880

Ile Ile Met Ser Thr Leu Thr Leu Val Val Trp Ile Val Ile Gly Phe
                885                 890                 895

Ile Asp Phe Gly Val Val Gln Arg Tyr Phe Pro Asn Pro Asn Lys His
            900                 905                 910

Ile Ser Gln Thr Glu Val Ile Ile Arg Phe Ala Phe Gln Thr Ser Ile
        915                 920                 925
```

```
Thr Val Leu Cys Ile Ala Cys Pro Cys Ser Leu Gly Leu Ala Thr Pro
    930                 935                 940

Thr Ala Val Met Val Gly Thr Gly Val Ala Ala Gln Asn Gly Ile Leu
945                 950                 955                 960

Ile Lys Gly Gly Lys Pro Leu Glu Met Ala His Lys Ile Lys Thr Val
                965                 970                 975

Met Phe Asp Lys Thr Gly Thr Ile Thr His Gly Val Pro Arg Val Met
            980                 985                 990

Arg Val Leu Leu Leu Gly Asp Val  Ala Thr Leu Pro Leu  Arg Lys
Val
        995                 1000                1005

Leu Ala  Val Val Gly Thr Ala  Glu Ala Ser Ser Glu  His Pro Leu
    1010                1015                1020

Gly Val  Ala Val Thr Lys Tyr  Cys Lys Glu Glu Leu  Gly Thr Glu
    1025                1030                1035

Thr Leu  Gly Tyr Cys Thr Asp  Phe Gln Ala Val Pro  Gly Cys Gly
    1040                1045                1050

Ile Gly  Cys Lys Val Ser Asn  Val Glu Gly Ile Leu  Ala His Ser
    1055                1060                1065

Glu Arg  Pro Leu Ser Ala Pro  Ala Ser His Leu Asn  Glu Ala Gly
    1070                1075                1080

Ser Leu  Pro Ala Glu Lys Asp  Ala Val Pro Gln Thr  Phe Ser Val
    1085                1090                1095

Leu Ile  Gly Asn Arg Glu Trp  Leu Arg Arg Asn Gly  Leu Thr Ile
    1100                1105                1110

Ser Ser  Asp Val Ser Asp Ala  Met Thr Asp His Glu  Met Lys Gly
    1115                1120                1125

Gln Thr  Ala Ile Leu Val Ala  Ile Asp Gly Val Leu  Cys Gly Met
    1130                1135                1140
```

```
Ile Ala  Ile Ala Asp Ala Val  Lys Gln Glu Ala Ala  Leu Ala Val
    1145                1150                1155

His Thr  Leu Gln Ser Met Gly  Val Asp Val Val Leu  Ile Thr Gly
    1160                1165                1170

Asp Asn  Arg Lys Thr Ala Arg  Ala Ile Ala Thr Gln  Val Gly Ile
    1175                1180                1185

Asn Lys  Val Phe Ala Glu Val  Leu Pro Ser His Lys  Val Ala Lys
    1190                1195                1200

Val Gln  Glu Leu Gln Asn Lys  Gly Lys Lys Val Ala  Met Val Gly
    1205                1210                1215

Asp Gly  Val Asn Asp Ser Pro  Ala Leu Ala Gln Ala  Asp Met Gly
    1220                1225                1230

Val Ala  Ile Gly Thr Gly Thr  Asp Val Ala Ile Glu  Ala Ala Asp
    1235                1240                1245

Val Val  Leu Ile Arg Asn Asp  Leu Leu Asp Val Val  Ala Ser Ile
    1250                1255                1260

His Leu  Ser Lys Arg Thr Val  Arg Arg Ile Arg Ile  Asn Leu Val
    1265                1270                1275

Leu Ala  Leu Ile Tyr Asn Leu  Val Gly Ile Pro Ile  Ala Ala Gly
    1280                1285                1290

Val Phe  Met Pro Ile Gly Ile  Val Leu Gln Pro Trp  Met Gly Ser
    1295                1300                1305

Ala Ala  Met Ala Ala Ser Ser  Val Ser Val Val Leu  Ser Ser Leu
    1310                1315                1320

Gln Leu  Lys Cys Tyr Lys Lys  Pro Asp Leu Glu Arg  Tyr Glu Ala
    1325                1330                1335

Gln Ala  His Gly His Met Lys  Pro Leu Thr Ala Ser  Gln Val Ser
    1340                1345                1350
```

```
Val His  Ile Gly Met Asp Asp  Arg Trp Arg Asp Ser  Pro Arg Ala
    1355                1360                1365

Thr Pro  Trp Asp Gln Val Ser  Tyr Val Ser Gln Val  Ser Leu Ser
    1370                1375                1380

Ser Leu  Thr Ser Asp Lys Pro  Ser Arg His Ser Ala  Ala Ala Asp
    1385                1390                1395

Asp Asp  Gly Asp Lys Trp Ser  Leu Leu Leu Asn Gly  Arg Asp Glu
    1400                1405                1410

Glu Gln  Tyr Ile
    1415


<210> 7374
<211> 42
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1561; "

<220>
<221> source
<223> /note="Gene Symbol: ATP7B; "

<220>
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<223> /note="Gene Name:
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      polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000489512"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7374
Xaa Glu Glu Ile Gly Phe His Ala Ser Leu Ala Gln Arg Asn Pro Asn
1               5                  10                  15

Ala His His Leu Asp His Lys Met Glu Ile Lys His Ser Ser Val Gly
            20                  25                  30
```

Gly Thr Ser Thr Phe Arg Pro Thr Asn Leu
35 40

<210> 7375
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V0E2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting V0
subunit e2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NHE4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396148"

<400> 7375
Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr Phe
1 5 10 15

Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly Pro
20 25 30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys Cys
35 40 45

Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
50 55 60

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Val Arg Phe Leu Trp
65 70 75 80

Glu

<210> 7376
<211> 130
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATPase, H+ transporting V0
subunit e2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NHE4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410220"

<400> 7376
Met Arg Val Arg Gly Pro Ala Arg Leu Ile Ala Ser Gly Ala Arg Leu
1   5   10   15

Leu Leu Arg Met Leu Ser Ala Leu Pro Gly Trp Gly Pro Ala His Leu
            20   25   30

Gln Arg Pro Leu Leu Gly Pro Ala Ser Cys Leu Gly Ile Leu Arg Pro
        35   40   45

Ala Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr
    50   55   60

Phe Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly
65   70   75   80

Pro Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys
                85   90   95

Cys Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu
            100   105   110

Phe Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Val Arg Phe Leu

115 120 125

Trp Glu
130

<210> 7377
<211> 213
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ATPase, H+ transporting V0
subunit e2; "

<220>
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<223> /note="ENSP ID: ENSP00000411672"

<400> 7377
Met Arg Val Arg Gly Pro Ala Arg Leu Ile Ala Ser Gly Ala Arg Leu
1 5 10 15

Leu Leu Arg Met Leu Ser Ala Leu Pro Gly Trp Gly Pro Ala His Leu
20 25 30

Gln Arg Pro Leu Leu Gly Pro Ala Ser Cys Leu Gly Ile Leu Arg Pro
35 40 45

Ala Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr
50 55 60

Phe Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly
65 70 75 80

Pro Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys
85 90 95

Cys Tyr Leu Leu Cys Pro Ala Leu Gly Met Thr Val Ala Pro Leu Ser
100 105 110

```
Leu Thr Thr Pro Ser Ser Gly Pro Ser Pro Thr Gln Leu Cys Leu Val
        115                 120                 125

Thr Ser Ser Leu Leu Leu Ala Pro Arg Asp Pro Asp Pro Gln Gly Leu
    130                 135                 140

Pro Gly Ser Trp Lys Ser Ser Gln Ser Ser Gln Pro Ala Arg Ala Leu
145                 150                 155                 160

Gly Ser Pro Gly His Ser Ser Gly Arg Gly Asp Val Leu Leu Gln Tyr
                165                 170                 175

Pro His Cys Ser Gly Val Cys Pro Leu Ser Gln Gly Asp Ala Ala Gly
            180                 185                 190

Glu Leu Val Trp Val Gly Ser Phe Pro Leu Gln Thr Gly Gln Met Pro
        195                 200                 205

Gly Leu Ser Pro Ser
    210


<210> 7378
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1562; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0E2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting V0
      subunit e2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NHE4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417939"
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<400> 7378
Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr Phe
1 5 10 15

Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly Pro
20 25 30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys Cys
35 40 45

Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
50 55 60

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Cys Pro Ala Leu Gly Met
65 70 75 80

Thr Val Ala Pro Leu Ser Leu Thr Thr Pro Ser Ser Gly Pro Ser Pro
85 90 95

Thr Gln Leu Cys Leu Val Thr Ser Ser Leu Leu Leu Ala Pro Arg Asp
100 105 110

Pro Asp Pro Gln Gly Leu Pro Gly Ser Trp Lys Ser Ser Gln Ser Ser
115 120 125

Gln Pro Ala Arg Ala Leu Gly Ser Pro Gly His Ser Ser Gly Arg Gly
130 135 140

Asp Val Leu Leu Gln Tyr Pro His Cys Ser Gly Val Cys Pro Leu Ser
145 150 155 160

Gln Gly Asp Ala Ala Gly Glu Leu Val Trp Val Gly Ser Phe Pro Leu
165 170 175

Gln Thr Gly Gln Met Pro Gly Leu Ser Pro Ser
180 185

<210> 7379
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V0E2; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting V0
subunit e2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420012"

<400> 7379
Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr Phe
1 5 10 15

Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly Pro
20 25 30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys Cys
35 40 45

Tyr Leu Phe Phe Gln Ala Ala Pro Tyr Thr His Glu Ile Thr Thr Leu
50 55 60

Glu Ile Cys Thr Trp Glu Phe Leu Leu Phe Met Asn Ala Pro Arg
65 70 75

<210> 7380
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1562; "

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<223> /note="Gene Symbol: ATP6V0E2; "

<220>
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ATPase, H+ transporting V0
subunit e2; "

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<223> /note="Uniprot ID: Q8NHE4; "

<220>
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<223> /note="ENSP ID: ENSP00000420679"

<400> 7380
Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr Phe
1   5   10   15

Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly Pro
            20   25   30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys Cys
        35   40   45

Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
    50   55   60

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Val Arg Phe Leu Trp
65   70   75   80

Glu

<210> 7381
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: Q8NHE4; "

<220>
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<223> /note="ENSP ID: ENSP00000475645"

<400> 7381
Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr Phe
1   5   10   15

Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly Pro
            20   25   30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys Cys
        35   40   45

Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
    50   55   60

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Val Arg Phe Leu Trp
65   70   75   80

Glu

<210> 7382
<211> 164
<212> PRT
<213> Homo sapiens

<220>
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      subunit e2; "

<220>
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<400> 7382
Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr Phe
1   5   10   15

```
Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly Pro
            20                  25                  30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys Cys
        35                  40                  45

Tyr Leu Leu Cys Pro Ala Leu Gly Met Thr Val Ala Pro Leu Ser Leu
    50                  55                  60

Thr Thr Pro Ser Ser Gly Pro Ser Pro Thr Gln Leu Cys Leu Val Thr
65                  70                  75                  80

Ser Ser Leu Leu Leu Ala Pro Arg Asp Pro Asp Pro Gln Gly Leu Pro
                85                  90                  95

Gly Ser Trp Lys Ser Ser Gln Ser Ser Gln Pro Ala Arg Ala Leu Gly
            100                 105                 110

Ser Pro Gly His Ser Ser Gly Arg Gly Asp Val Leu Leu Gln Tyr Pro
        115                 120                 125

His Cys Ser Gly Val Cys Pro Leu Ser Gln Gly Asp Ala Ala Gly Glu
    130                 135                 140

Leu Val Trp Val Gly Ser Phe Pro Leu Gln Thr Gly Gln Met Pro Gly
145                 150                 155                 160

Leu Ser Pro Ser
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<210> 7383
<211> 130
<212> PRT
<213> Homo sapiens

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ATPase, H+ transporting V0
subunit e2; "

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<220>
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<400> 7383
Met Arg Val Arg Gly Pro Ala Arg Leu Ile Ala Ser Gly Ala Arg Leu
1   5   10   15

Leu Leu Arg Met Leu Ser Ala Leu Pro Gly Trp Gly Pro Ala His Leu
            20   25   30

Gln Arg Pro Leu Leu Gly Pro Ala Ser Cys Leu Gly Ile Leu Arg Pro
        35   40   45

Ala Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr
    50   55   60

Phe Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly
65   70   75   80

Pro Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys
                85   90   95

Cys Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu
            100   105   110

Phe Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Val Arg Phe Leu
        115   120   125

Trp Glu
    130

<210> 7384
<211> 213
<212> PRT
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<220>
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ATPase, H+ transporting V0
subunit e2; "

<220>
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<223> /note="ENSP ID: ENSP00000482231"

<400> 7384
Met Arg Val Arg Gly Pro Ala Arg Leu Ile Ala Ser Gly Ala Arg Leu
1 5 10 15

Leu Leu Arg Met Leu Ser Ala Leu Pro Gly Trp Gly Pro Ala His Leu
20 25 30

Gln Arg Pro Leu Leu Gly Pro Ala Ser Cys Leu Gly Ile Leu Arg Pro
35 40 45

Ala Met Thr Ala His Ser Phe Ala Leu Pro Val Ile Ile Phe Thr Thr
50 55 60

Phe Trp Gly Leu Val Gly Ile Ala Gly Pro Trp Phe Val Pro Lys Gly
65 70 75 80

Pro Asn Arg Gly Val Ile Ile Thr Met Leu Val Ala Thr Ala Val Cys
85 90 95

Cys Tyr Leu Leu Cys Pro Ala Leu Gly Met Thr Val Ala Pro Leu Ser
100 105 110

Leu Thr Thr Pro Ser Ser Gly Pro Ser Pro Thr Gln Leu Cys Leu Val
115 120 125

Thr Ser Ser Leu Leu Leu Ala Pro Arg Asp Pro Asp Pro Gln Gly Leu
130 135 140

Pro Gly Ser Trp Lys Ser Ser Gln Ser Ser Gln Pro Ala Arg Ala Leu
145 150 155 160

Gly Ser Pro Gly His Ser Ser Gly Arg Gly Asp Val Leu Leu Gln Tyr
165 170 175

```
Pro His Cys Ser Gly Val Cys Pro Leu Ser Gln Gly Asp Ala Ala Gly
            180                 185                 190

Glu Leu Val Trp Val Gly Ser Phe Pro Leu Gln Thr Gly Gln Met Pro
        195                 200                 205

Gly Leu Ser Pro Ser
    210
```

<210> 7385
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1563; "

<220>
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<223> /note="Gene Symbol: ATP6V1G1; "

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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G1; "

<220>
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<223> /note="Uniprot ID: O75348; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363162"

<400> 7385

```
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                  10                  15

Arg Ala Ala Glu Lys Val Ser Glu Ala Arg Lys Arg Lys Asn Arg Arg
            20                  25                  30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Ala Glu Ile Glu Gln Tyr Arg
        35                  40                  45

Leu Gln Arg Glu Lys Glu Phe Lys Ala Lys Glu Ala Ala Ala Leu Gly
    50                  55                  60
```

```
Ser Arg Gly Ser Cys Ser Thr Glu Val Glu Lys Glu Thr Gln Glu Lys
65                  70                  75                  80


Met Thr Ile Leu Gln Thr Tyr Phe Arg Gln Asn Arg Asp Glu Val Leu
                85                  90                  95


Asp Asn Leu Leu Ala Phe Val Cys Asp Ile Arg Pro Glu Ile His Glu
            100                 105                 110


Asn Tyr Arg Ile Asn Gly
        115


<210> 7386
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
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      subunit G2; "

<220>
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<223> /note="Uniprot ID:  O95670; "

<220>
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<223> /note="ENSP ID: ENSP00000302194"

<400> 7386
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15


Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30


Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
        35                  40                  45
```

```
Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
    50                  55                  60

Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65                  70                  75                  80

Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
                85                  90                  95

Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
            100                 105                 110

Asn Tyr Arg Ile Ser Ala
        115


<210> 7387
<211> 78
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1564; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1G2; "

<220>
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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
      subunit G2; "

<220>
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<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365321"

<400> 7387
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
```

```
        35                  40                  45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    50                  55                  60

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65                  70                  75


<210> 7388
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1564; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1G2; "

<220>
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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
      subunit G2; "

<220>
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<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000372995"

<400> 7388
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
        35                  40                  45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
    50                  55                  60

Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65                  70                  75                  80
```

```
Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
                85                  90                  95

Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
            100                 105                 110

Asn Tyr Arg Ile Ser Ala
        115


<210> 7389
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
      subunit G2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390148"

<400> 7389
Gly Gly Gln Gln His Ala Val Pro Cys Pro His Gly Gly Pro Gly Gly
1               5                   10                  15

Gln Gly Gln Pro Arg Ala Glu Ala Ala Gly Thr Gly Gln Gly His Arg
            20                  25                  30

Gly Gly His Arg Pro Gly Ala Val Val Gly Ala Ala Gln His Leu His
        35                  40                  45

Arg Gly Leu Gly Val Ala Gly Gly Gly Pro Gly Pro Gly Pro Ala Val
    50                  55                  60

Leu Gln Thr Arg Lys Ala Arg Arg Leu Lys Gln Ala Lys Glu Glu Ala
65                  70                  75                  80
```

```
Gln Met Glu Val Glu Gln Tyr Arg Arg Glu Arg Glu His Glu Phe Gln
                85                  90                  95

Ser Lys Gln Gln Ala Ala Met Gly Ser Gln Gly Asn Leu Ser Ala Glu
            100                 105                 110

Val Glu Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
        115                 120                 125

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    130                 135                 140

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
145                 150                 155


<210> 7390
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1564; "

<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
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<220>
<221> source
<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395436"

<400> 7390
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30
```

```
Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
        35                  40                  45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
    50                  55                  60

Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65                  70                  75                  80

Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
                85                  90                  95

Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
            100                 105                 110

Asn Tyr Arg Ile Ser Ala
        115


<210> 7391
<211> 78
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1564; "

<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
      subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402430"

<400> 7391
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
```

```
            20                  25                  30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
        35                  40                  45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    50                  55                  60

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65                  70                  75


<210> 7392
<211> 78
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1564; "

<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
      subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403158"

<400> 7392
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
        35                  40                  45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    50                  55                  60
```

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65 70 75

<210> 7393
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1564; "

<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID: O95670; "

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<223> /note="ENSP ID: ENSP00000406372"

<400> 7393
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
20 25 30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
35 40 45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
50 55 60

Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65 70 75 80

Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
85 90 95

```
Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
            100                 105                 110


Asn Tyr Arg Ile Ser Ala
        115


<210> 7394
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
      subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406389"

<400> 7394
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                  10                  15


Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30


Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
        35                  40                  45


Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
    50                  55                  60


Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65                  70                  75                  80
```

```
Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
                85                  90                  95

Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
            100                 105                 110

Asn Tyr Arg Ile Ser Ala
        115


<210> 7395
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1564; "

<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 13kDa, V1
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<220>
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<223> /note="Uniprot ID:  O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406575"

<400> 7395
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1               5                  10                  15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20                  25                  30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
        35                  40                  45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    50                  55                  60

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
```

65 70 75

<210> 7396
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Symbol: ATP6V1G2; "

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ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G2; "

<220>
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<223> /note="Uniprot ID: O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406668"

<400> 7396
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
20 25 30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
35 40 45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
50 55 60

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65 70 75

<210> 7397
<211> 118
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID: O95670; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408670"

<400> 7397
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
20 25 30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
35 40 45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
50 55 60

Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65 70 75 80

Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
85 90 95

Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
100 105 110

Asn Tyr Arg Ile Ser Ala
115

<210> 7398
<211> 78
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID: O95670; "

<220>
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<223> /note="ENSP ID: ENSP00000409104"

<400> 7398
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20   25   30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
        35   40   45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    50   55   60

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65   70   75

<210> 7399
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1G2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G2; "

<220>
<221> source
<223> /note="Uniprot ID: O95670; "

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<223> /note="ENSP ID: ENSP00000413222"

<400> 7399
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20   25   30

Leu Lys Gln Ala Lys Glu Glu Ala Gln Met Glu Val Glu Gln Tyr Arg
        35   40   45

Arg Glu Arg Glu His Glu Phe Gln Ser Lys Gln Gln Ala Ala Met Gly
    50   55   60

Ser Gln Gly Asn Leu Ser Ala Glu Val Glu Gln Ala Thr Arg Arg Gln
65   70   75   80

Val Gln Gly Met Gln Ser Ser Gln Gln Arg Asn Arg Glu Arg Val Leu
                85   90   95

Ala Gln Leu Leu Gly Met Val Cys Asp Val Arg Pro Gln Val His Pro
            100   105   110

Asn Tyr Arg Ile Ser Ala
        115

<210> 7400
<211> 78
<212> PRT
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<220>
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<223> /note="Gene Symbol: ATP6V1G2; "

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ATPase, H+ transporting, lysosomal 13kDa, V1
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<223> /note="Uniprot ID: O95670; "

<220>
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<400> 7400
Met Ala Ser Gln Ser Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Ala Glu Lys Val Ala Asp Ala Arg Lys Arg Lys Ala Arg Arg
            20   25   30

Leu Lys Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln
        35   40   45

Gln Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys
    50   55   60

Asp Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65   70   75

<210> 7401
<211> 77
<212> PRT
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<220>
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<400> 7401
Met Glu Val Glu Gln Tyr Arg Arg Glu Arg Glu His Glu Phe Gln Ser
1   5   10   15

Lys Gln Gln Ala Ala Met Gly Ser Gln Gly Asn Leu Ser Ala Glu Val
            20   25   30

Glu Gln Ala Thr Arg Arg Gln Val Gln Gly Met Gln Ser Ser Gln Gln
        35   40   45

Arg Asn Arg Glu Arg Val Leu Ala Gln Leu Leu Gly Met Val Cys Asp
    50   55   60

Val Arg Pro Gln Val His Pro Asn Tyr Arg Ile Ser Ala
65   70   75

<210> 7402
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V1G3; "

<220>
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<223> /note="Gene Name:
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<220>
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<220>
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<400> 7402
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Arg Lys Gly Lys Arg
            20   25   30

Leu Lys Gln Ala Lys Glu Glu Ala Met Val Glu Ile Asp Gln Tyr Arg
        35   40   45

Met Gln Arg Asp Lys Glu Phe Arg Leu Lys Gln Ser Lys Ile Met Gly
    50   55   60

Ser Gln Asn Asn Leu Ser Asp Glu Ile Glu Glu Gln Thr Leu Gly Lys
65   70   75   80

Ile Gln Glu Leu Asn Gly His Tyr Asn Lys Tyr Met Glu Ser Val Met
                85   90   95

Asn Gln Leu Leu Ser Met Val Cys Asp Met Lys Pro Glu Ile His Val
            100   105   110

Asn Tyr Arg Ala Thr Asn
        115

<210> 7403
<211> 59
<212> PRT
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<220>
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subunit G3; "

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<223> /note="ENSP ID: ENSP00000309574"

<400> 7403
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Ile Leu His Leu Leu
            20   25   30

Phe Leu Lys Arg Arg Asp Trp Asp Cys Phe Trp Lys Arg Lys Ala Ile
        35   40   45

Glu Ala Ser Gln Gly Gly Ser Asn Gly Arg Asn
    50   55

<210> 7404
<211> 118
<212> PRT
<213> Homo sapiens

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<400> 7404
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Arg Lys Gly Lys Arg
            20   25   30

Leu Lys Gln Ala Lys Glu Glu Ala Met Val Glu Ile Asp Gln Tyr Arg

35 40 45

Met Gln Arg Asp Lys Glu Phe Arg Leu Lys Gln Ser Lys Ile Met Gly
50 55 60

Ser Gln Asn Asn Leu Ser Asp Glu Ile Glu Glu Gln Thr Leu Gly Lys
65 70 75 80

Ile Gln Glu Leu Asn Gly His Tyr Asn Lys Tyr Met Glu Ser Val Met
85 90 95

Asn Gln Leu Leu Ser Met Val Cys Asp Met Lys Pro Glu Ile His Val
100 105 110

Asn Tyr Arg Ala Thr Asn
115

<210> 7405
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G3; "

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<220>
<221> source
<223> /note="ENSP ID: ENSP00000356352"

<400> 7405
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Arg Lys Gly Lys Arg
20 25 30

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Leu Lys Gln Ala Lys Glu Glu Ala Met Val Glu Ile Asp Gln Tyr Arg
        35                  40                  45

Met Gln Arg Asp Lys Glu Phe Arg Leu Lys Gln Ser Lys Ile Met Gly
    50                  55                  60

Ser Gln Asn Asn Leu Ser Asp Glu Ile Glu Glu Gln Thr Leu Gly Lys
65                  70                  75                  80

Ile Gln Glu Leu Asn Gly His Tyr Asn Lys Tyr Met Glu Ser Val Met
                85                  90                  95

Asn Gln Leu Leu Ser Met Val Cys Asp Met Lys Pro Glu Ile His Val
            100                 105                 110

Asn Tyr Arg Ala Thr Asn
        115


<210> 7406
<211> 124
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID:  Q96LB4; "

<220>
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<223> /note="ENSP ID: ENSP00000417171"

<400> 7406
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15
```

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Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Lys Thr Gly Thr Ala
            20                  25                  30

Ser Gly Lys Gly Lys Arg Leu Lys Gln Ala Lys Glu Glu Ala Met Val
        35                  40                  45

Glu Ile Asp Gln Tyr Arg Met Gln Arg Asp Lys Glu Phe Arg Leu Lys
    50                  55                  60

Gln Ser Lys Ile Met Gly Ser Gln Asn Asn Leu Ser Asp Glu Ile Glu
65                  70                  75                  80

Glu Gln Thr Leu Gly Lys Ile Gln Glu Leu Asn Gly His Tyr Asn Lys
                85                  90                  95

Tyr Met Glu Ser Val Met Asn Gln Leu Leu Ser Met Val Cys Asp Met
            100                 105                 110

Lys Pro Glu Ile His Val Asn Tyr Arg Ala Thr Asn
        115                 120


<210> 7407
<211> 124
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 7407
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Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1               5                   10                  15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Lys Thr Gly Thr Ala
            20                  25                  30

Ser Gly Lys Gly Lys Arg Leu Lys Gln Ala Lys Glu Glu Ala Met Val
        35                  40                  45

Glu Ile Asp Gln Tyr Arg Met Gln Arg Asp Lys Glu Phe Arg Leu Lys
    50                  55                  60

Gln Ser Lys Ile Met Gly Ser Gln Asn Asn Leu Ser Asp Glu Ile Glu
65                  70                  75                  80

Glu Gln Thr Leu Gly Lys Ile Gln Glu Leu Asn Gly His Tyr Asn Lys
                85                  90                  95

Tyr Met Glu Ser Val Met Asn Gln Leu Leu Ser Met Val Cys Asp Met
            100                 105                 110

Lys Pro Glu Ile His Val Asn Tyr Arg Ala Thr Asn
        115                 120


<210> 7408
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q96LB4; "

<220>
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<223> /note="ENSP ID: ENSP00000461329"

<400> 7408
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1 5 10 15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Arg Lys Gly Lys Arg
20 25 30

Leu Lys Gln Ala Lys Glu Glu Ala Met Val Glu Ile Asp Gln Tyr Arg
35 40 45

Met Gln Arg Asp Lys Glu Phe Arg Leu Lys Gln Ser Lys Ile Met Gly
50 55 60

Ser Gln Asn Asn Leu Ser Asp Glu Ile Glu Glu Gln Thr Leu Gly Lys
65 70 75 80

Ile Gln Glu Leu Asn Gly His Tyr Asn Lys Tyr Met Glu Ser Val Met
85 90 95

Asn Gln Leu Leu Ser Met Val Cys Asp Met Lys Pro Glu Ile His Val
100 105 110

Asn Tyr Arg Ala Thr Asn
115

<210> 7409
<211> 59
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V1G3; "

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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 13kDa, V1
subunit G3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LB4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461616"

<400> 7409
Met Thr Ser Gln Ser Gln Gly Ile His Gln Leu Leu Gln Ala Glu Lys
1   5   10   15

Arg Ala Lys Asp Lys Leu Glu Glu Ala Lys Lys Ile Leu His Leu Leu
            20   25   30

Phe Leu Lys Arg Arg Asp Trp Asp Cys Phe Trp Lys Arg Lys Ala Ile
        35   40   45

Glu Ala Ser Gln Gly Gly Ser Asn Gly Arg Asn
    50   55

<210> 7410
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1566; "

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<221> source
<223> /note="Gene Symbol: ATP6V1F; "

<220>
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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 14kDa, V1
      subunit F; "

<220>
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<223> /note="Uniprot ID: Q16864; "

<220>
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<400> 7410
Met Ala Gly Arg Gly Lys Leu Ile Ala Val Ile Gly Asp Glu Asp Thr
1   5   10   15

Val Thr Gly Phe Leu Leu Gly Gly Ile Gly Glu Leu Asn Lys Asn Arg
            20   25   30

```
His Pro Asn Phe Leu Val Val Glu Lys Asp Thr Thr Ile Asn Glu Ile
        35                  40                  45

Glu Asp Thr Phe Arg Gln Phe Leu Asn Arg Asp Asp Ile Gly Ile Ile
    50                  55                  60

Leu Ile Asn Gln Tyr Ile Ala Glu Met Val Arg His Ala Leu Asp Ala
65                  70                  75                  80

His Gln Gln Ser Ile Pro Ala Val Leu Glu Ile Pro Ser Lys Glu His
                85                  90                  95

Pro Tyr Asp Ala Ala Lys Asp Ser Ile Leu Arg Arg Ala Arg Gly Met
            100                 105                 110

Phe Thr Ala Glu Asp Leu Arg
        115


<210> 7411
<211> 147
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1F; "

<220>
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<223> /note="Gene Name:
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      subunit F; "

<220>
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<223> /note="Uniprot ID:  Q16864; "

<220>
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<223> /note="ENSP ID: ENSP00000417378"

<400> 7411
Met Ala Gly Arg Gly Lys Leu Ile Ala Val Ile Gly Asp Glu Asp Thr
1               5                   10                  15
```

```
Val Thr Gly Phe Leu Leu Gly Gly Ile Gly Glu Leu Asn Lys Asn Arg
            20                  25                  30

His Pro Asn Phe Leu Val Val Glu Lys Asp Thr Thr Ile Asn Glu Ile
        35                  40                  45

Glu Asp Thr Phe Arg Ser Leu Gly Ser Leu Pro Gly Ser Val Val Glu
    50                  55                  60

Ala Asn Pro Asn Gln Arg Asp Pro Pro Leu Trp Asp Glu Ile Asp Ser
65                  70                  75                  80

Arg Gln Phe Leu Asn Arg Asp Asp Ile Gly Ile Ile Leu Ile Asn Gln
                85                  90                  95

Tyr Ile Ala Glu Met Val Arg His Ala Leu Asp Ala His Gln Gln Ser
            100                 105                 110

Ile Pro Ala Val Leu Glu Ile Pro Ser Lys Glu His Pro Tyr Asp Ala
        115                 120                 125

Ala Lys Asp Ser Ile Leu Arg Arg Ala Arg Gly Met Phe Thr Ala Glu
    130                 135                 140

Asp Leu Arg
145
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<210> 7412
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1567; "

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<221> source
<223> /note="Gene Symbol: ATP6V0C; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 16kDa, V0
subunit c; "

<220>
<221> source

<223> /note="Uniprot ID: P27449; "

<220>
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<400> 7412
Met Ser Glu Ser Lys Ser Gly Pro Glu Tyr Ala Ser Phe Phe Ala Val
1   5   10   15

Met Gly Ala Ser Ala Ala Met Val Phe Ser Ala Leu Gly Ala Ala Tyr
            20   25   30

Gly Thr Ala Lys Ser Gly Thr Gly Ile Ala Ala Met Ser Val Met Arg
        35   40   45

Pro Glu Gln Ile Met Lys Ser Ile Ile Pro Val Val Met Ala Gly Ile
    50   55   60

Ile Ala Ile Tyr Gly Leu Val Val Ala Val Leu Ile Ala Asn Ser Leu
65   70   75   80

Asn Asp Asp Ile Ser Leu Tyr Lys Ser Phe Leu Gln Leu Gly Ala Gly
                85   90   95

Leu Ser Val Gly Leu Ser Gly Leu Ala Ala Gly Phe Ala Ile Gly Ile
            100   105   110

Val Gly Asp Ala Gly Val Arg Gly Thr Ala Gln Gln Pro Arg Leu Phe
        115   120   125

Val Gly Met Ile Leu Ile Leu Ile Phe Ala Glu Val Leu Gly Leu Tyr
    130   135   140

Gly Leu Ile Val Ala Leu Ile Leu Ser Thr Lys
145   150   155

<210> 7413
<211> 63
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ATP6V0C; "

<220>
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ATPase, H+ transporting, lysosomal 16kDa, V0
subunit c; "

<220>
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<223> /note="ENSP ID: ENSP00000454597"

<400> 7413
Met Ser Glu Ser Lys Ser Gly Pro Asp Pro Gly Arg Cys Leu Trp His
1 5 10 15

Ser Gln Glu Arg Tyr Arg His Cys Gly His Val Cys His Ala Ala Gly
20 25 30

Ala Asp His Glu Val His His Pro Ser Gly His Gly Trp His His Arg
35 40 45

His Leu Arg Pro Gly Gly Gly Ser Pro His Arg Gln Leu Pro Glu
50 55 60

<210> 7414
<211> 112
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V0C; "

<220>
<221> source
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ATPase, H+ transporting, lysosomal 16kDa, V0
subunit c; "

<220>
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<223> /note="ENSP ID: ENSP00000454868"

<400> 7414
Met Ser Val Met Arg Pro Glu Gln Ile Met Lys Ser Ile Ile Pro Val
1 5 10 15

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Val Met Ala Gly Ile Ile Ala Ile Tyr Gly Leu Val Val Ala Val Leu
            20                  25                  30

Ile Ala Asn Ser Leu Asn Asp Asp Ile Ser Leu Tyr Lys Ser Phe Leu
        35                  40                  45

Gln Leu Gly Ala Gly Leu Ser Val Gly Leu Ser Gly Leu Ala Ala Gly
    50                  55                  60

Phe Ala Ile Gly Ile Val Gly Asp Ala Gly Val Arg Gly Thr Ala Gln
65                  70                  75                  80

Gln Pro Arg Leu Phe Val Gly Met Ile Leu Ile Leu Ile Phe Ala Glu
                85                  90                  95

Val Leu Gly Leu Tyr Gly Leu Ile Val Ala Leu Ile Leu Ser Thr Lys
            100                 105                 110


<210> 7415
<211> 112
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      ATPase, H+ transporting, lysosomal 16kDa, V0
      subunit c; "

<220>
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<223> /note="ENSP ID: ENSP00000457782"

<400> 7415
Met Ser Val Met Arg Pro Glu Gln Ile Met Lys Ser Ile Ile Pro Val
1               5                   10                  15

Val Met Ala Gly Ile Ile Ala Ile Tyr Gly Leu Val Val Ala Val Leu
            20                  25                  30
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```
Ile Ala Asn Ser Leu Asn Asp Asp Ile Ser Leu Tyr Lys Ser Phe Leu
        35                  40                  45

Gln Leu Gly Ala Gly Leu Ser Val Gly Leu Ser Gly Leu Ala Ala Gly
    50                  55                  60

Phe Ala Ile Gly Ile Val Gly Asp Ala Gly Val Arg Gly Thr Ala Gln
65                  70                  75                  80

Gln Pro Arg Leu Phe Val Gly Met Ile Leu Ile Leu Ile Phe Ala Glu
                85                  90                  95

Val Leu Gly Leu Tyr Gly Leu Ile Val Ala Leu Ile Leu Ser Thr Lys
            100                 105                 110


<210> 7416
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1568; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0B; "

<220>
<221> source
<223> /note="Gene Name:
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      subunit b; "

<220>
<221> source
<223> /note="Uniprot ID:  Q99437; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000236067"

<400> 7416
Met Trp Ser Asn Leu Gly Ile Gly Leu Ala Ile Ser Leu Ser Val Val
1               5                   10                  15

Gly Ala Ala Trp Gly Ile Tyr Ile Thr Gly Ser Ser Ile Ile Gly Gly
            20                  25                  30

Gly Val Lys Ala Pro Arg Ile Lys Thr Lys Asn Leu Val Ser Ile Ile
```

```
        35                  40                  45

Phe Cys Glu Ala Val Ala Ile Tyr Gly Ile Ile Met Ala Ile Val Ile
    50                  55                  60

Ser Asn Met Ala Glu Pro Phe Ser Ala Thr Asp Pro Lys Ala Ile Gly
65                  70                  75                  80

His Arg Asn Tyr His Ala Gly Tyr Ser Met Phe Gly Ala Gly Leu Thr
                85                  90                  95

Val Gly Leu Ser Asn Leu Phe Cys Gly Val Cys Val Gly Ile Val Gly
            100                 105                 110

Ser Gly Ala Ala Leu Ala Asp Ala Gln Asn Pro Ser Leu Phe Val Lys
        115                 120                 125

Ile Leu Ile Val Glu Ile Phe Gly Ser Ala Ile Gly Leu Phe Gly Val
    130                 135                 140

Ile Val Ala Ile Leu Gln Thr Ser Arg Val Lys Met Gly Asp
145                 150                 155


<210> 7417
<211> 88
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000431375"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7417
Xaa Ala Val Gly Glu Ala Gly Ser Trp Arg Ala Gly Ala Ala Ser Arg
1   5   10   15

Pro Ser Trp Pro Gly Arg Asn Ser Ala Gly Lys Trp Pro Ala Gly Asn
            20   25   30

Thr Gly Pro Pro Arg Ala Leu His Pro Arg Leu Trp Gly Leu Ala Pro
        35   40   45

Ala Arg Ala Ser Asp Ser Asp Lys Gly Asp Pro Asp Phe Gln Leu Leu
    50   55   60

Glu Glu Gly Cys Gly Arg Glu Ser Ala Thr Pro Phe Leu Ile Trp Ala
65   70   75   80

Ser Ala Leu Met Trp His Gly Ser
                85

<210> 7418
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1568; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0B; "

<220>
<221> source
<223> /note="Gene Name:
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      subunit b; "

<220>
<221> source
<223> /note="Uniprot ID: Q99437; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431605"

<400> 7418
Met Thr Gly Leu Ala Leu Leu Tyr Ser Gly Val Phe Val Ala Phe Trp

1 5 10 15

Ala Cys Ala Leu Ala Val Gly Val Cys Tyr Thr Ile Phe Asp Leu Gly
20 25 30

Phe Arg Phe Asp Val Ala Trp Phe Leu Thr Glu Thr Ser Pro Phe Met
35 40 45

Trp Ser Asn Leu Gly Ile Gly Leu Ala Ile Ser Leu Ser Val Val Gly
50 55 60

Ala Ala Trp Gly Ile Tyr Ile Thr Gly Ser Ser Ile Ile Gly Gly Gly
65 70 75 80

Val Lys Ala Pro Arg Ile Lys Thr Lys Asn Leu Val Ser Ile Ile Phe
85 90 95

Cys Glu Ala Val Ala Ile Tyr Gly Ile Ile Met Ala Ile Val Ile Ser
100 105 110

Asn Met Ala Glu Pro Phe Ser Ala Thr Asp Pro Lys Ala Ile Gly His
115 120 125

Arg Asn Tyr His Ala Gly Tyr Ser Met Phe Gly Ala Gly Leu Thr Val
130 135 140

Gly Leu Ser Asn Leu Phe Cys Gly Val Cys Val Gly Ile Val Gly Ser
145 150 155 160

Gly Ala Ala Leu Ala Asp Ala Gln Asn Pro Ser Leu Phe Val Lys Ile
165 170 175

Leu Ile Val Glu Ile Phe Gly Ser Ala Ile Gly Leu Phe Gly Val Ile
180 185 190

Val Ala Ile Leu Gln Thr Ser Arg Val Lys Met Gly Asp
195 200 205

<210> 7419
<211> 252
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1568; "

<220>
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<223> /note="Gene Symbol: ATP6V0B; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 21kDa, V0
subunit b; "

<220>
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<223> /note="ENSP ID: ENSP00000432754"

<400> 7419

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Met Thr Gly Leu Ala Leu Leu Tyr Ser Gly Val Phe Val Ala Phe Trp
1               5                  10                  15

Ala Cys Ala Leu Ala Val Gly Glu Ala Gly Ser Trp Arg Ala Gly Ala
            20                  25                  30

Ala Ser Arg Pro Ser Trp Pro Gly Arg Asn Ser Ala Gly Lys Trp Pro
        35                  40                  45

Ala Gly Asn Thr Gly Pro Pro Arg Ala Leu His Pro Arg Leu Trp Gly
    50                  55                  60

Leu Ala Pro Ala Arg Ala Ser Asp Ser Asp Lys Gly Asp Pro Asp Phe
65                  70                  75                  80

Gln Leu Leu Glu Glu Gly Phe Leu Thr Glu Thr Ser Pro Phe Met Trp
                85                  90                  95

Ser Asn Leu Gly Ile Gly Leu Ala Ile Ser Leu Ser Val Val Gly Ala
            100                 105                 110

Ala Trp Gly Ile Tyr Ile Thr Gly Ser Ser Ile Ile Gly Gly Gly Val
        115                 120                 125

Lys Ala Pro Arg Ile Lys Thr Lys Asn Leu Val Ser Ile Ile Phe Cys
    130                 135                 140

Glu Ala Val Ala Ile Tyr Gly Ile Ile Met Ala Ile Val Ile Ser Asn
145                 150                 155                 160
```

```
Met Ala Glu Pro Phe Ser Ala Thr Asp Pro Lys Ala Ile Gly His Arg
                165                 170                 175

Asn Tyr His Ala Gly Tyr Ser Met Phe Gly Ala Gly Leu Thr Val Gly
            180                 185                 190

Leu Ser Asn Leu Phe Cys Gly Val Cys Val Gly Ile Val Gly Ser Gly
        195                 200                 205

Ala Ala Leu Ala Asp Ala Gln Asn Pro Ser Leu Phe Val Lys Ile Leu
    210                 215                 220

Ile Val Glu Ile Phe Gly Ser Ala Ile Gly Leu Phe Gly Val Ile Val
225                 230                 235                 240

Ala Ile Leu Gln Thr Ser Arg Val Lys Met Gly Asp
                245                 250


<210> 7420
<211> 86
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V0B; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 21kDa, V0
      subunit b; "

<220>
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<223> /note="ENSP ID: ENSP00000432994"

<400> 7420
Met Trp Ser Asn Leu Gly Ile Gly Leu Ala Ile Ser Leu Ser Val Val
1               5                   10                  15

Gly Ala Ala Trp Gly Ile Tyr Ile Thr Gly Ser Ser Ile Ile Gly Gly
            20                  25                  30
```

```
Gly Val Lys Ala Pro Arg Ile Lys Thr Lys Asn Leu Val Ser Ile Ile
        35                  40                  45


Phe Cys Glu Ala Val Ala Ile Tyr Gly Ile Ile Met Ala Ile Val Ile
    50                  55                  60


Ser Asn Met Ala Glu Pro Phe Ser Ala Thr Asp Pro Lys Ala Ile Gly
65                  70                  75                  80


His Arg Asn Tyr His Ala
                85


<210> 7421
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q99437; "

<220>
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<400> 7421
Met Trp Ser Asn Leu Gly Ile Gly Leu Ala Ile Ser Leu Ser Val Val
1               5                   10                  15


Gly Ala Ala Trp Gly Ile Tyr Ile Thr Gly Ser Ser Ile Ile Gly Gly
            20                  25                  30


Gly Val Lys Ala Pro Arg Ile Lys Thr Lys Asn Leu Val Ser Ile Ile
        35                  40                  45


Phe Cys Glu Ala Val Ala Ile Tyr Gly Ile Ile Met Ala Ile Val Ile
```

```
    50                  55                  60

Ser Asn Met Ala Glu Pro Phe Ser Ala Thr Asp Pro Lys Ala Ile Gly
65                  70                  75                  80

His Arg Asn Tyr His Ala Gly Tyr Ser Met Phe Gly Ala Gly Leu Thr
                85                  90                  95

Val Gly Leu Ser Asn Leu Phe Cys Gly Val Cys Val Gly Ile Val Gly
            100                 105                 110

Ser Gly Ala Ala Leu Ala Asp Ala Gln Asn Pro Ser Leu Phe Val Lys
        115                 120                 125

Ile Leu Ile Val Glu Ile Phe Gly Ser Ala Ile Gly Leu Phe Gly Val
    130                 135                 140

Ile Val Ala Ile Leu Gln Thr Ser Arg Val Lys Met Gly Asp
145                 150                 155


<210> 7422
<211> 261
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V0B; "

<220>
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      subunit b; "

<220>
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<223> /note="ENSP ID: ENSP00000434729"

<400> 7422
Met Thr Gly Leu Ala Leu Leu Tyr Ser Gly Val Phe Val Ala Phe Trp
1               5                   10                  15

Ala Cys Ala Leu Ala Val Gly Val Cys Tyr Thr Ile Phe Asp Leu Gly
            20                  25                  30
```

```
Phe Arg Phe Asp Val Ala Trp Phe Leu Thr Glu Thr Ser Pro Phe Met
        35                  40                  45

Trp Ser Asn Leu Gly Ile Gly Leu Ala Ile Ser Leu Ser Val Val Gly
    50                  55                  60

Ala Ala Trp Gly Ile Tyr Ile Thr Gly Ser Ser Ile Ile Gly Gly Gly
65                  70                  75                  80

Val Lys Ala Pro Arg Ile Lys Thr Lys Asn Leu Val Ser Ile Ile Phe
                85                  90                  95

Cys Glu Ala Val Ala Ile Tyr Gly Ile Ile Met Ala Ile Val Ile Ser
            100                 105                 110

Asn Met Ala Glu Pro Phe Ser Ala Thr Asp Pro Lys Ala Ile Gly His
        115                 120                 125

Arg Asn Tyr His Ala Gly Tyr Ser Met Phe Gly Ala Gly Leu Thr Val
    130                 135                 140

Gly Leu Ser Asn Leu Phe Cys Gly Val Cys Val Gly Ile Val Gly Ser
145                 150                 155                 160

Gly Ala Ala Leu Ala Asp Ala Gln Asn Pro Ser Leu Phe Val Lys Ile
                165                 170                 175

Leu Ile Val Glu Ile Phe Gly Ser Ala Ile Gly Leu Phe Gly Val Ile
            180                 185                 190

Val Ala Ile Leu Gln Val Met Asn Pro Leu Gly Lys Pro Leu Cys Pro
        195                 200                 205

Cys Pro Gln Pro Ser Leu Thr Leu Leu Leu Glu Lys Leu Lys Cys Ser
    210                 215                 220

Pro Ser Leu Pro Ile Thr Ile Asp Ser Pro Lys Gln Leu Pro Pro Pro
225                 230                 235                 240

His Phe His Leu Leu Val Phe Ser Tyr Arg Gly Ser Leu Phe Leu Ser
                245                 250                 255
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Leu Ile Trp Cys His
260

<210> 7423
<211> 46
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V0B; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 21kDa, V0
subunit b; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435396"

<400> 7423
Met Thr Gly Leu Ala Leu Leu Tyr Ser Gly Val Phe Val Ala Phe Trp
1 5 10 15

Ala Cys Ala Leu Ala Val Ala Val Leu Ser Pro Gly Gly Ser Leu Arg
20 25 30

Thr Pro Leu Gln Gly Gly Gly Pro Ser Ala Arg Gln Leu Leu
35 40 45

<210> 7424
<211> 226
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1569; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1E1; "

<220>
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<223> /note="Gene Name:

ATPase, H+ transporting, lysosomal 31kDa, V1
subunit E1; "

<220>
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<223> /note="Uniprot ID: P36543; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000253413"

<400> 7424

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Met Ala Leu Ser Asp Ala Asp Val Gln Lys Gln Ile Lys His Met Met
1               5                  10                  15

Ala Phe Ile Glu Gln Glu Ala Asn Glu Lys Ala Glu Glu Ile Asp Ala
            20                  25                  30

Lys Ala Glu Glu Glu Phe Asn Ile Glu Lys Gly Arg Leu Val Gln Thr
        35                  40                  45

Gln Arg Leu Lys Ile Met Glu Tyr Tyr Glu Lys Lys Glu Lys Gln Ile
    50                  55                  60

Glu Gln Gln Lys Lys Ile Gln Met Ser Asn Leu Met Asn Gln Ala Arg
65                  70                  75                  80

Leu Lys Val Leu Arg Ala Arg Asp Asp Leu Ile Thr Asp Leu Leu Asn
                85                  90                  95

Glu Ala Lys Gln Arg Leu Ser Lys Val Val Lys Asp Thr Thr Arg Tyr
            100                 105                 110

Gln Val Leu Leu Asp Gly Leu Val Leu Gln Gly Leu Tyr Gln Leu Leu
        115                 120                 125

Glu Pro Arg Met Ile Val Arg Cys Arg Lys Gln Asp Phe Pro Leu Val
    130                 135                 140

Lys Ala Ala Val Gln Lys Ala Ile Pro Met Tyr Lys Ile Ala Thr Lys
145                 150                 155                 160

Asn Asp Val Asp Val Gln Ile Asp Gln Glu Ser Tyr Leu Pro Glu Asp
                165                 170                 175

Ile Ala Gly Gly Val Glu Ile Tyr Asn Gly Asp Arg Lys Ile Lys Val
```

180 185 190

Ser Asn Thr Leu Glu Ser Arg Leu Asp Leu Ile Ala Gln Gln Met Met
195 200 205

Pro Glu Val Arg Gly Ala Leu Phe Gly Ala Asn Ala Asn Arg Lys Phe
210 215 220

Leu Asp
225

<210> 7425
<211> 196
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V1E1; "

<220>
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ATPase, H+ transporting, lysosomal 31kDa, V1
subunit E1; "

<220>
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<223> /note="Uniprot ID: P36543; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382694"

<400> 7425
Met Ala Leu Ser Asp Ala Asp Val Gln Lys Gln Ile Lys His Met Met
1 5 10 15

Ala Phe Ile Glu Gln Glu Ala Asn Glu Lys Ala Glu Glu Ile Asp Ala
20 25 30

Lys Ala Glu Glu Glu Phe Asn Ile Glu Lys Gly Arg Leu Val Gln Thr
35 40 45

Gln Arg Leu Lys Ile Met Glu Tyr Tyr Glu Lys Lys Glu Lys Gln Ile
50 55 60

```
Glu Gln Gln Lys Lys Ile Gln Met Ser Asn Leu Met Asn Gln Ala Arg
65                  70                  75                  80

Leu Lys Val Leu Arg Ala Arg Asp Asp Leu Ile Thr Gly Leu Tyr Gln
                85                  90                  95

Leu Leu Glu Pro Arg Met Ile Val Arg Cys Arg Lys Gln Asp Phe Pro
            100                 105                 110

Leu Val Lys Ala Ala Val Gln Lys Ala Ile Pro Met Tyr Lys Ile Ala
        115                 120                 125

Thr Lys Asn Asp Val Asp Val Gln Ile Asp Gln Glu Ser Tyr Leu Pro
    130                 135                 140

Glu Asp Ile Ala Gly Gly Val Glu Ile Tyr Asn Gly Asp Arg Lys Ile
145                 150                 155                 160

Lys Val Ser Asn Thr Leu Glu Ser Arg Leu Asp Leu Ile Ala Gln Gln
                165                 170                 175

Met Met Pro Glu Val Arg Gly Ala Leu Phe Gly Ala Asn Ala Asn Arg
            180                 185                 190

Lys Phe Leu Asp
        195
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<210> 7426
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1569; "

<220>
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<223> /note="Gene Symbol: ATP6V1E1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 31kDa, V1
subunit E1; "

<220>
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<223> /note="Uniprot ID: P36543; "

<220>
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<223> /note="ENSP ID: ENSP00000382696"

<400> 7426
Met Ala Leu Ser Asp Ala Asp Val Gln Lys Gln Ala Glu Glu Glu Phe
1   5   10   15

Asn Ile Glu Lys Gly Arg Leu Val Gln Thr Gln Arg Leu Lys Ile Met
            20   25   30

Glu Tyr Tyr Glu Lys Lys Glu Lys Gln Ile Glu Gln Gln Lys Lys Ile
        35   40   45

Gln Met Ser Asn Leu Met Asn Gln Ala Arg Leu Lys Val Leu Arg Ala
    50   55   60

Arg Asp Asp Leu Ile Thr Asp Leu Leu Asn Glu Ala Lys Gln Arg Leu
65   70   75   80

Ser Lys Val Val Lys Asp Thr Thr Arg Tyr Gln Val Leu Leu Asp Gly
                85   90   95

Leu Val Leu Gln Gly Leu Tyr Gln Leu Leu Glu Pro Arg Met Ile Val
            100   105   110

Arg Cys Arg Lys Gln Asp Phe Pro Leu Val Lys Ala Ala Val Gln Lys
        115   120   125

Ala Ile Pro Met Tyr Lys Ile Ala Thr Lys Asn Asp Val Asp Val Gln
    130   135   140

Ile Asp Gln Glu Ser Tyr Leu Pro Glu Asp Ile Ala Gly Gly Val Glu
145   150   155   160

Ile Tyr Asn Gly Asp Arg Lys Ile Lys Val Ser Asn Thr Leu Glu Ser
                165   170   175

Arg Leu Asp Leu Ile Ala Gln Gln Met Met Pro Glu Val Arg Gly Ala
            180   185   190

Leu Phe Gly Ala Asn Ala Asn Arg Lys Phe Leu Asp
195 200

<210> 7427
<211> 203
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1E1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 31kDa, V1
subunit E1; "

<220>
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<223> /note="ENSP ID: ENSP00000398932"

<400> 7427
Met Gln Ser Arg Asp Gly Val Ser Pro Cys Trp Pro Gly Trp Ser Gln
1 5 10 15

Ser Leu Asp Leu Val Ile Arg Leu Pro Arg Pro Pro Gln Val Leu Gly
20 25 30

Leu Gln Ala Glu Glu Glu Phe Asn Ile Glu Lys Gly Arg Leu Val Gln
35 40 45

Thr Gln Arg Leu Lys Ile Met Glu Tyr Tyr Glu Lys Lys Glu Lys Gln
50 55 60

Ile Glu Gln Gln Lys Lys Ile Gln Met Ser Asn Leu Met Asn Gln Ala
65 70 75 80

Arg Leu Lys Val Leu Arg Ala Arg Asp Asp Leu Ile Thr Asp Leu Leu
85 90 95

Asn Glu Ala Lys Gln Arg Leu Ser Lys Val Val Lys Asp Thr Thr Arg
100 105 110

Tyr Gln Val Leu Leu Asp Gly Leu Val Leu Gln Gly Leu Tyr Gln Leu

```
        115                 120                 125

Leu Glu Pro Arg Met Ile Val Arg Cys Arg Lys Gln Asp Phe Pro Leu
    130                 135                 140

Val Lys Ala Ala Val Gln Lys Ala Ile Pro Met Tyr Lys Ile Ala Thr
145                 150                 155                 160

Lys Asn Asp Val Asp Val Gln Ile Asp Gln Glu Ser Tyr Leu Pro Glu
                165                 170                 175

Asp Ile Ala Gly Gly Val Glu Ile Tyr Asn Gly Asp Arg Lys Ile Lys
            180                 185                 190

Val Ser Asn Thr Leu Glu Ser Arg Leu Asp Leu
        195                 200


<210> 7428
<211> 226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1570; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1E2; "

<220>
<221> source
<223> /note="Gene Name:
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      subunit E2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96A05; "

<220>
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<223> /note="ENSP ID: ENSP00000304891"

<400> 7428
Met Ala Leu Ser Asp Val Asp Val Lys Lys Gln Ile Lys His Met Met
1               5                   10                  15

Ala Phe Ile Glu Gln Glu Ala Asn Glu Lys Ala Glu Glu Ile Asp Ala
            20                  25                  30
```

```
Lys Ala Glu Glu Glu Phe Asn Ile Glu Lys Gly Arg Leu Val Gln Thr
        35                  40                  45

Gln Arg Leu Lys Ile Met Glu Tyr Tyr Glu Lys Lys Glu Lys Gln Ile
    50                  55                  60

Glu Gln Gln Lys Lys Ile Leu Met Ser Thr Met Arg Asn Gln Ala Arg
65                  70                  75                  80

Leu Lys Val Leu Arg Ala Arg Asn Asp Leu Ile Ser Asp Leu Leu Ser
                85                  90                  95

Glu Ala Lys Leu Arg Leu Ser Arg Ile Val Glu Asp Pro Glu Val Tyr
            100                 105                 110

Gln Gly Leu Leu Asp Lys Leu Val Leu Gln Gly Leu Leu Arg Leu Leu
        115                 120                 125

Glu Pro Val Met Ile Val Arg Cys Arg Pro Gln Asp Leu Leu Leu Val
    130                 135                 140

Glu Ala Ala Val Gln Lys Ala Ile Pro Glu Tyr Met Thr Ile Ser Gln
145                 150                 155                 160

Lys His Val Glu Val Gln Ile Asp Lys Glu Ala Tyr Leu Ala Val Asn
                165                 170                 175

Ala Ala Gly Gly Val Glu Val Tyr Ser Gly Asn Gln Arg Ile Lys Val
            180                 185                 190

Ser Asn Thr Leu Glu Ser Arg Leu Asp Leu Ser Ala Lys Gln Lys Met
        195                 200                 205

Pro Glu Ile Arg Met Ala Leu Phe Gly Ala Asn Thr Asn Arg Lys Phe
    210                 215                 220

Phe Ile
225
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<210> 7429
<211> 226
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1570; "

<220>
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<223> /note="Gene Symbol: ATP6V1E2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 31kDa, V1
subunit E2; "

<220>
<221> source
<223> /note="Uniprot ID: Q96A05; "

<220>
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<223> /note="ENSP ID: ENSP00000428141"

<400> 7429
Met Ala Leu Ser Asp Val Asp Val Lys Lys Gln Ile Lys His Met Met
1 5 10 15

Ala Phe Ile Glu Gln Glu Ala Asn Glu Lys Ala Glu Glu Ile Asp Ala
20 25 30

Lys Ala Glu Glu Glu Phe Asn Ile Glu Lys Gly Arg Leu Val Gln Thr
35 40 45

Gln Arg Leu Lys Ile Met Glu Tyr Tyr Glu Lys Lys Glu Lys Gln Ile
50 55 60

Glu Gln Gln Lys Lys Ile Leu Met Ser Thr Met Arg Asn Gln Ala Arg
65 70 75 80

Leu Lys Val Leu Arg Ala Arg Asn Asp Leu Ile Ser Asp Leu Leu Ser
85 90 95

Glu Ala Lys Leu Arg Leu Ser Arg Ile Val Glu Asp Pro Glu Val Tyr
100 105 110

Gln Gly Leu Leu Asp Lys Leu Val Leu Gln Gly Leu Leu Arg Leu Leu
115 120 125

```
Glu Pro Val Met Ile Val Arg Cys Arg Pro Gln Asp Leu Leu Leu Val
    130                 135                 140

Glu Ala Ala Val Gln Lys Ala Ile Pro Glu Tyr Met Thr Ile Ser Gln
145                 150                 155                 160

Lys His Val Glu Val Gln Ile Asp Lys Glu Ala Tyr Leu Ala Val Asn
                165                 170                 175

Ala Ala Gly Gly Val Glu Val Tyr Ser Gly Asn Gln Arg Ile Lys Val
            180                 185                 190

Ser Asn Thr Leu Glu Ser Arg Leu Asp Leu Ser Ala Lys Gln Lys Met
        195                 200                 205

Pro Glu Ile Arg Met Ala Leu Phe Gly Ala Asn Thr Asn Arg Lys Phe
    210                 215                 220

Phe Ile
225


<210> 7430
<211> 247
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1571; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 34kDa, V1
      subunit D; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9Y5K8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000216442"

<400> 7430
Met Ser Gly Lys Asp Arg Ile Glu Ile Phe Pro Ser Arg Met Ala Gln
```

```
1               5                   10                  15

Thr Ile Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu
            20                  25                  30

Leu Lys Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu
        35                  40                  45

Lys Lys Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu
    50                  55                  60

Ala Ala Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala Gly Asp Phe Ser
65                  70                  75                  80

Thr Thr Val Ile Gln Asn Val Asn Lys Ala Gln Val Lys Ile Arg Ala
                85                  90                  95

Lys Lys Asp Asn Val Ala Gly Val Thr Leu Pro Val Phe Glu His Tyr
            100                 105                 110

His Glu Gly Thr Asp Ser Tyr Glu Leu Thr Gly Leu Ala Arg Gly Gly
        115                 120                 125

Glu Gln Leu Ala Lys Leu Lys Arg Asn Tyr Ala Lys Ala Val Glu Leu
    130                 135                 140

Leu Val Glu Leu Ala Ser Leu Gln Thr Ser Phe Val Thr Leu Asp Glu
145                 150                 155                 160

Ala Ile Lys Ile Thr Asn Arg Arg Val Asn Ala Ile Glu His Val Ile
                165                 170                 175

Ile Pro Arg Ile Glu Arg Thr Leu Ala Tyr Ile Ile Thr Glu Leu Asp
            180                 185                 190

Glu Arg Glu Arg Glu Glu Phe Tyr Arg Leu Lys Lys Ile Gln Glu Lys
        195                 200                 205

Lys Lys Ile Leu Lys Glu Lys Ser Glu Lys Asp Leu Glu Gln Arg Arg
    210                 215                 220

Ala Ala Gly Glu Val Leu Glu Pro Ala Asn Leu Leu Ala Glu Glu Lys
225                 230                 235                 240
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Asp Glu Asp Leu Leu Phe Glu
245

<210> 7431
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1571; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450834"

<400> 7431
Val Met Arg Glu Ala Ala Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala
1 5 10 15

Gly Asp Phe Ser Thr Thr Val Ile Gln Asn Val Asn Lys Ala Gln Val
20 25 30

Lys Ile Arg Ala Lys Lys Asp Asn Val Ala Ala Cys
35 40

<210> 7432
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1571; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source

<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450841"

<400> 7432

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Met Leu Met Gly Glu Val Met Arg Glu Ala Ala Phe Ser Leu Ala Glu
1               5                  10                  15

Ala Lys Phe Thr Ala Gly Asp Phe Ser Thr Thr Val Ile Gln Asn Val
            20                  25                  30

Asn Lys Ala Gln Val Lys Ile Arg Ala Lys Lys Asp Asn Val Ala Gly
        35                  40                  45

Val Thr Leu Pro Val Phe Glu His Tyr His Glu Gly Thr Asp Ser Tyr
    50                  55                  60

Glu Leu Thr Gly Leu Ala Arg Gly Gly Glu Gln Leu Ala Lys Leu Lys
65                  70                  75                  80

Arg Asn Tyr Ala Lys Ala Val Glu Leu Leu Val Glu Leu Ala Ser Leu
                85                  90                  95

Gln Thr Ser Phe Val Thr Leu Asp Glu Ala Ile Lys Ile Thr Asn Arg
            100                 105                 110

Arg Val Asn Ala Ile Glu His Val Ile Ile Pro Arg Ile Glu Arg Thr
        115                 120                 125

Leu Ala Tyr Ile Ile Thr Glu Leu Asp Glu Arg Glu Arg Glu Glu Phe
    130                 135                 140

Tyr Arg Leu Lys Lys Ile Gln Glu Lys Lys Lys Ile Leu Lys Glu Lys
145                 150                 155                 160

Ser Glu Lys Asp Leu Glu Gln Arg Arg Ala Ala Gly Glu Val Leu Glu
                165                 170                 175

Pro Ala Asn Leu Leu Ala Glu Glu Lys Asp Glu Asp Leu Leu Phe Glu
            180                 185                 190
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<210> 7433
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450885"

<400> 7433

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Met Ser Gly Lys Asp Arg Ile Glu Ile Phe Pro Ser Arg Met Ala Gln
1               5                  10                  15

Thr Ile Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu
            20                  25                  30

Leu Lys Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu
        35                  40                  45

Lys Lys Ile Ile Glu Thr Ser Phe Val Thr Leu Asp Glu Ala Ile Lys
    50                  55                  60

Ile Thr Asn Arg Arg Val Asn Ala Ile Glu His Val Ile Ile Pro Arg
65                  70                  75                  80

Ile Glu Arg Thr Leu Ala Tyr Ile Ile Thr Glu Leu Asp Glu Arg Glu
                85                  90                  95

Arg Glu Glu Phe Tyr Arg Leu Lys Lys Ile Gln Glu Lys Lys Lys Ile
            100                 105                 110

Leu Lys Glu Lys Ser Glu Lys Asp Leu Glu Gln Arg Arg Ala Ala Gly
        115                 120                 125

Glu Val Leu Glu Pro Ala Asn Leu Leu Ala Glu Glu Lys Asp Glu Asp
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130 135 140

Leu Leu Phe Glu
145

<210> 7434
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1571; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451031"

<400> 7434
Met Ser Gly Lys Asp Arg Ile Glu Ile Phe Pro Ser Arg Met Ala Gln
1 5 10 15

Thr Ile Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu
20 25 30

Leu Lys Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu
35 40 45

Lys Lys Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu
50 55 60

Ala Ala Phe Ser Leu Ala Glu Ala
65 70

<210> 7435
<211> 247
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1571; "

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<223> /note="Gene Symbol: ATP6V1D; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
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<223> /note="Uniprot ID: Q9Y5K8; "

<220>
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<223> /note="ENSP ID: ENSP00000451167"

<400> 7435

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Met Ser Gly Lys Asp Arg Ile Glu Ile Phe Pro Ser Arg Met Ala Gln
1               5                  10                  15

Thr Ile Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu
            20                  25                  30

Leu Lys Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu
        35                  40                  45

Lys Lys Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu
    50                  55                  60

Ala Ala Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala Gly Asp Phe Ser
65                  70                  75                  80

Thr Thr Val Ile Gln Asn Val Asn Lys Ala Gln Val Lys Ile Arg Ala
                85                  90                  95

Lys Lys Asp Asn Val Ala Gly Val Thr Leu Pro Val Phe Glu His Tyr
            100                 105                 110

His Glu Gly Thr Asp Ser Tyr Glu Leu Thr Gly Leu Ala Arg Gly Gly
        115                 120                 125

Glu Gln Leu Ala Lys Leu Lys Arg Asn Tyr Ala Lys Ala Val Glu Leu
    130                 135                 140
```

```
Leu Val Glu Leu Ala Ser Leu Gln Thr Ser Phe Val Thr Leu Asp Glu
145                 150                 155                 160

Ala Ile Lys Ile Thr Asn Arg Arg Val Asn Ala Ile Glu His Val Ile
                165                 170                 175

Ile Pro Arg Ile Glu Arg Thr Leu Ala Tyr Ile Ile Thr Glu Leu Asp
            180                 185                 190

Glu Arg Glu Arg Glu Glu Phe Tyr Arg Leu Lys Lys Ile Gln Glu Lys
        195                 200                 205

Lys Lys Ile Leu Lys Glu Lys Ser Glu Lys Asp Leu Glu Gln Arg Arg
    210                 215                 220

Ala Ala Gly Glu Val Leu Glu Pro Ala Asn Leu Leu Ala Glu Glu Lys
225                 230                 235                 240

Asp Glu Asp Leu Leu Phe Glu
                245
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<210> 7436
<211> 86
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1571; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451422"

<400> 7436

```
Met Ser Gly Lys Asp Arg Ile Glu Ile Phe Pro Ser Arg Met Ala Gln
1               5                   10                  15
```

```
Thr Ile Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu
            20                  25                  30

Leu Lys Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu
        35                  40                  45

Lys Lys Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu
    50                  55                  60

Ala Ala Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala Gly Asp Phe Arg
65                  70                  75                  80

Cys Tyr Phe Ala Ser Ile
                85


<210> 7437
<211> 153
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
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      ATPase, H+ transporting, lysosomal 34kDa, V1
      subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451564"

<400> 7437
Arg Ala Lys Lys Asp Asn Val Ala Gly Val Thr Leu Pro Val Phe Glu
1               5                   10                  15

His Tyr His Glu Gly Thr Asp Ser Tyr Glu Leu Thr Gly Leu Ala Arg
            20                  25                  30

Gly Gly Glu Gln Leu Ala Lys Leu Lys Arg Asn Tyr Ala Lys Ala Val
        35                  40                  45

Glu Leu Leu Val Glu Leu Ala Ser Leu Gln Thr Ser Phe Val Thr Leu
```

```
    50                  55                  60

Asp Glu Ala Ile Lys Ile Thr Asn Arg Arg Val Asn Ala Ile Glu His
65                  70                  75                  80

Val Ile Ile Pro Arg Ile Glu Arg Thr Leu Ala Tyr Ile Ile Thr Glu
                85                  90                  95

Leu Asp Glu Arg Glu Arg Glu Glu Phe Tyr Arg Leu Lys Lys Ile Gln
            100                 105                 110

Glu Lys Lys Lys Ile Leu Lys Glu Lys Ser Glu Lys Asp Leu Glu Gln
        115                 120                 125

Arg Arg Ala Ala Gly Glu Val Leu Glu Pro Ala Asn Leu Leu Ala Glu
    130                 135                 140

Glu Lys Asp Glu Asp Leu Leu Phe Glu
145                 150


<210> 7438
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1571; "

<220>
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<223> /note="Gene Symbol: ATP6V1D; "

<220>
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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 34kDa, V1
      subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452029"

<400> 7438
Lys Lys Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu
1               5                   10                  15

Ala Ala Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala Gly Asp Phe Ser
            20                  25                  30
```

```
Thr Thr Val Ile Gln Asn Val Asn Lys Ala Gln Val Lys Ile Arg Ala
        35                  40                  45

Lys Lys Asp Asn Val Ala Gly Val Thr Leu Pro Val Phe Glu His Tyr
    50                  55                  60

His Glu Gly Thr Asp Ser Tyr Glu Leu Thr Gly Leu Ala Arg Gly Gly
65                  70                  75                  80

Glu Gln Leu Ala Lys Leu Lys Arg Asn Tyr Ala Lys Ala Val Glu Leu
                85                  90                  95

Leu Val Glu Leu Ala Ser Leu Gln Val Lys Glu Asn Thr Arg Glu Glu
            100                 105                 110

Lys Asp Ser Lys Gly Lys Ile
        115


<210> 7439
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 34kDa, V1
      subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452192"

<400> 7439
Met Ser Gly Lys Asp Arg Ile Glu Ile Phe Pro Ser Arg Met Ala Gln
1               5                   10                  15

Thr Ile Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu
            20                  25                  30
```

```
Leu Lys Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu
        35                  40                  45

Lys Lys Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu
    50                  55                  60

Ala Ala Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala Gly Asp Phe Ser
65                  70                  75                  80

Thr Thr Val Ile Gln Asn Val Asn Lys Ala Gln Val Lys Ile Arg Ala
                85                  90                  95

Lys Lys Asp Asn Val Ala Gly Val Thr Leu Pro Val Phe Glu His Tyr
            100                 105                 110

His Glu Gly Thr Asp Ser Tyr Glu Leu Thr Gly Leu Ala Arg Gly Gly
        115                 120                 125

Glu Gln Leu Ala Lys Leu Lys Arg Asn Tyr Ala Lys Ala Val Glu Leu
    130                 135                 140

Leu Val Glu Leu Ala Ser Leu Gln Ser Ser Phe Pro Gly Leu Asn Val
145                 150                 155                 160

Leu Leu Leu Ile Ser Ser Gln Ser Trp Met Arg Glu Ser Glu Lys Ser
                165                 170                 175

Ser Ile Gly
```

<210> 7440
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1571; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1D; "

<220>
<221> source
<223> /note="Gene Name:

ATPase, H+ transporting, lysosomal 34kDa, V1
subunit D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452492"

<400> 7440
Met Lys Ala Arg Leu Lys Gly Ala Gln Thr Gly Arg Asn Leu Leu Lys
1 5 10 15

Lys Lys Ser Asp Ala Leu Thr Leu Arg Phe Arg Gln Ile Leu Lys Lys
20 25 30

Ile Ile Glu Thr Lys Met Leu Met Gly Glu Val Met Arg Glu Ala Ala
35 40 45

Phe Ser Leu Ala Glu Ala Lys Phe Thr Ala Gly
50 55

<210> 7441
<211> 351
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="Uniprot ID: P61421; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000290949"

<400> 7441
Met Ser Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu
1 5 10 15

Glu Gly Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp

```
            20                  25                  30

Tyr Leu Asn Leu Val Gln Cys Glu Thr Leu Glu Asp Leu Lys Leu His
        35                  40                  45

Leu Gln Ser Thr Asp Tyr Gly Asn Phe Leu Ala Asn Glu Ala Ser Pro
    50                  55                  60

Leu Thr Val Ser Val Ile Asp Asp Arg Leu Lys Glu Lys Met Val Val
65                  70                  75                  80

Glu Phe Arg His Met Arg Asn His Ala Tyr Glu Pro Leu Ala Ser Phe
                85                  90                  95

Leu Asp Phe Ile Thr Tyr Ser Tyr Met Ile Asp Asn Val Ile Leu Leu
            100                 105                 110

Ile Thr Gly Thr Leu His Gln Arg Ser Ile Ala Glu Leu Val Pro Lys
        115                 120                 125

Cys His Pro Leu Gly Ser Phe Glu Gln Met Glu Ala Val Asn Ile Ala
    130                 135                 140

Gln Thr Pro Ala Glu Leu Tyr Asn Ala Ile Leu Val Asp Thr Pro Leu
145                 150                 155                 160

Ala Ala Phe Phe Gln Asp Cys Ile Ser Glu Gln Asp Leu Asp Glu Met
                165                 170                 175

Asn Ile Glu Ile Ile Arg Asn Thr Leu Tyr Lys Ala Tyr Leu Glu Ser
            180                 185                 190

Phe Tyr Lys Phe Cys Thr Leu Leu Gly Gly Thr Thr Ala Asp Ala Met
        195                 200                 205

Cys Pro Ile Leu Glu Phe Glu Ala Asp Arg Arg Ala Phe Ile Ile Thr
    210                 215                 220

Ile Asn Ser Phe Gly Thr Glu Leu Ser Lys Glu Asp Arg Ala Lys Leu
225                 230                 235                 240

Phe Pro His Cys Gly Arg Leu Tyr Pro Glu Gly Leu Ala Gln Leu Ala
                245                 250                 255
```

```
Arg Ala Asp Asp Tyr Glu Gln Val Lys Asn Val Ala Asp Tyr Tyr Pro
            260                 265                 270

Glu Tyr Lys Leu Leu Phe Glu Gly Ala Gly Ser Asn Pro Gly Asp Lys
        275                 280                 285

Thr Leu Glu Asp Arg Phe Phe Glu His Glu Val Lys Leu Asn Lys Leu
    290                 295                 300

Ala Phe Leu Asn Gln Phe His Phe Gly Val Phe Tyr Ala Phe Val Lys
305                 310                 315                 320

Leu Lys Glu Gln Glu Cys Arg Asn Ile Val Trp Ile Ala Glu Cys Ile
                325                 330                 335

Ala Gln Arg His Arg Ala Lys Ile Asp Asn Tyr Ile Pro Ile Phe
            340                 345                 350


<210> 7442
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 38kDa, V0
      subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393910"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7442
Xaa Ser Cys Thr Ser Arg Ala Ser Leu Ser Gly Ser Leu Trp Thr Ser
```

1 5 10 15

Leu Glu His Leu Leu Glu Gln Arg Ser Gln Glu Gly His Ser Gly Gln
20 25 30

Gln Val Ala Leu Leu Asp Gln Ser Arg Ala Glu Glu Trp Met Val Pro
35 40 45

Gln Gly Met Pro Glu Gly Leu Val Pro Glu
50 55

<210> 7443
<211> 392
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441282"

<400> 7443
Met Ser Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu
1 5 10 15

Glu Gly Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp
20 25 30

Tyr Leu Asn Leu Val Gln Cys Glu Thr Leu Glu Asp Leu Lys Leu His
35 40 45

Leu Gln Ser Thr Asp Tyr Gly Asn Phe Leu Ala Asn Glu Ala Ser Pro
50 55 60

Leu Thr Val Ser Val Ile Asp Asp Arg Leu Lys Glu Lys Met Val Val
65 70 75 80

```
Glu Phe Arg His Met Arg Asn His Ala Tyr Glu Pro Leu Ala Ser Phe
                85                  90                  95

Leu Asp Phe Ile Thr Gln Glu Ser Glu Ala Gly Thr Pro Glu Gly Pro
            100                 105                 110

Gly Asn Met Pro Lys Leu Gly Ser Arg Pro Ser Pro Gly His Arg Pro
        115                 120                 125

Pro Phe Leu Arg Val Ser Leu Leu Pro Trp Pro Pro Ser Ser Tyr Ser
    130                 135                 140

Tyr Met Ile Asp Asn Val Ile Leu Leu Ile Thr Gly Thr Leu His Gln
145                 150                 155                 160

Arg Ser Ile Ala Glu Leu Val Pro Lys Cys His Pro Leu Gly Ser Phe
                165                 170                 175

Glu Gln Met Glu Ala Val Asn Ile Ala Gln Thr Pro Ala Glu Leu Tyr
            180                 185                 190

Asn Ala Ile Leu Val Asp Thr Pro Leu Ala Ala Phe Phe Gln Asp Cys
        195                 200                 205

Ile Ser Glu Gln Asp Leu Asp Glu Met Asn Ile Glu Ile Ile Arg Asn
    210                 215                 220

Thr Leu Tyr Lys Ala Tyr Leu Glu Ser Phe Tyr Lys Phe Cys Thr Leu
225                 230                 235                 240

Leu Gly Gly Thr Thr Ala Asp Ala Met Cys Pro Ile Leu Glu Phe Glu
                245                 250                 255

Ala Asp Arg Arg Ala Phe Ile Ile Thr Ile Asn Ser Phe Gly Thr Glu
            260                 265                 270

Leu Ser Lys Glu Asp Arg Ala Lys Leu Phe Pro His Cys Gly Arg Leu
        275                 280                 285

Tyr Pro Glu Gly Leu Ala Gln Leu Ala Arg Ala Asp Asp Tyr Glu Gln
    290                 295                 300
```

```
Val Lys Asn Val Ala Asp Tyr Tyr Pro Glu Tyr Lys Leu Leu Phe Glu
305                 310                 315                 320

Gly Ala Gly Ser Asn Pro Gly Asp Lys Thr Leu Glu Asp Arg Phe Phe
                325                 330                 335

Glu His Glu Val Lys Leu Asn Lys Leu Ala Phe Leu Asn Gln Phe His
            340                 345                 350

Phe Gly Val Phe Tyr Ala Phe Val Lys Leu Lys Glu Gln Glu Cys Arg
        355                 360                 365

Asn Ile Val Trp Ile Ala Glu Cys Ile Ala Gln Arg His Arg Ala Lys
    370                 375                 380

Ile Asp Asn Tyr Ile Pro Ile Phe
385                 390


<210> 7444
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 38kDa, V0
      subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455446"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7444
Xaa Leu Glu His Leu Leu Glu Gln Arg Ser Gln Glu Gly His Ser Gly
1               5                   10                  15
```

```
Gln Gln Val Ala Leu Leu Asp Gln Ser Arg Ala Glu Val Met Leu Gly
            20                  25                  30

Leu Arg Ala Arg Gly Leu Thr Gly Cys Gly Gly Glu Ala Glu Leu Gln
        35                  40                  45

Leu Gln Gly Tyr Met Asp Cys Trp Val Lys Val Thr Ala Asn His Ser
    50                  55                  60

Ile Trp Arg Thr Ser Phe Trp
65                  70


<210> 7445
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 38kDa, V0
      subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455695"

<400> 7445
Met Ser Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu
1               5                   10                  15

Glu Gly Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp
            20                  25                  30

Tyr Leu Asn Leu Val Gln Cys Glu Thr Leu Glu Asp Leu Lys Leu His
        35                  40                  45

Leu Gln Ser Thr Asp Tyr Gly Asn Phe Leu Ala Asn Glu Ala Ser Pro
    50                  55                  60
```

```
Leu Thr Val Ser Val Ile Asp Asp Arg Leu Lys Glu Lys Met Val Val
65                  70                  75                  80

Glu Phe Arg His Met Arg Asn His Ala Tyr Glu Pro Leu Ala Ser Phe
                85                  90                  95

Leu Asp Phe Ile Thr Gly Phe Phe Pro Gly Leu His Phe Arg Ala Gly
            100                 105                 110

Pro
```

<210> 7446
<211> 227
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455802"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7446

```
Xaa Leu Lys Leu His Leu Gln Ser Thr Asp Tyr Gly Asn Phe Leu Ala
1               5                   10                  15

Asn Glu Ala Ser Pro Leu Thr Val Ser Val Ile Asp Asp Arg Leu Lys
            20                  25                  30

Glu Lys Met Val Val Glu Phe Arg His Met Arg Asn His Ala Tyr Glu
        35                  40                  45
```

```
Pro Leu Ala Ser Phe Leu Asp Phe Ile Thr Tyr Ser Tyr Met Ile Asp
    50                  55                  60

Asn Val Ile Leu Leu Ile Thr Gly Thr Leu His Gln Arg Ser Ile Ala
65                  70                  75                  80

Glu Leu Val Pro Lys Cys His Pro Leu Gly Ser Phe Glu Gln Met Glu
                85                  90                  95

Ala Val Asn Ile Ala Gln Thr Pro Ala Glu Leu Tyr Asn Ala Ile Leu
            100                 105                 110

Val Asp Thr Pro Leu Ala Ala Phe Phe Gln Asp Cys Ile Ser Glu Gln
        115                 120                 125

Asp Leu Asp Glu Met Asn Ile Glu Ile Ile Arg Asn Thr Leu Tyr Lys
    130                 135                 140

Ala Tyr Leu Glu Ser Phe Tyr Lys Phe Cys Thr Leu Leu Gly Gly Thr
145                 150                 155                 160

Thr Ala Asp Ala Met Cys Pro Ile Leu Glu Ser Cys Pro Lys Arg Thr
                165                 170                 175

Val Pro Ser Ser Phe His Thr Val Gly Gly Ser Thr Leu Arg Ala Trp
            180                 185                 190

Arg Ser Trp Leu Gly Leu Thr Thr Met Asn Arg Ser Arg Thr Trp Pro
        195                 200                 205

Ile Thr Thr Arg Ser Thr Ser Cys Ser Ser Arg Val Gln Val Ala Thr
    210                 215                 220

Leu Glu Thr
225
```

<210> 7447
<211> 115
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456695"

<400> 7447
Met Ser Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu
1 5 10 15

Glu Gly Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp
20 25 30

Tyr Leu Asn Leu Val Gln Cys Glu Thr Leu Glu Asp Leu Lys Leu His
35 40 45

Leu Gln Ser Thr Asp Tyr Gly Asn Phe Leu Ala Asn Glu Ala Ser Pro
50 55 60

Leu Thr Val Ser Val Ile Asp Asp Arg Leu Lys Glu Lys Met Val Val
65 70 75 80

Glu Phe Arg His Met Arg Asn His Ala Tyr Glu Pro Leu Ala Ser Phe
85 90 95

Leu Asp Phe Ile Thr Cys Leu Thr Leu Thr Leu Glu Glu Phe Pro Leu
100 105 110

Gly Leu Ile
115

<210> 7448
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457104"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7448
Xaa His Phe Lys Gly Phe Ser Leu Arg Gln Pro Val Asp Phe Pro Gly
1 5 10 15

Ala Leu Ala Gly Ala Glu Ile Thr Gly Arg Ser Leu Trp Pro Ala Ser
20 25 30

Ser Thr Val Arg Pro Val Lys Gly
35 40

<210> 7449
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457105"

<400> 7449
Met Ser Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu
1   5   10   15

Glu Gly Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp
            20   25   30

Tyr Leu Asn Leu Val Gln Cys Glu Thr Leu Glu Gly Met Asp Gly Ala
        35   40   45

Thr Arg Asp Ala Arg Gly Thr Cys Pro
    50   55

<210> 7450
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 38kDa, V0
      subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457744"

<400> 7450
Met Ser Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu
1   5   10   15

Glu Gly Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp
            20   25   30

Tyr Leu Asn Leu Val Gln Cys Glu Thr Leu Glu Val Thr Val Thr
        35   40   45

<210> 7451
<211> 232
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463328"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7451
Xaa Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu Glu Gly
1 5 10 15

Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp Tyr Leu
20 25 30

Asn Leu Val Gln Cys Glu Thr Leu Glu Ala Ala Phe Phe Gln Asp Cys
35 40 45

Ile Ser Glu Gln Asp Leu Asp Glu Met Asn Ile Glu Ile Ile Arg Asn
50 55 60

Thr Leu Tyr Lys Ala Tyr Leu Glu Ser Phe Tyr Lys Phe Cys Thr Leu
65 70 75 80

Leu Gly Gly Thr Thr Ala Asp Ala Met Cys Pro Ile Leu Glu Phe Glu
85 90 95

Ala Asp Arg Arg Ala Phe Ile Ile Thr Ile Asn Ser Phe Gly Thr Glu
100 105 110

Leu Ser Lys Glu Asp Arg Ala Lys Leu Phe Pro His Cys Gly Arg Leu
115 120 125

```
Tyr Pro Glu Gly Leu Ala Gln Leu Ala Arg Ala Asp Asp Tyr Glu Gln
    130                 135                 140

Val Lys Asn Val Ala Asp Tyr Tyr Pro Glu Tyr Lys Leu Leu Phe Glu
145                 150                 155                 160

Gly Ala Gly Ser Asn Pro Gly Asp Lys Thr Leu Glu Asp Arg Phe Phe
                165                 170                 175

Glu His Glu Val Lys Leu Asn Lys Leu Ala Phe Leu Asn Gln Phe His
            180                 185                 190

Phe Gly Val Phe Tyr Ala Phe Val Lys Leu Lys Glu Gln Glu Cys Arg
        195                 200                 205

Asn Ile Val Trp Ile Ala Glu Cys Ile Ala Gln Arg His Arg Ala Lys
    210                 215                 220

Ile Asp Asn Tyr Ile Pro Ile Phe
225                 230


<210> 7452
<211> 274
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1572; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 38kDa, V0
      subunit d1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473515"

<400> 7452
Met Val Val Glu Phe Arg His Met Arg Asn His Ala Tyr Glu Pro Leu
1               5                   10                  15
```

```
Ala Ser Phe Leu Asp Phe Ile Thr Tyr Ser Tyr Met Ile Asp Asn Val
            20                  25                  30

Ile Leu Leu Ile Thr Gly Thr Leu His Gln Arg Ser Ile Ala Glu Leu
        35                  40                  45

Val Pro Lys Cys His Pro Leu Gly Ser Phe Glu Gln Met Glu Ala Val
    50                  55                  60

Asn Ile Ala Gln Thr Pro Ala Glu Leu Tyr Asn Ala Ile Leu Val Asp
65                  70                  75                  80

Thr Pro Leu Ala Ala Phe Phe Gln Asp Cys Ile Ser Glu Gln Asp Leu
                85                  90                  95

Asp Glu Met Asn Ile Glu Ile Ile Arg Asn Thr Leu Tyr Lys Ala Tyr
            100                 105                 110

Leu Glu Ser Phe Tyr Lys Phe Cys Thr Leu Leu Gly Gly Thr Thr Ala
        115                 120                 125

Asp Ala Met Cys Pro Ile Leu Glu Phe Glu Ala Asp Arg Arg Ala Phe
    130                 135                 140

Ile Ile Thr Ile Asn Ser Phe Gly Thr Glu Leu Ser Lys Glu Asp Arg
145                 150                 155                 160

Ala Lys Leu Phe Pro His Cys Gly Arg Leu Tyr Pro Glu Gly Leu Ala
                165                 170                 175

Gln Leu Ala Arg Ala Asp Asp Tyr Glu Gln Val Lys Asn Val Ala Asp
            180                 185                 190

Tyr Tyr Pro Glu Tyr Lys Leu Leu Phe Glu Gly Ala Gly Ser Asn Pro
        195                 200                 205

Gly Asp Lys Thr Leu Glu Asp Arg Phe Phe Glu His Glu Val Lys Leu
    210                 215                 220

Asn Lys Leu Ala Phe Leu Asn Gln Phe His Phe Gly Val Phe Tyr Ala
225                 230                 235                 240

Phe Val Lys Leu Lys Glu Gln Glu Cys Arg Asn Ile Val Trp Ile Ala
```

245 250 255

Glu Cys Ile Ala Gln Arg His Arg Ala Lys Ile Asp Asn Tyr Ile Pro
260 265 270

Ile Phe

<210> 7453
<211> 350
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1573; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N8Y2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000285393"

<400> 7453
Met Leu Glu Gly Ala Glu Leu Tyr Phe Asn Val Asp His Gly Tyr Leu
1 5 10 15

Glu Gly Leu Val Arg Gly Cys Lys Ala Ser Leu Leu Thr Gln Gln Asp
20 25 30

Tyr Ile Asn Leu Val Gln Cys Glu Thr Leu Glu Asp Leu Lys Ile His
35 40 45

Leu Gln Thr Thr Asp Tyr Gly Asn Phe Leu Ala Asn His Thr Asn Pro
50 55 60

Leu Thr Val Ser Lys Ile Asp Thr Glu Met Arg Lys Arg Leu Cys Gly
65 70 75 80

```
Glu Phe Glu Tyr Phe Arg Asn His Ser Leu Glu Pro Leu Ser Thr Phe
                85                  90                  95

Leu Thr Tyr Met Thr Cys Ser Tyr Met Ile Asp Asn Val Ile Leu Leu
            100                 105                 110

Met Asn Gly Ala Leu Gln Lys Lys Ser Val Lys Glu Ile Leu Gly Lys
        115                 120                 125

Cys His Pro Leu Gly Arg Phe Thr Glu Met Glu Ala Val Asn Ile Ala
    130                 135                 140

Glu Thr Pro Ser Asp Leu Phe Asn Ala Ile Leu Ile Glu Thr Pro Leu
145                 150                 155                 160

Ala Pro Phe Phe Gln Asp Cys Met Ser Glu Asn Ala Leu Asp Glu Leu
                165                 170                 175

Asn Ile Glu Leu Leu Arg Asn Lys Leu Tyr Lys Ser Tyr Leu Glu Ala
            180                 185                 190

Phe Tyr Lys Phe Cys Lys Asn His Gly Asp Val Thr Ala Glu Val Met
        195                 200                 205

Cys Pro Ile Leu Glu Phe Glu Ala Asp Arg Arg Ala Phe Ile Ile Thr
    210                 215                 220

Leu Asn Ser Phe Gly Thr Glu Leu Ser Lys Glu Asp Arg Glu Thr Leu
225                 230                 235                 240

Tyr Pro Thr Phe Gly Lys Leu Tyr Pro Glu Gly Leu Arg Leu Leu Ala
                245                 250                 255

Gln Ala Glu Asp Phe Asp Gln Met Lys Asn Val Ala Asp His Tyr Gly
            260                 265                 270

Val Tyr Lys Pro Leu Phe Glu Ala Val Gly Gly Ser Gly Gly Lys Thr
        275                 280                 285

Leu Glu Asp Val Phe Tyr Glu Arg Glu Val Gln Met Asn Val Leu Ala
    290                 295                 300
```

```
Phe Asn Arg Gln Phe His Tyr Gly Val Phe Tyr Ala Tyr Val Lys Leu
305                 310                 315                 320

Lys Glu Gln Glu Ile Arg Asn Ile Val Trp Ile Ala Glu Cys Ile Ser
                325                 330                 335

Gln Arg His Arg Thr Lys Ile Asn Ser Tyr Ile Pro Ile Leu
            340                 345                 350


<210> 7454
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1573; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 38kDa, V0
      subunit d2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428382"

<400> 7454
Met Leu Glu Gly Ala Glu Leu Tyr Phe Asn Val Asp His Gly Tyr Leu
1               5                   10                  15

Glu Gly Leu Val Arg Gly Cys Lys Ala Ser Leu Leu Thr Gln Gln Asp
            20                  25                  30

Tyr Ile Asn Leu Val Gln Cys Glu Thr Leu Glu
        35                  40


<210> 7455
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1573; "
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V0D2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 38kDa, V0
subunit d2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429731"

<400> 7455
Met Leu Glu Gly Ala Glu Leu Tyr Phe Asn Val Asp His Gly Tyr Leu
1 5 10 15

Glu Gly Leu Val Arg Gly Cys Lys Ala Ser Leu Leu Thr Gln Gln Asp
20 25 30

Tyr Ile Asn Leu
35

<210> 7456
<211> 382
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1574; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 42kDa, V1
subunit C1; "

<220>
<221> source
<223> /note="Uniprot ID: P21283; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379203"

<400> 7456
Met Thr Glu Phe Trp Leu Ile Ser Ala Pro Gly Glu Lys Thr Cys Gln

```
1               5                   10                  15

Gln Thr Trp Glu Lys Leu His Ala Ala Thr Ser Lys Asn Asn Asn Leu
            20                  25                  30

Ala Val Thr Ser Lys Phe Asn Ile Pro Asp Leu Lys Val Gly Thr Leu
        35                  40                  45

Asp Val Leu Val Gly Leu Ser Asp Glu Leu Ala Lys Leu Asp Ala Phe
    50                  55                  60

Val Glu Gly Val Val Lys Lys Val Ala Gln Tyr Met Ala Asp Val Leu
65                  70                  75                  80

Glu Asp Ser Lys Asp Lys Val Gln Glu Asn Leu Leu Ala Asn Gly Val
                85                  90                  95

Asp Leu Val Thr Tyr Ile Thr Arg Phe Gln Trp Asp Met Ala Lys Tyr
            100                 105                 110

Pro Ile Lys Gln Ser Leu Lys Asn Ile Ser Glu Ile Ile Ala Lys Gly
        115                 120                 125

Val Thr Gln Ile Asp Asn Asp Leu Lys Ser Arg Ala Ser Ala Tyr Asn
    130                 135                 140

Asn Leu Lys Gly Asn Leu Gln Asn Leu Glu Arg Lys Asn Ala Gly Ser
145                 150                 155                 160

Leu Leu Thr Arg Ser Leu Ala Glu Ile Val Lys Lys Asp Asp Phe Val
                165                 170                 175

Leu Asp Ser Glu Tyr Leu Val Thr Leu Leu Val Val Val Pro Lys Leu
            180                 185                 190

Asn His Asn Asp Trp Ile Lys Gln Tyr Glu Thr Leu Ala Glu Met Val
        195                 200                 205

Val Pro Arg Ser Ser Asn Val Leu Ser Glu Asp Gln Asp Ser Tyr Leu
    210                 215                 220

Cys Asn Val Thr Leu Phe Arg Lys Ala Val Asp Asp Phe Arg His Lys
225                 230                 235                 240
```

```
Ala Arg Glu Asn Lys Phe Ile Val Arg Asp Phe Gln Tyr Asn Glu Glu
                245                 250                 255

Glu Met Lys Ala Asp Lys Glu Glu Met Asn Arg Leu Ser Thr Asp Lys
            260                 265                 270

Lys Lys Gln Phe Gly Pro Leu Val Arg Trp Leu Lys Val Asn Phe Ser
        275                 280                 285

Glu Ala Phe Ile Ala Trp Ile His Val Lys Ala Leu Arg Val Phe Val
    290                 295                 300

Glu Ser Val Leu Arg Tyr Gly Leu Pro Val Asn Phe Gln Ala Met Leu
305                 310                 315                 320

Leu Gln Pro Asn Lys Lys Thr Leu Lys Lys Leu Arg Glu Val Leu His
                325                 330                 335

Glu Leu Tyr Lys His Leu Asp Ser Ser Ala Ala Ala Ile Ile Asp Ala
            340                 345                 350

Pro Met Asp Ile Pro Gly Leu Asn Leu Ser Gln Gln Glu Tyr Tyr Pro
        355                 360                 365

Tyr Val Tyr Tyr Lys Ile Asp Cys Asn Leu Leu Glu Phe Lys
    370                 375                 380


<210> 7457
<211> 307
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1574; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 42kDa, V1
      subunit C1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000428204"

<400> 7457
Met Ala Asp Val Leu Glu Asp Ser Lys Asp Lys Val Gln Glu Asn Leu
1   5   10   15

Leu Ala Asn Gly Val Asp Leu Val Thr Tyr Ile Thr Arg Phe Gln Trp
            20   25   30

Asp Met Ala Lys Tyr Pro Ile Lys Gln Ser Leu Lys Asn Ile Ser Glu
        35   40   45

Ile Ile Ala Lys Gly Val Thr Gln Ile Asp Asn Asp Leu Lys Ser Arg
    50   55   60

Ala Ser Ala Tyr Asn Asn Leu Lys Gly Asn Leu Gln Asn Leu Glu Arg
65   70   75   80

Lys Asn Ala Gly Ser Leu Leu Thr Arg Ser Leu Ala Glu Ile Val Lys
                85   90   95

Lys Asp Asp Phe Val Leu Asp Ser Glu Tyr Leu Val Thr Leu Leu Val
            100   105   110

Val Val Pro Lys Leu Asn His Asn Asp Trp Ile Lys Gln Tyr Glu Thr
        115   120   125

Leu Ala Glu Met Val Val Pro Arg Ser Ser Asn Val Leu Ser Glu Asp
    130   135   140

Gln Asp Ser Tyr Leu Cys Asn Val Thr Leu Phe Arg Lys Ala Val Asp
145   150   155   160

Asp Phe Arg His Lys Ala Arg Glu Asn Lys Phe Ile Val Arg Asp Phe
                165   170   175

Gln Tyr Asn Glu Glu Glu Met Lys Ala Asp Lys Glu Glu Met Asn Arg
            180   185   190

Leu Ser Thr Asp Lys Lys Lys Gln Phe Gly Pro Leu Val Arg Trp Leu
        195   200   205

```
Lys Val Asn Phe Ser Glu Ala Phe Ile Ala Trp Ile His Val Lys Ala
    210                 215                 220

Leu Arg Val Phe Val Glu Ser Val Leu Arg Tyr Gly Leu Pro Val Asn
225                 230                 235                 240

Phe Gln Ala Met Leu Leu Gln Pro Asn Lys Lys Thr Leu Lys Lys Leu
                245                 250                 255

Arg Glu Val Leu His Glu Leu Tyr Lys His Leu Asp Ser Ser Ala Ala
            260                 265                 270

Ala Ile Ile Asp Ala Pro Met Asp Ile Pro Gly Leu Asn Leu Ser Gln
        275                 280                 285

Gln Glu Tyr Tyr Pro Tyr Val Tyr Tyr Lys Ile Asp Cys Asn Leu Leu
    290                 295                 300

Glu Phe Lys
305
```

<210> 7458
<211> 307
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1574; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 42kDa, V1
subunit C1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430129"

<400> 7458

```
Met Ala Asp Val Leu Glu Asp Ser Lys Asp Lys Val Gln Glu Asn Leu
1               5                   10                  15

Leu Ala Asn Gly Val Asp Leu Val Thr Tyr Ile Thr Arg Phe Gln Trp
```

```
            20                  25                  30

Asp Met Ala Lys Tyr Pro Ile Lys Gln Ser Leu Lys Asn Ile Ser Glu
        35                  40                  45

Ile Ile Ala Lys Gly Val Thr Gln Ile Asp Asn Asp Leu Lys Ser Arg
    50                  55                  60

Ala Ser Ala Tyr Asn Asn Leu Lys Gly Asn Leu Gln Asn Leu Glu Arg
65                  70                  75                  80

Lys Asn Ala Gly Ser Leu Leu Thr Arg Ser Leu Ala Glu Ile Val Lys
                85                  90                  95

Lys Asp Asp Phe Val Leu Asp Ser Glu Tyr Leu Val Thr Leu Leu Val
            100                 105                 110

Val Val Pro Lys Leu Asn His Asn Asp Trp Ile Lys Gln Tyr Glu Thr
        115                 120                 125

Leu Ala Glu Met Val Val Pro Arg Ser Ser Asn Val Leu Ser Glu Asp
    130                 135                 140

Gln Asp Ser Tyr Leu Cys Asn Val Thr Leu Phe Arg Lys Ala Val Asp
145                 150                 155                 160

Asp Phe Arg His Lys Ala Arg Glu Asn Lys Phe Ile Val Arg Asp Phe
                165                 170                 175

Gln Tyr Asn Glu Glu Glu Met Lys Ala Asp Lys Glu Glu Met Asn Arg
            180                 185                 190

Leu Ser Thr Asp Lys Lys Lys Gln Phe Gly Pro Leu Val Arg Trp Leu
        195                 200                 205

Lys Val Asn Phe Ser Glu Ala Phe Ile Ala Trp Ile His Val Lys Ala
    210                 215                 220

Leu Arg Val Phe Val Glu Ser Val Leu Arg Tyr Gly Leu Pro Val Asn
225                 230                 235                 240

Phe Gln Ala Met Leu Leu Gln Pro Asn Lys Lys Thr Leu Lys Lys Leu
                245                 250                 255
```

```
Arg Glu Val Leu His Glu Leu Tyr Lys His Leu Asp Ser Ser Ala Ala
            260                 265                 270

Ala Ile Ile Asp Ala Pro Met Asp Ile Pro Gly Leu Asn Leu Ser Gln
        275                 280                 285

Gln Glu Tyr Tyr Pro Tyr Val Tyr Tyr Lys Ile Asp Cys Asn Leu Leu
    290                 295                 300

Glu Phe Lys
305


<210> 7459
<211> 382
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1574; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 42kDa, V1
      subunit C1; "

<220>
<221> source
<223> /note="Uniprot ID:  P21283; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430282"

<400> 7459
Met Thr Glu Phe Trp Leu Ile Ser Ala Pro Gly Glu Lys Thr Cys Gln
1               5                  10                  15

Gln Thr Trp Glu Lys Leu His Ala Ala Thr Ser Lys Asn Asn Asn Leu
            20                  25                  30

Ala Val Thr Ser Lys Phe Asn Ile Pro Asp Leu Lys Val Gly Thr Leu
        35                  40                  45
```

```
Asp Val Leu Val Gly Leu Ser Asp Glu Leu Ala Lys Leu Asp Ala Phe
    50                  55                  60

Val Glu Gly Val Val Lys Lys Val Ala Gln Tyr Met Ala Asp Val Leu
65                  70                  75                  80

Glu Asp Ser Lys Asp Lys Val Gln Glu Asn Leu Leu Ala Asn Gly Val
                85                  90                  95

Asp Leu Val Thr Tyr Ile Thr Arg Phe Gln Trp Asp Met Ala Lys Tyr
            100                 105                 110

Pro Ile Lys Gln Ser Leu Lys Asn Ile Ser Glu Ile Ile Ala Lys Gly
        115                 120                 125

Val Thr Gln Ile Asp Asn Asp Leu Lys Ser Arg Ala Ser Ala Tyr Asn
    130                 135                 140

Asn Leu Lys Gly Asn Leu Gln Asn Leu Glu Arg Lys Asn Ala Gly Ser
145                 150                 155                 160

Leu Leu Thr Arg Ser Leu Ala Glu Ile Val Lys Lys Asp Asp Phe Val
                165                 170                 175

Leu Asp Ser Glu Tyr Leu Val Thr Leu Leu Val Val Val Pro Lys Leu
            180                 185                 190

Asn His Asn Asp Trp Ile Lys Gln Tyr Glu Thr Leu Ala Glu Met Val
        195                 200                 205

Val Pro Arg Ser Ser Asn Val Leu Ser Glu Asp Gln Asp Ser Tyr Leu
    210                 215                 220

Cys Asn Val Thr Leu Phe Arg Lys Ala Val Asp Asp Phe Arg His Lys
225                 230                 235                 240

Ala Arg Glu Asn Lys Phe Ile Val Arg Asp Phe Gln Tyr Asn Glu Glu
                245                 250                 255

Glu Met Lys Ala Asp Lys Glu Glu Met Asn Arg Leu Ser Thr Asp Lys
            260                 265                 270
```

```
Lys Lys Gln Phe Gly Pro Leu Val Arg Trp Leu Lys Val Asn Phe Ser
        275                 280                 285

Glu Ala Phe Ile Ala Trp Ile His Val Lys Ala Leu Arg Val Phe Val
    290                 295                 300

Glu Ser Val Leu Arg Tyr Gly Leu Pro Val Asn Phe Gln Ala Met Leu
305                 310                 315                 320

Leu Gln Pro Asn Lys Lys Thr Leu Lys Lys Leu Arg Glu Val Leu His
                325                 330                 335

Glu Leu Tyr Lys His Leu Asp Ser Ser Ala Ala Ala Ile Ile Asp Ala
            340                 345                 350

Pro Met Asp Ile Pro Gly Leu Asn Leu Ser Gln Gln Glu Tyr Tyr Pro
        355                 360                 365

Tyr Val Tyr Tyr Lys Ile Asp Cys Asn Leu Leu Glu Phe Lys
    370                 375                 380


<210> 7460
<211> 427
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1575; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 42kDa, V1
      subunit C2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NEY4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000272238"

<400> 7460
Met Ser Glu Phe Trp Leu Ile Ser Ala Pro Gly Asp Lys Glu Asn Leu
```

```
1               5                   10                  15

Gln Ala Leu Glu Arg Met Asn Thr Val Thr Ser Lys Ser Asn Leu Ser
            20                  25                  30

Tyr Asn Thr Lys Phe Ala Ile Pro Asp Phe Lys Val Gly Thr Leu Asp
        35                  40                  45

Ser Leu Val Gly Leu Ser Asp Glu Leu Gly Lys Leu Asp Thr Phe Ala
    50                  55                  60

Glu Ser Leu Ile Arg Arg Met Ala Gln Ser Val Val Glu Val Met Glu
65                  70                  75                  80

Asp Ser Lys Gly Lys Val Gln Glu His Leu Leu Ala Asn Gly Val Asp
                85                  90                  95

Leu Thr Ser Phe Val Thr His Phe Glu Trp Asp Met Ala Lys Tyr Pro
            100                 105                 110

Val Lys Gln Pro Leu Val Ser Val Val Asp Thr Ile Ala Lys Gln Leu
        115                 120                 125

Ala Gln Ile Glu Met Asp Leu Lys Ser Arg Thr Ala Ala Tyr Asn Thr
    130                 135                 140

Leu Lys Thr Asn Leu Glu Asn Leu Glu Lys Lys Ser Met Gly Asn Leu
145                 150                 155                 160

Phe Thr Arg Thr Leu Ser Asp Ile Val Ser Lys Glu Asp Phe Val Leu
                165                 170                 175

Asp Ser Glu Tyr Leu Val Thr Leu Leu Val Ile Val Pro Lys Pro Asn
            180                 185                 190

Tyr Ser Gln Trp Gln Lys Thr Tyr Glu Ser Leu Ser Asp Met Val Val
        195                 200                 205

Pro Arg Ser Thr Lys Leu Ile Thr Glu Asp Lys Glu Gly Gly Leu Phe
    210                 215                 220

Thr Val Thr Leu Phe Arg Lys Val Ile Glu Asp Phe Lys Thr Lys Ala
225                 230                 235                 240
```

```
Lys Glu Asn Lys Phe Thr Val Arg Glu Phe Tyr Tyr Asp Glu Lys Glu
                245                 250                 255

Ile Glu Arg Glu Arg Glu Glu Met Ala Arg Leu Leu Ser Asp Lys Lys
            260                 265                 270

Gln Gln Tyr Gln Thr Ser Cys Val Ala Leu Lys Lys Gly Ser Ser Thr
        275                 280                 285

Phe Pro Asp His Lys Val Lys Val Thr Pro Leu Gly Asn Pro Asp Arg
    290                 295                 300

Pro Ala Ala Gly Gln Thr Asp Arg Glu Arg Glu Ser Glu Gly Glu Gly
305                 310                 315                 320

Glu Gly Pro Leu Leu Arg Trp Leu Lys Val Asn Phe Ser Glu Ala Phe
                325                 330                 335

Ile Ala Trp Ile His Ile Lys Ala Leu Arg Val Phe Val Glu Ser Val
            340                 345                 350

Leu Arg Tyr Gly Leu Pro Val Asn Phe Gln Ala Val Leu Leu Gln Pro
        355                 360                 365

His Lys Lys Ser Ser Thr Lys Arg Leu Arg Glu Val Leu Asn Ser Val
    370                 375                 380

Phe Arg His Leu Asp Glu Val Ala Ala Thr Ser Ile Leu Asp Ala Ser
385                 390                 395                 400

Val Glu Ile Pro Gly Leu Gln Leu Asn Asn Gln Asp Tyr Phe Pro Tyr
                405                 410                 415

Val Tyr Phe His Ile Asp Leu Ser Leu Leu Asp
            420                 425
```

<210> 7461
<211> 381
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1575; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 42kDa, V1
subunit C2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NEY4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371077"

<400> 7461
Met Ser Glu Phe Trp Leu Ile Ser Ala Pro Gly Asp Lys Glu Asn Leu
1   5   10   15

Gln Ala Leu Glu Arg Met Asn Thr Val Thr Ser Lys Ser Asn Leu Ser
            20   25   30

Tyr Asn Thr Lys Phe Ala Ile Pro Asp Phe Lys Val Gly Thr Leu Asp
        35   40   45

Ser Leu Val Gly Leu Ser Asp Glu Leu Gly Lys Leu Asp Thr Phe Ala
    50   55   60

Glu Ser Leu Ile Arg Arg Met Ala Gln Ser Val Val Glu Val Met Glu
65   70   75   80

Asp Ser Lys Gly Lys Val Gln Glu His Leu Leu Ala Asn Gly Val Asp
                85   90   95

Leu Thr Ser Phe Val Thr His Phe Glu Trp Asp Met Ala Lys Tyr Pro
            100   105   110

Val Lys Gln Pro Leu Val Ser Val Val Asp Thr Ile Ala Lys Gln Leu
        115   120   125

Ala Gln Ile Glu Met Asp Leu Lys Ser Arg Thr Ala Ala Tyr Asn Thr
    130   135   140

```
Leu Lys Thr Asn Leu Glu Asn Leu Glu Lys Lys Ser Met Gly Asn Leu
145                 150                 155                 160

Phe Thr Arg Thr Leu Ser Asp Ile Val Ser Lys Glu Asp Phe Val Leu
                165                 170                 175

Asp Ser Glu Tyr Leu Val Thr Leu Leu Val Ile Val Pro Lys Pro Asn
            180                 185                 190

Tyr Ser Gln Trp Gln Lys Thr Tyr Glu Ser Leu Ser Asp Met Val Val
        195                 200                 205

Pro Arg Ser Thr Lys Leu Ile Thr Glu Asp Lys Glu Gly Gly Leu Phe
    210                 215                 220

Thr Val Thr Leu Phe Arg Lys Val Ile Glu Asp Phe Lys Thr Lys Ala
225                 230                 235                 240

Lys Glu Asn Lys Phe Thr Val Arg Glu Phe Tyr Tyr Asp Glu Lys Glu
                245                 250                 255

Ile Glu Arg Glu Arg Glu Glu Met Ala Arg Leu Leu Ser Asp Lys Lys
            260                 265                 270

Gln Gln Tyr Gly Pro Leu Leu Arg Trp Leu Lys Val Asn Phe Ser Glu
        275                 280                 285

Ala Phe Ile Ala Trp Ile His Ile Lys Ala Leu Arg Val Phe Val Glu
    290                 295                 300

Ser Val Leu Arg Tyr Gly Leu Pro Val Asn Phe Gln Ala Val Leu Leu
305                 310                 315                 320

Gln Pro His Lys Lys Ser Ser Thr Lys Arg Leu Arg Glu Val Leu Asn
                325                 330                 335

Ser Val Phe Arg His Leu Asp Glu Val Ala Ala Thr Ser Ile Leu Asp
            340                 345                 350

Ala Ser Val Glu Ile Pro Gly Leu Gln Leu Asn Asn Gln Asp Tyr Phe
        355                 360                 365

Pro Tyr Val Tyr Phe His Ile Asp Leu Ser Leu Leu Asp
```

370 375 380

<210> 7462
<211> 437
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1575; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1C2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 42kDa, V1
subunit C2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489280"

<400> 7462
Met Ser Glu Phe Trp Leu Ile Ser Ala Pro Gly Asp Lys Glu Asn Leu
1 5 10 15

Gln Ala Leu Glu Arg Met Asn Thr Val Thr Ser Lys Ser Asn Leu Ser
20 25 30

Tyr Asn Thr Lys Phe Ala Ile Pro Asp Phe Lys Val Gly Thr Leu Asp
35 40 45

Ser Leu Val Gly Leu Ser Asp Glu Leu Gly Lys Leu Asp Thr Phe Ala
50 55 60

Glu Ser Leu Ile Arg Arg Met Ala Gln Ser Val Val Glu Val Met Glu
65 70 75 80

Asp Ser Lys Gly Lys Val Gln Glu His Leu Leu Ala Asn Gly Gly Leu
85 90 95

Lys Gly Lys Met Lys Cys Leu Lys Ile Asp Leu Thr Ser Phe Val Thr
100 105 110

His Phe Glu Trp Asp Met Ala Lys Tyr Pro Val Lys Gln Pro Leu Val
115 120 125

```
Ser Val Val Asp Thr Ile Ala Lys Gln Leu Ala Gln Ile Glu Met Asp
    130                 135                 140

Leu Lys Ser Arg Thr Ala Ala Tyr Asn Thr Leu Lys Thr Asn Leu Glu
145                 150                 155                 160

Asn Leu Glu Lys Lys Ser Met Gly Asn Leu Phe Thr Arg Thr Leu Ser
                165                 170                 175

Asp Ile Val Ser Lys Glu Asp Phe Val Leu Asp Ser Glu Tyr Leu Val
            180                 185                 190

Thr Leu Leu Val Ile Val Pro Lys Pro Asn Tyr Ser Gln Trp Gln Lys
        195                 200                 205

Thr Tyr Glu Ser Leu Ser Asp Met Val Val Pro Arg Ser Thr Lys Leu
    210                 215                 220

Ile Thr Glu Asp Lys Glu Gly Gly Leu Phe Thr Val Thr Leu Phe Arg
225                 230                 235                 240

Lys Val Ile Glu Asp Phe Lys Thr Lys Ala Lys Glu Asn Lys Phe Thr
                245                 250                 255

Val Arg Glu Phe Tyr Tyr Asp Glu Lys Glu Ile Glu Arg Glu Arg Glu
            260                 265                 270

Glu Met Ala Arg Leu Leu Ser Asp Lys Lys Gln Gln Tyr Gln Thr Ser
        275                 280                 285

Cys Val Ala Leu Lys Lys Gly Ser Ser Thr Phe Pro Asp His Lys Val
    290                 295                 300

Lys Val Thr Pro Leu Gly Asn Pro Asp Arg Pro Ala Ala Gly Gln Thr
305                 310                 315                 320

Asp Arg Glu Arg Glu Ser Glu Gly Glu Gly Glu Gly Pro Leu Leu Arg
                325                 330                 335

Trp Leu Lys Val Asn Phe Ser Glu Ala Phe Ile Ala Trp Ile His Ile
            340                 345                 350
```

```
Lys Ala Leu Arg Val Phe Val Glu Ser Val Leu Arg Tyr Gly Leu Pro
        355                 360                 365

Val Asn Phe Gln Ala Val Leu Leu Gln Pro His Lys Lys Ser Ser Thr
    370                 375                 380

Lys Arg Leu Arg Glu Val Leu Asn Ser Val Phe Arg His Leu Asp Glu
385                 390                 395                 400

Val Ala Ala Thr Ser Ile Leu Asp Ala Ser Val Glu Ile Pro Gly Leu
                405                 410                 415

Gln Leu Asn Asn Gln Asp Tyr Phe Pro Tyr Val Tyr Phe His Ile Asp
            420                 425                 430

Leu Ser Leu Leu Asp
        435


<210> 7463
<211> 465
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V1H; "

<220>
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      subunit H; "

<220>
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<223> /note="Uniprot ID:  Q9UI12; "

<220>
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<400> 7463
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1               5                   10                  15
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Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
            20                  25                  30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Cys Glu
        35                  40                  45

Phe Ile Gln Arg Phe Glu Met Lys Arg Ser Pro Glu Glu Lys Gln Glu
    50                  55                  60

Met Leu Gln Thr Glu Gly Ser Gln Cys Ala Lys Thr Phe Ile Asn Leu
65                  70                  75                  80

Met Thr His Ile Cys Lys Glu Gln Thr Val Gln Tyr Ile Leu Thr Met
                85                  90                  95

Val Asp Asp Met Leu Gln Glu Asn His Gln Arg Val Ser Ile Phe Phe
            100                 105                 110

Asp Tyr Ala Arg Cys Ser Lys Asn Thr Ala Trp Pro Tyr Phe Leu Pro
        115                 120                 125

Met Leu Asn Arg Gln Asp Pro Phe Thr Val His Met Ala Ala Arg Ile
    130                 135                 140

Ile Ala Lys Leu Ala Ala Trp Gly Lys Glu Leu Met Glu Gly Ser Asp
145                 150                 155                 160

Leu Asn Tyr Tyr Phe Asn Trp Ile Lys Thr Gln Leu Ser Ser Gln Ser
                165                 170                 175

Ser Gln Tyr Val Gln Cys Val Ala Gly Cys Leu Gln Leu Met Leu Arg
            180                 185                 190

Val Asn Glu Tyr Arg Phe Ala Trp Val Glu Ala Asp Gly Val Asn Cys
        195                 200                 205

Ile Met Gly Val Leu Ser Asn Lys Cys Gly Phe Gln Leu Gln Tyr Gln
    210                 215                 220

Met Ile Phe Ser Ile Trp Leu Leu Ala Phe Ser Pro Gln Met Cys Glu
225                 230                 235                 240

His Leu Arg Arg Tyr Asn Ile Ile Pro Val Leu Ser Asp Ile Leu Gln
```

245 250 255

Glu Ser Val Lys Glu Lys Val Thr Arg Ile Ile Leu Ala Ala Phe Arg
260 265 270

Asn Phe Leu Glu Lys Ser Thr Glu Arg Glu Thr Arg Gln Glu Tyr Ala
275 280 285

Leu Ala Met Ile Gln Cys Lys Val Leu Lys Gln Leu Glu Asn Leu Glu
290 295 300

Gln Gln Lys Tyr Asp Asp Glu Asp Ile Ser Glu Asp Ile Lys Phe Leu
305 310 315 320

Leu Glu Lys Leu Gly Glu Ser Val Gln Asp Leu Ser Ser Phe Asp Glu
325 330 335

Tyr Ser Ser Glu Leu Lys Ser Gly Arg Leu Glu Trp Ser Pro Val His
340 345 350

Lys Ser Glu Lys Phe Trp Arg Glu Asn Ala Val Arg Leu Asn Glu Lys
355 360 365

Asn Tyr Glu Leu Leu Lys Ile Leu Thr Lys Leu Leu Glu Val Ser Asp
370 375 380

Asp Pro Gln Val Leu Ala Val Ala Ala His Asp Val Gly Glu Tyr Val
385 390 395 400

Arg His Tyr Pro Arg Gly Lys Arg Val Ile Glu Gln Leu Gly Gly Lys
405 410 415

Gln Leu Val Met Asn His Met His His Glu Asp Gln Gln Val Arg Tyr
420 425 430

Asn Ala Leu Leu Ala Val Gln Lys Leu Met Val His Asn Trp Glu Tyr
435 440 445

Leu Gly Lys Gln Leu Gln Ser Glu Gln Pro Gln Thr Ala Ala Ala Arg
450 455 460

Ser
465

<210> 7464
<211> 483
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V1H; "

<220>
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ATPase, H+ transporting, lysosomal 50/57kDa, V1
subunit H; "

<220>
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<223> /note="Uniprot ID: Q9UI12; "

<220>
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<400> 7464
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1   5   10   15

Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
            20   25   30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Cys Glu
        35   40   45

Phe Ile Gln Arg Phe Glu Met Lys Arg Ser Pro Glu Glu Lys Gln Glu
    50   55   60

Met Leu Gln Thr Glu Gly Ser Gln Cys Ala Lys Thr Phe Ile Asn Leu
65   70   75   80

Met Thr His Ile Cys Lys Glu Gln Thr Val Gln Tyr Ile Leu Thr Met
                85   90   95

Val Asp Asp Met Leu Gln Glu Asn His Gln Arg Val Ser Ile Phe Phe
            100   105   110

```
Asp Tyr Ala Arg Cys Ser Lys Asn Thr Ala Trp Pro Tyr Phe Leu Pro
        115                 120                 125

Met Leu Asn Arg Gln Asp Pro Phe Thr Val His Met Ala Ala Arg Ile
    130                 135                 140

Ile Ala Lys Leu Ala Ala Trp Gly Lys Glu Leu Met Glu Gly Ser Asp
145                 150                 155                 160

Leu Asn Tyr Tyr Phe Asn Trp Ile Lys Thr Gln Leu Ser Ser Gln Lys
                165                 170                 175

Leu Arg Gly Ser Gly Val Ala Val Glu Thr Gly Thr Val Ser Ser Ser
            180                 185                 190

Asp Ser Ser Gln Tyr Val Gln Cys Val Ala Gly Cys Leu Gln Leu Met
        195                 200                 205

Leu Arg Val Asn Glu Tyr Arg Phe Ala Trp Val Glu Ala Asp Gly Val
    210                 215                 220

Asn Cys Ile Met Gly Val Leu Ser Asn Lys Cys Gly Phe Gln Leu Gln
225                 230                 235                 240

Tyr Gln Met Ile Phe Ser Ile Trp Leu Leu Ala Phe Ser Pro Gln Met
                245                 250                 255

Cys Glu His Leu Arg Arg Tyr Asn Ile Ile Pro Val Leu Ser Asp Ile
            260                 265                 270

Leu Gln Glu Ser Val Lys Glu Lys Val Thr Arg Ile Ile Leu Ala Ala
        275                 280                 285

Phe Arg Asn Phe Leu Glu Lys Ser Thr Glu Arg Glu Thr Arg Gln Glu
    290                 295                 300

Tyr Ala Leu Ala Met Ile Gln Cys Lys Val Leu Lys Gln Leu Glu Asn
305                 310                 315                 320

Leu Glu Gln Gln Lys Tyr Asp Asp Glu Asp Ile Ser Glu Asp Ile Lys
                325                 330                 335
```

```
Phe Leu Leu Glu Lys Leu Gly Glu Ser Val Gln Asp Leu Ser Ser Phe
            340                 345                 350

Asp Glu Tyr Ser Ser Glu Leu Lys Ser Gly Arg Leu Glu Trp Ser Pro
        355                 360                 365

Val His Lys Ser Glu Lys Phe Trp Arg Glu Asn Ala Val Arg Leu Asn
    370                 375                 380

Glu Lys Asn Tyr Glu Leu Leu Lys Ile Leu Thr Lys Leu Leu Glu Val
385                 390                 395                 400

Ser Asp Asp Pro Gln Val Leu Ala Val Ala Ala His Asp Val Gly Glu
                405                 410                 415

Tyr Val Arg His Tyr Pro Arg Gly Lys Arg Val Ile Glu Gln Leu Gly
            420                 425                 430

Gly Lys Gln Leu Val Met Asn His Met His His Glu Asp Gln Gln Val
        435                 440                 445

Arg Tyr Asn Ala Leu Leu Ala Val Gln Lys Leu Met Val His Asn Trp
    450                 455                 460

Glu Tyr Leu Gly Lys Gln Leu Gln Ser Glu Gln Pro Gln Thr Ala Ala
465                 470                 475                 480

Ala Arg Ser
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<210> 7465
<211> 483
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1576; "

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<223> /note="Gene Symbol: ATP6V1H; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 50/57kDa, V1

subunit H; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UI12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379995"

<400> 7465
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1   5   10   15

Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
            20   25   30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Cys Glu
        35   40   45

Phe Ile Gln Arg Phe Glu Met Lys Arg Ser Pro Glu Glu Lys Gln Glu
    50   55   60

Met Leu Gln Thr Glu Gly Ser Gln Cys Ala Lys Thr Phe Ile Asn Leu
65   70   75   80

Met Thr His Ile Cys Lys Glu Gln Thr Val Gln Tyr Ile Leu Thr Met
                85   90   95

Val Asp Asp Met Leu Gln Glu Asn His Gln Arg Val Ser Ile Phe Phe
            100   105   110

Asp Tyr Ala Arg Cys Ser Lys Asn Thr Ala Trp Pro Tyr Phe Leu Pro
        115   120   125

Met Leu Asn Arg Gln Asp Pro Phe Thr Val His Met Ala Ala Arg Ile
    130   135   140

Ile Ala Lys Leu Ala Ala Trp Gly Lys Glu Leu Met Glu Gly Ser Asp
145   150   155   160

Leu Asn Tyr Tyr Phe Asn Trp Ile Lys Thr Gln Leu Ser Ser Gln Lys
                165   170   175

Leu Arg Gly Ser Gly Val Ala Val Glu Thr Gly Thr Val Ser Ser Ser
            180   185   190

```
Asp Ser Ser Gln Tyr Val Gln Cys Val Ala Gly Cys Leu Gln Leu Met
        195                 200                 205

Leu Arg Val Asn Glu Tyr Arg Phe Ala Trp Val Glu Ala Asp Gly Val
    210                 215                 220

Asn Cys Ile Met Gly Val Leu Ser Asn Lys Cys Gly Phe Gln Leu Gln
225                 230                 235                 240

Tyr Gln Met Ile Phe Ser Ile Trp Leu Leu Ala Phe Ser Pro Gln Met
                245                 250                 255

Cys Glu His Leu Arg Arg Tyr Asn Ile Ile Pro Val Leu Ser Asp Ile
            260                 265                 270

Leu Gln Glu Ser Val Lys Glu Lys Val Thr Arg Ile Ile Leu Ala Ala
        275                 280                 285

Phe Arg Asn Phe Leu Glu Lys Ser Thr Glu Arg Glu Thr Arg Gln Glu
    290                 295                 300

Tyr Ala Leu Ala Met Ile Gln Cys Lys Val Leu Lys Gln Leu Glu Asn
305                 310                 315                 320

Leu Glu Gln Gln Lys Tyr Asp Asp Glu Asp Ile Ser Glu Asp Ile Lys
                325                 330                 335

Phe Leu Leu Glu Lys Leu Gly Glu Ser Val Gln Asp Leu Ser Ser Phe
            340                 345                 350

Asp Glu Tyr Ser Ser Glu Leu Lys Ser Gly Arg Leu Glu Trp Ser Pro
        355                 360                 365

Val His Lys Ser Glu Lys Phe Trp Arg Glu Asn Ala Val Arg Leu Asn
    370                 375                 380

Glu Lys Asn Tyr Glu Leu Leu Lys Ile Leu Thr Lys Leu Leu Glu Val
385                 390                 395                 400

Ser Asp Asp Pro Gln Val Leu Ala Val Ala Ala His Asp Val Gly Glu
                405                 410                 415
```

```
Tyr Val Arg His Tyr Pro Arg Gly Lys Arg Val Ile Glu Gln Leu Gly
            420                 425                 430

Gly Lys Gln Leu Val Met Asn His Met His His Glu Asp Gln Gln Val
        435                 440                 445

Arg Tyr Asn Ala Leu Leu Ala Val Gln Lys Leu Met Val His Asn Trp
    450                 455                 460

Glu Tyr Leu Gly Lys Gln Leu Gln Ser Glu Gln Pro Gln Thr Ala Ala
465                 470                 475                 480

Ala Arg Ser
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<210> 7466
<211> 101
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V1H; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 50/57kDa, V1
subunit H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427835"

<400> 7466

```
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1               5                  10                  15

Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
            20                  25                  30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Cys Glu
        35                  40                  45
```

```
Phe Ile Gln Arg Phe Glu Met Lys Arg Ser Pro Glu Glu Lys Gln Glu
    50                  55                  60

Met Leu Gln Thr Glu Gly Ser Gln Cys Ala Lys Thr Phe Ile Asn Leu
65                  70                  75                  80

Met Thr His Ile Cys Lys Glu Gln Thr Val Gln Tyr Ile Leu Thr Met
                85                  90                  95

Val Asp Asp Met Leu
            100


<210> 7467
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1576; "

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<223> /note="Gene Symbol: ATP6V1H; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 50/57kDa, V1
      subunit H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428255"

<400> 7467
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1               5                   10                  15

Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
            20                  25                  30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Leu Cys
        35                  40                  45


<210> 7468
<211> 86
<212> PRT
<213> Homo sapiens
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<220>
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<223> /note="Payload ID: 1576; "

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<223> /note="Gene Symbol: ATP6V1H; "

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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 50/57kDa, V1
subunit H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428625"

<400> 7468
Phe Asp Tyr Ala Arg Cys Ser Lys Asn Thr Ala Trp Pro Tyr Phe Leu
1 5 10 15

Pro Met Leu Asn Arg Gln Asp Pro Phe Thr Val His Met Ala Ala Arg
20 25 30

Ile Ile Ala Lys Leu Ala Ala Trp Gly Lys Glu Leu Met Glu Gly Ser
35 40 45

Asp Leu Asn Tyr Tyr Phe Asn Trp Ile Lys Thr Gln Leu Ser Ser Gln
50 55 60

Lys Leu Arg Gly Ser Gly Val Ala Val Glu Thr Gly Thr Val Ser Ser
65 70 75 80

Ser Asp His Ser Ile Gln
85

<210> 7469
<211> 36
<212> PRT
<213> Homo sapiens

<220>
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<220>

<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 50/57kDa, V1
subunit H; "

<220>
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<223> /note="ENSP ID: ENSP00000428969"

<400> 7469
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1 5 10 15

Asn Ile Ile Ala Ala Lys Arg Cys Phe Lys Leu Lys Ala Ala Ser Val
20 25 30

Leu Lys His Leu
35

<210> 7470
<211> 102
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V1H; "

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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 50/57kDa, V1
subunit H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429786"

<400> 7470
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1 5 10 15

Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
20 25 30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Cys Glu
35 40 45

```
Phe Ile Gln Arg Phe Glu Met Lys Arg Ser Pro Glu Glu Lys Gln Glu
    50                  55                  60

Met Leu Gln Thr Glu Gly Ser Gln Cys Ala Lys Thr Phe Ile Asn Leu
65                  70                  75                  80

Met Thr His Ile Cys Lys Glu Gln Thr Val Gln Tyr Ile Leu Thr Met
                85                  90                  95

Val Asp Asp Met Leu Gln
            100


<210> 7471
<211> 443
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1576; "

<220>
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<223> /note="Gene Symbol: ATP6V1H; "

<220>
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      ATPase, H+ transporting, lysosomal 50/57kDa, V1
      subunit H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429947"

<400> 7471
Met Ile Ser Ala Glu Asp Cys Glu Phe Ile Gln Arg Phe Glu Met Lys
1               5                   10                  15

Arg Ser Pro Glu Glu Lys Gln Glu Met Leu Gln Thr Glu Gly Ser Gln
            20                  25                  30

Cys Ala Lys Thr Phe Ile Asn Leu Met Thr His Ile Cys Lys Glu Gln
        35                  40                  45

Thr Val Gln Tyr Ile Leu Thr Met Val Asp Asp Met Leu Gln Glu Asn
    50                  55                  60
```

```
His Gln Arg Val Ser Ile Phe Phe Asp Tyr Ala Arg Cys Ser Lys Asn
65                  70                  75                  80

Thr Ala Trp Pro Tyr Phe Leu Pro Met Leu Asn Arg Gln Asp Pro Phe
                85                  90                  95

Thr Val His Met Ala Ala Arg Ile Ile Ala Lys Leu Ala Ala Trp Gly
            100                 105                 110

Lys Glu Leu Met Glu Gly Ser Asp Leu Asn Tyr Tyr Phe Asn Trp Ile
        115                 120                 125

Lys Thr Gln Leu Ser Ser Gln Lys Leu Arg Gly Ser Gly Val Ala Val
    130                 135                 140

Glu Thr Gly Thr Val Ser Ser Ser Asp Ser Ser Gln Tyr Val Gln Cys
145                 150                 155                 160

Val Ala Gly Cys Leu Gln Leu Met Leu Arg Val Asn Glu Tyr Arg Phe
                165                 170                 175

Ala Trp Val Glu Ala Asp Gly Val Asn Cys Ile Met Gly Val Leu Ser
            180                 185                 190

Asn Lys Cys Gly Phe Gln Leu Gln Tyr Gln Met Ile Phe Ser Ile Trp
        195                 200                 205

Leu Leu Ala Phe Ser Pro Gln Met Cys Glu His Leu Arg Arg Tyr Asn
    210                 215                 220

Ile Ile Pro Val Leu Ser Asp Ile Leu Gln Glu Ser Val Lys Glu Lys
225                 230                 235                 240

Val Thr Arg Ile Ile Leu Ala Ala Phe Arg Asn Phe Leu Glu Lys Ser
                245                 250                 255

Thr Glu Arg Glu Thr Arg Gln Glu Tyr Ala Leu Ala Met Ile Gln Cys
            260                 265                 270

Lys Val Leu Lys Gln Leu Glu Asn Leu Glu Gln Gln Lys Tyr Asp Asp
        275                 280                 285

Glu Asp Ile Ser Glu Asp Ile Lys Phe Leu Leu Glu Lys Leu Gly Glu
```

```
    290                 295                 300

Ser Val Gln Asp Leu Ser Ser Phe Asp Glu Tyr Ser Ser Glu Leu Lys
305                 310                 315                 320

Ser Gly Arg Leu Glu Trp Ser Pro Val His Lys Ser Glu Lys Phe Trp
                325                 330                 335

Arg Glu Asn Ala Val Arg Leu Asn Glu Lys Asn Tyr Glu Leu Leu Lys
            340                 345                 350

Ile Leu Thr Lys Leu Leu Glu Val Ser Asp Asp Pro Gln Val Leu Ala
        355                 360                 365

Val Ala Ala His Asp Val Gly Glu Tyr Val Arg His Tyr Pro Arg Gly
    370                 375                 380

Lys Arg Val Ile Glu Gln Leu Gly Gly Lys Gln Leu Val Met Asn His
385                 390                 395                 400

Met His His Glu Asp Gln Gln Val Arg Tyr Asn Ala Leu Leu Ala Val
                405                 410                 415

Gln Lys Leu Met Val His Asn Trp Glu Tyr Leu Gly Lys Gln Leu Gln
            420                 425                 430

Ser Glu Gln Pro Gln Thr Ala Ala Ala Arg Ser
        435                 440


<210> 7472
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1576; "

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<221> source
<223> /note="Gene Symbol: ATP6V1H; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 50/57kDa, V1
      subunit H; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000487194"

<400> 7472
Met Thr Lys Met Asp Ile Arg Gly Ala Val Asp Ala Ala Val Pro Thr
1   5   10   15

Asn Ile Ile Ala Ala Lys Ala Ala Glu Val Arg Ala Asn Lys Val Asn
            20   25   30

Trp Gln Ser Tyr Leu Gln Gly Gln Met Ile Ser Ala Glu Asp Phe Cys
        35   40   45

<210> 7473
<211> 513
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ATP6V1B1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B1; "

<220>
<221> source
<223> /note="Uniprot ID: P15313; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000234396"

<400> 7473
Met Ala Met Glu Ile Asp Ser Arg Pro Gly Gly Leu Pro Gly Ser Ser
1   5   10   15

Cys Asn Leu Gly Ala Ala Arg Glu His Met Gln Ala Val Thr Arg Asn
            20   25   30

Tyr Ile Thr His Pro Arg Val Thr Tyr Arg Thr Val Cys Ser Val Asn
        35   40   45

```
Gly Pro Leu Val Val Leu Asp Arg Val Lys Phe Ala Gln Tyr Ala Glu
    50                  55                  60

Ile Val His Phe Thr Leu Pro Asp Gly Thr Gln Arg Ser Gly Gln Val
65                  70                  75                  80

Leu Glu Val Ala Gly Thr Lys Ala Ile Val Gln Val Phe Glu Gly Thr
                85                  90                  95

Ser Gly Ile Asp Ala Arg Lys Thr Thr Cys Glu Phe Thr Gly Asp Ile
            100                 105                 110

Leu Arg Thr Pro Val Ser Glu Asp Met Leu Gly Arg Val Phe Asn Gly
        115                 120                 125

Ser Gly Lys Pro Ile Asp Lys Gly Pro Val Val Met Ala Glu Asp Phe
    130                 135                 140

Leu Asp Ile Asn Gly Gln Pro Ile Asn Pro His Ser Arg Ile Tyr Pro
145                 150                 155                 160

Glu Glu Met Ile Gln Thr Gly Ile Ser Pro Ile Asp Val Met Asn Ser
                165                 170                 175

Ile Ala Arg Gly Gln Lys Ile Pro Ile Phe Ser Ala Ala Gly Leu Pro
            180                 185                 190

His Asn Glu Ile Ala Ala Gln Ile Cys Arg Gln Ala Gly Leu Val Lys
        195                 200                 205

Lys Ser Lys Ala Val Leu Asp Tyr His Asp Asp Asn Phe Ala Ile Val
    210                 215                 220

Phe Ala Ala Met Gly Val Asn Met Glu Thr Ala Arg Phe Phe Lys Ser
225                 230                 235                 240

Asp Phe Glu Gln Asn Gly Thr Met Gly Asn Val Cys Leu Phe Leu Asn
                245                 250                 255

Leu Ala Asn Asp Pro Thr Ile Glu Arg Ile Ile Thr Pro Arg Leu Ala
            260                 265                 270
```

```
Leu Thr Thr Ala Glu Phe Leu Ala Tyr Gln Cys Glu Lys His Val Leu
        275                 280                 285

Val Ile Leu Thr Asp Met Ser Ser Tyr Ala Glu Ala Leu Arg Glu Val
    290                 295                 300

Ser Ala Ala Arg Glu Glu Val Pro Gly Arg Arg Gly Phe Pro Gly Tyr
305                 310                 315                 320

Met Tyr Thr Asp Leu Ala Thr Ile Tyr Glu Arg Ala Gly Arg Val Glu
                325                 330                 335

Gly Arg Gly Gly Ser Ile Thr Gln Ile Pro Ile Leu Thr Met Pro Asn
            340                 345                 350

Asp Asp Ile Thr His Pro Ile Pro Asp Leu Thr Gly Phe Ile Thr Glu
        355                 360                 365

Gly Gln Ile Tyr Val Asp Arg Gln Leu His Asn Arg Gln Ile Tyr Pro
    370                 375                 380

Pro Ile Asn Val Leu Pro Ser Leu Ser Arg Leu Met Lys Ser Ala Ile
385                 390                 395                 400

Gly Glu Gly Met Thr Arg Lys Asp His Gly Asp Val Ser Asn Gln Leu
                405                 410                 415

Tyr Ala Cys Tyr Ala Ile Gly Lys Asp Val Gln Ala Met Lys Ala Val
            420                 425                 430

Val Gly Glu Glu Ala Leu Thr Ser Glu Asp Leu Leu Tyr Leu Glu Phe
        435                 440                 445

Leu Gln Lys Phe Glu Lys Asn Phe Ile Asn Gln Gly Pro Tyr Glu Asn
    450                 455                 460

Arg Ser Val Phe Glu Ser Leu Asp Leu Gly Trp Lys Leu Leu Arg Ile
465                 470                 475                 480

Phe Pro Lys Glu Met Leu Lys Arg Ile Pro Gln Ala Val Ile Asp Glu
                485                 490                 495

Phe Tyr Ser Arg Glu Gly Ala Leu Gln Asp Leu Ala Pro Asp Thr Ala
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500 505 510

Leu

<210> 7474
<211> 74
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1577; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B1; "

<220>
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<223> /note="ENSP ID: ENSP00000387599"

<400> 7474
Met Leu Gly Arg Val Phe Asn Gly Ser Gly Lys Pro Ile Asp Lys Gly
1 5 10 15

Pro Val Val Met Ala Glu Asp Phe Leu Asp Ile Asn Gly Gln Pro Ile
20 25 30

Asn Pro His Ser Arg Ile Tyr Pro Glu Glu Met Ile Gln Thr Gly Ile
35 40 45

Ser Pro Ile Asp Val Met Asn Ser Ile Ala Arg Gly Gln Lys Ile Pro
50 55 60

Ile Phe Ser Ala Ala Gly Leu Pro His Asn
65 70

<210> 7475
<211> 496
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1577; "

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<223> /note="Gene Symbol: ATP6V1B1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388353"

<400> 7475
Met Ala Met Glu Ile Asp Ser Arg Pro Gly Gly Leu Pro Gly Ser Ser
1 5 10 15

Cys Asn Leu Gly Ala Ala Arg Glu His Met Gln Ala Val Thr Arg Asn
20 25 30

Tyr Ile Thr His Pro Arg Val Thr Tyr Arg Thr Val Cys Ser Val Asn
35 40 45

Gly Pro Leu Val Val Leu Asp Arg Val Lys Phe Ala Gln Tyr Ala Glu
50 55 60

Ile Val His Phe Thr Leu Pro Asp Gly Thr Gln Arg Ser Gly Gln Val
65 70 75 80

Leu Glu Val Ala Gly Thr Lys Ala Ile Val Gln Val Phe Glu Gly Thr
85 90 95

Ser Gly Ile Asp Ala Arg Lys Thr Thr Cys Glu Phe Thr Gly Asp Ile
100 105 110

Leu Arg Thr Pro Val Ser Glu Asp Met Leu Gly Arg Val Phe Asn Gly
115 120 125

Ser Gly Lys Pro Ile Asp Lys Gly Pro Val Val Met Ala Glu Asp Phe
130 135 140

Leu Asp Ile Asn Gly Gln Pro Ile Asn Pro His Ser Arg Ile Tyr Pro
145 150 155 160

```
Glu Glu Met Ile Gln Thr Gly Ile Ser Pro Ile Asp Val Met Asn Ser
                165                 170                 175

Ile Ala Arg Gly Gln Lys Ile Pro Ile Phe Ser Ala Ala Gly Leu Pro
            180                 185                 190

His Asn Glu Ile Ala Ala Gln Ile Cys Arg Gln Ala Gly Leu Val Lys
        195                 200                 205

Lys Ser Lys Ala Val Leu Asp Tyr His Asp Asp Asn Phe Ala Ile Val
    210                 215                 220

Phe Ala Ala Met Gly Val Asn Met Glu Thr Ala Arg Phe Phe Lys Ser
225                 230                 235                 240

Asp Phe Glu Gln Asn Gly Thr Met Gly Asn Val Cys Leu Phe Leu Asn
                245                 250                 255

Leu Ala Asn Asp Pro Thr Ile Glu Arg Ile Ile Thr Pro Arg Leu Ala
            260                 265                 270

Leu Thr Thr Ala Glu Phe Leu Ala Tyr Gln Cys Glu Lys His Val Leu
        275                 280                 285

Val Ile Leu Thr Asp Met Ser Ser Tyr Ala Glu Ala Leu Arg Glu Val
    290                 295                 300

Ser Ala Ala Arg Glu Glu Val Pro Gly Arg Arg Gly Phe Pro Gly Tyr
305                 310                 315                 320

Met Tyr Thr Asp Leu Ala Thr Ile Tyr Glu Arg Ala Gly Arg Val Glu
                325                 330                 335

Asp Ile Thr His Pro Ile Pro Asp Leu Thr Gly Phe Ile Thr Glu Gly
            340                 345                 350

Gln Ile Tyr Val Asp Arg Gln Leu His Asn Arg Gln Ile Tyr Pro Pro
        355                 360                 365

Ile Asn Val Leu Pro Ser Leu Ser Arg Leu Met Lys Ser Ala Ile Gly
    370                 375                 380
```

```
Glu Gly Met Thr Arg Lys Asp His Gly Asp Val Ser Asn Gln Leu Tyr
385                 390                 395                 400

Ala Cys Tyr Ala Ile Gly Lys Asp Val Gln Ala Met Lys Ala Val Val
                405                 410                 415

Gly Glu Glu Ala Leu Thr Ser Glu Asp Leu Leu Tyr Leu Glu Phe Leu
            420                 425                 430

Gln Lys Phe Glu Lys Asn Phe Ile Asn Gln Gly Pro Tyr Glu Asn Arg
        435                 440                 445

Ser Val Phe Glu Ser Leu Asp Leu Gly Trp Lys Leu Leu Arg Ile Phe
    450                 455                 460

Pro Lys Glu Met Leu Lys Arg Ile Pro Gln Ala Val Ile Asp Glu Phe
465                 470                 475                 480

Tyr Ser Arg Glu Gly Ala Leu Gln Asp Leu Ala Pro Asp Thr Ala Leu
                485                 490                 495


<210> 7476
<211> 248
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1577; "

<220>
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<223> /note="Gene Symbol: ATP6V1B1; "

<220>
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<223> /note="Gene Name:
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      subunit B1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405114"

<400> 7476
Met Ala Met Glu Ile Asp Ser Arg Pro Gly Gly Leu Pro Gly Ser Ser
1               5                   10                  15

Cys Asn Leu Gly Ala Ala Arg Glu His Met Gln Ala Val Thr Arg Asn
```

```
            20                  25                  30

Tyr Ile Thr His Pro Arg Val Thr Tyr Arg Thr Val Cys Ser Val Asn
        35                  40                  45

Gly Pro Leu Val Val Leu Asp Arg Val Lys Phe Ala Gln Tyr Ala Glu
    50                  55                  60

Ile Val His Phe Thr Leu Pro Asp Gly Thr Gln Arg Ser Gly Gln Val
65                  70                  75                  80

Leu Glu Val Ala Gly Thr Lys Ala Ile Val Gln Val Phe Glu Gly Thr
                85                  90                  95

Ser Gly Ile Asp Ala Arg Lys Thr Thr Cys Glu Phe Thr Gly Asp Ile
            100                 105                 110

Leu Arg Thr Pro Val Ser Glu Asp Met Leu Gly Arg Val Phe Asn Gly
        115                 120                 125

Ser Gly Lys Pro Ile Asp Lys Gly Pro Val Val Met Ala Glu Asp Phe
    130                 135                 140

Leu Asp Ile Asn Gly Gln Pro Ile Asn Pro His Ser Arg Ile Tyr Pro
145                 150                 155                 160

Glu Glu Met Ile Gln Thr Gly Ile Ser Pro Ile Asp Val Met Asn Ser
                165                 170                 175

Ile Ala Arg Gly Gln Lys Ile Pro Ile Phe Ser Ala Ala Gly Leu Pro
            180                 185                 190

His Asn Glu Ile Ala Ala Gln Ile Cys Arg Gln Ala Gly Leu Val Lys
        195                 200                 205

Lys Ser Lys Ala Val Leu Asp Tyr His Asp Asp Asn Phe Ala Ile Val
    210                 215                 220

Phe Ala Ala Met Gly Val Arg Arg Leu Ser Arg Leu Ala Ser Glu His
225                 230                 235                 240

Gly Asp Ser Gln Ile Leu Gln Val
                245
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<210> 7477
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1577; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407840"

<400> 7477

```
Met Lys Ser Ala Ile Gly Glu Gly Met Thr Arg Lys Asp His Gly Asp
1               5                  10                  15


Val Ser Asn Gln Leu Tyr Ala Cys Tyr Ala Ile Gly Lys Asp Val Gln
            20                  25                  30


Ala Met Lys Ala Val Val Gly Glu Glu Ala Leu Thr Ser Glu Asp Leu
        35                  40                  45


Leu Tyr Leu Glu Phe Leu Gln Lys Phe Glu Lys Asn Phe Ile Asn Gln
    50                  55                  60


Gly Pro Tyr Glu Asn Arg Ser Val Phe Glu Ser Leu Asp Leu Gly Trp
65                  70                  75                  80


Lys Leu Leu Arg Ile Phe Pro Lys Glu Met Leu Lys Arg Ile Pro Gln
                85                  90                  95


Ala Val Ile Asp Glu Phe Tyr Ser Arg Glu Gly Ala Leu Gln Asp Leu
            100                 105                 110


Ala Pro Asp Thr Ala Leu
        115
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<210> 7478
<211> 249
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1577; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408361"

<400> 7478

```
Met Thr Leu Thr Ala Met Val Ala Gly Pro Val Thr Ala Asn Asp Pro
1               5                  10                  15

Asp Gly Pro Gly Trp Glu Gly Gly Gly Val Trp Arg Glu Glu Gly Lys
            20                  25                  30

Ala Glu Asp Ala Ser Val Cys Val Ser Arg Val Phe Gly Val Arg Pro
        35                  40                  45

Leu Leu Thr Pro Ala Pro Pro Pro Ala Tyr Arg Thr Val Cys Ser Val
    50                  55                  60

Asn Gly Pro Leu Val Val Leu Asp Arg Val Lys Phe Ala Gln Tyr Ala
65                  70                  75                  80

Glu Ile Val His Phe Thr Leu Pro Asp Gly Thr Gln Arg Ser Gly Gln
                85                  90                  95

Val Leu Glu Val Ala Gly Thr Lys Ala Ile Val Gln Val Phe Glu Gly
            100                 105                 110

Thr Ser Gly Ile Asp Ala Arg Lys Thr Thr Cys Glu Phe Thr Gly Asp
        115                 120                 125
```

```
Ile Leu Arg Thr Pro Val Ser Glu Asp Met Leu Gly Arg Val Phe Asn
    130                 135                 140

Gly Ser Gly Lys Pro Ile Asp Lys Gly Pro Val Val Met Ala Glu Asp
145                 150                 155                 160

Phe Leu Asp Ile Asn Gly Gln Pro Ile Asn Pro His Ser Arg Ile Tyr
                165                 170                 175

Pro Glu Glu Met Ile Gln Thr Gly Ile Ser Pro Ile Asp Val Met Asn
            180                 185                 190

Ser Ile Ala Arg Gly Gln Lys Ile Pro Ile Phe Ser Ala Ala Gly Leu
        195                 200                 205

Pro His Asn Glu Ile Ala Ala Gln Ile Cys Arg Gln Ala Gly Leu Val
    210                 215                 220

Lys Lys Ser Lys Ala Val Leu Asp Tyr His Asp Asp Asn Phe Ala Ile
225                 230                 235                 240

Val Phe Ala Ala Met Gly Val Arg Arg
                245
```

<210> 7479
<211> 511
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1578; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B2; "

<220>
<221> source
<223> /note="Uniprot ID: P21281; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000276390"

<400> 7479

```
Met Ala Leu Arg Ala Met Arg Gly Ile Val Asn Gly Ala Ala Pro Glu
1               5                  10                  15

Leu Pro Val Pro Thr Gly Gly Pro Ala Val Gly Ala Arg Glu Gln Ala
            20                  25                  30

Leu Ala Val Ser Arg Asn Tyr Leu Ser Gln Pro Arg Leu Thr Tyr Lys
        35                  40                  45

Thr Val Ser Gly Val Asn Gly Pro Leu Val Ile Leu Asp His Val Lys
    50                  55                  60

Phe Pro Arg Tyr Ala Glu Ile Val His Leu Thr Leu Pro Asp Gly Thr
65                  70                  75                  80

Lys Arg Ser Gly Gln Val Leu Glu Val Ser Gly Ser Lys Ala Val Val
                85                  90                  95

Gln Val Phe Glu Gly Thr Ser Gly Ile Asp Ala Lys Lys Thr Ser Cys
            100                 105                 110

Glu Phe Thr Gly Asp Ile Leu Arg Thr Pro Val Ser Glu Asp Met Leu
        115                 120                 125

Gly Arg Val Phe Asn Gly Ser Gly Lys Pro Ile Asp Arg Gly Pro Val
    130                 135                 140

Val Leu Ala Glu Asp Phe Leu Asp Ile Met Gly Gln Pro Ile Asn Pro
145                 150                 155                 160

Gln Cys Arg Ile Tyr Pro Glu Glu Met Ile Gln Thr Gly Ile Ser Ala
                165                 170                 175

Ile Asp Gly Met Asn Ser Ile Ala Arg Gly Gln Lys Ile Pro Ile Phe
            180                 185                 190

Ser Ala Ala Gly Leu Pro His Asn Glu Ile Ala Ala Gln Ile Cys Arg
        195                 200                 205

Gln Ala Gly Leu Val Lys Lys Ser Lys Asp Val Val Asp Tyr Ser Glu
    210                 215                 220
```

```
Glu Asn Phe Ala Ile Val Phe Ala Ala Met Gly Val Asn Met Glu Thr
225                 230                 235                 240

Ala Arg Phe Phe Lys Ser Asp Phe Glu Glu Asn Gly Ser Met Asp Asn
                245                 250                 255

Val Cys Leu Phe Leu Asn Leu Ala Asn Asp Pro Thr Ile Glu Arg Ile
            260                 265                 270

Ile Thr Pro Arg Leu Ala Leu Thr Thr Ala Glu Phe Leu Ala Tyr Gln
        275                 280                 285

Cys Glu Lys His Val Leu Val Ile Leu Thr Asp Met Ser Ser Tyr Ala
    290                 295                 300

Glu Ala Leu Arg Glu Val Ser Ala Ala Arg Glu Glu Val Pro Gly Arg
305                 310                 315                 320

Arg Gly Phe Pro Gly Tyr Met Tyr Thr Asp Leu Ala Thr Ile Tyr Glu
                325                 330                 335

Arg Ala Gly Arg Val Glu Gly Arg Asn Gly Ser Ile Thr Gln Ile Pro
            340                 345                 350

Ile Leu Thr Met Pro Asn Asp Asp Ile Thr His Pro Ile Pro Asp Leu
        355                 360                 365

Thr Gly Tyr Ile Thr Glu Gly Gln Ile Tyr Val Asp Arg Gln Leu His
    370                 375                 380

Asn Arg Gln Ile Tyr Pro Pro Ile Asn Val Leu Pro Ser Leu Ser Arg
385                 390                 395                 400

Leu Met Lys Ser Ala Ile Gly Glu Gly Met Thr Arg Lys Asp His Ala
                405                 410                 415

Asp Val Ser Asn Gln Leu Tyr Ala Cys Tyr Ala Ile Gly Lys Asp Val
            420                 425                 430

Gln Ala Met Lys Ala Val Val Gly Glu Glu Ala Leu Thr Ser Asp Asp
        435                 440                 445
```

```
Leu Leu Tyr Leu Glu Phe Leu Gln Lys Phe Glu Arg Asn Phe Ile Ala
    450                 455                 460

Gln Gly Pro Tyr Glu Asn Arg Thr Val Phe Glu Thr Leu Asp Ile Gly
465                 470                 475                 480

Trp Gln Leu Leu Arg Ile Phe Pro Lys Glu Met Leu Lys Arg Ile Pro
                485                 490                 495

Gln Ser Thr Leu Ser Glu Phe Tyr Pro Arg Asp Ser Ala Lys His
            500                 505                 510
```

<210> 7480
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1578; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428069"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7480

```
Xaa Arg Gly Ile Val Asn Gly Ala Ala Pro Glu Leu Pro Val Pro Thr
1               5                   10                  15

Gly Gly Pro Ala Val Gly Ala Arg Glu Gln Ala Leu Ala Val Ser Arg
            20                  25                  30

Asn Tyr Leu Ser Gln Pro Arg Leu Ser Tyr Thr Ile Ser Pro Ile Ser
        35                  40                  45
```

Phe Val Thr Phe Val Thr Ser Ala
    50   55

<210> 7481
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1578; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 56/58kDa, V1
      subunit B2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430154"

<400> 7481
Met Ala Leu Arg Ala Met Arg Gly Ile Val Asn Gly Ala Ala Pro Glu
1   5   10   15

Leu Pro Val Pro Thr Gly Gly Pro Ala Val Gly Ala Arg Glu Gln Ala
            20   25   30

Leu Ala Val Ser Arg Asn Tyr Leu Ser Gln Pro Arg Leu Thr Tyr Lys
        35   40   45

Thr Val Ser Gly Val Asn Gly Pro Leu Val Ile Leu Asp His Val Lys
    50   55   60

Val Cys
65

<210> 7482
<211> 199
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1578; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 56/58kDa, V1
subunit B2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430682"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7482

```
Xaa Gly Ala Ala Pro Glu Leu Pro Val Pro Thr Gly Gly Pro Ala Val
1               5                  10                  15

Gly Ala Arg Glu Gln Ala Leu Ala Val Ser Arg Asn Tyr Leu Ser Gln
            20                  25                  30

Pro Arg Leu Thr Tyr Lys Thr Val Ser Gly Val Asn Gly Pro Leu Val
        35                  40                  45

Ile Leu Asp His Val Lys Phe Pro Arg Tyr Ala Glu Ile Val His Leu
    50                  55                  60

Thr Leu Pro Asp Gly Thr Lys Arg Ser Gly Gln Val Leu Glu Val Ser
65                  70                  75                  80

Gly Ser Lys Ala Val Val Gln Val Phe Glu Gly Thr Ser Gly Ile Asp
                85                  90                  95

Ala Lys Lys Thr Ser Cys Glu Phe Thr Gly Asp Ile Leu Arg Thr Pro
            100                 105                 110

Val Ser Glu Asp Met Leu Gly Arg Val Phe Asn Gly Ser Gly Lys Pro
        115                 120                 125

Ile Asp Arg Gly Pro Val Val Leu Ala Glu Asp Phe Leu Asp Ile Met
    130                 135                 140
```

```
Gly Gln Pro Ile Asn Pro Gln Cys Arg Ile Tyr Pro Glu Glu Met Ile
145                 150                 155                 160


Gln Thr Gly Ile Ser Ala Ile Asp Gly Met Asn Ser Ile Ala Arg Gly
                165                 170                 175


Gln Lys Ile Pro Ile Phe Ser Ala Ala Gly Leu Pro His Asn Glu Val
            180                 185                 190


Arg Thr Gly Ile Gly Leu Leu
        195


<210> 7483
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1578; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1B2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 56/58kDa, V1
      subunit B2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430866"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7483
Xaa Gln Ala Met Lys Ala Val Val Gly Glu Glu Ala Leu Thr Ser Asp
1               5                   10                  15


Asp Leu Leu Tyr Leu Glu Phe Leu Gln Lys Phe Glu Arg Asn Phe Ile
            20                  25                  30


Ala Gln Gly Val Ser Leu Cys Arg Pro Gly Trp Ser Thr Val Val Arg
```

35 40 45

Ser

<210> 7484
<211> 617
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1579; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 70kDa, V1
subunit A; "

<220>
<221> source
<223> /note="Uniprot ID: P38606; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000273398"

<400> 7484
Met Asp Phe Ser Lys Leu Pro Lys Ile Leu Asp Glu Asp Lys Glu Ser
1 5 10 15

Thr Phe Gly Tyr Val His Gly Val Ser Gly Pro Val Val Thr Ala Cys
20 25 30

Asp Met Ala Gly Ala Ala Met Tyr Glu Leu Val Arg Val Gly His Ser
35 40 45

Glu Leu Val Gly Glu Ile Ile Arg Leu Glu Gly Asp Met Ala Thr Ile
50 55 60

Gln Val Tyr Glu Glu Thr Ser Gly Val Ser Val Gly Asp Pro Val Leu
65 70 75 80

Arg Thr Gly Lys Pro Leu Ser Val Glu Leu Gly Pro Gly Ile Met Gly
85 90 95

```
Ala Ile Phe Asp Gly Ile Gln Arg Pro Leu Ser Asp Ile Ser Ser Gln
            100                 105                 110

Thr Gln Ser Ile Tyr Ile Pro Arg Gly Val Asn Val Ser Ala Leu Ser
        115                 120                 125

Arg Asp Ile Lys Trp Asp Phe Thr Pro Cys Lys Asn Leu Arg Val Gly
    130                 135                 140

Ser His Ile Thr Gly Gly Asp Ile Tyr Gly Ile Val Ser Glu Asn Ser
145                 150                 155                 160

Leu Ile Lys His Lys Ile Met Leu Pro Pro Arg Asn Arg Gly Thr Val
                165                 170                 175

Thr Tyr Ile Ala Pro Pro Gly Asn Tyr Asp Thr Ser Asp Val Val Leu
            180                 185                 190

Glu Leu Glu Phe Glu Gly Val Lys Glu Lys Phe Thr Met Val Gln Val
        195                 200                 205

Trp Pro Val Arg Gln Val Arg Pro Val Thr Glu Lys Leu Pro Ala Asn
    210                 215                 220

His Pro Leu Leu Thr Gly Gln Arg Val Leu Asp Ala Leu Phe Pro Cys
225                 230                 235                 240

Val Gln Gly Gly Thr Thr Ala Ile Pro Gly Ala Phe Gly Cys Gly Lys
                245                 250                 255

Thr Val Ile Ser Gln Ser Leu Ser Lys Tyr Ser Asn Ser Asp Val Ile
            260                 265                 270

Ile Tyr Val Gly Cys Gly Glu Arg Gly Asn Glu Met Ser Glu Val Leu
        275                 280                 285

Arg Asp Phe Pro Glu Leu Thr Met Glu Val Asp Gly Lys Val Glu Ser
    290                 295                 300

Ile Met Lys Arg Thr Ala Leu Val Ala Asn Thr Ser Asn Met Pro Val
305                 310                 315                 320
```

```
Ala Ala Arg Glu Ala Ser Ile Tyr Thr Gly Ile Thr Leu Ser Glu Tyr
                325                 330                 335

Phe Arg Asp Met Gly Tyr His Val Ser Met Met Ala Asp Ser Thr Ser
            340                 345                 350

Arg Trp Ala Glu Ala Leu Arg Glu Ile Ser Gly Arg Leu Ala Glu Met
        355                 360                 365

Pro Ala Asp Ser Gly Tyr Pro Ala Tyr Leu Gly Ala Arg Leu Ala Ser
    370                 375                 380

Phe Tyr Glu Arg Ala Gly Arg Val Lys Cys Leu Gly Asn Pro Glu Arg
385                 390                 395                 400

Glu Gly Ser Val Ser Ile Val Gly Ala Val Ser Pro Pro Gly Gly Asp
                405                 410                 415

Phe Ser Asp Pro Val Thr Ser Ala Thr Leu Gly Ile Val Gln Val Phe
            420                 425                 430

Trp Gly Leu Asp Lys Lys Leu Ala Gln Arg Lys His Phe Pro Ser Val
        435                 440                 445

Asn Trp Leu Ile Ser Tyr Ser Lys Tyr Met Arg Ala Leu Asp Glu Tyr
    450                 455                 460

Tyr Asp Lys His Phe Thr Glu Phe Val Pro Leu Arg Thr Lys Ala Lys
465                 470                 475                 480

Glu Ile Leu Gln Glu Glu Glu Asp Leu Ala Glu Ile Val Gln Leu Val
                485                 490                 495

Gly Lys Ala Ser Leu Ala Glu Thr Asp Lys Ile Thr Leu Glu Val Ala
            500                 505                 510

Lys Leu Ile Lys Asp Asp Phe Leu Gln Gln Asn Gly Tyr Thr Pro Tyr
        515                 520                 525

Asp Arg Phe Cys Pro Phe Tyr Lys Thr Val Gly Met Leu Ser Asn Met
    530                 535                 540
```

```
Ile Ala Phe Tyr Asp Met Ala Arg Arg Ala Val Glu Thr Thr Ala Gln
545                 550                 555                 560


Ser Asp Asn Lys Ile Thr Trp Ser Ile Ile Arg Glu His Met Gly Asp
                565                 570                 575


Ile Leu Tyr Lys Leu Ser Ser Met Lys Phe Lys Asp Pro Leu Lys Asp
            580                 585                 590


Gly Glu Ala Lys Ile Lys Ser Asp Tyr Ala Gln Leu Leu Glu Asp Met
        595                 600                 605


Gln Asn Ala Phe Arg Ser Leu Glu Asp
    610                 615


<210> 7485
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1579; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1A; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 70kDa, V1
      subunit A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417545"

<400> 7485
Met Ala Gly Ala Ala Met Tyr Glu Leu Val Arg Val Gly His Ser Glu
1               5                   10                  15


Leu Val Gly Glu Ile Ile Arg Leu Glu Gly Asp Met Ala Thr Ile Gln
            20                  25                  30


Val Tyr Glu Glu Thr Ser Gly Val Ser Val Gly Asp Pro Val Leu Arg
        35                  40                  45


Thr Gly Lys Pro Leu Ser Val Glu Leu Gly Pro Gly Ile Met Gly Ala
```

```
    50                  55                  60

Ile Phe Asp Gly Ile Gln Arg Pro Leu Ser Asp Ile Ser Ser Gln Thr
65                  70                  75                  80

Gln Ser Ile Tyr Ile Pro Arg Gly Val Asn Val Ser Ala Leu Ser Arg
                85                  90                  95

Asp Ile Lys Trp Asp Phe Thr Pro Cys Lys Asn Leu Arg Val Gly Ser
            100                 105                 110

His Ile Thr Gly Gly Asp Ile Tyr Gly Ile Val Ser Glu Asn Ser Leu
        115                 120                 125

Ile Lys His Lys Ile Met Leu Pro Pro Arg Asn Arg Gly Thr Val Thr
    130                 135                 140

Tyr Ile Ala Pro Pro Gly Asn Tyr Asp Thr Ser Asp Val Val Leu Glu
145                 150                 155                 160

Leu Glu Phe Glu Gly Val Lys Glu Lys Phe Thr Met Val Gln Val Trp
                165                 170                 175

Pro Val Arg Gln Val Arg Pro Val
            180


<210> 7486
<211> 221
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1579; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V1A; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal 70kDa, V1
      subunit A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419294"
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<400> 7486
Met Asp Phe Ser Lys Leu Pro Lys Ile Leu Asp Glu Asp Lys Glu Ser
1 5 10 15

Thr Phe Gly Tyr Val His Gly Val Ser Gly Pro Val Val Thr Ala Cys
20 25 30

Asp Met Ala Gly Ala Ala Met Tyr Glu Leu Val Arg Val Gly His Ser
35 40 45

Glu Leu Val Gly Glu Ile Ile Arg Leu Glu Gly Asp Met Ala Thr Ile
50 55 60

Gln Val Tyr Glu Glu Thr Ser Gly Val Ser Val Gly Asp Pro Val Leu
65 70 75 80

Arg Thr Gly Lys Pro Leu Ser Val Glu Leu Gly Pro Gly Ile Met Gly
85 90 95

Ala Ile Phe Asp Gly Ile Gln Arg Pro Leu Ser Asp Ile Ser Ser Gln
100 105 110

Thr Gln Ser Ile Tyr Ile Pro Arg Gly Val Asn Val Ser Ala Leu Ser
115 120 125

Arg Asp Ile Lys Trp Asp Phe Thr Pro Cys Lys Asn Leu Arg Val Gly
130 135 140

Ser His Ile Thr Gly Gly Asp Ile Tyr Gly Ile Val Ser Glu Asn Ser
145 150 155 160

Leu Ile Lys His Lys Ile Met Leu Pro Pro Arg Asn Arg Gly Thr Val
165 170 175

Thr Tyr Ile Ala Pro Pro Gly Asn Tyr Asp Thr Ser Asp Val Val Leu
180 185 190

Glu Leu Glu Phe Glu Gly Val Lys Glu Lys Phe Thr Met Val Gln Val
195 200 205

Trp Pro Val Arg Gln Val Arg Pro Val Thr Glu Lys Leu
210 215 220

<210> 7487
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1579; "

<220>
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<223> /note="Gene Symbol: ATP6V1A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 70kDa, V1
subunit A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420146"

<400> 7487
Met Asp Phe Ser Lys Leu Pro Lys Ile Leu Asp Glu Asp Lys Glu Ser
1 5 10 15

Thr Phe Gly Tyr Val His Gly Val Ser Gly Pro Ala Phe Thr Pro Cys
20 25 30

Ile Ile Ala Thr Leu Arg Thr Tyr Leu Asn Pro Thr Ser Gly Tyr Ser
35 40 45

Leu

<210> 7488
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1580; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0E1; "

<220>
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<223> /note="Gene Name:

ATPase, H+ transporting, lysosomal 9kDa, V0
subunit e1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265093"

<400> 7488
Met Ala Tyr His Gly Leu Thr Val Pro Leu Ile Val Met Ser Val Phe
1 5 10 15

Trp Gly Phe Val Gly Phe Leu Val Pro Trp Phe Ile Pro Lys Gly Pro
20 25 30

Asn Arg Gly Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
35 40 45

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Leu Lys Tyr His Trp
50 55 60

Pro
65

<210> 7489
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1580; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0E1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 9kDa, V0
subunit e1; "

<220>
<221> source
<223> /note="Uniprot ID: O15342; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427941"

<400> 7489
Met Ala Tyr His Gly Leu Thr Val Pro Leu Ile Val Met Ser Val Phe

1 5 10 15

Trp Gly Phe Val Gly Phe Leu Val Pro Trp Phe Ile Pro Lys Gly Pro
20 25 30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Thr Cys Ser Val Cys Cys
35 40 45

Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
50 55 60

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Leu Lys Tyr His Trp
65 70 75 80

Pro

<210> 7490
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1580; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0E1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 9kDa, V0
subunit e1; "

<220>
<221> source
<223> /note="Uniprot ID: O15342; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429690"

<400> 7490
Met Ala Tyr His Gly Leu Thr Val Pro Leu Ile Val Met Ser Val Phe
1 5 10 15

Trp Gly Phe Val Gly Phe Leu Val Pro Trp Phe Ile Pro Lys Gly Pro
20 25 30

```
Asn Arg Gly Val Ile Ile Thr Met Leu Val Thr Cys Ser Val Cys Cys
        35                  40                  45

Tyr Leu Phe Trp Leu Ile Ala Ile Leu Ala Gln Leu Asn Pro Leu Phe
    50                  55                  60

Gly Pro Gln Leu Lys Asn Glu Thr Ile Trp Tyr Leu Lys Tyr His Trp
65                  70                  75                  80

Pro
```

<210> 7491
<211> 58
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1580; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0E1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal 9kDa, V0
subunit e1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430896"

<400> 7491

```
Met Ala Tyr His Gly Leu Thr Val Pro Leu Ile Val Met Ser Val Phe
1               5                   10                  15

Trp Gly Phe Val Gly Phe Leu Val Pro Trp Phe Ile Pro Lys Gly Pro
            20                  25                  30

Asn Arg Gly Val Ile Ile Thr Met Leu Val Thr Cys Ser Val Cys Cys
        35                  40                  45

Tyr Leu Leu Ser Arg Glu Glu Asn Ala Phe
    50                  55
```

<210> 7492
<211> 470
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q15904; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358777"

<400> 7492
Met Met Ala Ala Met Ala Thr Ala Arg Val Arg Met Gly Pro Arg Cys
1   5   10   15

Ala Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu
            20   25   30

Ala Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val
        35   40   45

Leu Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His
    50   55   60

Glu Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro
65   70   75   80

Ala Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys
                85   90   95

Leu Ser Ile Glu Asp Phe Thr Ala Tyr Gly Gly Val Phe Gly Asn Lys
            100   105   110

Gln Asp Ser Ala Phe Ser Asn Leu Glu Asn Ala Leu Asp Leu Ala Pro

```
        115                 120                 125

Ser Ser Leu Val Leu Pro Ala Val Asp Trp Tyr Ala Val Ser Thr Leu
    130                 135                 140

Thr Thr Tyr Leu Gln Glu Lys Leu Gly Ala Ser Pro Leu His Val Asp
145                 150                 155                 160

Leu Ala Thr Leu Arg Glu Leu Lys Leu Asn Ala Ser Leu Pro Ala Leu
                165                 170                 175

Leu Leu Ile Arg Leu Pro Tyr Thr Ala Ser Ser Gly Leu Met Ala Pro
            180                 185                 190

Arg Glu Val Leu Thr Gly Asn Asp Glu Val Ile Gly Gln Val Leu Ser
        195                 200                 205

Thr Leu Lys Ser Glu Asp Val Pro Tyr Thr Ala Ala Leu Thr Ala Val
    210                 215                 220

Arg Pro Ser Arg Val Ala Arg Asp Val Ala Val Val Ala Gly Gly Leu
225                 230                 235                 240

Gly Arg Gln Leu Leu Gln Lys Gln Pro Val Ser Pro Val Ile His Pro
                245                 250                 255

Pro Val Ser Tyr Asn Asp Thr Ala Pro Arg Ile Leu Phe Trp Ala Gln
            260                 265                 270

Asn Phe Ser Val Ala Tyr Lys Asp Gln Trp Glu Asp Leu Thr Pro Leu
        275                 280                 285

Thr Phe Gly Val Gln Glu Leu Asn Leu Thr Gly Ser Phe Trp Asn Asp
    290                 295                 300

Ser Phe Ala Arg Leu Ser Leu Thr Tyr Glu Arg Leu Phe Gly Thr Thr
305                 310                 315                 320

Val Thr Phe Lys Phe Ile Leu Ala Asn Arg Leu Tyr Pro Val Ser Ala
                325                 330                 335

Arg His Trp Phe Thr Met Glu Arg Leu Glu Val His Ser Asn Gly Ser
            340                 345                 350
```

```
Val Ala Tyr Phe Asn Ala Ser Gln Val Thr Gly Pro Ser Ile Tyr Ser
        355                 360                 365

Phe His Cys Glu Tyr Val Ser Ser Leu Ser Lys Lys Gly Ser Leu Leu
    370                 375                 380

Val Ala Arg Thr Gln Pro Ser Pro Trp Gln Met Met Leu Gln Asp Phe
385                 390                 395                 400

Gln Ile Gln Ala Phe Asn Val Met Gly Glu Gln Phe Ser Tyr Ala Ser
                405                 410                 415

Asp Cys Ala Ser Phe Phe Ser Pro Gly Ile Trp Met Gly Leu Leu Thr
            420                 425                 430

Ser Leu Phe Met Leu Phe Ile Phe Thr Tyr Gly Leu His Met Ile Leu
        435                 440                 445

Ser Leu Lys Thr Met Asp Arg Phe Asp Asp His Lys Gly Pro Thr Ile
    450                 455                 460

Ser Leu Thr Gln Ile Val
465                 470
```

<210> 7493
<211> 230
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392375"

<400> 7493

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Met Met Ala Ala Met Ala Thr Ala Arg Val Arg Met Gly Pro Arg Cys
1               5                  10                  15

Ala Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu
            20                  25                  30

Ala Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val
        35                  40                  45

Leu Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His
    50                  55                  60

Glu Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro
65                  70                  75                  80

Ala Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys
                85                  90                  95

Leu Ser Ile Glu Asp Phe Thr Ala Tyr Gly Gly Val Phe Gly Asn Lys
            100                 105                 110

Gln Asp Ser Ala Phe Ser Asn Leu Glu Asn Ala Leu Asp Leu Ala Pro
        115                 120                 125

Ser Ser Leu Val Leu Pro Ala Val Asp Trp Tyr Ala Val Ser Thr Leu
    130                 135                 140

Thr Thr Tyr Leu Gln Glu Lys Leu Gly Ala Ser Pro Leu His Val Asp
145                 150                 155                 160

Leu Ala Thr Leu Arg Glu Leu Lys Leu Asn Ala Ser Leu Pro Ala Leu
                165                 170                 175

Leu Leu Ile Arg Leu Pro Tyr Thr Ala Ser Ser Gly Leu Met Ala Pro
            180                 185                 190

Arg Glu Val Leu Thr Asp Glu Val Ile Gly Gln Val Leu Ser Thr Leu
        195                 200                 205

Lys Ser Glu Asp Val Pro Tyr Thr Ala Ala Leu Thr Ala Val Arg Pro
    210                 215                 220

Ser Arg Val Ala Arg Asp
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225 230

<210> 7494
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396643"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7494
Xaa Ala Ala Met Ala Thr Ala Arg Val Arg Met Gly Pro Arg Cys Ala
1 5 10 15

Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu Ala
20 25 30

Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val Leu
35 40 45

Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His Glu
50 55 60

Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro Ala
65 70 75 80

Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys Val
85 90 95

Arg Pro Pro Gln Pro Thr Leu Pro Arg Ser Ser Gly Gly Ser Gln Ala

```
            100                 105                 110

Pro Ser Pro His Asp Thr Asp Ala His Ser Pro Arg Glu Ala Ser Val
        115                 120                 125

Thr Leu Ser Gln Leu
    130


<210> 7495
<211> 273
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398511"

<400> 7495
Met Met Ala Ala Met Ala Thr Ala Arg Val Arg Met Gly Pro Arg Cys
1               5                   10                  15

Ala Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu
            20                  25                  30

Ala Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val
        35                  40                  45

Leu Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His
    50                  55                  60

Glu Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro
65                  70                  75                  80

Ala Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys
                85                  90                  95
```

```
Leu Ser Ile Glu Asp Phe Thr Ala Tyr Gly Gly Val Phe Gly Asn Lys
            100                 105                 110

Gln Asp Ser Ala Phe Ser Asn Leu Glu Asn Ala Leu Asp Leu Ala Pro
        115                 120                 125

Ser Ser Leu Val Leu Pro Ala Val Asp Trp Tyr Ala Val Ser Thr Leu
    130                 135                 140

Thr Thr Tyr Leu Gln Glu Lys Leu Gly Ala Ser Pro Leu His Val Ala
145                 150                 155                 160

Arg Asp Val Ala Val Val Ala Gly Gly Leu Gly Arg Gln Leu Leu Gln
                165                 170                 175

Lys Gln Pro Val Ser Pro Val Ile His Pro Pro Val Ser Tyr Asn Asp
            180                 185                 190

Thr Ala Pro Arg Ile Leu Phe Trp Ala Gln Asn Phe Ser Val Ala Tyr
        195                 200                 205

Lys Asp Gln Trp Glu Asp Leu Thr Pro Leu Thr Phe Gly Val Gln Glu
    210                 215                 220

Leu Asn Leu Thr Gly Ser Phe Trp Asn Asp Ser Phe Ala Arg Phe Ile
225                 230                 235                 240

Leu Ala Asn Arg Leu Tyr Pro Val Ser Ala Arg His Trp Phe Thr Met
                245                 250                 255

Glu Arg Leu Glu Val His Ser Asn Gly Ser Val Ala Tyr Phe Asn Ala
            260                 265                 270

Ser
```

<210> 7496
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408317"

<400> 7496
Met Met Ala Ala Met Ala Thr Ala Arg Val Arg Met Gly Pro Arg Cys
1 5 10 15

Ala Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu
20 25 30

Ala Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val
35 40 45

Leu Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His
50 55 60

Glu Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro
65 70 75 80

Ala Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys
85 90 95

Val Arg Pro Pro Gln Pro Thr Leu Pro Arg Ser Ser Gly Gly Ser Gln
100 105 110

Ala Pro Ser Pro His Asp Thr Asp Ala His Ser Pro Arg Glu Ala Ser
115 120 125

Val Thr Leu Ser Gln Leu
130

<210> 7497
<211> 128
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408470"

<400> 7497
Ala Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu
1 5 10 15

Ala Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val
20 25 30

Leu Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His
35 40 45

Glu Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro
50 55 60

Ala Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys
65 70 75 80

Leu Ser Ile Glu Asp Phe Thr Ala Tyr Gly Gly Val Phe Gly Asn Lys
85 90 95

Gln Asp Ser Ala Phe Ser Asn Leu Glu His Thr Gln Val Arg Arg Cys
100 105 110

Pro Ile His Ser Gly Pro His Ser Gly Pro Pro Phe Gln Gly Gly Pro
115 120 125

<210> 7498
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411209"

<400> 7498
Met Met Ala Ala Met Ala Thr Ala Arg Val Arg Met Gly Pro Arg Cys
1 5 10 15

Ala Gln Ala Leu Trp Arg Met Pro Trp Leu Pro Val Phe Leu Ser Leu
20 25 30

Ala Ala Ala Ala Ala Ala Ala Ala Ala Glu Gln Gln Val Pro Leu Val
35 40 45

Leu Trp Ser Ser Asp Arg Asp Leu Trp Ala Pro Ala Ala Asp Thr His
50 55 60

Glu Gly His Ile Thr Ser Asp Leu Gln Leu Ser Thr Tyr Leu Asp Pro
65 70 75 80

Ala Leu Glu Leu Gly Pro Arg Asn Val Leu Leu Phe Leu Gln Asp Lys
85 90 95

Val Arg Pro Pro Gln Pro Thr Leu Pro Arg Ser Ser Gly Gly Ser Gln
100 105 110

Ala Pro Ser Pro His Asp Thr Asp Ala His Ser Pro Arg Glu Ala Ser
115 120 125

Val Thr Leu Ser Gln Leu
130

<210> 7499
<211> 281
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1581; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482243"

<400> 7499

```
Met Ala Pro Arg Glu Val Leu Thr Gly Asn Asp Glu Val Ile Gly Gln
1               5                  10                  15

Val Leu Ser Thr Leu Lys Ser Glu Asp Val Pro Tyr Thr Ala Ala Leu
            20                  25                  30

Thr Ala Val Arg Pro Ser Arg Val Ala Arg Asp Val Ala Val Val Ala
        35                  40                  45

Gly Gly Leu Gly Arg Gln Leu Leu Gln Lys Gln Pro Val Ser Pro Val
    50                  55                  60

Ile His Pro Pro Val Ser Tyr Asn Asp Thr Ala Pro Arg Ile Leu Phe
65                  70                  75                  80

Trp Ala Gln Asn Phe Ser Val Ala Tyr Lys Asp Gln Trp Glu Asp Leu
                85                  90                  95

Thr Pro Leu Thr Phe Gly Val Gln Glu Leu Asn Leu Thr Gly Ser Phe
            100                 105                 110

Trp Asn Asp Ser Phe Ala Arg Leu Ser Leu Thr Tyr Glu Arg Leu Phe
        115                 120                 125

Gly Thr Thr Val Thr Phe Lys Phe Ile Leu Ala Asn Arg Leu Tyr Pro
    130                 135                 140

Val Ser Ala Arg His Trp Phe Thr Met Glu Arg Leu Glu Val His Ser
145                 150                 155                 160
```

```
Asn Gly Ser Val Ala Tyr Phe Asn Ala Ser Gln Val Thr Gly Pro Ser
                165                 170                 175

Ile Tyr Ser Phe His Cys Glu Tyr Val Ser Ser Leu Ser Lys Lys Gly
            180                 185                 190

Ser Leu Leu Val Ala Arg Thr Gln Pro Ser Pro Trp Gln Met Met Leu
        195                 200                 205

Gln Asp Phe Gln Ile Gln Ala Phe Asn Val Met Gly Glu Gln Phe Ser
    210                 215                 220

Tyr Ala Ser Asp Cys Ala Ser Phe Phe Ser Pro Gly Ile Trp Met Gly
225                 230                 235                 240

Leu Leu Thr Ser Leu Phe Met Leu Phe Ile Phe Thr Tyr Gly Leu His
                245                 250                 255

Met Ile Leu Ser Leu Lys Thr Met Asp Arg Phe Asp Asp His Lys Gly
            260                 265                 270

Pro Thr Ile Ser Leu Thr Gln Ile Val
        275                 280


<210> 7500
<211> 224
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1582; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1L; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal accessory prt
      1-like; "

<220>
<221> source
<223> /note="Uniprot ID:  Q52LC2; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000369513"

<400> 7500

```
Met Arg Leu Trp Lys Ala Arg Val Leu Lys Leu Val Leu Lys Thr Ala
1               5                  10                  15

Lys Asp Ser Arg Leu Gly Leu Asn Ser Lys Trp Leu Ser Leu Lys Leu
            20                  25                  30

Gly Asp Ala Gly Asn Pro Arg Ser Leu Ala Ile Arg Phe Ile Leu Thr
        35                  40                  45

Asn Tyr Asn Lys Leu Ser Ile Gln Ser Trp Phe Ser Leu Arg Arg Val
    50                  55                  60

Glu Ile Ile Ser Asn Asn Ser Ile Gln Ala Val Phe Asn Pro Thr Gly
65                  70                  75                  80

Val Tyr Ala Pro Ser Gly Tyr Ser Tyr Arg Cys Gln Arg Val Gly Ser
                85                  90                  95

Leu Gln Gln Asp Gln Ala Leu Leu Leu Pro Ser Asp Thr Asp Asp Gly
            100                 105                 110

Ser Ser Leu Trp Glu Val Thr Phe Ile Asp Phe Gln Ile Gln Gly Phe
        115                 120                 125

Ala Ile Lys Gly Gly Arg Phe Thr Lys Ala Gln Asp Cys Ala Ser Ser
    130                 135                 140

Phe Ser Pro Ala Phe Leu Ile Gly Leu Ala Met Ser Leu Ile Leu Leu
145                 150                 155                 160

Leu Val Leu Ala Tyr Ala Leu His Met Leu Ile Tyr Leu Arg Tyr Leu
                165                 170                 175

Asp Gln Gln Tyr Asp Leu Ile Ala Ser Pro Ala His Phe Ser Gln Leu
            180                 185                 190

Lys Ala Arg Asp Thr Ala Glu Glu Lys Glu Leu Leu Arg Ser Gln Gly
        195                 200                 205

Ala Glu Cys Tyr Lys Leu Arg Ser Gln Gln Ile Ser Lys Ile Tyr Val
    210                 215                 220
```

<210> 7501
<211> 224
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1582; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP1L; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt
1-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q52LC2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391381"

<400> 7501
Met Arg Leu Trp Lys Ala Arg Val Leu Lys Leu Val Leu Lys Thr Ala
1   5   10   15

Lys Asp Ser Arg Leu Gly Leu Asn Ser Lys Trp Leu Ser Leu Lys Leu
            20   25   30

Gly Asp Ala Gly Asn Pro Arg Ser Leu Ala Ile Arg Phe Ile Leu Thr
        35   40   45

Asn Tyr Asn Lys Leu Ser Ile Gln Ser Trp Phe Ser Leu Arg Arg Val
    50   55   60

Glu Ile Ile Ser Asn Asn Ser Ile Gln Ala Val Phe Asn Pro Thr Gly
65   70   75   80

Val Tyr Ala Pro Ser Gly Tyr Ser Tyr Arg Cys Gln Arg Val Gly Ser
                85   90   95

Leu Gln Gln Asp Gln Ala Leu Leu Leu Pro Ser Asp Thr Asp Asp Gly
            100   105   110

```
Ser Ser Leu Trp Glu Val Thr Phe Ile Asp Phe Gln Ile Gln Gly Phe
        115                 120                 125

Ala Ile Lys Gly Gly Arg Phe Thr Lys Ala Gln Asp Cys Ala Ser Ser
    130                 135                 140

Phe Ser Pro Ala Phe Leu Ile Gly Leu Ala Met Ser Leu Ile Leu Leu
145                 150                 155                 160

Leu Val Leu Ala Tyr Ala Leu His Met Leu Ile Tyr Leu Arg Tyr Leu
                165                 170                 175

Asp Gln Gln Tyr Asp Leu Ile Ala Ser Pro Ala His Phe Ser Gln Leu
            180                 185                 190

Lys Ala Arg Asp Thr Ala Glu Glu Lys Glu Leu Leu Arg Ser Gln Gly
        195                 200                 205

Ala Glu Cys Tyr Lys Leu Arg Ser Gln Gln Ile Ser Lys Ile Tyr Val
    210                 215                 220
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<210> 7502
<211> 350
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1583; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6AP2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal accessory prt 2; "

<220>
<221> source
<223> /note="Uniprot ID: O75787; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000367697"

<400> 7502
```
Met Ala Val Phe Val Val Leu Leu Ala Leu Val Ala Gly Val Leu Gly
```

```
1               5                   10                  15

Asn Glu Phe Ser Ile Leu Lys Ser Pro Gly Ser Val Val Phe Arg Asn
            20                  25                  30

Gly Asn Trp Pro Ile Pro Gly Glu Arg Ile Pro Asp Val Ala Ala Leu
        35                  40                  45

Ser Met Gly Phe Ser Val Lys Glu Asp Leu Ser Trp Pro Gly Leu Ala
    50                  55                  60

Val Gly Asn Leu Phe His Arg Pro Arg Ala Thr Val Met Val Met Val
65                  70                  75                  80

Lys Gly Val Asn Lys Leu Ala Leu Pro Pro Gly Ser Val Ile Ser Tyr
                85                  90                  95

Pro Leu Glu Asn Ala Val Pro Phe Ser Leu Asp Ser Val Ala Asn Ser
            100                 105                 110

Ile His Ser Leu Phe Ser Glu Glu Thr Pro Val Val Leu Gln Leu Ala
        115                 120                 125

Pro Ser Glu Glu Arg Val Tyr Met Val Gly Lys Ala Asn Ser Val Phe
    130                 135                 140

Glu Asp Leu Ser Val Thr Leu Arg Gln Leu Arg Asn Arg Leu Phe Gln
145                 150                 155                 160

Glu Asn Ser Val Leu Ser Ser Leu Pro Leu Asn Ser Leu Ser Arg Asn
                165                 170                 175

Asn Glu Val Asp Leu Leu Phe Leu Ser Glu Leu Gln Val Leu His Asp
            180                 185                 190

Ile Ser Ser Leu Leu Ser Arg His Lys His Leu Ala Lys Asp His Ser
        195                 200                 205

Pro Asp Leu Tyr Ser Leu Glu Leu Ala Gly Leu Asp Glu Ile Gly Lys
    210                 215                 220

Arg Tyr Gly Glu Asp Ser Glu Gln Phe Arg Asp Ala Ser Lys Ile Leu
225                 230                 235                 240
```

```
Val Asp Ala Leu Gln Lys Phe Ala Asp Asp Met Tyr Ser Leu Tyr Gly
                245                 250                 255

Gly Asn Ala Val Val Glu Leu Val Thr Val Lys Ser Phe Asp Thr Ser
            260                 265                 270

Leu Ile Arg Lys Thr Arg Thr Ile Leu Glu Ala Lys Gln Ala Lys Asn
        275                 280                 285

Pro Ala Ser Pro Tyr Asn Leu Ala Tyr Lys Tyr Asn Phe Glu Tyr Ser
    290                 295                 300

Val Val Phe Asn Met Val Leu Trp Ile Met Ile Ala Leu Ala Leu Ala
305                 310                 315                 320

Val Ile Ile Thr Ser Tyr Asn Ile Trp Asn Met Asp Pro Gly Tyr Asp
                325                 330                 335

Ser Ile Ile Tyr Arg Met Thr Asn Gln Lys Ile Arg Met Asp
            340                 345                 350


<210> 7503
<211> 203
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<400> 7503
Glu Ser Glu Arg Val Thr Ser Ser Arg Cys Gly Cys Arg Pro Cys Pro
1               5                   10                  15
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Ala Gly Pro Phe Arg Val Ala Pro Gln Cys Cys Gly Arg Arg Gly Thr
            20                  25                  30

Met Ala Val Phe Val Val Leu Leu Ala Leu Val Ala Gly Val Leu Gly
        35                  40                  45

Asn Glu Phe Ser Ile Leu Lys Ser Pro Gly Ser Val Val Phe Arg Asn
    50                  55                  60

Gly Asn Trp Pro Ile Pro Gly Glu Arg Ile Pro Asp Val Ala Ala Leu
65                  70                  75                  80

Ser Met Gly Phe Ser Val Lys Glu Asp Leu Ser Trp Pro Gly Leu Ala
                85                  90                  95

Val Gly Asn Leu Phe His Arg Pro Arg Ala Thr Val Met Val Met Val
            100                 105                 110

Lys Gly Val Asn Lys Leu Ala Leu Pro Pro Gly Ser Val Ile Ser Tyr
        115                 120                 125

Pro Leu Glu Asn Arg Val Tyr Met Val Gly Lys Ala Asn Ser Val Phe
    130                 135                 140

Glu Asp Leu Ser Val Thr Leu Arg Gln Leu Arg Asn Arg Leu Phe Gln
145                 150                 155                 160

Glu Asn Ser Val Leu Ser Ser Leu Pro Leu Asn Ser Leu Ser Arg Asn
                165                 170                 175

Asn Glu Val Asp Leu Leu Phe Leu Ser Glu Leu Gln Val Leu His Asp
            180                 185                 190

Ile Ser Ser Leu Leu Ser Arg His Lys His Leu
        195                 200


<210> 7504
<211> 243
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7504
Xaa Cys Pro Ala Gly Pro Phe Arg Val Ala Pro Gln Cys Cys Gly Arg
1 5 10 15

Arg Gly Thr Met Ala Val Phe Val Val Leu Leu Ala Leu Val Ala Gly
20 25 30

Val Leu Gly Asn Glu Phe Ser Ile Leu Lys Ser Pro Gly Ser Val Val
35 40 45

Phe Arg Asn Gly Asn Trp Pro Ile Pro Gly Glu Arg Ile Pro Asp Val
50 55 60

Ala Ala Leu Ser Met Gly Phe Ser Val Lys Glu Asp Leu Ser Trp Pro
65 70 75 80

Gly Leu Ala Val Gly Asn Leu Phe His Arg Pro Arg Ala Thr Val Met
85 90 95

Val Met Val Lys Gly Val Asn Lys Leu Ala Leu Pro Pro Gly Ser Val
100 105 110

Ile Ser Tyr Pro Leu Glu Asn Val Asp Leu Leu Phe Leu Ser Glu Leu
115 120 125

Gln Val Leu His Asp Ile Ser Ser Leu Leu Ser Arg His Lys His Leu
130 135 140

Ala Lys Asp His Ser Pro Asp Leu Tyr Ser Leu Glu Leu Ala Gly Leu

```
145                 150                 155                 160

Asp Glu Ile Gly Lys Arg Tyr Gly Glu Asp Ser Glu Gln Phe Arg Asp
                165                 170                 175

Ala Ser Lys Ile Leu Val Asp Ala Leu Gln Lys Phe Ala Asp Asp Met
            180                 185                 190

Tyr Ser Leu Tyr Gly Gly Asn Ala Val Val Glu Leu Val Thr Val Lys
        195                 200                 205

Ser Phe Asp Thr Ser Leu Ile Arg Lys Thr Arg Thr Ile Leu Glu Ala
    210                 215                 220

Lys Gln Ala Lys Asn Pro Ala Ser Pro Tyr Asn Leu Ala Tyr Lys Tyr
225                 230                 235                 240

Asn Phe Glu



<210> 7505
<211> 259
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7505
Xaa Val Pro Pro Ala Arg Ser Val Ser Pro Arg Ser Ala Ala Ala Ala
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```
1               5                   10                  15

Ala Ala Pro Trp Leu Cys Leu Ser Cys Ser Trp Arg Trp Trp Arg Asp
            20                  25                  30

Leu Ser Trp Pro Gly Leu Ala Val Gly Asn Leu Phe His Arg Pro Arg
        35                  40                  45

Ala Thr Val Met Val Met Val Lys Gly Val Asn Lys Leu Ala Leu Pro
    50                  55                  60

Pro Gly Ser Val Ile Ser Tyr Pro Leu Glu Asn Ala Val Pro Phe Ser
65                  70                  75                  80

Leu Asp Ser Val Ala Asn Ser Ile His Ser Leu Phe Ser Glu Glu Thr
                85                  90                  95

Pro Val Val Leu Gln Leu Ala Pro Ser Glu Glu Arg Val Tyr Met Val
            100                 105                 110

Gly Lys Ala Asn Ser Val Phe Glu Asp Leu Ser Val Thr Leu Arg Gln
        115                 120                 125

Leu Arg Asn Arg Leu Phe Gln Glu Asn Ser Val Leu Ser Ser Leu Pro
    130                 135                 140

Leu Asn Ser Leu Ser Arg Asn Asn Glu Val Asp Leu Leu Phe Leu Ser
145                 150                 155                 160

Glu Leu Gln Val Leu His Asp Ile Ser Ser Leu Leu Ser Arg His Lys
                165                 170                 175

His Leu Ala Lys Asp His Ser Pro Asp Leu Tyr Ser Leu Glu Leu Ala
            180                 185                 190

Gly Leu Asp Glu Ile Gly Lys Arg Tyr Gly Glu Asp Ser Glu Gln Phe
        195                 200                 205

Arg Asp Ala Ser Lys Ile Leu Val Asp Ala Leu Gln Lys Phe Ala Asp
    210                 215                 220

Asp Met Tyr Ser Leu Tyr Gly Gly Asn Ala Val Val Glu Leu Val Thr
225                 230                 235                 240
```

```
Val Lys Ser Phe Asp Thr Ser Leu Ile Arg Lys Thr Arg Thr Ile Leu
                245                 250                 255


Glu Ala Lys
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<210> 7506
<211> 838
<212> PRT
<213> Homo sapiens

<220>
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subunit a1; "

<220>
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<223> /note="Uniprot ID: Q93050; "

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<400> 7506

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Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1               5                   10                  15


Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20                  25                  30


Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
        35                  40                  45


Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
    50                  55                  60


Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65                  70                  75                  80
```

```
Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp Met Ile Asp
                85                  90                  95

Leu Glu Ala Asn Phe Glu Lys Ile Glu Asn Glu Leu Lys Glu Ile Asn
            100                 105                 110

Thr Asn Gln Glu Ala Leu Lys Arg Asn Phe Leu Glu Leu Thr Glu Leu
        115                 120                 125

Lys Phe Ile Leu Arg Lys Thr Gln Gln Phe Phe Asp Glu Ala Glu Leu
    130                 135                 140

His His Gln Gln Met Ala Asp Pro Asp Leu Leu Glu Glu Ser Ser Ser
145                 150                 155                 160

Leu Leu Glu Pro Ser Glu Met Gly Arg Gly Thr Pro Leu Arg Leu Gly
                165                 170                 175

Phe Val Ala Gly Val Ile Asn Arg Glu Arg Ile Pro Thr Phe Glu Arg
            180                 185                 190

Met Leu Trp Arg Val Cys Arg Gly Asn Val Phe Leu Arg Gln Ala Glu
        195                 200                 205

Ile Glu Asn Pro Leu Glu Asp Pro Val Thr Gly Asp Tyr Val His Lys
    210                 215                 220

Ser Val Phe Ile Ile Phe Phe Gln Gly Asp Gln Leu Lys Asn Arg Val
225                 230                 235                 240

Lys Lys Ile Cys Glu Gly Phe Arg Ala Ser Leu Tyr Pro Cys Pro Glu
                245                 250                 255

Thr Pro Gln Glu Arg Lys Glu Met Ala Ser Gly Val Asn Thr Arg Ile
            260                 265                 270

Asp Asp Leu Gln Met Val Leu Asn Gln Thr Glu Asp His Arg Gln Arg
        275                 280                 285

Val Leu Gln Ala Ala Ala Lys Asn Ile Arg Val Trp Phe Ile Lys Val
    290                 295                 300
```

```
Arg Lys Met Lys Ala Ile Tyr His Thr Leu Asn Leu Cys Asn Ile Asp
305                 310                 315                 320

Val Thr Gln Lys Cys Leu Ile Ala Glu Val Trp Cys Pro Val Thr Asp
                325                 330                 335

Leu Asp Ser Ile Gln Phe Ala Leu Arg Arg Gly Thr Glu His Ser Gly
            340                 345                 350

Ser Thr Val Pro Ser Ile Leu Asn Arg Met Gln Thr Asn Gln Thr Pro
        355                 360                 365

Pro Thr Tyr Asn Lys Thr Asn Lys Phe Thr Tyr Gly Phe Gln Asn Ile
    370                 375                 380

Val Asp Ala Tyr Gly Ile Gly Thr Tyr Arg Glu Ile Asn Pro Ala Pro
385                 390                 395                 400

Tyr Thr Ile Ile Thr Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp
                405                 410                 415

Phe Gly His Gly Ile Leu Met Thr Leu Phe Ala Val Trp Met Val Leu
            420                 425                 430

Arg Glu Ser Arg Ile Leu Ser Gln Lys Asn Glu Asn Glu Met Phe Ser
        435                 440                 445

Thr Val Phe Ser Gly Arg Tyr Ile Ile Leu Leu Met Gly Val Phe Ser
    450                 455                 460

Met Tyr Thr Gly Leu Ile Tyr Asn Asp Cys Phe Ser Lys Ser Leu Asn
465                 470                 475                 480

Ile Phe Gly Ser Ser Trp Ser Val Arg Pro Met Phe Thr Tyr Asn Trp
                485                 490                 495

Thr Glu Glu Thr Leu Arg Gly Asn Pro Val Leu Gln Leu Asn Pro Ala
            500                 505                 510

Leu Pro Gly Val Phe Gly Gly Pro Tyr Pro Phe Gly Ile Asp Pro Ile
        515                 520                 525

Trp Asn Ile Ala Thr Asn Lys Leu Thr Phe Leu Asn Ser Phe Lys Met
```

```
    530                 535                 540

Lys Met Ser Val Ile Leu Gly Ile Ile His Met Leu Phe Gly Val Ser
545                 550                 555                 560

Leu Ser Leu Phe Asn His Ile Tyr Phe Lys Lys Pro Leu Asn Ile Tyr
                565                 570                 575

Phe Gly Phe Ile Pro Glu Ile Ile Phe Met Thr Ser Leu Phe Gly Tyr
            580                 585                 590

Leu Val Ile Leu Ile Phe Tyr Lys Trp Thr Ala Tyr Asp Ala His Thr
        595                 600                 605

Ser Glu Asn Ala Pro Ser Leu Leu Ile His Phe Ile Asn Met Phe Leu
    610                 615                 620

Phe Ser Tyr Pro Glu Ser Gly Tyr Ser Met Leu Tyr Ser Gly Gln Lys
625                 630                 635                 640

Gly Ile Gln Cys Phe Leu Val Val Val Ala Leu Leu Cys Val Pro Trp
                645                 650                 655

Met Leu Leu Phe Lys Pro Leu Val Leu Arg Arg Gln Tyr Leu Arg Arg
            660                 665                 670

Lys His Leu Gly Thr Leu Asn Phe Gly Gly Ile Arg Val Gly Asn Gly
        675                 680                 685

Pro Thr Glu Glu Asp Ala Glu Ile Ile Gln His Asp Gln Leu Ser Thr
    690                 695                 700

His Ser Glu Asp Ala Asp Glu Phe Asp Phe Gly Asp Thr Met Val His
705                 710                 715                 720

Gln Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr
                725                 730                 735

Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu
            740                 745                 750

Ser Glu Val Leu Trp Thr Met Val Ile His Ile Gly Leu Ser Val Lys
        755                 760                 765
```

```
Ser Leu Ala Gly Gly Leu Val Leu Phe Phe Phe Phe Thr Ala Phe Ala
    770                 775                 780

Thr Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe
785                 790                 795                 800

Leu His Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr
                805                 810                 815

Ser Gly Thr Gly Phe Lys Phe Leu Pro Phe Ser Phe Glu His Ile Arg
            820                 825                 830

Glu Gly Lys Phe Glu Glu
        835
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<210> 7507
<211> 837
<212> PRT
<213> Homo sapiens

<220>
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subunit a1; "

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<400> 7507

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Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1               5                   10                  15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20                  25                  30
```

```
Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
        35                  40                  45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
    50                  55                  60

Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65                  70                  75                  80

Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp Met Ile Asp
                85                  90                  95

Leu Glu Ala Asn Phe Glu Lys Ile Glu Asn Glu Leu Lys Glu Ile Asn
            100                 105                 110

Thr Asn Gln Glu Ala Leu Lys Arg Asn Phe Leu Glu Leu Thr Glu Leu
        115                 120                 125

Lys Phe Ile Leu Arg Lys Thr Gln Gln Phe Phe Asp Glu Met Ala Asp
    130                 135                 140

Pro Asp Leu Leu Glu Glu Ser Ser Ser Leu Leu Glu Pro Ser Glu Met
145                 150                 155                 160

Gly Arg Gly Thr Pro Leu Arg Leu Gly Phe Val Ala Gly Val Ile Asn
                165                 170                 175

Arg Glu Arg Ile Pro Thr Phe Glu Arg Met Leu Trp Arg Val Cys Arg
            180                 185                 190

Gly Asn Val Phe Leu Arg Gln Ala Glu Ile Glu Asn Pro Leu Glu Asp
        195                 200                 205

Pro Val Thr Gly Asp Tyr Val His Lys Ser Val Phe Ile Ile Phe Phe
    210                 215                 220

Gln Gly Asp Gln Leu Lys Asn Arg Val Lys Lys Ile Cys Glu Gly Phe
225                 230                 235                 240

Arg Ala Ser Leu Tyr Pro Cys Pro Glu Thr Pro Gln Glu Arg Lys Glu
                245                 250                 255
```

```
Met Ala Ser Gly Val Asn Thr Arg Ile Asp Asp Leu Gln Met Val Leu
            260                 265                 270

Asn Gln Thr Glu Asp His Arg Gln Arg Val Leu Gln Ala Ala Ala Lys
        275                 280                 285

Asn Ile Arg Val Trp Phe Ile Lys Val Arg Lys Met Lys Ala Ile Tyr
    290                 295                 300

His Thr Leu Asn Leu Cys Asn Ile Asp Val Thr Gln Lys Cys Leu Ile
305                 310                 315                 320

Ala Glu Val Trp Cys Pro Val Thr Asp Leu Asp Ser Ile Gln Phe Ala
                325                 330                 335

Leu Arg Arg Gly Thr Glu His Ser Gly Ser Thr Val Pro Ser Ile Leu
            340                 345                 350

Asn Arg Met Gln Thr Asn Gln Thr Pro Pro Thr Tyr Asn Lys Thr Asn
        355                 360                 365

Lys Phe Thr Tyr Gly Phe Gln Asn Ile Val Asp Ala Tyr Gly Ile Gly
    370                 375                 380

Thr Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr Ile Ile Thr Phe Pro
385                 390                 395                 400

Phe Leu Phe Ala Val Met Phe Gly Asp Phe Gly His Gly Ile Leu Met
                405                 410                 415

Thr Leu Phe Ala Val Trp Met Val Leu Arg Glu Ser Arg Ile Leu Ser
            420                 425                 430

Gln Lys Asn Glu Asn Glu Met Phe Ser Thr Val Phe Ser Gly Arg Tyr
        435                 440                 445

Ile Ile Leu Leu Met Gly Val Phe Ser Met Tyr Thr Gly Leu Ile Tyr
    450                 455                 460

Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe Gly Ser Ser Trp Ser
465                 470                 475                 480

Val Arg Pro Met Phe Thr Tyr Asn Trp Thr Glu Glu Thr Leu Arg Gly
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485 490 495

Asn Pro Val Leu Gln Leu Asn Pro Ala Leu Pro Gly Val Phe Gly Gly
500 505 510

Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn Ile Ala Thr Asn Lys
515 520 525

Leu Thr Phe Leu Asn Ser Phe Lys Met Lys Met Ser Val Ile Leu Gly
530 535 540

Ile Ile His Met Leu Phe Gly Val Ser Leu Ser Leu Phe Asn His Ile
545 550 555 560

Tyr Phe Lys Lys Pro Leu Asn Ile Tyr Phe Gly Phe Ile Pro Glu Ile
565 570 575

Ile Phe Met Thr Ser Leu Phe Gly Tyr Leu Val Ile Leu Ile Phe Tyr
580 585 590

Lys Trp Thr Ala Tyr Asp Ala His Thr Ser Glu Asn Ala Pro Ser Leu
595 600 605

Leu Ile His Phe Ile Asn Met Phe Leu Phe Ser Tyr Pro Glu Ser Gly
610 615 620

Tyr Ser Met Leu Tyr Ser Gly Gln Lys Gly Ile Gln Cys Phe Leu Val
625 630 635 640

Val Val Ala Leu Leu Cys Val Pro Trp Met Leu Leu Phe Lys Pro Leu
645 650 655

Val Leu Arg Arg Gln Tyr Leu Arg Arg Lys His Leu Gly Thr Leu Asn
660 665 670

Phe Gly Gly Ile Arg Val Gly Asn Gly Pro Thr Glu Glu Asp Ala Glu
675 680 685

Ile Ile Gln His Asp Gln Leu Ser Thr His Ser Glu Asp Ala Asp Glu
690 695 700

Pro Ser Glu Asp Glu Val Phe Asp Phe Gly Asp Thr Met Val His Gln
705 710 715 720

```
Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala
                725                 730                 735

Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu Ser
            740                 745                 750

Glu Val Leu Trp Thr Met Val Ile His Ile Gly Leu Ser Val Lys Ser
        755                 760                 765

Leu Ala Gly Gly Leu Val Leu Phe Phe Phe Phe Thr Ala Phe Ala Thr
    770                 775                 780

Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe Leu
785                 790                 795                 800

His Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr Ser
                805                 810                 815

Gly Thr Gly Phe Lys Phe Leu Pro Phe Ser Phe Glu His Ile Arg Glu
            820                 825                 830

Gly Lys Phe Glu Glu
        835


<210> 7508
<211> 831
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V0A1; "

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<220>
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Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1   5   10   15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20   25   30

Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
        35   40   45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
    50   55   60

Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65   70   75   80

Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp Met Ile Asp
                85   90   95

Leu Glu Ala Asn Phe Glu Lys Ile Glu Asn Glu Leu Lys Glu Ile Asn
            100   105   110

Thr Asn Gln Glu Ala Leu Lys Arg Asn Phe Leu Glu Leu Thr Glu Leu
        115   120   125

Lys Phe Ile Leu Arg Lys Thr Gln Gln Phe Phe Asp Glu Met Ala Asp
    130   135   140

Pro Asp Leu Leu Glu Glu Ser Ser Ser Leu Leu Glu Pro Ser Glu Met
145   150   155   160

Gly Arg Gly Thr Pro Leu Arg Leu Gly Phe Val Ala Gly Val Ile Asn
                165   170   175

Arg Glu Arg Ile Pro Thr Phe Glu Arg Met Leu Trp Arg Val Cys Arg
            180   185   190

Gly Asn Val Phe Leu Arg Gln Ala Glu Ile Glu Asn Pro Leu Glu Asp
        195   200   205

```
Pro Val Thr Gly Asp Tyr Val His Lys Ser Val Phe Ile Ile Phe Phe
    210                 215                 220

Gln Gly Asp Gln Leu Lys Asn Arg Val Lys Lys Ile Cys Glu Gly Phe
225                 230                 235                 240

Arg Ala Ser Leu Tyr Pro Cys Pro Glu Thr Pro Gln Glu Arg Lys Glu
                245                 250                 255

Met Ala Ser Gly Val Asn Thr Arg Ile Asp Asp Leu Gln Met Val Leu
            260                 265                 270

Asn Gln Thr Glu Asp His Arg Gln Arg Val Leu Gln Ala Ala Ala Lys
        275                 280                 285

Asn Ile Arg Val Trp Phe Ile Lys Val Arg Lys Met Lys Ala Ile Tyr
    290                 295                 300

His Thr Leu Asn Leu Cys Asn Ile Asp Val Thr Gln Lys Cys Leu Ile
305                 310                 315                 320

Ala Glu Val Trp Cys Pro Val Thr Asp Leu Asp Ser Ile Gln Phe Ala
                325                 330                 335

Leu Arg Arg Gly Thr Glu His Ser Gly Ser Thr Val Pro Ser Ile Leu
            340                 345                 350

Asn Arg Met Gln Thr Asn Gln Thr Pro Pro Thr Tyr Asn Lys Thr Asn
        355                 360                 365

Lys Phe Thr Tyr Gly Phe Gln Asn Ile Val Asp Ala Tyr Gly Ile Gly
    370                 375                 380

Thr Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr Ile Ile Thr Phe Pro
385                 390                 395                 400

Phe Leu Phe Ala Val Met Phe Gly Asp Phe Gly His Gly Ile Leu Met
                405                 410                 415

Thr Leu Phe Ala Val Trp Met Val Leu Arg Glu Ser Arg Ile Leu Ser
            420                 425                 430

Gln Lys Asn Glu Asn Glu Met Phe Ser Thr Val Phe Ser Gly Arg Tyr
```

```
        435                 440                 445

Ile Ile Leu Leu Met Gly Val Phe Ser Met Tyr Thr Gly Leu Ile Tyr
    450                 455                 460

Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe Gly Ser Ser Trp Ser
465                 470                 475                 480

Val Arg Pro Met Phe Thr Tyr Asn Trp Thr Glu Glu Thr Leu Arg Gly
                485                 490                 495

Asn Pro Val Leu Gln Leu Asn Pro Ala Leu Pro Gly Val Phe Gly Gly
            500                 505                 510

Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn Ile Ala Thr Asn Lys
        515                 520                 525

Leu Thr Phe Leu Asn Ser Phe Lys Met Lys Met Ser Val Ile Leu Gly
    530                 535                 540

Ile Ile His Met Leu Phe Gly Val Ser Leu Ser Leu Phe Asn His Ile
545                 550                 555                 560

Tyr Phe Lys Lys Pro Leu Asn Ile Tyr Phe Gly Phe Ile Pro Glu Ile
                565                 570                 575

Ile Phe Met Thr Ser Leu Phe Gly Tyr Leu Val Ile Leu Ile Phe Tyr
            580                 585                 590

Lys Trp Thr Ala Tyr Asp Ala His Thr Ser Glu Asn Ala Pro Ser Leu
        595                 600                 605

Leu Ile His Phe Ile Asn Met Phe Leu Phe Ser Tyr Pro Glu Ser Gly
    610                 615                 620

Tyr Ser Met Leu Tyr Ser Gly Gln Lys Gly Ile Gln Cys Phe Leu Val
625                 630                 635                 640

Val Val Ala Leu Leu Cys Val Pro Trp Met Leu Leu Phe Lys Pro Leu
                645                 650                 655

Val Leu Arg Arg Gln Tyr Leu Arg Arg Lys His Leu Gly Thr Leu Asn
            660                 665                 670
```

```
Phe Gly Gly Ile Arg Val Gly Asn Gly Pro Thr Glu Glu Asp Ala Glu
        675                 680                 685

Ile Ile Gln His Asp Gln Leu Ser Thr His Ser Glu Asp Ala Asp Glu
    690                 695                 700

Phe Asp Phe Gly Asp Thr Met Val His Gln Ala Ile His Thr Ile Glu
705                 710                 715                 720

Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala Ser Tyr Leu Arg Leu Trp
                725                 730                 735

Ala Leu Ser Leu Ala His Ala Gln Leu Ser Glu Val Leu Trp Thr Met
            740                 745                 750

Val Ile His Ile Gly Leu Ser Val Lys Ser Leu Ala Gly Gly Leu Val
        755                 760                 765

Leu Phe Phe Phe Phe Thr Ala Phe Ala Thr Leu Thr Val Ala Ile Leu
    770                 775                 780

Leu Ile Met Glu Gly Leu Ser Ala Phe Leu His Ala Leu Arg Leu His
785                 790                 795                 800

Trp Val Glu Phe Gln Asn Lys Phe Tyr Ser Gly Thr Gly Phe Lys Phe
                805                 810                 815

Leu Pro Phe Ser Phe Glu His Ile Arg Glu Gly Lys Phe Glu Glu
            820                 825                 830


<210> 7509
<211> 788
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1584; "

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<223> /note="Gene Symbol: ATP6V0A1; "

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<223> /note="Gene Name:
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subunit a1; "

<220>
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<223> /note="ENSP ID: ENSP00000443991"

<400> 7509

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Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1               5                  10                  15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20                  25                  30

Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
        35                  40                  45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
    50                  55                  60

Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65                  70                  75                  80

Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp Met Ile Asp
                85                  90                  95

Leu Glu Met Ala Asp Pro Asp Leu Leu Glu Glu Ser Ser Ser Leu Leu
            100                 105                 110

Glu Pro Ser Glu Met Gly Arg Gly Thr Pro Leu Arg Leu Gly Phe Val
        115                 120                 125

Ala Gly Val Ile Asn Arg Glu Arg Ile Pro Thr Phe Glu Arg Met Leu
    130                 135                 140

Trp Arg Val Cys Arg Gly Asn Val Phe Leu Arg Gln Ala Glu Ile Glu
145                 150                 155                 160

Asn Pro Leu Glu Asp Pro Val Thr Gly Asp Tyr Val His Lys Ser Val
                165                 170                 175

Phe Ile Ile Phe Phe Gln Gly Asp Gln Leu Lys Asn Arg Val Lys Lys
            180                 185                 190
```

```
Ile Cys Glu Gly Phe Arg Ala Ser Leu Tyr Pro Cys Pro Glu Thr Pro
        195                 200                 205

Gln Glu Arg Lys Glu Met Ala Ser Gly Val Asn Thr Arg Ile Asp Asp
    210                 215                 220

Leu Gln Met Val Leu Asn Gln Thr Glu Asp His Arg Gln Arg Val Leu
225                 230                 235                 240

Gln Ala Ala Ala Lys Asn Ile Arg Val Trp Phe Ile Lys Val Arg Lys
                245                 250                 255

Met Lys Ala Ile Tyr His Thr Leu Asn Leu Cys Asn Ile Asp Val Thr
            260                 265                 270

Gln Lys Cys Leu Ile Ala Glu Val Trp Cys Pro Val Thr Asp Leu Asp
        275                 280                 285

Ser Ile Gln Phe Ala Leu Arg Arg Gly Thr Glu His Ser Gly Ser Thr
    290                 295                 300

Val Pro Ser Ile Leu Asn Arg Met Gln Thr Asn Gln Thr Pro Pro Thr
305                 310                 315                 320

Tyr Asn Lys Thr Asn Lys Phe Thr Tyr Gly Phe Gln Asn Ile Val Asp
                325                 330                 335

Ala Tyr Gly Ile Gly Thr Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr
            340                 345                 350

Ile Ile Thr Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Phe Gly
        355                 360                 365

His Gly Ile Leu Met Thr Leu Phe Ala Val Trp Met Val Leu Arg Glu
    370                 375                 380

Ser Arg Ile Leu Ser Gln Lys Asn Glu Asn Glu Met Phe Ser Thr Val
385                 390                 395                 400

Phe Ser Gly Arg Tyr Ile Ile Leu Leu Met Gly Val Phe Ser Met Tyr
                405                 410                 415

Thr Gly Leu Ile Tyr Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe
```

```
            420                 425                 430

Gly Ser Ser Trp Ser Val Arg Pro Met Phe Thr Tyr Asn Trp Thr Glu
        435                 440                 445

Glu Thr Leu Arg Gly Asn Pro Val Leu Gln Leu Asn Pro Ala Leu Pro
    450                 455                 460

Gly Val Phe Gly Gly Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn
465                 470                 475                 480

Ile Ala Thr Asn Lys Leu Thr Phe Leu Asn Ser Phe Lys Met Lys Met
                485                 490                 495

Ser Val Ile Leu Gly Ile Ile His Met Leu Phe Gly Val Ser Leu Ser
            500                 505                 510

Leu Phe Asn His Ile Tyr Phe Lys Lys Pro Leu Asn Ile Tyr Phe Gly
        515                 520                 525

Phe Ile Pro Glu Ile Ile Phe Met Thr Ser Leu Phe Gly Tyr Leu Val
    530                 535                 540

Ile Leu Ile Phe Tyr Lys Trp Thr Ala Tyr Asp Ala His Thr Ser Glu
545                 550                 555                 560

Asn Ala Pro Ser Leu Leu Ile His Phe Ile Asn Met Phe Leu Phe Ser
                565                 570                 575

Tyr Pro Glu Ser Gly Tyr Ser Met Leu Tyr Ser Gly Gln Lys Gly Ile
            580                 585                 590

Gln Cys Phe Leu Val Val Val Ala Leu Leu Cys Val Pro Trp Met Leu
        595                 600                 605

Leu Phe Lys Pro Leu Val Leu Arg Arg Gln Tyr Leu Arg Arg Lys His
    610                 615                 620

Leu Gly Thr Leu Asn Phe Gly Gly Ile Arg Val Gly Asn Gly Pro Thr
625                 630                 635                 640

Glu Glu Asp Ala Glu Ile Ile Gln His Asp Gln Leu Ser Thr His Ser
                645                 650                 655
```

```
Glu Asp Ala Asp Glu Phe Asp Phe Gly Asp Thr Met Val His Gln Ala
            660                 665                 670

Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala Ser
        675                 680                 685

Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu Ser Glu
    690                 695                 700

Val Leu Trp Thr Met Val Ile His Ile Gly Leu Ser Val Lys Ser Leu
705                 710                 715                 720

Ala Gly Gly Leu Val Leu Phe Phe Phe Phe Thr Ala Phe Ala Thr Leu
                725                 730                 735

Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe Leu His
            740                 745                 750

Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr Ser Gly
        755                 760                 765

Thr Gly Phe Lys Phe Leu Pro Phe Ser Phe Glu His Ile Arg Glu Gly
    770                 775                 780

Lys Phe Glu Glu
785
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<210> 7510
<211> 483
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1584; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0A1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
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<223> /note="ENSP ID: ENSP00000446377"

<400> 7510
Met Gln Thr Asn Gln Thr Pro Pro Thr Tyr Asn Lys Thr Asn Lys Phe
1   5   10   15

Thr Tyr Gly Phe Gln Asn Ile Val Asp Ala Tyr Gly Ile Gly Thr Tyr
            20   25   30

Arg Glu Ile Asn Pro Ala Pro Tyr Thr Ile Ile Thr Phe Pro Phe Leu
        35   40   45

Phe Ala Val Met Phe Gly Asp Phe Gly His Gly Ile Leu Met Thr Leu
    50   55   60

Phe Ala Val Trp Met Val Leu Arg Glu Ser Arg Ile Leu Ser Gln Lys
65   70   75   80

Asn Glu Asn Glu Met Phe Ser Thr Val Phe Ser Gly Arg Tyr Ile Ile
                85   90   95

Leu Leu Met Gly Val Phe Ser Met Tyr Thr Gly Leu Ile Tyr Asn Asp
            100   105   110

Cys Phe Ser Lys Ser Leu Asn Ile Phe Gly Ser Ser Trp Ser Val Arg
        115   120   125

Pro Met Phe Thr Tyr Asn Trp Thr Glu Glu Thr Leu Arg Gly Asn Pro
    130   135   140

Val Leu Gln Leu Asn Pro Ala Leu Pro Gly Val Phe Gly Gly Pro Tyr
145   150   155   160

Pro Phe Gly Ile Asp Pro Ile Trp Asn Ile Ala Thr Asn Lys Leu Thr
                165   170   175

Phe Leu Asn Ser Phe Lys Met Lys Met Ser Val Ile Leu Gly Ile Ile
            180   185   190

His Met Leu Phe Gly Val Ser Leu Ser Leu Phe Asn His Ile Tyr Phe
        195   200   205

```
Lys Lys Pro Leu Asn Ile Tyr Phe Gly Phe Ile Pro Glu Ile Ile Phe
    210                 215                 220

Met Thr Ser Leu Phe Gly Tyr Leu Val Ile Leu Ile Phe Tyr Lys Trp
225                 230                 235                 240

Thr Ala Tyr Asp Ala His Thr Ser Glu Asn Ala Pro Ser Leu Leu Ile
                245                 250                 255

His Phe Ile Asn Met Phe Leu Phe Ser Tyr Pro Glu Ser Gly Tyr Ser
            260                 265                 270

Met Leu Tyr Ser Gly Gln Lys Gly Ile Gln Cys Phe Leu Val Val Val
        275                 280                 285

Ala Leu Leu Cys Val Pro Trp Met Leu Leu Phe Lys Pro Leu Val Leu
    290                 295                 300

Arg Arg Gln Tyr Leu Arg Arg Lys His Leu Gly Thr Leu Asn Phe Gly
305                 310                 315                 320

Gly Ile Arg Val Gly Asn Gly Pro Thr Glu Glu Asp Ala Glu Ile Ile
                325                 330                 335

Gln His Asp Gln Leu Ser Thr His Ser Glu Asp Ala Asp Glu Pro Ser
            340                 345                 350

Glu Asp Glu Val Phe Asp Phe Gly Asp Thr Met Val His Gln Ala Ile
        355                 360                 365

His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala Ser Tyr
    370                 375                 380

Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu Ser Glu Val
385                 390                 395                 400

Leu Trp Thr Met Val Ile His Ile Gly Leu Ser Val Lys Ser Leu Ala
                405                 410                 415

Gly Gly Leu Val Leu Phe Phe Phe Phe Thr Ala Phe Ala Thr Leu Thr
            420                 425                 430

Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe Leu His Ala
```

435 440 445

Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr Ser Gly Thr
450 455 460

Gly Phe Lys Phe Leu Pro Phe Ser Phe Glu His Ile Arg Glu Gly Lys
465 470 475 480

Phe Glu Glu

<210> 7511
<211> 93
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1584; "

<220>
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<220>
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ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
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<223> /note="ENSP ID: ENSP00000466290"

<400> 7511
Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1 5 10 15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
20 25 30

Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
35 40 45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
50 55 60

Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65 70 75 80

```
Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp
                85                  90


<210> 7512
<211> 130
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V0A1; "

<220>
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<223> /note="Gene Name:
      ATPase, H+ transporting, lysosomal V0
      subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466328"

<400> 7512
Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1               5                  10                  15


Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20                  25                  30


Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
        35                  40                  45


Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
    50                  55                  60


Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65                  70                  75                  80


Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp Met Ile Asp
                85                  90                  95


Leu Glu Ala Asn Phe Glu Lys Ile Glu Asn Glu Leu Lys Glu Ile Asn
            100                 105                 110
```

Thr Asn Gln Glu Ala Leu Lys Arg Asn Phe Leu Glu Leu Thr Glu Leu
115 120 125

Lys Phe
130

<210> 7513
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1584; "

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<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466767"

<400> 7513
Ala Asn Ile Pro Ile Met Asp Thr Gly Glu Asn Pro Glu Val Pro Phe
1 5 10 15

Pro Arg Asp Met Ile Asp Leu Glu Ala Asn Phe Glu Lys Ile Glu Asn
20 25 30

Glu Leu Lys Glu Ile Asn Thr Asn Gln Glu Ala Leu Lys Arg Asn Phe
35 40 45

Leu Glu Leu Thr Glu Leu Lys Phe Ile Leu Arg Lys Thr Gln Gln Phe
50 55 60

Phe Asp Glu Met Ala Asp Pro Asp Leu Leu Glu Glu Ser Ser Ser Leu
65 70 75 80

Leu Glu Pro Ser Glu Met Gly Arg Gly Thr Pro Leu Arg Leu Gly Phe
85 90 95

```
Val Ala Gly Val Ile Asn Arg Glu Arg Ile Pro Thr Phe Glu Arg Met
            100                 105                 110

Leu Trp Arg Val Cys Arg Gly Asn Val Phe Leu Arg Gln Ala Glu Ile
        115                 120                 125

Glu Asn Pro Leu Glu Asp Pro Val Thr Val Glu Ser His Ser Val Val
    130                 135                 140

Gln Ala Arg Val Gln Trp Arg Asp Leu Gly Ser Pro Gln Pro Pro Leu
145                 150                 155                 160

Pro Gly Phe Lys Arg Phe Ser Cys Leu Ser Leu Pro Ser Ser Trp Gly
                165                 170                 175

Leu Gln Gly Asp Tyr Val His Lys Ser Val Phe Ile Ile Phe Phe Gln
            180                 185                 190

Gly Asp Gln
        195
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<210> 7514
<211> 191
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1584; "

<220>
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<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466852"

<400> 7514

```
Pro Trp Met Leu Leu Phe Lys Pro Leu Val Leu Arg Arg Gln Tyr Leu
1               5                   10                  15

Arg Arg Lys His Leu Glu Gly Gln Pro Val Glu Ala Pro Val Ser Pro
```

```
            20                  25                  30

Asn Pro Ser Gln Gln Gly Leu Glu Ala Ala Ala Ala Ala Thr Gly Thr
        35                  40                  45

Leu Asn Phe Gly Gly Ile Arg Val Gly Asn Gly Pro Thr Glu Glu Asp
    50                  55                  60

Ala Glu Ile Ile Gln His Asp Gln Leu Ser Thr His Ser Glu Asp Ala
65                  70                  75                  80

Asp Glu Pro Ser Glu Asp Glu Val Phe Asp Phe Gly Asp Thr Met Val
                85                  90                  95

His Gln Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn
            100                 105                 110

Thr Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln
        115                 120                 125

Leu Ser Glu Val Leu Trp Thr Met Val Ile His Ile Gly Leu Ser Val
    130                 135                 140

Lys Ser Leu Ala Gly Gly Leu Val Leu Phe Phe Phe Phe Thr Ala Phe
145                 150                 155                 160

Ala Thr Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser Ala
                165                 170                 175

Phe Leu His Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys
            180                 185                 190


<210> 7515
<211> 794
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP6V0A1; "

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<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466878"

<400> 7515

```
Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1               5                  10                  15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20                  25                  30

Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
        35                  40                  45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
    50                  55                  60

Leu Arg Phe Val Glu Lys Glu Ile Arg Lys Ala Asn Ile Pro Ile Met
65                  70                  75                  80

Asp Thr Gly Glu Asn Pro Glu Val Pro Phe Pro Arg Asp Met Ile Asp
                85                  90                  95

Leu Glu Met Ala Asp Pro Asp Leu Leu Glu Glu Ser Ser Ser Leu Leu
            100                 105                 110

Glu Pro Ser Glu Met Gly Arg Gly Thr Pro Leu Arg Leu Gly Phe Val
        115                 120                 125

Ala Gly Val Ile Asn Arg Glu Arg Ile Pro Thr Phe Glu Arg Met Leu
    130                 135                 140

Trp Arg Val Cys Arg Gly Asn Val Phe Leu Arg Gln Ala Glu Ile Glu
145                 150                 155                 160

Asn Pro Leu Glu Asp Pro Val Thr Gly Asp Tyr Val His Lys Ser Val
                165                 170                 175

Phe Ile Ile Phe Phe Gln Gly Asp Gln Leu Lys Asn Arg Val Lys Lys
            180                 185                 190
```

```
Ile Cys Glu Gly Phe Arg Ala Ser Leu Tyr Pro Cys Pro Glu Thr Pro
        195                 200                 205

Gln Glu Arg Lys Glu Met Ala Ser Gly Val Asn Thr Arg Ile Asp Asp
    210                 215                 220

Leu Gln Met Val Leu Asn Gln Thr Glu Asp His Arg Gln Arg Val Leu
225                 230                 235                 240

Gln Ala Ala Ala Lys Asn Ile Arg Val Trp Phe Ile Lys Val Arg Lys
                245                 250                 255

Met Lys Ala Ile Tyr His Thr Leu Asn Leu Cys Asn Ile Asp Val Thr
            260                 265                 270

Gln Lys Cys Leu Ile Ala Glu Val Trp Cys Pro Val Thr Asp Leu Asp
        275                 280                 285

Ser Ile Gln Phe Ala Leu Arg Arg Gly Thr Glu His Ser Gly Ser Thr
    290                 295                 300

Val Pro Ser Ile Leu Asn Arg Met Gln Thr Asn Gln Thr Pro Pro Thr
305                 310                 315                 320

Tyr Asn Lys Thr Asn Lys Phe Thr Tyr Gly Phe Gln Asn Ile Val Asp
                325                 330                 335

Ala Tyr Gly Ile Gly Thr Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr
            340                 345                 350

Ile Ile Thr Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Phe Gly
        355                 360                 365

His Gly Ile Leu Met Thr Leu Phe Ala Val Trp Met Val Leu Arg Glu
    370                 375                 380

Ser Arg Ile Leu Ser Gln Lys Asn Glu Asn Glu Met Phe Ser Thr Val
385                 390                 395                 400

Phe Ser Gly Arg Tyr Ile Ile Leu Leu Met Gly Val Phe Ser Met Tyr
                405                 410                 415
```

```
Thr Gly Leu Ile Tyr Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe
            420                 425                 430

Gly Ser Ser Trp Ser Val Arg Pro Met Phe Thr Tyr Asn Trp Thr Glu
        435                 440                 445

Glu Thr Leu Arg Gly Asn Pro Val Leu Gln Leu Asn Pro Ala Leu Pro
    450                 455                 460

Gly Val Phe Gly Gly Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn
465                 470                 475                 480

Ile Ala Thr Asn Lys Leu Thr Phe Leu Asn Ser Phe Lys Met Lys Met
                485                 490                 495

Ser Val Ile Leu Gly Ile Ile His Met Leu Phe Gly Val Ser Leu Ser
            500                 505                 510

Leu Phe Asn His Ile Tyr Phe Lys Lys Pro Leu Asn Ile Tyr Phe Gly
        515                 520                 525

Phe Ile Pro Glu Ile Ile Phe Met Thr Ser Leu Phe Gly Tyr Leu Val
    530                 535                 540

Ile Leu Ile Phe Tyr Lys Trp Thr Ala Tyr Asp Ala His Thr Ser Glu
545                 550                 555                 560

Asn Ala Pro Ser Leu Leu Ile His Phe Ile Asn Met Phe Leu Phe Ser
                565                 570                 575

Tyr Pro Glu Ser Gly Tyr Ser Met Leu Tyr Ser Gly Gln Lys Gly Ile
            580                 585                 590

Gln Cys Phe Leu Val Val Val Ala Leu Leu Cys Val Pro Trp Met Leu
        595                 600                 605

Leu Phe Lys Pro Leu Val Leu Arg Arg Gln Tyr Leu Arg Arg Lys His
    610                 615                 620

Leu Gly Thr Leu Asn Phe Gly Gly Ile Arg Val Gly Asn Gly Pro Thr
625                 630                 635                 640

Glu Glu Asp Ala Glu Ile Ile Gln His Asp Gln Leu Ser Thr His Ser
```

645 650 655

Glu Asp Ala Asp Glu Pro Ser Glu Asp Glu Val Phe Asp Phe Gly Asp
660 665 670

Thr Met Val His Gln Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys
675 680 685

Ile Ser Asn Thr Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala
690 695 700

His Ala Gln Leu Ser Glu Val Leu Trp Thr Met Val Ile His Ile Gly
705 710 715 720

Leu Ser Val Lys Ser Leu Ala Gly Gly Leu Val Leu Phe Phe Phe Phe
725 730 735

Thr Ala Phe Ala Thr Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly
740 745 750

Leu Ser Ala Phe Leu His Ala Leu Arg Leu His Trp Val Glu Phe Gln
755 760 765

Asn Lys Phe Tyr Ser Gly Thr Gly Phe Lys Phe Leu Pro Phe Ser Phe
770 775 780

Glu His Ile Arg Glu Gly Lys Phe Glu Glu
785 790

<210> 7516
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1584; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0A1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
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<223> /note="ENSP ID: ENSP00000467373"

<400> 7516
Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1   5   10   15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
            20   25   30

Gly Lys Val Gln Phe Arg Asp Ala Asn Phe Glu Lys Ile Glu Asn Glu
        35   40   45

Leu Lys Glu Ile Asn Thr Asn Gln Glu Ala Leu Lys Arg Asn Phe Leu
    50   55   60

Glu Leu Thr Glu Leu Lys Phe Ile Leu Arg Lys Thr Gln Gln Phe Phe
65   70   75   80

Asp Glu Met Ala Asp Pro Asp Leu Leu Glu Glu Ser Ser Ser Leu Leu
                85   90   95

Glu Pro Ser Glu Met Gly Arg Gly Thr Pro Leu Arg Leu Gly Phe Val
            100   105   110

Ala Gly Val Ile Asn Arg Glu Arg Ile Pro Thr Phe Glu Arg Met Leu
        115   120   125

Trp Arg Val Cys Arg Gly Asn Val Phe Leu Arg Gln Ala Glu Ile Glu
    130   135   140

Asn Pro Leu Glu Asp Pro Val Thr Gly Asp Tyr Val His Lys Ser Val
145   150   155   160

Phe Ile Ile Phe Phe Gln Gly Asp Gln Leu Lys Asn Arg Val Lys Lys
                165   170   175

Ile Cys Glu Gly Phe Arg Ala Ser Leu Tyr Pro Cys Pro Glu Thr Pro
            180   185   190

Gln Glu Arg Lys Glu Met
        195

<210> 7517
<211> 68
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1584; "

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<223> /note="Gene Symbol: ATP6V0A1; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468001"

<400> 7517
Met Gly Glu Leu Phe Arg Ser Glu Glu Met Thr Leu Ala Gln Leu Phe
1 5 10 15

Leu Gln Ser Glu Ala Ala Tyr Cys Cys Val Ser Glu Leu Gly Glu Leu
20 25 30

Gly Lys Val Gln Phe Arg Asp Leu Asn Pro Asp Val Asn Val Phe Gln
35 40 45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Glu Met Asp Arg Lys
50 55 60

Leu Arg Gln Phe
65

<210> 7518
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1584; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0A1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468169"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7518
Xaa Leu Val Ile Leu Ile Phe Tyr Lys Trp Thr Ala Tyr Asp Ala His
1 5 10 15

Thr Ser Glu Asn Ala Pro Ser Leu Leu Ile His Phe Ile Asn Met Phe
20 25 30

Leu Phe Ser Tyr Pro Glu Ser Gly Tyr Ser Met Leu Tyr Ser Gly Gln
35 40 45

Lys Gly Ile Gln Cys Phe Leu Val Val Val Ala Leu Leu Cys Val Pro
50 55 60

Trp Met Leu Leu Phe Lys Pro Leu Val Leu Arg Arg Gln Tyr Leu Arg
65 70 75 80

Arg Lys His Leu Gly Thr Leu Asn Phe Gly Gly Ile Arg Val Gly Asn
85 90 95

Gly Pro Thr Glu Glu Asp Ala Glu Ile Ile Gln His Asp Gln Leu Ser
100 105 110

Thr His Ser Glu Asp Ala Asp Glu Ala Leu Ala Pro Ala Gln Trp Lys
115 120 125

His

<210> 7519
<211> 188
<212> PRT

<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP6V0A1; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468177"

<400> 7519

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Ala Tyr Asp Ala His Thr Ser Glu Asn Ala Pro Ser Leu Leu Ile His
1               5                  10                  15

Phe Ile Asn Met Phe Leu Phe Ser Tyr Pro Glu Ser Gly Tyr Ser Met
            20                  25                  30

Leu Tyr Ser Gly Gln Lys Gly Ile Gln Cys Phe Leu Val Val Val Ala
        35                  40                  45

Leu Leu Cys Val Pro Trp Met Leu Leu Phe Lys Pro Leu Val Leu Arg
    50                  55                  60

Arg Gln Tyr Leu Arg Arg Lys His Leu Gly Thr Leu Asn Phe Gly Gly
65                  70                  75                  80

Ile Arg Val Gly Asn Gly Pro Thr Glu Glu Asp Ala Glu Ile Ile Gln
                85                  90                  95

His Asp Gln Leu Ser Thr His Ser Glu Asp Ala Asp Glu Pro Ser Glu
            100                 105                 110

Asp Glu Val Phe Asp Phe Gly Asp Thr Met Val His Gln Ala Ile His
        115                 120                 125

Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala Ser Tyr Leu
    130                 135                 140
```

```
Arg Leu Trp Ala Leu Ser Leu Ala His Ala Arg Leu Ser Ser Arg Ile
145                 150                 155                 160


Asn Ser Thr Ala Gly Pro Val Ser Ser Ser Tyr Pro Ser Pro Ser Ser
                165                 170                 175


Ile Phe Gly Lys Gly Ser Leu Lys Ser Glu Ser Leu
            180                 185


<210> 7520
<211> 856
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID:  Q9Y487; "

<220>
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<400> 7520
Met Gly Ser Leu Phe Arg Ser Glu Thr Met Cys Leu Ala Gln Leu Phe
1               5                   10                  15


Leu Gln Ser Gly Thr Ala Tyr Glu Cys Leu Ser Ala Leu Gly Glu Lys
            20                  25                  30


Gly Leu Val Gln Phe Arg Asp Leu Asn Gln Asn Val Ser Ser Phe Gln
        35                  40                  45


Arg Lys Phe Val Gly Glu Val Lys Arg Cys Glu Glu Leu Glu Arg Ile
    50                  55                  60


Leu Val Tyr Leu Val Gln Glu Ile Asn Arg Ala Asp Ile Pro Leu Pro
```

65 70 75 80

Glu Gly Glu Ala Ser Pro Pro Ala Pro Pro Leu Lys Gln Val Leu Glu
85 90 95

Met Gln Glu Gln Leu Gln Lys Leu Glu Val Glu Leu Arg Glu Val Thr
100 105 110

Lys Asn Lys Glu Lys Leu Arg Lys Asn Leu Leu Glu Leu Ile Glu Tyr
115 120 125

Thr His Met Leu Arg Val Thr Lys Thr Phe Val Lys Arg Asn Val Glu
130 135 140

Phe Glu Pro Thr Tyr Glu Glu Phe Pro Ser Leu Glu Ser Asp Ser Leu
145 150 155 160

Leu Asp Tyr Ser Cys Met Gln Arg Leu Gly Ala Lys Leu Gly Phe Val
165 170 175

Ser Gly Leu Ile Asn Gln Gly Lys Val Glu Ala Phe Glu Lys Met Leu
180 185 190

Trp Arg Val Cys Lys Gly Tyr Thr Ile Val Ser Tyr Ala Glu Leu Asp
195 200 205

Glu Ser Leu Glu Asp Pro Glu Thr Gly Glu Val Ile Lys Trp Tyr Val
210 215 220

Phe Leu Ile Ser Phe Trp Gly Glu Gln Ile Gly His Lys Val Lys Lys
225 230 235 240

Ile Cys Asp Cys Tyr His Cys His Val Tyr Pro Tyr Pro Asn Thr Ala
245 250 255

Glu Glu Arg Arg Glu Ile Gln Glu Gly Leu Asn Thr Arg Ile Gln Asp
260 265 270

Leu Tyr Thr Val Leu His Lys Thr Glu Asp Tyr Leu Arg Gln Val Leu
275 280 285

Cys Lys Ala Ala Glu Ser Val Tyr Ser Arg Val Ile Gln Val Lys Lys
290 295 300

Met Lys Ala Ile Tyr His Met Leu Asn Met Cys Ser Phe Asp Val Thr
305 310 315 320

Asn Lys Cys Leu Ile Ala Glu Val Trp Cys Pro Glu Ala Asp Leu Gln
325 330 335

Asp Leu Arg Arg Ala Leu Glu Glu Gly Ser Arg Glu Ser Gly Ala Thr
340 345 350

Ile Pro Ser Phe Met Asn Ile Ile Pro Thr Lys Glu Thr Pro Pro Thr
355 360 365

Arg Ile Arg Thr Asn Lys Phe Thr Glu Gly Phe Gln Asn Ile Val Asp
370 375 380

Ala Tyr Gly Val Gly Ser Tyr Arg Glu Val Asn Pro Ala Leu Phe Thr
385 390 395 400

Ile Ile Thr Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Phe Gly
405 410 415

His Gly Phe Val Met Phe Leu Phe Ala Leu Leu Leu Val Leu Asn Glu
420 425 430

Asn His Pro Arg Leu Asn Gln Ser Gln Glu Ile Met Arg Met Phe Phe
435 440 445

Asn Gly Arg Tyr Ile Leu Leu Leu Met Gly Leu Phe Ser Val Tyr Thr
450 455 460

Gly Leu Ile Tyr Asn Asp Cys Phe Ser Lys Ser Val Asn Leu Phe Gly
465 470 475 480

Ser Gly Trp Asn Val Ser Ala Met Tyr Ser Ser Ser His Pro Pro Ala
485 490 495

Glu His Lys Lys Met Val Leu Trp Asn Asp Ser Val Val Arg His Asn
500 505 510

Ser Ile Leu Gln Leu Asp Pro Ser Ile Pro Gly Val Phe Arg Gly Pro
515 520 525

```
Tyr Pro Leu Gly Ile Asp Pro Ile Trp Asn Leu Ala Thr Asn Arg Leu
    530                 535                 540

Thr Phe Leu Asn Ser Phe Lys Met Lys Met Ser Val Ile Leu Gly Ile
545                 550                 555                 560

Ile His Met Thr Phe Gly Val Ile Leu Gly Ile Phe Asn His Leu His
                565                 570                 575

Phe Arg Lys Lys Phe Asn Ile Tyr Leu Val Ser Ile Pro Glu Leu Leu
            580                 585                 590

Phe Met Leu Cys Ile Phe Gly Tyr Leu Ile Phe Met Ile Phe Tyr Lys
        595                 600                 605

Trp Leu Val Phe Ser Ala Glu Thr Ser Arg Val Ala Pro Ser Ile Leu
    610                 615                 620

Ile Glu Phe Ile Asn Met Phe Leu Phe Pro Ala Ser Lys Thr Ser Gly
625                 630                 635                 640

Leu Tyr Thr Gly Gln Glu Tyr Val Gln Arg Val Leu Leu Val Val Thr
                645                 650                 655

Ala Leu Ser Val Pro Val Leu Phe Leu Gly Lys Pro Leu Phe Leu Leu
            660                 665                 670

Trp Leu His Asn Gly Arg Ser Cys Phe Gly Val Asn Arg Ser Gly Tyr
        675                 680                 685

Thr Leu Ile Arg Lys Asp Ser Glu Glu Glu Val Ser Leu Leu Gly Ser
    690                 695                 700

Gln Asp Ile Glu Glu Gly Asn His Gln Val Glu Asp Gly Cys Arg Glu
705                 710                 715                 720

Met Ala Cys Glu Glu Phe Asn Phe Gly Glu Ile Leu Met Thr Gln Val
                725                 730                 735

Ile His Ser Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala Ser
            740                 745                 750
```

```
Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu Ser Asp
        755                 760                 765

Val Leu Trp Ala Met Leu Met Arg Val Gly Leu Arg Val Asp Thr Thr
    770                 775                 780

Tyr Gly Val Leu Leu Leu Leu Pro Val Ile Ala Leu Phe Ala Val Leu
785                 790                 795                 800

Thr Ile Phe Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe Leu His
                805                 810                 815

Ala Ile Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr Val Gly
            820                 825                 830

Ala Gly Thr Lys Phe Val Pro Phe Ser Phe Ser Leu Leu Ser Ser Lys
        835                 840                 845

Phe Asn Asn Asp Asp Ser Val Ala
    850                 855
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<210> 7521
<211> 138
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1585; "

<220>
<221> source
<223> /note="Gene Symbol: ATP6V0A2; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441143"

<400> 7521

```
Met Leu Cys Asp Leu Ser Gln Phe Asn Phe Gly Glu Ile Leu Met Thr
1               5                  10                  15

Gln Val Ile His Ser Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr
```

```
            20                  25                  30

Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu
        35                  40                  45

Ser Asp Val Leu Trp Ala Met Leu Met Arg Val Gly Leu Arg Val Asp
    50                  55                  60

Thr Thr Tyr Gly Val Leu Leu Leu Leu Pro Val Ile Ala Leu Phe Ala
65                  70                  75                  80

Val Leu Thr Ile Phe Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe
                85                  90                  95

Leu His Ala Ile Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr
            100                 105                 110

Val Gly Ala Gly Thr Lys Phe Val Pro Phe Ser Phe Ser Leu Leu Ser
        115                 120                 125

Ser Lys Phe Asn Asn Asp Asp Ser Val Ala
    130                 135


<210> 7522
<211> 328
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000443441"

<400> 7522
Met Leu Arg Val Thr Lys Thr Phe Val Lys Arg Asn Val Glu Phe Glu
1               5                   10                  15
```

```
Pro Thr Tyr Glu Glu Phe Pro Ser Leu Glu Ser Asp Ser Leu Leu Asp
            20                  25                  30

Tyr Ser Cys Met Gln Arg Leu Gly Ala Lys Leu Gly Phe Val Ser Gly
        35                  40                  45

Leu Ile Asn Gln Gly Lys Val Glu Ala Phe Glu Lys Met Leu Trp Arg
    50                  55                  60

Val Cys Lys Gly Tyr Thr Ile Val Ser Tyr Ala Glu Leu Asp Glu Ser
65                  70                  75                  80

Leu Glu Asp Pro Glu Thr Gly Glu Val Ile Lys Trp Tyr Val Phe Leu
                85                  90                  95

Ile Ser Phe Trp Gly Glu Gln Ile Gly His Lys Val Lys Lys Ile Cys
            100                 105                 110

Asp Cys Tyr His Cys His Val Tyr Pro Tyr Pro Asn Thr Ala Glu Glu
        115                 120                 125

Arg Arg Glu Ile Gln Glu Gly Leu Asn Thr Arg Ile Gln Asp Leu Tyr
    130                 135                 140

Thr Val Leu His Lys Thr Glu Asp Tyr Leu Arg Gln Val Leu Cys Lys
145                 150                 155                 160

Ala Ala Glu Ser Val Tyr Ser Arg Val Ile Gln Val Lys Lys Met Lys
                165                 170                 175

Ala Ile Tyr His Met Leu Asn Met Cys Ser Phe Asp Val Thr Asn Lys
            180                 185                 190

Cys Leu Ile Ala Glu Val Trp Cys Pro Glu Ala Asp Leu Gln Asp Leu
        195                 200                 205

Arg Arg Ala Leu Glu Glu Gly Ser Arg Glu Ser Gly Ala Thr Ile Pro
    210                 215                 220

Ser Phe Met Asn Ile Ile Pro Thr Lys Glu Thr Pro Pro Thr Arg Ile
225                 230                 235                 240
```

```
Arg Thr Asn Lys Phe Thr Glu Gly Phe Gln Asn Ile Val Asp Ala Tyr
                245                 250                 255

Gly Val Gly Ser Tyr Arg Glu Val Asn Pro Ala Leu Phe Thr Ile Ile
            260                 265                 270

Thr Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Phe Gly His Gly
        275                 280                 285

Phe Val Met Phe Leu Phe Ala Leu Leu Leu Val Leu Asn Glu Asn His
    290                 295                 300

Pro Arg Leu Asn Gln Ser Gln Glu Ile Met Arg Met Phe Phe Asn Gly
305                 310                 315                 320

Arg Tyr Ile Leu Leu Leu Met Gly
                325
```

<210> 7523
<211> 131
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443726"

<400> 7523

```
Met Ala Cys Glu Glu Phe Asn Phe Gly Glu Ile Leu Met Thr Gln Val
1               5                   10                  15

Ile His Ser Ile Glu Tyr Cys Leu Gly Cys Ile Ser Asn Thr Ala Ser
            20                  25                  30
```

Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala Gln Leu Ser Asp
        35   40   45

Val Leu Trp Ala Met Leu Met Arg Val Gly Leu Arg Val Asp Thr Thr
    50   55   60

Tyr Gly Val Leu Leu Leu Leu Pro Val Ile Ala Leu Phe Ala Val Leu
65   70   75   80

Thr Ile Phe Ile Leu Leu Ile Met Glu Gly Leu Ser Ala Phe Leu His
                85   90   95

Ala Ile Arg Leu His Trp Val Glu Phe Gln Asn Lys Phe Tyr Val Gly
            100   105   110

Ala Gly Thr Lys Phe Val Pro Phe Ser Phe Ser Leu Leu Ser Ser Lys
        115   120   125

Phe Asn Asn
    130

<210> 7524
<211> 372
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP6V0A2; "

<220>
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<223> /note="Gene Name:
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      subunit a2; "

<220>
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<400> 7524
Met Gly Ser Leu Phe Arg Ser Glu Thr Met Cys Leu Ala Gln Leu Phe
1   5   10   15

Leu Gln Ser Gly Thr Ala Tyr Glu Cys Leu Ser Ala Leu Gly Glu Lys

```
            20                  25                  30

Gly Leu Val Gln Phe Arg Asp Leu Asn Gln Asn Val Ser Ser Phe Gln
        35                  40                  45

Arg Lys Phe Val Gly Glu Val Lys Arg Cys Glu Glu Leu Glu Arg Ile
    50                  55                  60

Leu Val Tyr Leu Val Gln Glu Ile Asn Arg Ala Asp Ile Pro Leu Pro
65                  70                  75                  80

Glu Gly Glu Ala Ser Pro Pro Ala Pro Pro Leu Lys Gln Val Leu Glu
                85                  90                  95

Met Gln Glu Gln Leu Gln Lys Leu Glu Val Glu Leu Arg Glu Val Thr
            100                 105                 110

Lys Asn Lys Glu Lys Leu Arg Lys Asn Leu Leu Glu Leu Ile Glu Tyr
        115                 120                 125

Thr His Met Leu Arg Val Thr Lys Thr Phe Val Lys Arg Asn Val Glu
    130                 135                 140

Phe Glu Pro Thr Tyr Glu Glu Phe Pro Ser Leu Glu Ser Asp Ser Leu
145                 150                 155                 160

Leu Asp Tyr Ser Cys Met Gln Arg Leu Gly Ala Lys Leu Gly Phe Val
                165                 170                 175

Ser Gly Leu Ile Asn Gln Gly Lys Val Glu Ala Phe Glu Lys Met Leu
            180                 185                 190

Trp Arg Val Cys Lys Gly Tyr Thr Ile Val Ser Tyr Ala Glu Leu Asp
        195                 200                 205

Glu Ser Leu Glu Asp Pro Glu Thr Gly Glu Val Ile Lys Trp Tyr Val
    210                 215                 220

Phe Leu Ile Ser Phe Trp Gly Glu Gln Ile Gly His Lys Val Lys Lys
225                 230                 235                 240

Ile Cys Asp Cys Tyr His Cys His Val Tyr Pro Tyr Pro Asn Thr Ala
                245                 250                 255
```

```
Glu Glu Arg Arg Glu Ile Gln Glu Gly Leu Asn Thr Arg Ile Gln Asp
            260                 265                 270

Leu Tyr Thr Val Leu His Lys Thr Glu Asp Tyr Leu Arg Gln Val Leu
        275                 280                 285

Cys Lys Ala Ala Glu Ser Val Tyr Ser Arg Val Ile Gln Val Lys Lys
    290                 295                 300

Met Lys Ala Ile Tyr His Met Leu Asn Met Cys Ser Phe Asp Val Thr
305                 310                 315                 320

Asn Lys Cys Leu Ile Ala Glu Val Trp Cys Pro Glu Ala Asp Leu Gln
                325                 330                 335

Asp Leu Arg Arg Ala Leu Glu Glu Gly Ser Val Arg Leu Pro Ser Ser
            340                 345                 350

Pro Leu Pro Gly Thr Glu Glu Arg Leu Met Glu Leu Ile Asn Ser Glu
        355                 360                 365

Lys Lys Arg Lys
    370
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<210> 7525
<211> 840
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1586; "

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<223> /note="Gene Symbol: ATP6V0A4; "

<220>
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<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a4; "

<220>
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<223> /note="Uniprot ID: Q9HBG4; "

<220>
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<223> /note="ENSP ID: ENSP00000253856"

<400> 7525
Met Val Ser Val Phe Arg Ser Glu Glu Met Cys Leu Ser Gln Leu Phe
1   5   10   15

Leu Gln Val Glu Ala Ala Tyr Cys Cys Val Ala Glu Leu Gly Glu Leu
            20   25   30

Gly Leu Val Gln Phe Lys Asp Leu Asn Met Asn Val Asn Ser Phe Gln
        35   40   45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Ser Leu Glu Arg Ile
    50   55   60

Leu Arg Phe Leu Glu Asp Glu Met Gln Asn Glu Ile Val Val Gln Leu
65   70   75   80

Leu Glu Lys Ser Pro Leu Thr Pro Leu Pro Arg Glu Met Ile Thr Leu
                85   90   95

Glu Thr Val Leu Glu Lys Leu Glu Gly Glu Leu Gln Glu Ala Asn Gln
            100   105   110

Asn Gln Gln Ala Leu Lys Gln Ser Phe Leu Glu Leu Thr Glu Leu Lys
        115   120   125

Tyr Leu Leu Lys Lys Thr Gln Asp Phe Phe Glu Thr Glu Thr Asn Leu
    130   135   140

Ala Asp Asp Phe Phe Thr Glu Asp Thr Ser Gly Leu Leu Glu Leu Lys
145   150   155   160

Ala Val Pro Ala Tyr Met Thr Gly Lys Leu Gly Phe Ile Ala Gly Val
                165   170   175

Ile Asn Arg Glu Arg Met Ala Ser Phe Glu Arg Leu Leu Trp Arg Ile
            180   185   190

Cys Arg Gly Asn Val Tyr Leu Lys Phe Ser Glu Met Asp Ala Pro Leu
        195   200   205

```
Glu Asp Pro Val Thr Lys Glu Glu Ile Gln Lys Asn Ile Phe Ile Ile
    210                 215                 220

Phe Tyr Gln Gly Glu Gln Leu Arg Gln Lys Ile Lys Lys Ile Cys Asp
225                 230                 235                 240

Gly Phe Arg Ala Thr Val Tyr Pro Cys Pro Glu Pro Ala Val Glu Arg
                245                 250                 255

Arg Glu Met Leu Glu Ser Val Asn Val Arg Leu Glu Asp Leu Ile Thr
            260                 265                 270

Val Ile Thr Gln Thr Glu Ser His Arg Gln Arg Leu Leu Gln Glu Ala
        275                 280                 285

Ala Ala Asn Trp His Ser Trp Leu Ile Lys Val Gln Lys Met Lys Ala
    290                 295                 300

Val Tyr His Ile Leu Asn Met Cys Asn Ile Asp Val Thr Gln Gln Cys
305                 310                 315                 320

Val Ile Ala Glu Ile Trp Phe Pro Val Ala Asp Ala Thr Arg Ile Lys
                325                 330                 335

Arg Ala Leu Glu Gln Gly Met Glu Leu Ser Gly Ser Ser Met Ala Pro
            340                 345                 350

Ile Met Thr Thr Val Gln Ser Lys Thr Ala Pro Pro Thr Phe Asn Arg
        355                 360                 365

Thr Asn Lys Phe Thr Ala Gly Phe Gln Asn Ile Val Asp Ala Tyr Gly
    370                 375                 380

Val Gly Ser Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr Ile Ile Thr
385                 390                 395                 400

Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Cys Gly His Gly Thr
                405                 410                 415

Val Met Leu Leu Ala Ala Leu Trp Met Ile Leu Asn Glu Arg Arg Leu
            420                 425                 430

Leu Ser Gln Lys Thr Asp Asn Glu Ile Trp Asn Thr Phe Phe His Gly
```

```
        435                 440                 445

Arg Tyr Leu Ile Leu Leu Met Gly Ile Phe Ser Ile Tyr Thr Gly Leu
    450                 455                 460

Ile Tyr Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe Gly Ser Ser
465                 470                 475                 480

Trp Ser Val Gln Pro Met Phe Arg Asn Gly Thr Trp Asn Thr His Val
                485                 490                 495

Met Glu Glu Ser Leu Tyr Leu Gln Leu Asp Pro Ala Ile Pro Gly Val
            500                 505                 510

Tyr Phe Gly Asn Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn Leu
        515                 520                 525

Ala Ser Asn Lys Leu Thr Phe Leu Asn Ser Tyr Lys Met Lys Met Ser
    530                 535                 540

Val Ile Leu Gly Ile Val Gln Met Val Phe Gly Val Ile Leu Ser Leu
545                 550                 555                 560

Phe Asn His Ile Tyr Phe Arg Arg Thr Leu Asn Ile Ile Leu Gln Phe
                565                 570                 575

Ile Pro Glu Met Ile Phe Ile Leu Cys Leu Phe Gly Tyr Leu Val Phe
            580                 585                 590

Met Ile Ile Phe Lys Trp Cys Cys Phe Asp Val His Val Ser Gln His
        595                 600                 605

Ala Pro Ser Ile Leu Ile His Phe Ile Asn Met Phe Leu Phe Asn Tyr
    610                 615                 620

Ser Asp Ser Ser Asn Ala Pro Leu Tyr Lys His Gln Gln Glu Val Gln
625                 630                 635                 640

Ser Phe Phe Val Val Met Ala Leu Ile Ser Val Pro Trp Met Leu Leu
                645                 650                 655

Ile Lys Pro Phe Ile Leu Arg Ala Ser His Arg Lys Ser Gln Leu Gln
            660                 665                 670
```

```
Ala Ser Arg Ile Gln Glu Asp Ala Thr Glu Asn Ile Glu Gly Asp Ser
        675                 680                 685

Ser Ser Pro Ser Ser Arg Ser Gly Gln Arg Thr Ser Ala Asp Thr His
    690                 695                 700

Gly Ala Leu Asp Asp His Gly Glu Glu Phe Asn Phe Gly Asp Val Phe
705                 710                 715                 720

Val His Gln Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser
                725                 730                 735

Asn Thr Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala
            740                 745                 750

Gln Leu Ser Glu Val Leu Trp Thr Met Val Met Asn Ser Gly Leu Gln
        755                 760                 765

Thr Arg Gly Trp Gly Gly Ile Val Gly Val Phe Ile Ile Phe Ala Val
    770                 775                 780

Phe Ala Val Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser
785                 790                 795                 800

Ala Phe Leu His Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys
                805                 810                 815

Phe Tyr Val Gly Asp Gly Tyr Lys Phe Ser Pro Phe Ser Phe Lys His
            820                 825                 830

Ile Leu Asp Gly Thr Ala Glu Glu
        835                 840


<210> 7526
<211> 840
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1586; "

<220>
<221> source
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<223> /note="Gene Symbol: ATP6V0A4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HBG4; "

<220>
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<223> /note="ENSP ID: ENSP00000308122"

<400> 7526

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Met Val Ser Val Phe Arg Ser Glu Glu Met Cys Leu Ser Gln Leu Phe
1               5                  10                  15

Leu Gln Val Glu Ala Ala Tyr Cys Cys Val Ala Glu Leu Gly Glu Leu
            20                  25                  30

Gly Leu Val Gln Phe Lys Asp Leu Asn Met Asn Val Asn Ser Phe Gln
        35                  40                  45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Ser Leu Glu Arg Ile
    50                  55                  60

Leu Arg Phe Leu Glu Asp Glu Met Gln Asn Glu Ile Val Val Gln Leu
65                  70                  75                  80

Leu Glu Lys Ser Pro Leu Thr Pro Leu Pro Arg Glu Met Ile Thr Leu
                85                  90                  95

Glu Thr Val Leu Glu Lys Leu Glu Gly Glu Leu Gln Glu Ala Asn Gln
            100                 105                 110

Asn Gln Gln Ala Leu Lys Gln Ser Phe Leu Glu Leu Thr Glu Leu Lys
        115                 120                 125

Tyr Leu Leu Lys Lys Thr Gln Asp Phe Phe Glu Thr Glu Thr Asn Leu
    130                 135                 140

Ala Asp Asp Phe Phe Thr Glu Asp Thr Ser Gly Leu Leu Glu Leu Lys
145                 150                 155                 160
```

```
Ala Val Pro Ala Tyr Met Thr Gly Lys Leu Gly Phe Ile Ala Gly Val
                165                 170                 175

Ile Asn Arg Glu Arg Met Ala Ser Phe Glu Arg Leu Leu Trp Arg Ile
            180                 185                 190

Cys Arg Gly Asn Val Tyr Leu Lys Phe Ser Glu Met Asp Ala Pro Leu
        195                 200                 205

Glu Asp Pro Val Thr Lys Glu Glu Ile Gln Lys Asn Ile Phe Ile Ile
    210                 215                 220

Phe Tyr Gln Gly Glu Gln Leu Arg Gln Lys Ile Lys Lys Ile Cys Asp
225                 230                 235                 240

Gly Phe Arg Ala Thr Val Tyr Pro Cys Pro Glu Pro Ala Val Glu Arg
                245                 250                 255

Arg Glu Met Leu Glu Ser Val Asn Val Arg Leu Glu Asp Leu Ile Thr
            260                 265                 270

Val Ile Thr Gln Thr Glu Ser His Arg Gln Arg Leu Leu Gln Glu Ala
        275                 280                 285

Ala Ala Asn Trp His Ser Trp Leu Ile Lys Val Gln Lys Met Lys Ala
    290                 295                 300

Val Tyr His Ile Leu Asn Met Cys Asn Ile Asp Val Thr Gln Gln Cys
305                 310                 315                 320

Val Ile Ala Glu Ile Trp Phe Pro Val Ala Asp Ala Thr Arg Ile Lys
                325                 330                 335

Arg Ala Leu Glu Gln Gly Met Glu Leu Ser Gly Ser Ser Met Ala Pro
            340                 345                 350

Ile Met Thr Thr Val Gln Ser Lys Thr Ala Pro Pro Thr Phe Asn Arg
        355                 360                 365

Thr Asn Lys Phe Thr Ala Gly Phe Gln Asn Ile Val Asp Ala Tyr Gly
    370                 375                 380

Val Gly Ser Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr Ile Ile Thr
```

385 390 395 400

Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Cys Gly His Gly Thr
405 410 415

Val Met Leu Leu Ala Ala Leu Trp Met Ile Leu Asn Glu Arg Arg Leu
420 425 430

Leu Ser Gln Lys Thr Asp Asn Glu Ile Trp Asn Thr Phe Phe His Gly
435 440 445

Arg Tyr Leu Ile Leu Leu Met Gly Ile Phe Ser Ile Tyr Thr Gly Leu
450 455 460

Ile Tyr Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe Gly Ser Ser
465 470 475 480

Trp Ser Val Gln Pro Met Phe Arg Asn Gly Thr Trp Asn Thr His Val
485 490 495

Met Glu Glu Ser Leu Tyr Leu Gln Leu Asp Pro Ala Ile Pro Gly Val
500 505 510

Tyr Phe Gly Asn Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn Leu
515 520 525

Ala Ser Asn Lys Leu Thr Phe Leu Asn Ser Tyr Lys Met Lys Met Ser
530 535 540

Val Ile Leu Gly Ile Val Gln Met Val Phe Gly Val Ile Leu Ser Leu
545 550 555 560

Phe Asn His Ile Tyr Phe Arg Arg Thr Leu Asn Ile Ile Leu Gln Phe
565 570 575

Ile Pro Glu Met Ile Phe Ile Leu Cys Leu Phe Gly Tyr Leu Val Phe
580 585 590

Met Ile Ile Phe Lys Trp Cys Cys Phe Asp Val His Val Ser Gln His
595 600 605

Ala Pro Ser Ile Leu Ile His Phe Ile Asn Met Phe Leu Phe Asn Tyr
610 615 620

```
Ser Asp Ser Ser Asn Ala Pro Leu Tyr Lys His Gln Gln Glu Val Gln
625                 630                 635                 640

Ser Phe Phe Val Val Met Ala Leu Ile Ser Val Pro Trp Met Leu Leu
                645                 650                 655

Ile Lys Pro Phe Ile Leu Arg Ala Ser His Arg Lys Ser Gln Leu Gln
            660                 665                 670

Ala Ser Arg Ile Gln Glu Asp Ala Thr Glu Asn Ile Glu Gly Asp Ser
        675                 680                 685

Ser Ser Pro Ser Ser Arg Ser Gly Gln Arg Thr Ser Ala Asp Thr His
    690                 695                 700

Gly Ala Leu Asp Asp His Gly Glu Glu Phe Asn Phe Gly Asp Val Phe
705                 710                 715                 720

Val His Gln Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser
                725                 730                 735

Asn Thr Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala
            740                 745                 750

Gln Leu Ser Glu Val Leu Trp Thr Met Val Met Asn Ser Gly Leu Gln
        755                 760                 765

Thr Arg Gly Trp Gly Gly Ile Val Gly Val Phe Ile Ile Phe Ala Val
    770                 775                 780

Phe Ala Val Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser
785                 790                 795                 800

Ala Phe Leu His Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys
                805                 810                 815

Phe Tyr Val Gly Asp Gly Tyr Lys Phe Ser Pro Phe Ser Phe Lys His
            820                 825                 830

Ile Leu Asp Gly Thr Ala Glu Glu
        835                 840
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<210> 7527
<211> 840
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1586; "

<220>
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<223> /note="Gene Symbol: ATP6V0A4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+ transporting, lysosomal V0
subunit a4; "

<220>
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<223> /note="Uniprot ID: Q9HBG4; "

<220>
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<223> /note="ENSP ID: ENSP00000376774"

<400> 7527

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Met Val Ser Val Phe Arg Ser Glu Glu Met Cys Leu Ser Gln Leu Phe
1               5                  10                  15

Leu Gln Val Glu Ala Ala Tyr Cys Cys Val Ala Glu Leu Gly Glu Leu
            20                  25                  30

Gly Leu Val Gln Phe Lys Asp Leu Asn Met Asn Val Asn Ser Phe Gln
        35                  40                  45

Arg Lys Phe Val Asn Glu Val Arg Arg Cys Glu Ser Leu Glu Arg Ile
    50                  55                  60

Leu Arg Phe Leu Glu Asp Glu Met Gln Asn Glu Ile Val Val Gln Leu
65                  70                  75                  80

Leu Glu Lys Ser Pro Leu Thr Pro Leu Pro Arg Glu Met Ile Thr Leu
                85                  90                  95

Glu Thr Val Leu Glu Lys Leu Glu Gly Glu Leu Gln Glu Ala Asn Gln
            100                 105                 110
```

```
Asn Gln Gln Ala Leu Lys Gln Ser Phe Leu Glu Leu Thr Glu Leu Lys
        115                 120                 125

Tyr Leu Leu Lys Lys Thr Gln Asp Phe Phe Glu Thr Glu Thr Asn Leu
    130                 135                 140

Ala Asp Asp Phe Phe Thr Glu Asp Thr Ser Gly Leu Leu Glu Leu Lys
145                 150                 155                 160

Ala Val Pro Ala Tyr Met Thr Gly Lys Leu Gly Phe Ile Ala Gly Val
                165                 170                 175

Ile Asn Arg Glu Arg Met Ala Ser Phe Glu Arg Leu Leu Trp Arg Ile
            180                 185                 190

Cys Arg Gly Asn Val Tyr Leu Lys Phe Ser Glu Met Asp Ala Pro Leu
        195                 200                 205

Glu Asp Pro Val Thr Lys Glu Glu Ile Gln Lys Asn Ile Phe Ile Ile
    210                 215                 220

Phe Tyr Gln Gly Glu Gln Leu Arg Gln Lys Ile Lys Lys Ile Cys Asp
225                 230                 235                 240

Gly Phe Arg Ala Thr Val Tyr Pro Cys Pro Glu Pro Ala Val Glu Arg
                245                 250                 255

Arg Glu Met Leu Glu Ser Val Asn Val Arg Leu Glu Asp Leu Ile Thr
            260                 265                 270

Val Ile Thr Gln Thr Glu Ser His Arg Gln Arg Leu Leu Gln Glu Ala
        275                 280                 285

Ala Ala Asn Trp His Ser Trp Leu Ile Lys Val Gln Lys Met Lys Ala
    290                 295                 300

Val Tyr His Ile Leu Asn Met Cys Asn Ile Asp Val Thr Gln Gln Cys
305                 310                 315                 320

Val Ile Ala Glu Ile Trp Phe Pro Val Ala Asp Ala Thr Arg Ile Lys
                325                 330                 335

Arg Ala Leu Glu Gln Gly Met Glu Leu Ser Gly Ser Ser Met Ala Pro
```

```
            340                 345                 350

Ile Met Thr Thr Val Gln Ser Lys Thr Ala Pro Pro Thr Phe Asn Arg
        355                 360                 365

Thr Asn Lys Phe Thr Ala Gly Phe Gln Asn Ile Val Asp Ala Tyr Gly
    370                 375                 380

Val Gly Ser Tyr Arg Glu Ile Asn Pro Ala Pro Tyr Thr Ile Ile Thr
385                 390                 395                 400

Phe Pro Phe Leu Phe Ala Val Met Phe Gly Asp Cys Gly His Gly Thr
                405                 410                 415

Val Met Leu Leu Ala Ala Leu Trp Met Ile Leu Asn Glu Arg Arg Leu
            420                 425                 430

Leu Ser Gln Lys Thr Asp Asn Glu Ile Trp Asn Thr Phe Phe His Gly
        435                 440                 445

Arg Tyr Leu Ile Leu Leu Met Gly Ile Phe Ser Ile Tyr Thr Gly Leu
    450                 455                 460

Ile Tyr Asn Asp Cys Phe Ser Lys Ser Leu Asn Ile Phe Gly Ser Ser
465                 470                 475                 480

Trp Ser Val Gln Pro Met Phe Arg Asn Gly Thr Trp Asn Thr His Val
                485                 490                 495

Met Glu Glu Ser Leu Tyr Leu Gln Leu Asp Pro Ala Ile Pro Gly Val
            500                 505                 510

Tyr Phe Gly Asn Pro Tyr Pro Phe Gly Ile Asp Pro Ile Trp Asn Leu
        515                 520                 525

Ala Ser Asn Lys Leu Thr Phe Leu Asn Ser Tyr Lys Met Lys Met Ser
    530                 535                 540

Val Ile Leu Gly Ile Val Gln Met Val Phe Gly Val Ile Leu Ser Leu
545                 550                 555                 560

Phe Asn His Ile Tyr Phe Arg Arg Thr Leu Asn Ile Ile Leu Gln Phe
                565                 570                 575
```

```
Ile Pro Glu Met Ile Phe Ile Leu Cys Leu Phe Gly Tyr Leu Val Phe
            580                 585                 590

Met Ile Ile Phe Lys Trp Cys Cys Phe Asp Val His Val Ser Gln His
        595                 600                 605

Ala Pro Ser Ile Leu Ile His Phe Ile Asn Met Phe Leu Phe Asn Tyr
    610                 615                 620

Ser Asp Ser Ser Asn Ala Pro Leu Tyr Lys His Gln Gln Glu Val Gln
625                 630                 635                 640

Ser Phe Phe Val Val Met Ala Leu Ile Ser Val Pro Trp Met Leu Leu
                645                 650                 655

Ile Lys Pro Phe Ile Leu Arg Ala Ser His Arg Lys Ser Gln Leu Gln
            660                 665                 670

Ala Ser Arg Ile Gln Glu Asp Ala Thr Glu Asn Ile Glu Gly Asp Ser
        675                 680                 685

Ser Ser Pro Ser Ser Arg Ser Gly Gln Arg Thr Ser Ala Asp Thr His
    690                 695                 700

Gly Ala Leu Asp Asp His Gly Glu Glu Phe Asn Phe Gly Asp Val Phe
705                 710                 715                 720

Val His Gln Ala Ile His Thr Ile Glu Tyr Cys Leu Gly Cys Ile Ser
                725                 730                 735

Asn Thr Ala Ser Tyr Leu Arg Leu Trp Ala Leu Ser Leu Ala His Ala
            740                 745                 750

Gln Leu Ser Glu Val Leu Trp Thr Met Val Met Asn Ser Gly Leu Gln
        755                 760                 765

Thr Arg Gly Trp Gly Gly Ile Val Gly Val Phe Ile Ile Phe Ala Val
    770                 775                 780

Phe Ala Val Leu Thr Val Ala Ile Leu Leu Ile Met Glu Gly Leu Ser
785                 790                 795                 800
```

```
Ala Phe Leu His Ala Leu Arg Leu His Trp Val Glu Phe Gln Asn Lys
                805                 810                 815

Phe Tyr Val Gly Asp Gly Tyr Lys Phe Ser Pro Phe Ser Phe Lys His
            820                 825                 830

Ile Leu Asp Gly Thr Ala Glu Glu
        835                 840


<210> 7528
<211> 1035
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1587; "

<220>
<221> source
<223> /note="Gene Symbol: ATP4A; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, H+/K+ exchanging, alpha
      polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID:  P20648; "

<220>
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<400> 7528
Met Gly Lys Ala Glu Asn Tyr Glu Leu Tyr Ser Val Glu Leu Gly Pro
1               5                   10                  15

Gly Pro Gly Gly Asp Met Ala Ala Lys Met Ser Lys Lys Lys Lys Ala
            20                  25                  30

Gly Gly Gly Gly Gly Lys Arg Lys Glu Lys Leu Glu Asn Met Lys Lys
        35                  40                  45

Glu Met Glu Ile Asn Asp His Gln Leu Ser Val Ala Glu Leu Glu Gln
    50                  55                  60
```

```
Lys Tyr Gln Thr Ser Ala Thr Lys Gly Leu Ser Ala Ser Leu Ala Ala
65                  70                  75                  80

Glu Leu Leu Leu Arg Asp Gly Pro Asn Ala Leu Arg Pro Pro Arg Gly
                85                  90                  95

Thr Pro Glu Tyr Val Lys Phe Ala Arg Gln Leu Ala Gly Gly Leu Gln
            100                 105                 110

Cys Leu Met Trp Val Ala Ala Ala Ile Cys Leu Ile Ala Phe Ala Ile
        115                 120                 125

Gln Ala Ser Glu Gly Asp Leu Thr Thr Asp Asp Asn Leu Tyr Leu Ala
    130                 135                 140

Ile Ala Leu Ile Ala Val Val Val Val Thr Gly Cys Phe Gly Tyr Tyr
145                 150                 155                 160

Gln Glu Phe Lys Ser Thr Asn Ile Ile Ala Ser Phe Lys Asn Leu Val
                165                 170                 175

Pro Gln Gln Ala Thr Val Ile Arg Asp Gly Asp Lys Phe Gln Ile Asn
            180                 185                 190

Ala Asp Gln Leu Val Val Gly Asp Leu Val Glu Met Lys Gly Gly Asp
        195                 200                 205

Arg Val Pro Ala Asp Ile Arg Ile Leu Ala Ala Gln Gly Cys Lys Val
    210                 215                 220

Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro Gln Thr Arg Ser Pro
225                 230                 235                 240

Glu Cys Thr His Glu Ser Pro Leu Glu Thr Arg Asn Ile Ala Phe Phe
                245                 250                 255

Ser Thr Met Cys Leu Glu Gly Thr Val Gln Gly Leu Val Val Asn Thr
            260                 265                 270

Gly Asp Arg Thr Ile Ile Gly Arg Ile Ala Ser Leu Ala Ser Gly Val
        275                 280                 285

Glu Asn Glu Lys Thr Pro Ile Ala Ile Glu Ile Glu His Phe Val Asp
```

```
    290                 295                 300

Ile Ile Ala Gly Leu Ala Ile Leu Phe Gly Ala Thr Phe Phe Ile Val
305                 310                 315                 320

Ala Met Cys Ile Gly Tyr Thr Phe Leu Arg Ala Met Val Phe Phe Met
                325                 330                 335

Ala Ile Val Val Ala Tyr Val Pro Glu Gly Leu Leu Ala Thr Val Thr
            340                 345                 350

Val Cys Leu Ser Leu Thr Ala Lys Arg Leu Ala Ser Lys Asn Cys Val
        355                 360                 365

Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly Ser Thr Ser Val Ile
    370                 375                 380

Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ser
385                 390                 395                 400

His Leu Trp Phe Asp Asn His Ile His Thr Ala Asp Thr Thr Glu Asp
                405                 410                 415

Gln Ser Gly Gln Thr Phe Asp Gln Ser Ser Glu Thr Trp Arg Ala Leu
            420                 425                 430

Cys Arg Val Leu Thr Leu Cys Asn Arg Ala Ala Phe Lys Ser Gly Gln
        435                 440                 445

Asp Ala Val Pro Val Pro Lys Arg Ile Val Ile Gly Asp Ala Ser Glu
    450                 455                 460

Thr Ala Leu Leu Lys Phe Ser Glu Leu Thr Leu Gly Asn Ala Met Gly
465                 470                 475                 480

Tyr Arg Asp Arg Phe Pro Lys Val Cys Glu Ile Pro Phe Asn Ser Thr
                485                 490                 495

Asn Lys Phe Gln Leu Ser Ile His Thr Leu Glu Asp Pro Arg Asp Pro
            500                 505                 510

Arg His Leu Leu Val Met Lys Gly Ala Pro Glu Arg Val Leu Glu Arg
        515                 520                 525
```

```
Cys Ser Ser Ile Leu Ile Lys Gly Gln Glu Leu Pro Leu Asp Glu Gln
    530                 535                 540

Trp Arg Glu Ala Phe Gln Thr Ala Tyr Leu Ser Leu Gly Gly Leu Gly
545                 550                 555                 560

Glu Arg Val Leu Gly Phe Cys Gln Leu Tyr Leu Asn Glu Lys Asp Tyr
                565                 570                 575

Pro Pro Gly Tyr Ala Phe Asp Val Glu Ala Met Asn Phe Pro Ser Ser
            580                 585                 590

Gly Leu Cys Phe Ala Gly Leu Val Ser Met Ile Asp Pro Pro Arg Ala
        595                 600                 605

Thr Val Pro Asp Ala Val Leu Lys Cys Arg Thr Ala Gly Ile Arg Val
    610                 615                 620

Ile Met Val Thr Gly Asp His Pro Ile Thr Ala Lys Ala Ile Ala Ala
625                 630                 635                 640

Ser Val Gly Ile Ile Ser Glu Gly Ser Glu Thr Val Glu Asp Ile Ala
                645                 650                 655

Ala Arg Leu Arg Val Pro Val Asp Gln Val Asn Arg Lys Asp Ala Arg
            660                 665                 670

Ala Cys Val Ile Asn Gly Met Gln Leu Lys Asp Met Asp Pro Ser Glu
        675                 680                 685

Leu Val Glu Ala Leu Arg Thr His Pro Glu Met Val Phe Ala Arg Thr
    690                 695                 700

Ser Pro Gln Gln Lys Leu Val Ile Val Glu Ser Cys Gln Arg Leu Gly
705                 710                 715                 720

Ala Ile Val Ala Val Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu
                725                 730                 735

Lys Lys Ala Asp Ile Gly Val Ala Met Gly Ile Ala Gly Ser Asp Ala
            740                 745                 750
```

```
Ala Lys Asn Ala Ala Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser
        755                 760                 765

Ile Val Thr Gly Val Glu Gln Gly Arg Leu Ile Phe Asp Asn Leu Lys
    770                 775                 780

Lys Ser Ile Ala Tyr Thr Leu Thr Lys Asn Ile Pro Glu Leu Thr Pro
785                 790                 795                 800

Tyr Leu Ile Tyr Ile Thr Val Ser Val Pro Leu Pro Leu Gly Cys Ile
                805                 810                 815

Thr Ile Leu Phe Ile Glu Leu Cys Thr Asp Ile Phe Pro Ser Val Ser
            820                 825                 830

Leu Ala Tyr Glu Lys Ala Glu Ser Asp Ile Met His Leu Arg Pro Arg
        835                 840                 845

Asn Pro Lys Arg Asp Arg Leu Val Asn Glu Pro Leu Ala Ala Tyr Ser
    850                 855                 860

Tyr Phe Gln Ile Gly Ala Ile Gln Ser Phe Ala Gly Phe Thr Asp Tyr
865                 870                 875                 880

Phe Thr Ala Met Ala Gln Glu Gly Trp Phe Pro Leu Leu Cys Val Gly
                885                 890                 895

Leu Arg Ala Gln Trp Glu Asp His His Leu Gln Asp Leu Gln Asp Ser
            900                 905                 910

Tyr Gly Gln Glu Trp Thr Phe Gly Gln Arg Leu Tyr Gln Gln Tyr Thr
        915                 920                 925

Cys Tyr Thr Val Phe Phe Ile Ser Ile Glu Val Cys Gln Ile Ala Asp
    930                 935                 940

Val Leu Ile Arg Lys Thr Arg Arg Leu Ser Ala Phe Gln Gln Gly Phe
945                 950                 955                 960

Phe Arg Asn Lys Ile Leu Val Ile Ala Ile Val Phe Gln Val Cys Ile
                965                 970                 975
```

Gly Cys Phe Leu Cys Tyr Cys Pro Gly Met Pro Asn Ile Phe Asn Phe
980 985 990

Met Pro Ile Arg Phe Gln Trp Trp Leu Val Pro Leu Pro Tyr Gly
Ile
995 1000 1005

Leu Ile Phe Val Tyr Asp Glu Ile Arg Lys Leu Gly Val Arg Cys
1010 1015 1020

Cys Pro Gly Ser Trp Trp Asp Gln Glu Leu Tyr Tyr
1025 1030 1035

<210> 7529
<211> 34
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1587; "

<220>
<221> source
<223> /note="Gene Symbol: ATP4A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+/K+ exchanging, alpha
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000472323"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7529
Xaa Glu Leu Pro Leu Asp Glu Gln Trp Arg Glu Ala Phe Gln Thr Ala
1 5 10 15

Tyr Leu Ser Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Asp His Gly
20 25 30

Asn Gly

<210> 7530
<211> 291
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
ATPase, H+/K+ exchanging, beta
polypeptide; "

<220>
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<223> /note="Uniprot ID: P51164; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000334216"

<400> 7530

```
Met Ala Ala Leu Gln Glu Lys Lys Thr Cys Gly Gln Arg Met Glu Glu
1               5                  10                  15


Phe Gln Arg Tyr Cys Trp Asn Pro Asp Thr Gly Gln Met Leu Gly Arg
            20                  25                  30


Thr Leu Ser Arg Trp Val Trp Ile Ser Leu Tyr Tyr Val Ala Phe Tyr
        35                  40                  45


Val Val Met Thr Gly Leu Phe Ala Leu Cys Leu Tyr Val Leu Met Gln
    50                  55                  60


Thr Val Asp Pro Tyr Thr Pro Asp Tyr Gln Asp Gln Leu Arg Ser Pro
65                  70                  75                  80


Gly Val Thr Leu Arg Pro Asp Val Tyr Gly Glu Lys Gly Leu Glu Ile
                85                  90                  95


Val Tyr Asn Val Ser Asp Asn Arg Thr Trp Ala Asp Leu Thr Gln Thr
            100                 105                 110
```

```
Leu His Ala Phe Leu Ala Gly Tyr Ser Pro Ala Ala Gln Glu Asp Ser
        115                 120                 125

Ile Asn Cys Thr Ser Glu Gln Tyr Phe Phe Gln Glu Ser Phe Arg Ala
    130                 135                 140

Pro Asn His Thr Lys Phe Ser Cys Lys Phe Thr Ala Asp Met Leu Gln
145                 150                 155                 160

Asn Cys Ser Gly Leu Ala Asp Pro Asn Phe Gly Phe Glu Glu Gly Lys
                165                 170                 175

Pro Cys Phe Ile Ile Lys Met Asn Arg Ile Val Lys Phe Leu Pro Ser
            180                 185                 190

Asn Gly Ser Ala Pro Arg Val Asp Cys Ala Phe Leu Asp Gln Pro Arg
        195                 200                 205

Glu Leu Gly Gln Pro Leu Gln Val Lys Tyr Tyr Pro Pro Asn Gly Thr
    210                 215                 220

Phe Ser Leu His Tyr Phe Pro Tyr Tyr Gly Lys Lys Ala Gln Pro His
225                 230                 235                 240

Tyr Ser Asn Pro Leu Val Ala Ala Lys Leu Leu Asn Ile Pro Arg Asn
                245                 250                 255

Ala Glu Val Ala Ile Val Cys Lys Val Met Ala Glu His Val Thr Phe
            260                 265                 270

Asn Asn Pro His Asp Pro Tyr Glu Gly Lys Val Glu Phe Lys Leu Lys
        275                 280                 285

Ile Glu Lys
    290


<210> 7531
<211> 1045
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1589; "
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<220>
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<220>
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<223> /note="Gene Name:
ATPase, H+/K+ transporting, nongastric, alpha
polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: P54707; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000218548"

<400> 7531
Met His Gln Lys Thr Pro Glu Ile Tyr Ser Val Glu Leu Ser Gly Thr
1   5   10   15

Lys Asp Ile Val Lys Thr Asp Lys Gly Asp Gly Lys Glu Lys Tyr Arg
            20   25   30

Gly Leu Lys Asn Asn Cys Leu Glu Leu Lys Lys Lys Asn His Lys Glu
        35   40   45

Glu Phe Gln Lys Glu Leu His Leu Asp Asp His Lys Leu Ser Asn Arg
    50   55   60

Glu Leu Glu Glu Lys Tyr Gly Thr Asp Ile Ile Met Gly Leu Ser Ser
65   70   75   80

Thr Arg Ala Ala Glu Leu Leu Ala Arg Asp Gly Pro Asn Ser Leu Thr
                85   90   95

Pro Pro Lys Gln Thr Pro Glu Ile Val Lys Phe Leu Lys Gln Met Val
            100   105   110

Gly Gly Phe Ser Ile Leu Leu Trp Val Gly Ala Phe Leu Cys Trp Ile
        115   120   125

Ala Tyr Gly Ile Gln Tyr Ser Ser Asp Lys Ser Ala Ser Leu Asn Asn
    130   135   140

Val Tyr Leu Gly Cys Val Leu Gly Leu Val Val Ile Leu Thr Gly Ile

145 150 155 160

Phe Ala Tyr Tyr Gln Glu Ala Lys Ser Thr Asn Ile Met Ser Ser Phe
165 170 175

Asn Lys Met Ile Pro Gln Gln Ala Leu Val Ile Arg Asp Ser Glu Lys
180 185 190

Lys Thr Ile Pro Ser Glu Gln Leu Val Val Gly Asp Ile Val Glu Val
195 200 205

Lys Gly Gly Asp Gln Ile Pro Ala Asp Ile Arg Val Leu Ser Ser Gln
210 215 220

Gly Cys Arg Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro Gln
225 230 235 240

Pro Arg Ser Ser Glu Phe Thr His Glu Asn Pro Leu Glu Thr Lys Asn
245 250 255

Ile Cys Phe Tyr Ser Thr Thr Cys Leu Glu Ala Ser Thr Ser Pro Val
260 265 270

Gly Thr Val Thr Gly Met Val Ile Asn Thr Gly Asp Arg Thr Ile Ile
275 280 285

Gly His Ile Ala Ser Leu Ala Ser Gly Val Gly Asn Glu Lys Thr Pro
290 295 300

Ile Ala Ile Glu Ile Glu His Phe Val His Ile Val Ala Gly Val Ala
305 310 315 320

Val Ser Ile Gly Ile Leu Phe Phe Ile Ile Ala Val Ser Leu Lys Tyr
325 330 335

Gln Val Leu Asp Ser Ile Ile Phe Leu Ile Gly Ile Ile Val Ala Asn
340 345 350

Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Thr Leu Ser Leu Thr
355 360 365

Ala Lys Arg Met Ala Lys Lys Asn Cys Leu Val Lys Asn Leu Glu Ala
370 375 380

```
Val Glu Thr Leu Gly Ser Thr Ser Ile Ile Cys Ser Asp Lys Thr Gly
385                 390                 395                 400

Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Leu Trp Phe Asp Asn
                405                 410                 415

Gln Ile Phe Val Ala Asp Thr Ser Glu Asp His Ser Asn Gln Val Phe
            420                 425                 430

Asp Gln Ser Ser Arg Thr Trp Ala Ser Leu Ser Lys Ile Ile Thr Leu
        435                 440                 445

Cys Asn Arg Ala Glu Phe Lys Pro Gly Gln Glu Asn Val Pro Ile Met
    450                 455                 460

Lys Lys Ala Val Ile Gly Asp Ala Ser Glu Thr Ala Leu Leu Lys Phe
465                 470                 475                 480

Ser Glu Val Ile Leu Gly Asp Val Met Glu Ile Arg Lys Arg Asn Arg
                485                 490                 495

Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Phe Gln Leu Ser
            500                 505                 510

Ile His Glu Met Asp Asp Pro His Gly Lys Arg Phe Leu Met Val Met
        515                 520                 525

Lys Gly Ala Pro Glu Arg Ile Leu Glu Lys Cys Ser Thr Ile Met Ile
    530                 535                 540

Asn Gly Glu Glu His Pro Leu Asp Lys Ser Thr Ala Lys Thr Phe His
545                 550                 555                 560

Thr Ala Tyr Met Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Phe
                565                 570                 575

Cys His Leu Tyr Leu Pro Ala Asp Glu Phe Pro Glu Thr Tyr Ser Phe
            580                 585                 590

Asp Ile Asp Ala Met Asn Phe Pro Thr Ser Asn Leu Cys Phe Val Gly
        595                 600                 605
```

```
Leu Leu Ser Met Ile Asp Pro Pro Arg Ser Thr Val Pro Asp Ala Val
    610                 615                 620

Thr Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly Asp
625                 630                 635                 640

His Pro Ile Thr Ala Lys Ala Ile Ala Lys Ser Val Gly Ile Ile Ser
                645                 650                 655

Ala Asn Ser Glu Thr Val Glu Asp Ile Ala His Arg Leu Asn Ile Ala
            660                 665                 670

Val Glu Gln Val Asn Lys Arg Asp Ala Lys Ala Ala Val Val Thr Gly
        675                 680                 685

Met Glu Leu Lys Asp Met Ser Ser Glu Gln Leu Asp Glu Ile Leu Ala
    690                 695                 700

Asn Tyr Gln Glu Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu
705                 710                 715                 720

Ile Ile Val Glu Gly Cys Gln Arg Gln Asp Ala Val Val Ala Val Thr
                725                 730                 735

Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly
            740                 745                 750

Ile Ala Met Gly Ile Ala Gly Ser Asp Ala Ala Lys Asn Ala Ala Asp
        755                 760                 765

Met Val Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val Glu
    770                 775                 780

Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Thr Ile Ala Tyr Ser
785                 790                 795                 800

Leu Thr Lys Asn Ile Ala Glu Leu Cys Pro Phe Leu Ile Tyr Ile Ile
                805                 810                 815

Val Gly Leu Pro Leu Pro Ile Gly Thr Ile Thr Ile Leu Phe Ile Asp
            820                 825                 830
```

```
Leu Gly Thr Asp Ile Ile Pro Ser Ile Ala Leu Ala Tyr Glu Lys Ala
        835                 840                 845

Glu Ser Asp Ile Met Asn Arg Lys Pro Arg His Lys Asn Lys Asp Arg
    850                 855                 860

Leu Val Asn Gln Pro Leu Ala Val Tyr Ser Tyr Leu His Ile Gly Leu
865                 870                 875                 880

Met Gln Ala Leu Gly Ala Phe Leu Val Tyr Phe Thr Val Tyr Ala Gln
                885                 890                 895

Glu Gly Phe Leu Pro Arg Thr Leu Ile Asn Leu Arg Val Glu Trp Glu
            900                 905                 910

Lys Asp Tyr Val Asn Asp Leu Lys Asp Ser Tyr Gly Gln Glu Trp Thr
        915                 920                 925

Arg Tyr Gln Arg Glu Tyr Leu Glu Trp Thr Gly Tyr Thr Ala Phe Phe
    930                 935                 940

Val Gly Ile Leu Val Gln Gln Ile Ala Asp Leu Ile Ile Arg Lys Thr
945                 950                 955                 960

Arg Arg Asn Ser Ile Phe Gln Gln Gly Leu Phe Arg Asn Lys Val Ile
                965                 970                 975

Trp Val Gly Ile Thr Ser Gln Ile Ile Ile Gly Leu Ile Leu Ser Tyr
            980                 985                 990

Gly Leu Gly Ser Val Thr Ala Leu  Ser Phe Thr Met Leu  Arg Ala
Gln
        995                 1000                1005

Tyr Trp  Phe Val Ala Val Pro  His Ala Ile Leu Ile  Trp Val Tyr
    1010                1015                1020

Asp Glu  Val Arg Lys Leu Phe  Ile Arg Leu Tyr Pro  Gly Ser Trp
    1025                1030                1035

Trp Asp  Lys Asn Met Tyr Tyr
    1040                1045
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<210> 7532
<211> 1039
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1589; "

<220>
<221> source
<223> /note="Gene Symbol: ATP12A; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, H+/K+ transporting, nongastric, alpha
polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: P54707; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371372"

<400> 7532

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Met His Gln Lys Thr Pro Glu Ile Tyr Ser Val Glu Leu Ser Gly Thr
1               5                  10                  15

Lys Asp Ile Val Lys Thr Asp Lys Gly Asp Gly Lys Glu Lys Tyr Arg
            20                  25                  30

Gly Leu Lys Asn Asn Cys Leu Glu Leu Lys Lys Lys Asn His Lys Glu
        35                  40                  45

Glu Phe Gln Lys Glu Leu His Leu Asp Asp His Lys Leu Ser Asn Arg
    50                  55                  60

Glu Leu Glu Glu Lys Tyr Gly Thr Asp Ile Ile Met Gly Leu Ser Ser
65                  70                  75                  80

Thr Arg Ala Ala Glu Leu Leu Ala Arg Asp Gly Pro Asn Ser Leu Thr
                85                  90                  95

Pro Pro Lys Gln Thr Pro Glu Ile Val Lys Phe Leu Lys Gln Met Val
            100                 105                 110

Gly Gly Phe Ser Ile Leu Leu Trp Val Gly Ala Phe Leu Cys Trp Ile
```

```
        115                 120                 125

Ala Tyr Gly Ile Gln Tyr Ser Ser Asp Lys Ser Ala Ser Leu Asn Asn
    130                 135                 140

Val Tyr Leu Gly Cys Val Leu Gly Leu Val Val Ile Leu Thr Gly Ile
145                 150                 155                 160

Phe Ala Tyr Tyr Gln Glu Ala Lys Ser Thr Asn Ile Met Ser Ser Phe
                165                 170                 175

Asn Lys Met Ile Pro Gln Gln Ala Leu Val Ile Arg Asp Ser Glu Lys
            180                 185                 190

Lys Thr Ile Pro Ser Glu Gln Leu Val Val Gly Asp Ile Val Glu Val
        195                 200                 205

Lys Gly Gly Asp Gln Ile Pro Ala Asp Ile Arg Val Leu Ser Ser Gln
    210                 215                 220

Gly Cys Arg Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro Gln
225                 230                 235                 240

Pro Arg Ser Ser Glu Phe Thr His Glu Asn Pro Leu Glu Thr Lys Asn
                245                 250                 255

Ile Cys Phe Tyr Ser Thr Thr Cys Leu Glu Gly Thr Val Thr Gly Met
            260                 265                 270

Val Ile Asn Thr Gly Asp Arg Thr Ile Ile Gly His Ile Ala Ser Leu
        275                 280                 285

Ala Ser Gly Val Gly Asn Glu Lys Thr Pro Ile Ala Ile Glu Ile Glu
    290                 295                 300

His Phe Val His Ile Val Ala Gly Val Ala Val Ser Ile Gly Ile Leu
305                 310                 315                 320

Phe Phe Ile Ile Ala Val Ser Leu Lys Tyr Gln Val Leu Asp Ser Ile
                325                 330                 335

Ile Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly Leu Leu
            340                 345                 350
```

```
Ala Thr Val Thr Val Thr Leu Ser Leu Thr Ala Lys Arg Met Ala Lys
        355                 360                 365

Lys Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly Ser
    370                 375                 380

Thr Ser Ile Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Arg
385                 390                 395                 400

Met Thr Val Ala His Leu Trp Phe Asp Asn Gln Ile Phe Val Ala Asp
                405                 410                 415

Thr Ser Glu Asp His Ser Asn Gln Val Phe Asp Gln Ser Ser Arg Thr
            420                 425                 430

Trp Ala Ser Leu Ser Lys Ile Ile Thr Leu Cys Asn Arg Ala Glu Phe
        435                 440                 445

Lys Pro Gly Gln Glu Asn Val Pro Ile Met Lys Lys Ala Val Ile Gly
    450                 455                 460

Asp Ala Ser Glu Thr Ala Leu Leu Lys Phe Ser Glu Val Ile Leu Gly
465                 470                 475                 480

Asp Val Met Glu Ile Arg Lys Arg Asn Arg Lys Val Ala Glu Ile Pro
                485                 490                 495

Phe Asn Ser Thr Asn Lys Phe Gln Leu Ser Ile His Glu Met Asp Asp
            500                 505                 510

Pro His Gly Lys Arg Phe Leu Met Val Met Lys Gly Ala Pro Glu Arg
        515                 520                 525

Ile Leu Glu Lys Cys Ser Thr Ile Met Ile Asn Gly Glu Glu His Pro
    530                 535                 540

Leu Asp Lys Ser Thr Ala Lys Thr Phe His Thr Ala Tyr Met Glu Leu
545                 550                 555                 560

Gly Gly Leu Gly Glu Arg Val Leu Gly Phe Cys His Leu Tyr Leu Pro
                565                 570                 575
```

```
Ala Asp Glu Phe Pro Glu Thr Tyr Ser Phe Asp Ile Asp Ala Met Asn
            580                 585                 590

Phe Pro Thr Ser Asn Leu Cys Phe Val Gly Leu Leu Ser Met Ile Asp
        595                 600                 605

Pro Pro Arg Ser Thr Val Pro Asp Ala Val Thr Lys Cys Arg Ser Ala
    610                 615                 620

Gly Ile Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr Ala Lys
625                 630                 635                 640

Ala Ile Ala Lys Ser Val Gly Ile Ile Ser Ala Asn Ser Glu Thr Val
                645                 650                 655

Glu Asp Ile Ala His Arg Leu Asn Ile Ala Val Glu Gln Val Asn Lys
            660                 665                 670

Arg Asp Ala Lys Ala Ala Val Val Thr Gly Met Glu Leu Lys Asp Met
        675                 680                 685

Ser Ser Glu Gln Leu Asp Glu Ile Leu Ala Asn Tyr Gln Glu Ile Val
    690                 695                 700

Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu Gly Cys
705                 710                 715                 720

Gln Arg Gln Asp Ala Val Val Ala Val Thr Gly Asp Gly Val Asn Asp
                725                 730                 735

Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly Ile Ala Met Gly Ile Ala
            740                 745                 750

Gly Ser Asp Ala Ala Lys Asn Ala Ala Asp Met Val Leu Leu Asp Asp
        755                 760                 765

Asn Phe Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu Ile Phe
    770                 775                 780

Asp Asn Leu Lys Lys Thr Ile Ala Tyr Ser Leu Thr Lys Asn Ile Ala
785                 790                 795                 800
```

```
Glu Leu Cys Pro Phe Leu Ile Tyr Ile Ile Val Gly Leu Pro Leu Pro
                805                 810                 815

Ile Gly Thr Ile Thr Ile Leu Phe Ile Asp Leu Gly Thr Asp Ile Ile
            820                 825                 830

Pro Ser Ile Ala Leu Ala Tyr Glu Lys Ala Glu Ser Asp Ile Met Asn
        835                 840                 845

Arg Lys Pro Arg His Lys Asn Lys Asp Arg Leu Val Asn Gln Pro Leu
    850                 855                 860

Ala Val Tyr Ser Tyr Leu His Ile Gly Leu Met Gln Ala Leu Gly Ala
865                 870                 875                 880

Phe Leu Val Tyr Phe Thr Val Tyr Ala Gln Glu Gly Phe Leu Pro Arg
                885                 890                 895

Thr Leu Ile Asn Leu Arg Val Glu Trp Glu Lys Asp Tyr Val Asn Asp
            900                 905                 910

Leu Lys Asp Ser Tyr Gly Gln Glu Trp Thr Arg Tyr Gln Arg Glu Tyr
        915                 920                 925

Leu Glu Trp Thr Gly Tyr Thr Ala Phe Phe Val Gly Ile Leu Val Gln
    930                 935                 940

Gln Ile Ala Asp Leu Ile Ile Arg Lys Thr Arg Arg Asn Ser Ile Phe
945                 950                 955                 960

Gln Gln Gly Leu Phe Arg Asn Lys Val Ile Trp Val Gly Ile Thr Ser
                965                 970                 975

Gln Ile Ile Ile Gly Leu Ile Leu Ser Tyr Gly Leu Gly Ser Val Thr
            980                 985                 990

Ala Leu Ser Phe Thr Met Leu Arg  Ala Gln Tyr Trp Phe  Val Ala
Val
        995                 1000                1005

Pro His  Ala Ile Leu Ile Trp  Val Tyr Asp Glu Val  Arg Lys Leu
    1010                1015                1020
```

```
Phe Ile  Arg Leu Tyr Pro Gly  Ser Trp Trp Asp Lys  Asn Met Tyr
    1025                1030                1035


Tyr



<210> 7533
<211> 1023
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP1A1; "

<220>
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      ATPase, Na+/K+ transporting, alpha 1
      polypeptide; "

<220>
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<220>
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Met Gly Lys Gly Val Gly Arg Asp Lys Tyr Glu Pro Ala Ala Val Ser
1               5                  10                  15


Glu Gln Gly Asp Lys Lys Gly Lys Lys Gly Lys Lys Asp Arg Asp Met
            20                  25                  30


Asp Glu Leu Lys Lys Glu Val Ser Met Asp Asp His Lys Leu Ser Leu
        35                  40                  45


Asp Glu Leu His Arg Lys Tyr Gly Thr Asp Leu Ser Arg Gly Leu Thr
    50                  55                  60


Ser Ala Arg Ala Ala Glu Ile Leu Ala Arg Asp Gly Pro Asn Ala Leu
65                  70                  75                  80


Thr Pro Pro Pro Thr Thr Pro Glu Trp Ile Lys Phe Cys Arg Gln Leu
```

```
                85                  90                  95

Phe Gly Gly Phe Ser Met Leu Leu Trp Ile Gly Ala Ile Leu Cys Phe
            100                 105                 110

Leu Ala Tyr Ser Ile Gln Ala Ala Thr Glu Glu Glu Pro Gln Asn Asp
        115                 120                 125

Asn Leu Tyr Leu Gly Val Val Leu Ser Ala Val Val Ile Ile Thr Gly
    130                 135                 140

Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Glu Ser
145                 150                 155                 160

Phe Lys Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Asn Gly Glu
                165                 170                 175

Lys Met Ser Ile Asn Ala Glu Glu Val Val Val Gly Asp Leu Val Glu
            180                 185                 190

Val Lys Gly Gly Asp Arg Ile Pro Ala Asp Leu Arg Ile Ile Ser Ala
        195                 200                 205

Asn Gly Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro
    210                 215                 220

Gln Thr Arg Ser Pro Asp Phe Thr Asn Glu Asn Pro Leu Glu Thr Arg
225                 230                 235                 240

Asn Ile Ala Phe Phe Ser Thr Asn Cys Val Glu Gly Thr Ala Arg Gly
                245                 250                 255

Ile Val Val Tyr Thr Gly Asp Arg Thr Val Met Gly Arg Ile Ala Thr
            260                 265                 270

Leu Ala Ser Gly Leu Glu Gly Gly Gln Thr Pro Ile Ala Ala Glu Ile
        275                 280                 285

Glu His Phe Ile His Ile Ile Thr Gly Val Ala Val Phe Leu Gly Val
    290                 295                 300

Ser Phe Phe Ile Leu Ser Leu Ile Leu Glu Tyr Thr Trp Leu Glu Ala
305                 310                 315                 320
```

```
Val Ile Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly Leu
                325                 330                 335

Leu Ala Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met Ala
            340                 345                 350

Arg Lys Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly
        355                 360                 365

Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn
    370                 375                 380

Arg Met Thr Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu Ala
385                 390                 395                 400

Asp Thr Thr Glu Asn Gln Ser Gly Val Ser Phe Asp Lys Thr Ser Ala
                405                 410                 415

Thr Trp Leu Ala Leu Ser Arg Ile Ala Gly Leu Cys Asn Arg Ala Val
            420                 425                 430

Phe Gln Ala Asn Gln Glu Asn Leu Pro Ile Leu Lys Arg Ala Val Ala
        435                 440                 445

Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Cys Cys
    450                 455                 460

Gly Ser Val Lys Glu Met Arg Glu Arg Tyr Ala Lys Ile Val Glu Ile
465                 470                 475                 480

Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Lys Asn Pro
                485                 490                 495

Asn Thr Ser Glu Pro Gln His Leu Leu Val Met Lys Gly Ala Pro Glu
            500                 505                 510

Arg Ile Leu Asp Arg Cys Ser Ser Ile Leu Leu His Gly Lys Glu Gln
        515                 520                 525

Pro Leu Asp Glu Glu Leu Lys Asp Ala Phe Gln Asn Ala Tyr Leu Glu
    530                 535                 540
```

```
Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Phe Cys His Leu Phe Leu
545                 550                 555                 560

Pro Asp Glu Gln Phe Pro Glu Gly Phe Gln Phe Asp Thr Asp Asp Val
                565                 570                 575

Asn Phe Pro Ile Asp Asn Leu Cys Phe Val Gly Leu Ile Ser Met Ile
            580                 585                 590

Asp Pro Pro Arg Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg Ser
        595                 600                 605

Ala Gly Ile Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr Ala
    610                 615                 620

Lys Ala Ile Ala Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu Thr
625                 630                 635                 640

Val Glu Asp Ile Ala Ala Arg Leu Asn Ile Pro Val Ser Gln Val Asn
                645                 650                 655

Pro Arg Asp Ala Lys Ala Cys Val Val His Gly Ser Asp Leu Lys Asp
            660                 665                 670

Met Thr Ser Glu Gln Leu Asp Asp Ile Leu Lys Tyr His Thr Glu Ile
        675                 680                 685

Val Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu Gly
    690                 695                 700

Cys Gln Arg Gln Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val Asn
705                 710                 715                 720

Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly Val Ala Met Gly Ile
                725                 730                 735

Ala Gly Ser Asp Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu Asp
            740                 745                 750

Asp Asn Phe Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu Ile
        755                 760                 765
```

```
Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn Ile
    770                 775                 780

Pro Glu Ile Thr Pro Phe Leu Ile Phe Ile Ile Ala Asn Ile Pro Leu
785                 790                 795                 800

Pro Leu Gly Thr Val Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp Met
                805                 810                 815

Val Pro Ala Ile Ser Leu Ala Tyr Glu Gln Ala Glu Ser Asp Ile Met
            820                 825                 830

Lys Arg Gln Pro Arg Asn Pro Lys Thr Asp Lys Leu Val Asn Glu Arg
        835                 840                 845

Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu Gly
    850                 855                 860

Gly Phe Phe Thr Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu Pro
865                 870                 875                 880

Ile His Leu Leu Gly Leu Arg Val Asp Trp Asp Asp Arg Trp Ile Asn
                885                 890                 895

Asp Val Glu Asp Ser Tyr Gly Gln Gln Trp Thr Tyr Glu Gln Arg Lys
            900                 905                 910

Ile Val Glu Phe Thr Cys His Thr Ala Phe Phe Val Ser Ile Val Val
        915                 920                 925

Val Gln Trp Ala Asp Leu Val Ile Cys Lys Thr Arg Arg Asn Ser Val
    930                 935                 940

Phe Gln Gln Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Phe Glu
945                 950                 955                 960

Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly Val
                965                 970                 975

Ala Leu Arg Met Tyr Pro Leu Lys Pro Thr Trp Trp Phe Cys Ala Phe
            980                 985                 990

Pro Tyr Ser Leu Leu Ile Phe Val  Tyr Asp Glu Val Arg  Lys Leu
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Ile
995 1000 1005

Ile Arg Arg Arg Pro Gly Gly Trp Val Glu Lys Glu Thr Tyr Tyr
1010 1015 1020

<210> 7534
<211> 144
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1590; "

<220>
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<223> /note="Gene Symbol: ATP1A1; "

<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, alpha 1
polypeptide; "

<220>
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<400> 7534
Met Asp Glu Leu Lys Lys Glu Val Ser Met Asp Asp His Lys Leu Ser
1 5 10 15

Leu Asp Glu Leu His Arg Lys Tyr Gly Thr Asp Leu Ser Arg Gly Leu
20 25 30

Thr Ser Ala Arg Ala Ala Glu Ile Leu Ala Arg Asp Gly Pro Asn Ala
35 40 45

Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Ile Lys Phe Cys Arg Gln
50 55 60

Leu Phe Gly Gly Phe Ser Met Leu Leu Trp Ile Gly Ala Ile Leu Cys
65 70 75 80

Phe Leu Ala Tyr Ser Ile Gln Ala Ala Thr Glu Glu Glu Pro Gln Asn
85 90 95

Asp Asn Leu Tyr Leu Gly Val Val Leu Ser Ala Val Val Ile Ile Thr

100 105 110

Gly Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Glu
115 120 125

Ser Phe Lys Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Asn Gly
130 135 140

<210> 7535
<211> 992
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATPase, Na+/K+ transporting, alpha 1
polypeptide; "

<220>
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<400> 7535
Met Asp Glu Leu Lys Lys Glu Val Ser Met Asp Asp His Lys Leu Ser
1 5 10 15

Leu Asp Glu Leu His Arg Lys Tyr Gly Thr Asp Leu Ser Arg Gly Leu
20 25 30

Thr Ser Ala Arg Ala Ala Glu Ile Leu Ala Arg Asp Gly Pro Asn Ala
35 40 45

Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Ile Lys Phe Cys Arg Gln
50 55 60

Leu Phe Gly Gly Phe Ser Met Leu Leu Trp Ile Gly Ala Ile Leu Cys
65 70 75 80

```
Phe Leu Ala Tyr Ser Ile Gln Ala Ala Thr Glu Glu Glu Pro Gln Asn
                85                  90                  95

Asp Asn Leu Tyr Leu Gly Val Val Leu Ser Ala Val Val Ile Ile Thr
            100                 105                 110

Gly Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Glu
        115                 120                 125

Ser Phe Lys Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Asn Gly
    130                 135                 140

Glu Lys Met Ser Ile Asn Ala Glu Glu Val Val Val Gly Asp Leu Val
145                 150                 155                 160

Glu Val Lys Gly Gly Asp Arg Ile Pro Ala Asp Leu Arg Ile Ile Ser
                165                 170                 175

Ala Asn Gly Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu
            180                 185                 190

Pro Gln Thr Arg Ser Pro Asp Phe Thr Asn Glu Asn Pro Leu Glu Thr
        195                 200                 205

Arg Asn Ile Ala Phe Phe Ser Thr Asn Cys Val Glu Gly Thr Ala Arg
    210                 215                 220

Gly Ile Val Val Tyr Thr Gly Asp Arg Thr Val Met Gly Arg Ile Ala
225                 230                 235                 240

Thr Leu Ala Ser Gly Leu Glu Gly Gly Gln Thr Pro Ile Ala Ala Glu
                245                 250                 255

Ile Glu His Phe Ile His Ile Ile Thr Gly Val Ala Val Phe Leu Gly
            260                 265                 270

Val Ser Phe Phe Ile Leu Ser Leu Ile Leu Glu Tyr Thr Trp Leu Glu
        275                 280                 285

Ala Val Ile Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly
    290                 295                 300
```

```
Leu Leu Ala Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met
305                 310                 315                 320

Ala Arg Lys Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu
                325                 330                 335

Gly Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln
            340                 345                 350

Asn Arg Met Thr Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu
        355                 360                 365

Ala Asp Thr Thr Glu Asn Gln Ser Gly Val Ser Phe Asp Lys Thr Ser
    370                 375                 380

Ala Thr Trp Leu Ala Leu Ser Arg Ile Ala Gly Leu Cys Asn Arg Ala
385                 390                 395                 400

Val Phe Gln Ala Asn Gln Glu Asn Leu Pro Ile Leu Lys Arg Ala Val
                405                 410                 415

Ala Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Cys
            420                 425                 430

Cys Gly Ser Val Lys Glu Met Arg Glu Arg Tyr Ala Lys Ile Val Glu
        435                 440                 445

Ile Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Lys Asn
    450                 455                 460

Pro Asn Thr Ser Glu Pro Gln His Leu Leu Val Met Lys Gly Ala Pro
465                 470                 475                 480

Glu Arg Ile Leu Asp Arg Cys Ser Ser Ile Leu Leu His Gly Lys Glu
                485                 490                 495

Gln Pro Leu Asp Glu Glu Leu Lys Asp Ala Phe Gln Asn Ala Tyr Leu
            500                 505                 510

Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Phe Cys His Leu Phe
        515                 520                 525
```

```
Leu Pro Asp Glu Gln Phe Pro Glu Gly Phe Gln Phe Asp Thr Asp Asp
    530                 535                 540

Val Asn Phe Pro Ile Asp Asn Leu Cys Phe Val Gly Leu Ile Ser Met
545                 550                 555                 560

Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg
                565                 570                 575

Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr
            580                 585                 590

Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu
        595                 600                 605

Thr Val Glu Asp Ile Ala Ala Arg Leu Asn Ile Pro Val Ser Gln Val
    610                 615                 620

Asn Pro Arg Asp Ala Lys Ala Cys Val Val His Gly Ser Asp Leu Lys
625                 630                 635                 640

Asp Met Thr Ser Glu Gln Leu Asp Asp Ile Leu Lys Tyr His Thr Glu
                645                 650                 655

Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu
            660                 665                 670

Gly Cys Gln Arg Gln Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val
        675                 680                 685

Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly Val Ala Met Gly
    690                 695                 700

Ile Ala Gly Ser Asp Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu
705                 710                 715                 720

Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu
                725                 730                 735

Ile Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn
            740                 745                 750

Ile Pro Glu Ile Thr Pro Phe Leu Ile Phe Ile Ile Ala Asn Ile Pro
```

```
        755                 760                 765

Leu Pro Leu Gly Thr Val Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp
    770                 775                 780

Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Gln Ala Glu Ser Asp Ile
785                 790                 795                 800

Met Lys Arg Gln Pro Arg Asn Pro Lys Thr Asp Lys Leu Val Asn Glu
                805                 810                 815

Arg Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu
            820                 825                 830

Gly Gly Phe Phe Thr Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu
        835                 840                 845

Pro Ile His Leu Leu Gly Leu Arg Val Asp Trp Asp Asp Arg Trp Ile
    850                 855                 860

Asn Asp Val Glu Asp Ser Tyr Gly Gln Gln Trp Thr Tyr Glu Gln Arg
865                 870                 875                 880

Lys Ile Val Glu Phe Thr Cys His Thr Ala Phe Phe Val Ser Ile Val
                885                 890                 895

Val Val Gln Trp Ala Asp Leu Val Ile Cys Lys Thr Arg Arg Asn Ser
            900                 905                 910

Val Phe Gln Gln Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Phe
        915                 920                 925

Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly
    930                 935                 940

Val Ala Leu Arg Met Tyr Pro Leu Lys Pro Thr Trp Trp Phe Cys Ala
945                 950                 955                 960

Phe Pro Tyr Ser Leu Leu Ile Phe Val Tyr Asp Glu Val Arg Lys Leu
                965                 970                 975

Ile Ile Arg Arg Arg Pro Gly Gly Trp Val Glu Lys Glu Thr Tyr Tyr
            980                 985                 990
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<210> 7536
<211> 157
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ATP1A1; "

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polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000396236"

<400> 7536

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Arg Gln Pro Arg Asn Pro Lys Thr Asp Lys Leu Val Asn Glu Arg Leu
1               5                  10                  15

Ile Ser Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu Gly Gly
            20                  25                  30

Phe Phe Thr Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu Pro Ile
        35                  40                  45

His Leu Leu Gly Leu Arg Val Asp Trp Asp Asp Arg Trp Ile Asn Asp
    50                  55                  60

Val Glu Asp Ser Tyr Gly Gln Gln Trp Thr Tyr Glu Gln Arg Lys Ile
65                  70                  75                  80

Val Glu Phe Thr Cys His Thr Ala Phe Phe Val Ser Ile Val Val Val
                85                  90                  95

Gln Trp Ala Asp Leu Val Ile Cys Lys Thr Arg Arg Asn Ser Val Phe
            100                 105                 110

Gln Gln Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Phe Glu Glu
        115                 120                 125
```

```
Thr Ala Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly Val Ala
    130                 135                 140

Leu Arg Met Tyr Pro Leu Lys Thr Leu Thr Gln Tyr Ser
145                 150                 155


<210> 7537
<211> 106
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000400124"

<400> 7537
Met Asp Glu Leu Lys Lys Glu Val Ser Met Asp Asp His Lys Leu Ser
1               5                   10                  15

Leu Asp Glu Leu His Arg Lys Tyr Gly Thr Asp Leu Ser Arg Gly Leu
            20                  25                  30

Thr Ser Ala Arg Ala Ala Glu Ile Leu Ala Arg Asp Gly Pro Asn Ala
        35                  40                  45

Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Ile Lys Phe Cys Arg Gln
    50                  55                  60

Leu Phe Gly Gly Phe Ser Met Leu Leu Trp Ile Gly Ala Ile Leu Cys
65                  70                  75                  80

Phe Leu Ala Tyr Ser Ile Gln Ala Ala Thr Glu Glu Glu Pro Gln Asn
                85                  90                  95
```

```
Asp Asn Leu Tyr Leu Gly Val Val Leu Ser
            100                 105


<210> 7538
<211> 1023
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<400> 7538
Met Ala Phe Lys Val Gly Arg Asp Lys Tyr Glu Pro Ala Ala Val Ser
1               5                  10                  15


Glu Gln Gly Asp Lys Lys Gly Lys Lys Gly Lys Lys Asp Arg Asp Met
            20                  25                  30


Asp Glu Leu Lys Lys Glu Val Ser Met Asp Asp His Lys Leu Ser Leu
        35                  40                  45


Asp Glu Leu His Arg Lys Tyr Gly Thr Asp Leu Ser Arg Gly Leu Thr
    50                  55                  60


Ser Ala Arg Ala Ala Glu Ile Leu Ala Arg Asp Gly Pro Asn Ala Leu
65                  70                  75                  80


Thr Pro Pro Pro Thr Thr Pro Glu Trp Ile Lys Phe Cys Arg Gln Leu
                85                  90                  95


Phe Gly Gly Phe Ser Met Leu Leu Trp Ile Gly Ala Ile Leu Cys Phe
```

```
            100                 105                 110

Leu Ala Tyr Ser Ile Gln Ala Ala Thr Glu Glu Glu Pro Gln Asn Asp
        115                 120                 125

Asn Leu Tyr Leu Gly Val Val Leu Ser Ala Val Val Ile Ile Thr Gly
    130                 135                 140

Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Glu Ser
145                 150                 155                 160

Phe Lys Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Asn Gly Glu
                165                 170                 175

Lys Met Ser Ile Asn Ala Glu Glu Val Val Val Gly Asp Leu Val Glu
            180                 185                 190

Val Lys Gly Gly Asp Arg Ile Pro Ala Asp Leu Arg Ile Ile Ser Ala
        195                 200                 205

Asn Gly Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro
    210                 215                 220

Gln Thr Arg Ser Pro Asp Phe Thr Asn Glu Asn Pro Leu Glu Thr Arg
225                 230                 235                 240

Asn Ile Ala Phe Phe Ser Thr Asn Cys Val Glu Gly Thr Ala Arg Gly
                245                 250                 255

Ile Val Val Tyr Thr Gly Asp Arg Thr Val Met Gly Arg Ile Ala Thr
            260                 265                 270

Leu Ala Ser Gly Leu Glu Gly Gly Gln Thr Pro Ile Ala Ala Glu Ile
        275                 280                 285

Glu His Phe Ile His Ile Ile Thr Gly Val Ala Val Phe Leu Gly Val
    290                 295                 300

Ser Phe Phe Ile Leu Ser Leu Ile Leu Glu Tyr Thr Trp Leu Glu Ala
305                 310                 315                 320

Val Ile Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly Leu
                325                 330                 335
```

```
Leu Ala Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met Ala
            340                 345                 350

Arg Lys Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly
        355                 360                 365

Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn
    370                 375                 380

Arg Met Thr Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu Ala
385                 390                 395                 400

Asp Thr Thr Glu Asn Gln Ser Gly Val Ser Phe Asp Lys Thr Ser Ala
                405                 410                 415

Thr Trp Leu Ala Leu Ser Arg Ile Ala Gly Leu Cys Asn Arg Ala Val
            420                 425                 430

Phe Gln Ala Asn Gln Glu Asn Leu Pro Ile Leu Lys Arg Ala Val Ala
        435                 440                 445

Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Cys Cys
    450                 455                 460

Gly Ser Val Lys Glu Met Arg Glu Arg Tyr Ala Lys Ile Val Glu Ile
465                 470                 475                 480

Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Lys Asn Pro
                485                 490                 495

Asn Thr Ser Glu Pro Gln His Leu Leu Val Met Lys Gly Ala Pro Glu
            500                 505                 510

Arg Ile Leu Asp Arg Cys Ser Ser Ile Leu Leu His Gly Lys Glu Gln
        515                 520                 525

Pro Leu Asp Glu Glu Leu Lys Asp Ala Phe Gln Asn Ala Tyr Leu Glu
    530                 535                 540

Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Phe Cys His Leu Phe Leu
545                 550                 555                 560
```

```
Pro Asp Glu Gln Phe Pro Glu Gly Phe Gln Phe Asp Thr Asp Asp Val
                565                 570                 575

Asn Phe Pro Ile Asp Asn Leu Cys Phe Val Gly Leu Ile Ser Met Ile
            580                 585                 590

Asp Pro Pro Arg Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg Ser
        595                 600                 605

Ala Gly Ile Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr Ala
    610                 615                 620

Lys Ala Ile Ala Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu Thr
625                 630                 635                 640

Val Glu Asp Ile Ala Ala Arg Leu Asn Ile Pro Val Ser Gln Val Asn
                645                 650                 655

Pro Arg Asp Ala Lys Ala Cys Val Val His Gly Ser Asp Leu Lys Asp
            660                 665                 670

Met Thr Ser Glu Gln Leu Asp Asp Ile Leu Lys Tyr His Thr Glu Ile
        675                 680                 685

Val Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu Gly
    690                 695                 700

Cys Gln Arg Gln Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val Asn
705                 710                 715                 720

Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly Val Ala Met Gly Ile
                725                 730                 735

Ala Gly Ser Asp Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu Asp
            740                 745                 750

Asp Asn Phe Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu Ile
        755                 760                 765

Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn Ile
    770                 775                 780
```

```
Pro Glu Ile Thr Pro Phe Leu Ile Phe Ile Ile Ala Asn Ile Pro Leu
785                 790                 795                 800

Pro Leu Gly Thr Val Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp Met
                805                 810                 815

Val Pro Ala Ile Ser Leu Ala Tyr Glu Gln Ala Glu Ser Asp Ile Met
            820                 825                 830

Lys Arg Gln Pro Arg Asn Pro Lys Thr Asp Lys Leu Val Asn Glu Arg
        835                 840                 845

Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu Gly
    850                 855                 860

Gly Phe Phe Thr Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu Pro
865                 870                 875                 880

Ile His Leu Leu Gly Leu Arg Val Asp Trp Asp Asp Arg Trp Ile Asn
                885                 890                 895

Asp Val Glu Asp Ser Tyr Gly Gln Gln Trp Thr Tyr Glu Gln Arg Lys
            900                 905                 910

Ile Val Glu Phe Thr Cys His Thr Ala Phe Phe Val Ser Ile Val Val
        915                 920                 925

Val Gln Trp Ala Asp Leu Val Ile Cys Lys Thr Arg Arg Asn Ser Val
    930                 935                 940

Phe Gln Gln Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Phe Glu
945                 950                 955                 960

Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly Val
                965                 970                 975

Ala Leu Arg Met Tyr Pro Leu Lys Pro Thr Trp Trp Phe Cys Ala Phe
            980                 985                 990

Pro Tyr Ser Leu Leu Ile Phe Val  Tyr Asp Glu Val Arg  Lys Leu
Ile
        995                 1000                1005
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Ile Arg Arg Arg Pro Gly Gly Trp Val Glu Lys Glu Thr Tyr Tyr
1010 1015 1020

<210> 7539
<211> 1020
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP1A2; "

<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, alpha 2
polypeptide; "

<220>
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<223> /note="Uniprot ID: P50993; "

<220>
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<400> 7539
Met Gly Arg Gly Ala Gly Arg Glu Tyr Ser Pro Ala Ala Thr Thr Ala
1 5 10 15

Glu Asn Gly Gly Gly Lys Lys Lys Gln Lys Glu Lys Glu Leu Asp Glu
20 25 30

Leu Lys Lys Glu Val Ala Met Asp Asp His Lys Leu Ser Leu Asp Glu
35 40 45

Leu Gly Arg Lys Tyr Gln Val Asp Leu Ser Lys Gly Leu Thr Asn Gln
50 55 60

Arg Ala Gln Asp Val Leu Ala Arg Asp Gly Pro Asn Ala Leu Thr Pro
65 70 75 80

Pro Pro Thr Thr Pro Glu Trp Val Lys Phe Cys Arg Gln Leu Phe Gly
85 90 95

Gly Phe Ser Ile Leu Leu Trp Ile Gly Ala Ile Leu Cys Phe Leu Ala

```
            100                 105                 110

Tyr Gly Ile Gln Ala Ala Met Glu Asp Glu Pro Ser Asn Asp Asn Leu
        115                 120                 125

Tyr Leu Gly Val Val Leu Ala Ala Val Val Ile Val Thr Gly Cys Phe
    130                 135                 140

Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Asp Ser Phe Lys
145                 150                 155                 160

Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Glu Gly Glu Lys Met
                165                 170                 175

Gln Ile Asn Ala Glu Glu Val Val Val Gly Asp Leu Val Glu Val Lys
            180                 185                 190

Gly Gly Asp Arg Val Pro Ala Asp Leu Arg Ile Ile Ser Ser His Gly
        195                 200                 205

Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro Gln Thr
    210                 215                 220

Arg Ser Pro Glu Phe Thr His Glu Asn Pro Leu Glu Thr Arg Asn Ile
225                 230                 235                 240

Cys Phe Phe Ser Thr Asn Cys Val Glu Gly Thr Ala Arg Gly Ile Val
                245                 250                 255

Ile Ala Thr Gly Asp Arg Thr Val Met Gly Arg Ile Ala Thr Leu Ala
            260                 265                 270

Ser Gly Leu Glu Val Gly Arg Thr Pro Ile Ala Met Glu Ile Glu His
        275                 280                 285

Phe Ile Gln Leu Ile Thr Gly Val Ala Val Phe Leu Gly Val Ser Phe
    290                 295                 300

Phe Val Leu Ser Leu Ile Leu Gly Tyr Ser Trp Leu Glu Ala Val Ile
305                 310                 315                 320

Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly Leu Leu Ala
                325                 330                 335
```

```
Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met Ala Arg Lys
            340                 345                 350

Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly Ser Thr
        355                 360                 365

Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Arg Met
    370                 375                 380

Thr Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu Ala Asp Thr
385                 390                 395                 400

Thr Glu Asp Gln Ser Gly Ala Thr Phe Asp Lys Arg Ser Pro Thr Trp
                405                 410                 415

Thr Ala Leu Ser Arg Ile Ala Gly Leu Cys Asn Arg Ala Val Phe Lys
            420                 425                 430

Ala Gly Gln Glu Asn Ile Ser Val Ser Lys Arg Asp Thr Ala Gly Asp
        435                 440                 445

Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Ser Cys Gly Ser
    450                 455                 460

Val Arg Lys Met Arg Asp Arg Asn Pro Lys Val Ala Glu Ile Pro Phe
465                 470                 475                 480

Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Glu Arg Glu Asp Ser
                485                 490                 495

Pro Gln Ser His Val Leu Val Met Lys Gly Ala Pro Glu Arg Ile Leu
            500                 505                 510

Asp Arg Cys Ser Thr Ile Leu Val Gln Gly Lys Glu Ile Pro Leu Asp
        515                 520                 525

Lys Glu Met Gln Asp Ala Phe Gln Asn Ala Tyr Met Glu Leu Gly Gly
    530                 535                 540

Leu Gly Glu Arg Val Leu Gly Phe Cys Gln Leu Asn Leu Pro Ser Gly
545                 550                 555                 560
```

```
Lys Phe Pro Arg Gly Phe Lys Phe Asp Thr Asp Glu Leu Asn Phe Pro
                565                 570                 575

Thr Glu Lys Leu Cys Phe Val Gly Leu Met Ser Met Ile Asp Pro Pro
            580                 585                 590

Arg Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg Ser Ala Gly Ile
        595                 600                 605

Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr Ala Lys Ala Ile
    610                 615                 620

Ala Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu Thr Val Glu Asp
625                 630                 635                 640

Ile Ala Ala Arg Leu Asn Ile Pro Met Ser Gln Val Asn Pro Arg Glu
                645                 650                 655

Ala Lys Ala Cys Val Val His Gly Ser Asp Leu Lys Asp Met Thr Ser
            660                 665                 670

Glu Gln Leu Asp Glu Ile Leu Lys Asn His Thr Glu Ile Val Phe Ala
        675                 680                 685

Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu Gly Cys Gln Arg
    690                 695                 700

Gln Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val Asn Asp Ser Pro
705                 710                 715                 720

Ala Leu Lys Lys Ala Asp Ile Gly Ile Ala Met Gly Ile Ser Gly Ser
                725                 730                 735

Asp Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu Asp Asp Asn Phe
            740                 745                 750

Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu Ile Phe Asp Asn
        755                 760                 765

Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn Ile Pro Glu Ile
    770                 775                 780
```

```
Thr Pro Phe Leu Leu Phe Ile Ile Ala Asn Ile Pro Leu Pro Leu Gly
785                 790                 795                 800

Thr Val Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp Met Val Pro Ala
                805                 810                 815

Ile Ser Leu Ala Tyr Glu Ala Ala Glu Ser Asp Ile Met Lys Arg Gln
            820                 825                 830

Pro Arg Asn Ser Gln Thr Asp Lys Leu Val Asn Glu Arg Leu Ile Ser
        835                 840                 845

Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu Gly Gly Phe Phe
    850                 855                 860

Thr Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu Pro Ser Arg Leu
865                 870                 875                 880

Leu Gly Ile Arg Leu Asp Trp Asp Asp Arg Thr Met Asn Asp Leu Glu
                885                 890                 895

Asp Ser Tyr Gly Gln Glu Trp Thr Tyr Glu Gln Arg Lys Val Val Glu
            900                 905                 910

Phe Thr Cys His Thr Ala Phe Phe Ala Ser Ile Val Val Val Gln Trp
        915                 920                 925

Ala Asp Leu Ile Ile Cys Lys Thr Arg Arg Asn Ser Val Phe Gln Gln
    930                 935                 940

Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Leu Glu Glu Thr Ala
945                 950                 955                 960

Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly Val Ala Leu Arg
                965                 970                 975

Met Tyr Pro Leu Lys Val Thr Trp Trp Phe Cys Ala Phe Pro Tyr Ser
            980                 985                 990

Leu Leu Ile Phe Ile Tyr Asp Glu  Val Arg Lys Leu Ile  Leu Arg
Arg
        995                 1000                1005
```

```
Tyr Pro  Gly Gly Trp Val Glu  Lys Glu Thr Tyr Tyr
    1010                1015                1020


<210> 7540
<211> 1009
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1591; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1A2; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Na+/K+ transporting, alpha 2
      polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000376066"

<400> 7540
Met Gly Arg Gly Ala Gly Arg Glu Tyr Ser Pro Ala Ala Thr Thr Ala
1               5                  10                  15


Glu Asn Gly Gly Gly Lys Lys Lys Gln Lys Glu Lys Glu Leu Asp Glu
            20                  25                  30


Leu Lys Lys Glu Val Ala Met Asp Asp His Lys Leu Ser Leu Asp Glu
        35                  40                  45


Leu Gly Arg Lys Tyr Gln Val Asp Leu Ser Lys Gly Leu Thr Asn Gln
    50                  55                  60


Arg Ala Gln Asp Val Leu Ala Arg Asp Gly Pro Asn Ala Leu Thr Pro
65                  70                  75                  80


Pro Pro Thr Thr Pro Glu Trp Val Lys Phe Cys Arg Gln Leu Phe Gly
                85                  90                  95


Gly Phe Ser Ile Leu Leu Trp Ile Gly Ala Ile Leu Cys Phe Leu Ala
            100                 105                 110


Tyr Gly Ile Gln Ala Ala Met Glu Asp Glu Pro Ser Asn Asp Asn Leu
```

```
        115                 120                 125

Tyr Leu Gly Val Val Leu Ala Ala Val Val Ile Val Thr Gly Cys Phe
    130                 135                 140

Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Asp Ser Phe Lys
145                 150                 155                 160

Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Glu Gly Glu Lys Met
                165                 170                 175

Gln Ile Asn Ala Glu Glu Val Val Val Gly Asp Leu Val Glu Val Lys
            180                 185                 190

Gly Gly Asp Arg Val Pro Ala Asp Leu Arg Ile Ile Ser Ser His Gly
        195                 200                 205

Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu Pro Gln Thr
    210                 215                 220

Arg Ser Pro Glu Phe Thr His Glu Asn Pro Leu Glu Thr Arg Asn Ile
225                 230                 235                 240

Cys Phe Phe Ser Thr Asn Cys Val Glu Gly Thr Ala Arg Gly Ile Val
                245                 250                 255

Ile Ala Thr Gly Asp Arg Thr Val Met Gly Arg Ile Ala Thr Leu Ala
            260                 265                 270

Ser Gly Leu Glu Val Gly Arg Thr Pro Ile Ala Met Glu Ile Glu His
        275                 280                 285

Phe Ile Gln Leu Ile Thr Gly Val Ala Val Phe Leu Gly Val Ser Phe
    290                 295                 300

Phe Val Leu Ser Leu Ile Leu Gly Tyr Ser Trp Leu Glu Ala Val Ile
305                 310                 315                 320

Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly Leu Leu Ala
                325                 330                 335

Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met Ala Arg Lys
            340                 345                 350
```

```
Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly Ser Thr
        355                 360                 365

Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Arg Met
    370                 375                 380

Thr Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu Ala Asp Thr
385                 390                 395                 400

Thr Glu Asp Gln Ser Gly Ala Thr Phe Asp Lys Arg Ser Pro Thr Trp
                405                 410                 415

Thr Ala Leu Ser Arg Ile Ala Gly Leu Cys Asn Arg Ala Val Phe Lys
            420                 425                 430

Ala Gly Gln Glu Asn Ile Ser Val Ser Lys Arg Asp Thr Ala Gly Asp
        435                 440                 445

Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Ser Cys Gly Ser
    450                 455                 460

Val Arg Lys Met Arg Asp Arg Asn Pro Lys Val Ala Glu Ile Pro Phe
465                 470                 475                 480

Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Glu Arg Glu Asp Ser
                485                 490                 495

Pro Gln Ser His Val Leu Val Met Lys Gly Ala Pro Glu Arg Ile Leu
            500                 505                 510

Asp Arg Cys Ser Thr Ile Leu Val Gln Gly Lys Glu Ile Pro Leu Asp
        515                 520                 525

Lys Glu Met Gln Asp Ala Phe Gln Asn Ala Tyr Met Glu Leu Gly Gly
    530                 535                 540

Leu Gly Glu Arg Val Leu Gly Phe Cys Gln Leu Asn Leu Pro Ser Gly
545                 550                 555                 560

Lys Phe Pro Arg Gly Phe Lys Phe Asp Thr Asp Glu Leu Asn Phe Pro
                565                 570                 575
```

```
Thr Glu Lys Leu Cys Phe Val Gly Leu Met Ser Met Ile Asp Pro Pro
            580                 585                 590

Arg Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg Ser Ala Gly Ile
        595                 600                 605

Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr Ala Lys Ala Ile
    610                 615                 620

Ala Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu Thr Val Glu Asp
625                 630                 635                 640

Ile Ala Ala Arg Leu Asn Ile Pro Met Ser Gln Val Asn Pro Arg Glu
                645                 650                 655

Ala Lys Ala Cys Val Val His Gly Ser Asp Leu Lys Asp Met Thr Ser
            660                 665                 670

Glu Gln Leu Asp Glu Ile Leu Lys Asn His Thr Glu Ile Val Phe Ala
        675                 680                 685

Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu Gly Cys Gln Arg
    690                 695                 700

Gln Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val Asn Asp Ser Pro
705                 710                 715                 720

Ala Leu Lys Lys Ala Asp Ile Gly Ile Ala Met Gly Ile Ser Gly Ser
                725                 730                 735

Asp Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu Asp Asp Asn Phe
            740                 745                 750

Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu Ile Phe Asp Asn
        755                 760                 765

Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn Ile Pro Glu Ile
    770                 775                 780

Thr Pro Phe Leu Leu Phe Ile Ile Ala Asn Ile Pro Leu Pro Leu Gly
785                 790                 795                 800
```

```
Thr Val Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp Met Val Pro Ala
                805                 810                 815

Ile Ser Leu Ala Tyr Glu Ala Ala Glu Ser Asp Ile Met Lys Arg Gln
            820                 825                 830

Pro Arg Asn Ser Gln Thr Asp Lys Leu Val Asn Glu Arg Leu Ile Ser
        835                 840                 845

Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu Gly Gly Phe Phe
    850                 855                 860

Thr Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu Pro Ser Arg Leu
865                 870                 875                 880

Leu Gly Ile Arg Leu Asp Trp Asp Asp Arg Thr Met Asn Asp Leu Glu
                885                 890                 895

Asp Ser Tyr Gly Gln Glu Trp Thr Tyr Glu Gln Arg Lys Val Val Glu
            900                 905                 910

Phe Thr Cys His Thr Ala Phe Phe Ala Ser Ile Val Val Val Gln Trp
        915                 920                 925

Ala Asp Leu Ile Ile Cys Lys Thr Arg Arg Asn Ser Val Phe Gln Gln
    930                 935                 940

Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Leu Glu Glu Thr Ala
945                 950                 955                 960

Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly Val Ala Leu Arg
                965                 970                 975

Met Tyr Pro Leu Asn Leu Leu Ile Phe Ile Tyr Asp Glu Val Arg Lys
            980                 985                 990

Leu Ile Leu Arg Arg Tyr Pro Gly  Gly Trp Val Glu Lys  Glu Thr
Tyr
        995                 1000                1005

Tyr
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<210> 7541
<211> 714
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, alpha 2
polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000411705"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7541
Xaa Gln Leu Ile Thr Gly Val Ala Val Phe Leu Gly Val Ser Phe Phe
1 5 10 15

Val Leu Ser Leu Ile Leu Gly Tyr Ser Trp Leu Glu Ala Val Ile Phe
20 25 30

Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly Leu Leu Ala Thr
35 40 45

Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met Ala Arg Lys Asn
50 55 60

Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu Gly Ser Thr Ser
65 70 75 80

Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln Asn Arg Met Thr
85 90 95

Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu Ala Asp Thr Thr
100 105 110

```
Glu Asp Gln Ser Gly Ala Thr Phe Asp Lys Arg Ser Pro Thr Trp Thr
        115                 120                 125

Ala Leu Ser Arg Ile Ala Gly Leu Cys Asn Arg Ala Val Phe Lys Ala
    130                 135                 140

Gly Gln Glu Asn Ile Ser Val Ser Lys Arg Asp Thr Ala Gly Asp Ala
145                 150                 155                 160

Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Ser Cys Gly Ser Val
                165                 170                 175

Arg Lys Met Arg Asp Arg Asn Pro Lys Val Ala Glu Ile Pro Phe Asn
            180                 185                 190

Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Glu Arg Glu Asp Ser Pro
        195                 200                 205

Gln Ser His Val Leu Val Met Lys Gly Ala Pro Glu Arg Ile Leu Asp
    210                 215                 220

Arg Cys Ser Thr Ile Leu Val Gln Gly Lys Glu Ile Pro Leu Asp Lys
225                 230                 235                 240

Glu Met Gln Asp Ala Phe Gln Asn Ala Tyr Met Glu Leu Gly Gly Leu
                245                 250                 255

Gly Glu Arg Val Leu Gly Phe Cys Gln Leu Asn Leu Pro Ser Gly Lys
            260                 265                 270

Phe Pro Arg Gly Phe Lys Phe Asp Thr Asp Glu Leu Asn Phe Pro Thr
        275                 280                 285

Glu Lys Leu Cys Phe Val Gly Leu Met Ser Met Ile Asp Pro Pro Arg
    290                 295                 300

Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg Ser Ala Gly Ile Lys
305                 310                 315                 320

Val Ile Met Val Thr Gly Asp His Pro Ile Thr Ala Lys Ala Ile Ala
                325                 330                 335
```

```
Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu Thr Val Glu Asp Ile
            340                 345                 350

Ala Ala Arg Leu Asn Ile Pro Met Ser Gln Val Asn Pro Arg Glu Ala
        355                 360                 365

Lys Ala Cys Val Val His Gly Ser Asp Leu Lys Asp Met Thr Ser Glu
    370                 375                 380

Gln Leu Asp Glu Ile Leu Lys Asn His Thr Glu Ile Val Phe Ala Arg
385                 390                 395                 400

Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu Gly Cys Gln Arg Gln
                405                 410                 415

Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val Asn Asp Ser Pro Ala
            420                 425                 430

Leu Lys Lys Ala Asp Ile Gly Ile Ala Met Gly Ile Ser Gly Ser Asp
        435                 440                 445

Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu Asp Asp Asn Phe Ala
    450                 455                 460

Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu
465                 470                 475                 480

Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr
                485                 490                 495

Pro Phe Leu Leu Phe Ile Ile Ala Asn Ile Pro Leu Pro Leu Gly Thr
            500                 505                 510

Val Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp Met Val Pro Ala Ile
        515                 520                 525

Ser Leu Ala Tyr Glu Ala Ala Glu Ser Asp Ile Met Lys Arg Gln Pro
    530                 535                 540

Arg Asn Ser Gln Thr Asp Lys Leu Val Asn Glu Arg Leu Ile Ser Met
545                 550                 555                 560

Ala Tyr Gly Gln Ile Glu Asn Gly Phe Leu Pro Ser Arg Leu Leu Gly
```

```
                565                 570                 575

Ile Arg Leu Asp Trp Asp Asp Arg Thr Met Asn Asp Leu Glu Asp Ser
            580                 585                 590

Tyr Gly Gln Glu Trp Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr
        595                 600                 605

Cys His Thr Ala Phe Phe Ala Ser Ile Val Val Val Gln Trp Ala Asp
    610                 615                 620

Leu Ile Ile Cys Lys Thr Arg Arg Asn Ser Val Phe Gln Gln Gly Met
625                 630                 635                 640

Lys Asn Lys Ile Leu Ile Phe Gly Leu Leu Glu Glu Thr Ala Leu Ala
                645                 650                 655

Ala Phe Leu Ser Tyr Cys Pro Gly Met Gly Val Ala Leu Arg Met Tyr
            660                 665                 670

Pro Leu Lys Val Thr Trp Trp Phe Cys Ala Phe Pro Tyr Ser Leu Leu
        675                 680                 685

Ile Phe Ile Tyr Asp Glu Val Arg Lys Leu Ile Leu Arg Arg Tyr Pro
    690                 695                 700

Gly Gly Trp Val Glu Lys Glu Thr Tyr Tyr
705                 710


<210> 7542
<211> 1013
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP1A3; "

<220>
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<223> /note="Gene Name:
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      polypeptide; "
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<220>
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<223> /note="Uniprot ID: P13637; "

<220>
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Met Gly Asp Lys Lys Asp Asp Lys Asp Ser Pro Lys Lys Asn Lys Gly
1   5   10   15

Lys Glu Arg Arg Asp Leu Asp Asp Leu Lys Lys Glu Val Ala Met Thr
            20   25   30

Glu His Lys Met Ser Val Glu Glu Val Cys Arg Lys Tyr Asn Thr Asp
        35   40   45

Cys Val Gln Gly Leu Thr His Ser Lys Ala Gln Glu Ile Leu Ala Arg
    50   55   60

Asp Gly Pro Asn Ala Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Val
65   70   75   80

Lys Phe Cys Arg Gln Leu Phe Gly Gly Phe Ser Ile Leu Leu Trp Ile
                85   90   95

Gly Ala Ile Leu Cys Phe Leu Ala Tyr Gly Ile Gln Ala Gly Thr Glu
            100   105   110

Asp Asp Pro Ser Gly Asp Asn Leu Tyr Leu Gly Ile Val Leu Ala Ala
        115   120   125

Val Val Ile Ile Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser
    130   135   140

Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln Ala Leu
145   150   155   160

Val Ile Arg Glu Gly Glu Lys Met Gln Val Asn Ala Glu Glu Val Val
                165   170   175

Val Gly Asp Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro Ala Asp
            180   185   190

```
Leu Arg Ile Ile Ser Ala His Gly Cys Lys Val Asp Asn Ser Ser Leu
        195                 200                 205

Thr Gly Glu Ser Glu Pro Gln Thr Arg Ser Pro Asp Cys Thr His Asp
    210                 215                 220

Asn Pro Leu Glu Thr Arg Asn Ile Thr Phe Phe Ser Thr Asn Cys Val
225                 230                 235                 240

Glu Gly Thr Ala Arg Gly Val Val Val Ala Thr Gly Asp Arg Thr Val
                245                 250                 255

Met Gly Arg Ile Ala Thr Leu Ala Ser Gly Leu Glu Val Gly Lys Thr
            260                 265                 270

Pro Ile Ala Ile Glu Ile Glu His Phe Ile Gln Leu Ile Thr Gly Val
        275                 280                 285

Ala Val Phe Leu Gly Val Ser Phe Phe Ile Leu Ser Leu Ile Leu Gly
    290                 295                 300

Tyr Thr Trp Leu Glu Ala Val Ile Phe Leu Ile Gly Ile Ile Val Ala
305                 310                 315                 320

Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu Thr Leu
                325                 330                 335

Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn Leu Glu
            340                 345                 350

Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr
        355                 360                 365

Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met Trp Phe Asp
    370                 375                 380

Asn Gln Ile His Glu Ala Asp Thr Thr Glu Asp Gln Ser Gly Thr Ser
385                 390                 395                 400

Phe Asp Lys Ser Ser His Thr Trp Val Ala Leu Ser His Ile Ala Gly
                405                 410                 415
```

```
Leu Cys Asn Arg Ala Val Phe Lys Gly Gly Gln Asp Asn Ile Pro Val
            420                 425                 430

Leu Lys Arg Asp Val Ala Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys
        435                 440                 445

Cys Ile Glu Leu Ser Ser Gly Ser Val Lys Leu Met Arg Glu Arg Asn
    450                 455                 460

Lys Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu
465                 470                 475                 480

Ser Ile His Glu Thr Glu Asp Pro Asn Asp Asn Arg Tyr Leu Leu Val
                485                 490                 495

Met Lys Gly Ala Pro Glu Arg Ile Leu Asp Arg Cys Ser Thr Ile Leu
            500                 505                 510

Leu Gln Gly Lys Glu Gln Pro Leu Asp Glu Glu Met Lys Glu Ala Phe
        515                 520                 525

Gln Asn Ala Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly
    530                 535                 540

Phe Cys His Tyr Tyr Leu Pro Glu Glu Gln Phe Pro Lys Gly Phe Ala
545                 550                 555                 560

Phe Asp Cys Asp Asp Val Asn Phe Thr Thr Asp Asn Leu Cys Phe Val
                565                 570                 575

Gly Leu Met Ser Met Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala
            580                 585                 590

Val Gly Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly
        595                 600                 605

Asp His Pro Ile Thr Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile
    610                 615                 620

Ser Glu Gly Asn Glu Thr Val Glu Asp Ile Ala Ala Arg Leu Asn Ile
625                 630                 635                 640

Pro Val Ser Gln Val Asn Pro Arg Asp Ala Lys Ala Cys Val Ile His
```

```
                645                 650                 655

Gly Thr Asp Leu Lys Asp Phe Thr Ser Glu Gln Ile Asp Glu Ile Leu
            660                 665                 670

Gln Asn His Thr Glu Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys
        675                 680                 685

Leu Ile Ile Val Glu Gly Cys Gln Arg Gln Gly Ala Ile Val Ala Val
    690                 695                 700

Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile
705                 710                 715                 720

Gly Val Ala Met Gly Ile Ala Gly Ser Asp Val Ser Lys Gln Ala Ala
                725                 730                 735

Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val
            740                 745                 750

Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr
        755                 760                 765

Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu Leu Phe Ile
    770                 775                 780

Met Ala Asn Ile Pro Leu Pro Leu Gly Thr Ile Thr Ile Leu Cys Ile
785                 790                 795                 800

Asp Leu Gly Thr Asp Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Ala
                805                 810                 815

Ala Glu Ser Asp Ile Met Lys Arg Gln Pro Arg Asn Pro Arg Thr Asp
            820                 825                 830

Lys Leu Val Asn Glu Arg Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly
        835                 840                 845

Met Ile Gln Ala Leu Gly Gly Phe Phe Ser Tyr Phe Val Ile Leu Ala
    850                 855                 860

Glu Asn Gly Phe Leu Pro Gly Asn Leu Val Gly Ile Arg Leu Asn Trp
865                 870                 875                 880
```

```
Asp Asp Arg Thr Val Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp
                885                 890                 895

Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr Cys His Thr Ala Phe
            900                 905                 910

Phe Val Ser Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile Cys Lys
        915                 920                 925

Thr Arg Arg Asn Ser Val Phe Gln Gln Gly Met Lys Asn Lys Ile Leu
    930                 935                 940

Ile Phe Gly Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr
945                 950                 955                 960

Cys Pro Gly Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys Pro Ser
                965                 970                 975

Trp Trp Phe Cys Ala Phe Pro Tyr Ser Phe Leu Ile Phe Val Tyr Asp
            980                 985                 990

Glu Ile Arg Lys Leu Ile Leu Arg  Arg Asn Pro Gly Gly  Trp Val
Glu
        995                 1000                1005

Lys Glu  Thr Tyr Tyr
    1010


<210> 7543
<211> 1226
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1592; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1A3; "

<220>
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<223> /note="Gene Name:
      ATPase, Na+/K+ transporting, alpha 3
      polypeptide; "
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<220>
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<400> 7543
Met Gly Asp Lys Lys Asp Asp Lys Asp Ser Pro Lys Lys Asn Lys Gly
1   5   10   15

Lys Glu Arg Arg Asp Leu Asp Asp Leu Lys Lys Glu Val Ala Met Thr
            20   25   30

Glu His Lys Met Ser Val Glu Glu Val Cys Arg Lys Tyr Asn Thr Asp
        35   40   45

Cys Val Gln Gly Leu Thr His Ser Lys Ala Gln Glu Ile Leu Ala Arg
    50   55   60

Asp Gly Pro Asn Ala Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Val
65   70   75   80

Lys Phe Cys Arg Gln Leu Phe Gly Gly Phe Ser Ile Leu Leu Trp Ile
                85   90   95

Gly Ala Ile Leu Cys Phe Leu Ala Tyr Gly Ile Gln Ala Gly Thr Glu
            100   105   110

Asp Asp Pro Ser Gly Asp Asn Leu Tyr Leu Gly Ile Val Leu Ala Ala
        115   120   125

Val Val Ile Ile Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser
    130   135   140

Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln Ala Leu
145   150   155   160

Val Ile Arg Glu Gly Glu Lys Met Gln Val Asn Ala Glu Glu Val Val
                165   170   175

Val Gly Asp Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro Ala Asp
            180   185   190

Leu Arg Ile Ile Ser Ala His Gly Cys Lys Val Asp Asn Ser Ser Leu
        195   200   205

```
Thr Gly Glu Ser Glu Pro Gln Thr Arg Ser Pro Asp Cys Thr His Asp
    210                 215                 220

Asn Pro Leu Glu Thr Arg Asn Ile Thr Phe Phe Ser Thr Asn Cys Val
225                 230                 235                 240

Glu Gly Thr Ala Arg Gly Val Val Val Ala Thr Gly Asp Arg Thr Val
                245                 250                 255

Met Gly Arg Ile Ala Thr Leu Ala Ser Gly Leu Glu Val Gly Lys Thr
            260                 265                 270

Pro Ile Ala Ile Glu Ile Glu His Phe Ile Gln Leu Ile Thr Gly Val
        275                 280                 285

Ala Val Phe Leu Gly Val Ser Phe Phe Ile Leu Ser Leu Ile Leu Gly
    290                 295                 300

Tyr Thr Trp Leu Glu Ala Val Ile Phe Leu Ile Gly Ile Ile Val Ala
305                 310                 315                 320

Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu Thr Leu
                325                 330                 335

Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn Leu Glu
            340                 345                 350

Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr
        355                 360                 365

Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met Trp Phe Asp
    370                 375                 380

Asn Gln Ile His Glu Ala Asp Thr Thr Glu Asp Gln Ser Gly Thr Ser
385                 390                 395                 400

Phe Asp Lys Ser Ser His Thr Trp Val Ala Leu Ser His Ile Ala Gly
                405                 410                 415

Leu Cys Asn Arg Ala Val Phe Lys Gly Gly Gln Asp Asn Ile Pro Val
            420                 425                 430
```

```
Leu Lys Arg Asp Val Ala Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys
        435                 440                 445

Cys Ile Glu Leu Ser Ser Gly Ser Val Lys Leu Met Arg Glu Arg Asn
    450                 455                 460

Lys Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu
465                 470                 475                 480

Ser Ile His Glu Thr Glu Asp Pro Asn Asp Asn Arg Tyr Leu Leu Val
                485                 490                 495

Met Lys Gly Ala Pro Glu Arg Ile Leu Asp Arg Cys Ser Thr Ile Leu
            500                 505                 510

Leu Gln Gly Lys Glu Gln Pro Leu Asp Glu Glu Met Lys Glu Ala Phe
        515                 520                 525

Gln Asn Ala Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly
    530                 535                 540

Phe Cys His Tyr Tyr Leu Pro Glu Glu Gln Phe Pro Lys Gly Phe Ala
545                 550                 555                 560

Phe Asp Cys Asp Asp Val Asn Phe Thr Thr Asp Asn Leu Cys Phe Val
                565                 570                 575

Gly Leu Met Ser Met Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala
            580                 585                 590

Val Gly Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly
        595                 600                 605

Asp His Pro Ile Thr Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile
    610                 615                 620

Ser Glu Gly Asn Glu Thr Val Glu Asp Ile Ala Ala Arg Leu Asn Ile
625                 630                 635                 640

Pro Val Ser Gln Val Asn Pro Arg Asp Ala Lys Ala Cys Val Ile His
                645                 650                 655

Gly Thr Asp Leu Lys Asp Phe Thr Ser Glu Gln Ile Asp Glu Ile Leu
```

660 665 670

Gln Asn His Thr Glu Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys
675 680 685

Leu Ile Ile Val Glu Gly Cys Gln Arg Gln Gly Ala Ile Val Ala Val
690 695 700

Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile
705 710 715 720

Gly Val Ala Met Gly Ile Ala Gly Ser Asp Val Ser Lys Gln Ala Ala
725 730 735

Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val
740 745 750

Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr
755 760 765

Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu Leu Phe Ile
770 775 780

Met Ala Asn Ile Pro Leu Pro Leu Gly Thr Ile Thr Ile Leu Cys Ile
785 790 795 800

Asp Leu Gly Thr Asp Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Ala
805 810 815

Ala Glu Ser Asp Ile Met Lys Arg Gln Pro Arg Asn Pro Arg Thr Asp
820 825 830

Lys Leu Val Asn Glu Arg Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly
835 840 845

Met Ile Gln Ala Leu Gly Gly Phe Phe Ser Tyr Phe Val Ile Leu Ala
850 855 860

Glu Asn Gly Phe Leu Pro Gly Asn Leu Val Gly Ile Arg Leu Asn Trp
865 870 875 880

Asp Asp Arg Thr Val Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp
885 890 895

```
Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr Cys His Thr Ala Phe
            900                 905                 910

Phe Val Ser Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile Cys Lys
        915                 920                 925

Thr Arg Arg Asn Ser Val Phe Gln Gln Gly Met Lys Asn Lys Ile Leu
    930                 935                 940

Ile Phe Gly Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr
945                 950                 955                 960

Cys Pro Gly Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys Pro Ser
                965                 970                 975

Trp Trp Phe Cys Ala Phe Pro Tyr Ser Phe Leu Ile Phe Val Tyr Asp
            980                 985                 990

Glu Ile Arg Lys Leu Ile Leu Arg  Arg Asn Pro Gly Gly  Glu Gly
Ala
        995                 1000                1005

Arg Gln  Gly Ser Arg Gly Gly  Arg Gly Ala Ala Gly  Ser Gln Ala
    1010                1015                1020

Ala Gly  Pro Arg Leu Pro Ser  Pro Cys Trp Met Ala  Leu Pro Pro
    1025                1030                1035

Gly Ser  His Ser Ser Leu Ser  Ser His Leu Ser Gly  His Pro Leu
    1040                1045                1050

Cys Leu  Leu Thr Gly Leu Cys  Leu Cys Gly Phe Leu  Val Ser Leu
    1055                1060                1065

Pro Leu  Cys Pro Ser Leu Cys  Trp Ala Ala Arg Leu  Ala Cys Leu
    1070                1075                1080

Ser Pro  Ser Leu Thr Leu Ser  Leu Ser Phe Leu Leu  Cys Leu Ser
    1085                1090                1095

Arg Leu  Gly Gly Glu Gly Asn  Leu Leu Leu Thr Ser  Ala Pro Pro
    1100                1105                1110
```

```
His Arg  Pro Ser Leu Pro Arg  Pro Pro Gly Pro Gly  Pro Pro Leu
    1115                1120                1125

Ser Val  Pro Pro Ile Leu Tyr  Ser Gly Gly Arg Ser  Pro Leu Phe
    1130                1135                1140

Leu Trp  Pro His Leu Gly Pro  His Pro Leu His Tyr  Leu Leu Pro
    1145                1150                1155

Pro Pro  Leu Trp Leu Ala Ser  Leu Pro Cys Pro Lys  Pro Leu Ser
    1160                1165                1170

Ser Leu  Phe Ser Val Ser Val  Ser Leu Pro Leu Leu  Thr Pro Leu
    1175                1180                1185

Ser Ile  Pro Pro Ala Pro Ala  Thr Ser Leu Gly Ser  Phe Leu Leu
    1190                1195                1200

Pro Phe  Ser Pro Pro Ala Asp  Ala Ile Ser Gly Ser  Gly Gln Leu
    1205                1210                1215

Ser Asn  Ile Ser Val Gly Arg  Glu
    1220                1225


<210> 7544
<211> 1024
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1592; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1A3; "

<220>
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<223> /note="Gene Name:
      ATPase, Na+/K+ transporting, alpha 3
      polypeptide; "

<220>
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<223> /note="Uniprot ID:  P13637; "
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<220>
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<400> 7544
Met Gly Gly Trp Glu Glu Glu Arg Asn Arg Arg Ala Thr Asp Lys Lys
1   5   10   15

Asp Asp Lys Asp Ser Pro Lys Lys Asn Lys Gly Lys Glu Arg Arg Asp
            20   25   30

Leu Asp Asp Leu Lys Lys Glu Val Ala Met Thr Glu His Lys Met Ser
        35   40   45

Val Glu Glu Val Cys Arg Lys Tyr Asn Thr Asp Cys Val Gln Gly Leu
    50   55   60

Thr His Ser Lys Ala Gln Glu Ile Leu Ala Arg Asp Gly Pro Asn Ala
65   70   75   80

Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Val Lys Phe Cys Arg Gln
                85   90   95

Leu Phe Gly Gly Phe Ser Ile Leu Leu Trp Ile Gly Ala Ile Leu Cys
            100   105   110

Phe Leu Ala Tyr Gly Ile Gln Ala Gly Thr Glu Asp Asp Pro Ser Gly
        115   120   125

Asp Asn Leu Tyr Leu Gly Ile Val Leu Ala Ala Val Val Ile Ile Thr
    130   135   140

Gly Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile Met Glu
145   150   155   160

Ser Phe Lys Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg Glu Gly
                165   170   175

Glu Lys Met Gln Val Asn Ala Glu Glu Val Val Val Gly Asp Leu Val
            180   185   190

Glu Ile Lys Gly Gly Asp Arg Val Pro Ala Asp Leu Arg Ile Ile Ser
        195   200   205

```
Ala His Gly Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu Ser Glu
    210                 215                 220

Pro Gln Thr Arg Ser Pro Asp Cys Thr His Asp Asn Pro Leu Glu Thr
225                 230                 235                 240

Arg Asn Ile Thr Phe Phe Ser Thr Asn Cys Val Glu Gly Thr Ala Arg
                245                 250                 255

Gly Val Val Val Ala Thr Gly Asp Arg Thr Val Met Gly Arg Ile Ala
            260                 265                 270

Thr Leu Ala Ser Gly Leu Glu Val Gly Lys Thr Pro Ile Ala Ile Glu
        275                 280                 285

Ile Glu His Phe Ile Gln Leu Ile Thr Gly Val Ala Val Phe Leu Gly
    290                 295                 300

Val Ser Phe Phe Ile Leu Ser Leu Ile Leu Gly Tyr Thr Trp Leu Glu
305                 310                 315                 320

Ala Val Ile Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro Glu Gly
                325                 330                 335

Leu Leu Ala Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys Arg Met
            340                 345                 350

Ala Arg Lys Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu Thr Leu
        355                 360                 365

Gly Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu Thr Gln
    370                 375                 380

Asn Arg Met Thr Val Ala His Met Trp Phe Asp Asn Gln Ile His Glu
385                 390                 395                 400

Ala Asp Thr Thr Glu Asp Gln Ser Gly Thr Ser Phe Asp Lys Ser Ser
                405                 410                 415

His Thr Trp Val Ala Leu Ser His Ile Ala Gly Leu Cys Asn Arg Ala
            420                 425                 430

Val Phe Lys Gly Gly Gln Asp Asn Ile Pro Val Leu Lys Arg Asp Val
```

435 440 445

Ala Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu Leu Ser
450 455 460

Ser Gly Ser Val Lys Leu Met Arg Glu Arg Asn Lys Lys Val Ala Glu
465 470 475 480

Ile Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His Glu Thr
485 490 495

Glu Asp Pro Asn Asp Asn Arg Tyr Leu Leu Val Met Lys Gly Ala Pro
500 505 510

Glu Arg Ile Leu Asp Arg Cys Ser Thr Ile Leu Leu Gln Gly Lys Glu
515 520 525

Gln Pro Leu Asp Glu Glu Met Lys Glu Ala Phe Gln Asn Ala Tyr Leu
530 535 540

Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Phe Cys His Tyr Tyr
545 550 555 560

Leu Pro Glu Glu Gln Phe Pro Lys Gly Phe Ala Phe Asp Cys Asp Asp
565 570 575

Val Asn Phe Thr Thr Asp Asn Leu Cys Phe Val Gly Leu Met Ser Met
580 585 590

Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala Val Gly Lys Cys Arg
595 600 605

Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly Asp His Pro Ile Thr
610 615 620

Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile Ser Glu Gly Asn Glu
625 630 635 640

Thr Val Glu Asp Ile Ala Ala Arg Leu Asn Ile Pro Val Ser Gln Val
645 650 655

Asn Pro Arg Asp Ala Lys Ala Cys Val Ile His Gly Thr Asp Leu Lys
660 665 670

```
Asp Phe Thr Ser Glu Gln Ile Asp Glu Ile Leu Gln Asn His Thr Glu
        675                 680                 685

Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile Val Glu
    690                 695                 700

Gly Cys Gln Arg Gln Gly Ala Ile Val Ala Val Thr Gly Asp Gly Val
705                 710                 715                 720

Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly Val Ala Met Gly
                725                 730                 735

Ile Ala Gly Ser Asp Val Ser Lys Gln Ala Ala Asp Met Ile Leu Leu
            740                 745                 750

Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val Glu Glu Gly Arg Leu
        755                 760                 765

Ile Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr Ser Asn
    770                 775                 780

Ile Pro Glu Ile Thr Pro Phe Leu Leu Phe Ile Met Ala Asn Ile Pro
785                 790                 795                 800

Leu Pro Leu Gly Thr Ile Thr Ile Leu Cys Ile Asp Leu Gly Thr Asp
                805                 810                 815

Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Ala Ala Glu Ser Asp Ile
            820                 825                 830

Met Lys Arg Gln Pro Arg Asn Pro Arg Thr Asp Lys Leu Val Asn Glu
        835                 840                 845

Arg Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly Met Ile Gln Ala Leu
    850                 855                 860

Gly Gly Phe Phe Ser Tyr Phe Val Ile Leu Ala Glu Asn Gly Phe Leu
865                 870                 875                 880

Pro Gly Asn Leu Val Gly Ile Arg Leu Asn Trp Asp Asp Arg Thr Val
                885                 890                 895
```

```
Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp Thr Tyr Glu Gln Arg
            900                 905                 910

Lys Val Val Glu Phe Thr Cys His Thr Ala Phe Phe Val Ser Ile Val
        915                 920                 925

Val Val Gln Trp Ala Asp Leu Ile Ile Cys Lys Thr Arg Arg Asn Ser
    930                 935                 940

Val Phe Gln Gln Gly Met Lys Asn Lys Ile Leu Ile Phe Gly Leu Phe
945                 950                 955                 960

Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly Met Asp
                965                 970                 975

Val Ala Leu Arg Met Tyr Pro Leu Lys Pro Ser Trp Trp Phe Cys Ala
            980                 985                 990

Phe Pro Tyr Ser Phe Leu Ile Phe  Val Tyr Asp Glu Ile  Arg Lys
Leu
        995                 1000                1005

Ile Leu  Arg Arg Asn Pro Gly  Gly Trp Val Glu Lys  Glu Thr Tyr
    1010                1015                1020

Tyr
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<210> 7545
<211> 1026
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1592; "

<220>
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<223> /note="Gene Symbol: ATP1A3; "

<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, alpha 3
polypeptide; "

<220>
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<223> /note="Uniprot ID: P13637; "

<220>
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<400> 7545
Met Gly Ser Gly Gly Ser Asp Ser Tyr Arg Ile Ala Thr Ser Gln Asp
1   5   10   15

Lys Lys Asp Asp Lys Asp Ser Pro Lys Lys Asn Lys Gly Lys Glu Arg
            20   25   30

Arg Asp Leu Asp Asp Leu Lys Lys Glu Val Ala Met Thr Glu His Lys
        35   40   45

Met Ser Val Glu Glu Val Cys Arg Lys Tyr Asn Thr Asp Cys Val Gln
    50   55   60

Gly Leu Thr His Ser Lys Ala Gln Glu Ile Leu Ala Arg Asp Gly Pro
65   70   75   80

Asn Ala Leu Thr Pro Pro Pro Thr Thr Pro Glu Trp Val Lys Phe Cys
                85   90   95

Arg Gln Leu Phe Gly Gly Phe Ser Ile Leu Leu Trp Ile Gly Ala Ile
            100   105   110

Leu Cys Phe Leu Ala Tyr Gly Ile Gln Ala Gly Thr Glu Asp Asp Pro
        115   120   125

Ser Gly Asp Asn Leu Tyr Leu Gly Ile Val Leu Ala Ala Val Val Ile
    130   135   140

Ile Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala Lys Ser Ser Lys Ile
145   150   155   160

Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln Ala Leu Val Ile Arg
                165   170   175

Glu Gly Glu Lys Met Gln Val Asn Ala Glu Glu Val Val Val Gly Asp
            180   185   190

```
Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro Ala Asp Leu Arg Ile
        195                 200                 205

Ile Ser Ala His Gly Cys Lys Val Asp Asn Ser Ser Leu Thr Gly Glu
    210                 215                 220

Ser Glu Pro Gln Thr Arg Ser Pro Asp Cys Thr His Asp Asn Pro Leu
225                 230                 235                 240

Glu Thr Arg Asn Ile Thr Phe Phe Ser Thr Asn Cys Val Glu Gly Thr
                245                 250                 255

Ala Arg Gly Val Val Val Ala Thr Gly Asp Arg Thr Val Met Gly Arg
            260                 265                 270

Ile Ala Thr Leu Ala Ser Gly Leu Glu Val Gly Lys Thr Pro Ile Ala
        275                 280                 285

Ile Glu Ile Glu His Phe Ile Gln Leu Ile Thr Gly Val Ala Val Phe
    290                 295                 300

Leu Gly Val Ser Phe Phe Ile Leu Ser Leu Ile Leu Gly Tyr Thr Trp
305                 310                 315                 320

Leu Glu Ala Val Ile Phe Leu Ile Gly Ile Ile Val Ala Asn Val Pro
                325                 330                 335

Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu Thr Leu Thr Ala Lys
            340                 345                 350

Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn Leu Glu Ala Val Glu
        355                 360                 365

Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp Lys Thr Gly Thr Leu
    370                 375                 380

Thr Gln Asn Arg Met Thr Val Ala His Met Trp Phe Asp Asn Gln Ile
385                 390                 395                 400

His Glu Ala Asp Thr Thr Glu Asp Gln Ser Gly Thr Ser Phe Asp Lys
                405                 410                 415

Ser Ser His Thr Trp Val Ala Leu Ser His Ile Ala Gly Leu Cys Asn
```

```
            420                 425                 430

Arg Ala Val Phe Lys Gly Gly Gln Asp Asn Ile Pro Val Leu Lys Arg
        435                 440                 445

Asp Val Ala Gly Asp Ala Ser Glu Ser Ala Leu Leu Lys Cys Ile Glu
    450                 455                 460

Leu Ser Ser Gly Ser Val Lys Leu Met Arg Glu Arg Asn Lys Lys Val
465                 470                 475                 480

Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr Gln Leu Ser Ile His
                485                 490                 495

Glu Thr Glu Asp Pro Asn Asp Asn Arg Tyr Leu Leu Val Met Lys Gly
            500                 505                 510

Ala Pro Glu Arg Ile Leu Asp Arg Cys Ser Thr Ile Leu Leu Gln Gly
        515                 520                 525

Lys Glu Gln Pro Leu Asp Glu Glu Met Lys Glu Ala Phe Gln Asn Ala
    530                 535                 540

Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg Val Leu Gly Phe Cys His
545                 550                 555                 560

Tyr Tyr Leu Pro Glu Glu Gln Phe Pro Lys Gly Phe Ala Phe Asp Cys
                565                 570                 575

Asp Asp Val Asn Phe Thr Thr Asp Asn Leu Cys Phe Val Gly Leu Met
            580                 585                 590

Ser Met Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala Val Gly Lys
        595                 600                 605

Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly Asp His Pro
    610                 615                 620

Ile Thr Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile Ser Glu Gly
625                 630                 635                 640

Asn Glu Thr Val Glu Asp Ile Ala Ala Arg Leu Asn Ile Pro Val Ser
                645                 650                 655
```

```
Gln Val Asn Pro Arg Asp Ala Lys Ala Cys Val Ile His Gly Thr Asp
            660                 665                 670

Leu Lys Asp Phe Thr Ser Glu Gln Ile Asp Glu Ile Leu Gln Asn His
        675                 680                 685

Thr Glu Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys Leu Ile Ile
    690                 695                 700

Val Glu Gly Cys Gln Arg Gln Gly Ala Ile Val Ala Val Thr Gly Asp
705                 710                 715                 720

Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile Gly Val Ala
                725                 730                 735

Met Gly Ile Ala Gly Ser Asp Val Ser Lys Gln Ala Ala Asp Met Ile
            740                 745                 750

Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val Glu Glu Gly
        755                 760                 765

Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser Ile Ala Tyr Thr Leu Thr
    770                 775                 780

Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu Leu Phe Ile Met Ala Asn
785                 790                 795                 800

Ile Pro Leu Pro Leu Gly Thr Ile Thr Ile Leu Cys Ile Asp Leu Gly
                805                 810                 815

Thr Asp Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Ala Ala Glu Ser
            820                 825                 830

Asp Ile Met Lys Arg Gln Pro Arg Asn Pro Arg Thr Asp Lys Leu Val
        835                 840                 845

Asn Glu Arg Leu Ile Ser Met Ala Tyr Gly Gln Ile Gly Met Ile Gln
    850                 855                 860

Ala Leu Gly Gly Phe Phe Ser Tyr Phe Val Ile Leu Ala Glu Asn Gly
865                 870                 875                 880
```

```
Phe Leu Pro Gly Asn Leu Val Gly Ile Arg Leu Asn Trp Asp Asp Arg
                885                 890                 895

Thr Val Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp Thr Tyr Glu
            900                 905                 910

Gln Arg Lys Val Val Glu Phe Thr Cys His Thr Ala Phe Phe Val Ser
        915                 920                 925

Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile Cys Lys Thr Arg Arg
    930                 935                 940

Asn Ser Val Phe Gln Gln Gly Met Lys Asn Lys Ile Leu Ile Phe Gly
945                 950                 955                 960

Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr Cys Pro Gly
                965                 970                 975

Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys Pro Ser Trp Trp Phe
            980                 985                 990

Cys Ala Phe Pro Tyr Ser Phe Leu  Ile Phe Val Tyr Asp  Glu Ile
Arg
        995                 1000                1005

Lys Leu  Ile Leu Arg Arg Asn  Pro Gly Gly Trp Val  Glu Lys Glu
    1010                1015                1020

Thr Tyr  Tyr
    1025


<210> 7546
<211> 251
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP1A3; "

<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, alpha 3
polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000469129"

<400> 7546

```
Met Thr Glu His Lys Met Ser Val Glu Glu Val Cys Arg Lys Tyr Asn
1               5                  10                  15

Thr Asp Cys Val Gln Gly Leu Thr His Ser Lys Ala Gln Glu Ile Leu
            20                  25                  30

Ala Arg Asp Gly Pro Asn Ala Leu Thr Pro Pro Pro Thr Thr Pro Glu
        35                  40                  45

Trp Val Lys Phe Cys Arg Gln Leu Phe Gly Gly Phe Ser Ile Leu Leu
    50                  55                  60

Trp Ile Gly Ala Ile Leu Cys Phe Leu Ala Tyr Gly Ile Gln Ala Gly
65                  70                  75                  80

Thr Glu Asp Asp Pro Ser Gly Asp Asn Leu Tyr Leu Gly Ile Val Leu
                85                  90                  95

Ala Ala Val Val Ile Ile Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala
            100                 105                 110

Lys Ser Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln
        115                 120                 125

Ala Leu Val Ile Arg Glu Gly Glu Lys Met Gln Val Asn Ala Glu Glu
    130                 135                 140

Val Val Val Gly Asp Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro
145                 150                 155                 160

Ala Asp Leu Arg Ile Ile Ser Ala His Gly Cys Lys Val Asp Asn Ser
                165                 170                 175

Ser Leu Thr Gly Glu Ser Glu Pro Gln Thr Arg Ser Pro Asp Cys Thr
            180                 185                 190
```

```
His Asp Asn Pro Leu Glu Thr Arg Asn Ile Thr Phe Phe Ser Thr Asn
        195                 200                 205

Cys Val Glu Gly Thr Ala Arg Gly Val Val Val Ala Thr Gly Asp Arg
    210                 215                 220

Thr Val Met Gly Arg Ile Ala Thr Leu Ala Ser Gly Leu Glu Val Gly
225                 230                 235                 240

Lys Thr Pro Ile Ala Ile Glu Ile Glu His Phe
                245                 250


<210> 7547
<211> 983
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 7547
Met Thr Glu His Lys Met Ser Val Glu Glu Val Cys Arg Lys Tyr Asn
1               5                   10                  15

Thr Asp Cys Val Gln Gly Leu Thr His Ser Lys Ala Gln Glu Ile Leu
            20                  25                  30

Ala Arg Asp Gly Pro Asn Ala Leu Thr Pro Pro Pro Thr Thr Pro Glu
        35                  40                  45

Trp Val Lys Phe Cys Arg Gln Leu Phe Gly Gly Phe Ser Ile Leu Leu
    50                  55                  60

Trp Ile Gly Ala Ile Leu Cys Phe Leu Ala Tyr Gly Ile Gln Ala Gly
```

65 70 75 80

Thr Glu Asp Asp Pro Ser Gly Asp Asn Leu Tyr Leu Gly Ile Val Leu
85 90 95

Ala Ala Val Val Ile Ile Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala
100 105 110

Lys Ser Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln
115 120 125

Ala Leu Val Ile Arg Glu Gly Glu Lys Met Gln Val Asn Ala Glu Glu
130 135 140

Val Val Val Gly Asp Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro
145 150 155 160

Ala Asp Leu Arg Ile Ile Ser Ala His Gly Cys Lys Val Asp Asn Ser
165 170 175

Ser Leu Thr Gly Glu Ser Glu Pro Gln Thr Arg Ser Pro Asp Cys Thr
180 185 190

His Asp Asn Pro Leu Glu Thr Arg Asn Ile Thr Phe Phe Ser Thr Asn
195 200 205

Cys Val Glu Gly Thr Ala Arg Gly Val Val Val Ala Thr Gly Asp Arg
210 215 220

Thr Val Met Gly Arg Ile Ala Thr Leu Ala Ser Gly Leu Glu Val Gly
225 230 235 240

Lys Thr Pro Ile Ala Ile Glu Ile Glu His Phe Ile Gln Leu Ile Thr
245 250 255

Gly Val Ala Val Phe Leu Gly Val Ser Phe Phe Ile Leu Ser Leu Ile
260 265 270

Leu Gly Tyr Thr Trp Leu Glu Ala Val Ile Phe Leu Ile Gly Ile Ile
275 280 285

Val Ala Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu
290 295 300

```
Thr Leu Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn
305                 310                 315                 320

Leu Glu Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp
                325                 330                 335

Lys Thr Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met Trp
            340                 345                 350

Phe Asp Asn Gln Ile His Glu Ala Asp Thr Thr Glu Asp Gln Ser Gly
        355                 360                 365

Thr Ser Phe Asp Lys Ser Ser His Thr Trp Val Ala Leu Ser His Ile
    370                 375                 380

Ala Gly Leu Cys Asn Arg Ala Val Phe Lys Gly Gly Gln Asp Asn Ile
385                 390                 395                 400

Pro Val Leu Lys Arg Asp Val Ala Gly Asp Ala Ser Glu Ser Ala Leu
                405                 410                 415

Leu Lys Cys Ile Glu Leu Ser Ser Gly Ser Val Lys Leu Met Arg Glu
            420                 425                 430

Arg Asn Lys Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr
        435                 440                 445

Gln Leu Ser Ile His Glu Thr Glu Asp Pro Asn Asp Asn Arg Tyr Leu
    450                 455                 460

Leu Val Met Lys Gly Ala Pro Glu Arg Ile Leu Asp Arg Cys Ser Thr
465                 470                 475                 480

Ile Leu Leu Gln Gly Lys Glu Gln Pro Leu Asp Glu Glu Met Lys Glu
                485                 490                 495

Ala Phe Gln Asn Ala Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg Val
            500                 505                 510

Leu Gly Phe Cys His Tyr Tyr Leu Pro Glu Glu Gln Phe Pro Lys Gly
        515                 520                 525
```

```
Phe Ala Phe Asp Cys Asp Asp Val Asn Phe Thr Thr Asp Asn Leu Cys
    530                 535                 540

Phe Val Gly Leu Met Ser Met Ile Asp Pro Pro Arg Ala Ala Val Pro
545                 550                 555                 560

Asp Ala Val Gly Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val
                565                 570                 575

Thr Gly Asp His Pro Ile Thr Ala Lys Ala Ile Ala Lys Gly Val Gly
            580                 585                 590

Ile Ile Ser Glu Gly Asn Glu Thr Val Glu Asp Ile Ala Ala Arg Leu
        595                 600                 605

Asn Ile Pro Val Ser Gln Val Asn Pro Arg Asp Ala Lys Ala Cys Val
    610                 615                 620

Ile His Gly Thr Asp Leu Lys Asp Phe Thr Ser Glu Gln Ile Asp Glu
625                 630                 635                 640

Ile Leu Gln Asn His Thr Glu Ile Val Phe Ala Arg Thr Ser Pro Gln
                645                 650                 655

Gln Lys Leu Ile Ile Val Glu Gly Cys Gln Arg Gln Gly Ala Ile Val
            660                 665                 670

Ala Val Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala
        675                 680                 685

Asp Ile Gly Val Ala Met Gly Ile Ala Gly Ser Asp Val Ser Lys Gln
    690                 695                 700

Ala Ala Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr
705                 710                 715                 720

Gly Val Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser Ile
                725                 730                 735

Ala Tyr Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu Leu
            740                 745                 750
```

```
Phe Ile Met Ala Asn Ile Pro Leu Pro Leu Gly Thr Ile Thr Ile Leu
        755                 760                 765

Cys Ile Asp Leu Gly Thr Asp Met Val Pro Ala Ile Ser Leu Ala Tyr
    770                 775                 780

Glu Ala Ala Glu Ser Asp Ile Met Lys Arg Gln Pro Arg Asn Pro Arg
785                 790                 795                 800

Thr Asp Lys Leu Val Asn Glu Arg Leu Ile Ser Met Ala Tyr Gly Gln
                805                 810                 815

Ile Gly Met Ile Gln Ala Leu Gly Gly Phe Phe Ser Tyr Phe Val Ile
            820                 825                 830

Leu Ala Glu Asn Gly Phe Leu Pro Gly Asn Leu Val Gly Ile Arg Leu
        835                 840                 845

Asn Trp Asp Asp Arg Thr Val Asn Asp Leu Glu Asp Ser Tyr Gly Gln
    850                 855                 860

Gln Trp Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr Cys His Thr
865                 870                 875                 880

Ala Phe Phe Val Ser Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile
                885                 890                 895

Cys Lys Thr Arg Arg Asn Ser Val Phe Gln Gln Gly Met Lys Asn Lys
            900                 905                 910

Ile Leu Ile Phe Gly Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe Leu
        915                 920                 925

Ser Tyr Cys Pro Gly Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys
    930                 935                 940

Pro Ser Trp Trp Phe Cys Ala Phe Pro Tyr Ser Phe Leu Ile Phe Val
945                 950                 955                 960

Tyr Asp Glu Ile Arg Lys Leu Ile Leu Arg Arg Asn Pro Gly Gly Trp
                965                 970                 975

Val Glu Lys Glu Thr Tyr Tyr
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980

<210> 7548
<211> 1029
<212> PRT
<213> Homo sapiens

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<220>
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ATPase, Na+/K+ transporting, alpha 4
polypeptide; "

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<220>
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<400> 7548
Met Gly Leu Trp Gly Lys Lys Gly Thr Val Ala Pro His Asp Gln Ser
1   5   10   15

Pro Arg Arg Arg Pro Lys Lys Gly Leu Ile Lys Lys Lys Met Val Lys
            20   25   30

Arg Glu Lys Gln Lys Arg Asn Met Glu Glu Leu Lys Lys Glu Val Val
        35   40   45

Met Asp Asp His Lys Leu Thr Leu Glu Glu Leu Ser Thr Lys Tyr Ser
    50   55   60

Val Asp Leu Thr Lys Gly His Ser His Gln Arg Ala Lys Glu Ile Leu
65   70   75   80

Thr Arg Gly Gly Pro Asn Thr Val Thr Pro Pro Pro Thr Thr Pro Glu
                85   90   95

Trp Val Lys Phe Cys Lys Gln Leu Phe Gly Gly Phe Ser Leu Leu Leu
            100   105   110

```
Trp Thr Gly Ala Ile Leu Cys Phe Val Ala Tyr Ser Ile Gln Ile Tyr
        115                 120                 125

Phe Asn Glu Glu Pro Thr Lys Asp Asn Leu Tyr Leu Ser Ile Val Leu
    130                 135                 140

Ser Val Val Val Ile Val Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala
145                 150                 155                 160

Lys Ser Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln
                165                 170                 175

Ala Leu Val Ile Arg Gly Gly Glu Lys Met Gln Ile Asn Val Gln Glu
            180                 185                 190

Val Val Leu Gly Asp Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro
        195                 200                 205

Ala Asp Leu Arg Leu Ile Ser Ala Gln Gly Cys Lys Val Asp Asn Ser
    210                 215                 220

Ser Leu Thr Gly Glu Ser Glu Pro Gln Ser Arg Ser Pro Asp Phe Thr
225                 230                 235                 240

His Glu Asn Pro Leu Glu Thr Arg Asn Ile Cys Phe Phe Ser Thr Asn
                245                 250                 255

Cys Val Glu Gly Thr Ala Arg Gly Ile Val Ile Ala Thr Gly Asp Ser
            260                 265                 270

Thr Val Met Gly Arg Ile Ala Ser Leu Thr Ser Gly Leu Ala Val Gly
        275                 280                 285

Gln Thr Pro Ile Ala Ala Glu Ile Glu His Phe Ile His Leu Ile Thr
    290                 295                 300

Val Val Ala Val Phe Leu Gly Val Thr Phe Phe Ala Leu Ser Leu Leu
305                 310                 315                 320

Leu Gly Tyr Gly Trp Leu Glu Ala Ile Ile Phe Leu Ile Gly Ile Ile
                325                 330                 335
```

```
Val Ala Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu
            340                 345                 350

Thr Leu Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn
        355                 360                 365

Leu Glu Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp
    370                 375                 380

Lys Thr Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met Trp
385                 390                 395                 400

Phe Asp Met Thr Val Tyr Glu Ala Asp Thr Thr Glu Glu Gln Thr Gly
                405                 410                 415

Lys Thr Phe Thr Lys Ser Ser Asp Thr Trp Phe Met Leu Ala Arg Ile
            420                 425                 430

Ala Gly Leu Cys Asn Arg Ala Asp Phe Lys Ala Asn Gln Glu Ile Leu
        435                 440                 445

Pro Ile Ala Lys Arg Ala Thr Thr Gly Asp Ala Ser Glu Ser Ala Leu
    450                 455                 460

Leu Lys Phe Ile Glu Gln Ser Tyr Ser Ser Val Ala Glu Met Arg Glu
465                 470                 475                 480

Lys Asn Pro Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr
                485                 490                 495

Gln Met Ser Ile His Leu Arg Glu Asp Ser Ser Gln Thr His Val Leu
            500                 505                 510

Met Met Lys Gly Ala Pro Glu Arg Ile Leu Glu Phe Cys Ser Thr Phe
        515                 520                 525

Leu Leu Asn Gly Gln Glu Tyr Ser Met Asn Asp Glu Met Lys Glu Ala
    530                 535                 540

Phe Gln Asn Ala Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg Val Leu
545                 550                 555                 560
```

```
Gly Phe Cys Phe Leu Asn Leu Pro Ser Ser Phe Ser Lys Gly Phe Pro
                565                 570                 575

Phe Asn Thr Asp Glu Ile Asn Phe Pro Met Asp Asn Leu Cys Phe Val
            580                 585                 590

Gly Leu Ile Ser Met Ile Asp Pro Pro Arg Ala Ala Val Pro Asp Ala
        595                 600                 605

Val Ser Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met Val Thr Gly
    610                 615                 620

Asp His Pro Ile Thr Ala Lys Ala Ile Ala Lys Gly Val Gly Ile Ile
625                 630                 635                 640

Ser Glu Gly Thr Glu Thr Ala Glu Glu Val Ala Ala Arg Leu Lys Ile
                645                 650                 655

Pro Ile Ser Lys Val Asp Ala Ser Ala Ala Lys Ala Ile Val Val His
            660                 665                 670

Gly Ala Glu Leu Lys Asp Ile Gln Ser Lys Gln Leu Asp Gln Ile Leu
        675                 680                 685

Gln Asn His Pro Glu Ile Val Phe Ala Arg Thr Ser Pro Gln Gln Lys
    690                 695                 700

Leu Ile Ile Val Glu Gly Cys Gln Arg Leu Gly Ala Val Val Ala Val
705                 710                 715                 720

Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys Ala Asp Ile
                725                 730                 735

Gly Ile Ala Met Gly Ile Ser Gly Ser Asp Val Ser Lys Gln Ala Ala
            740                 745                 750

Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser Ile Val Thr Gly Val
        755                 760                 765

Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser Ile Met Tyr
    770                 775                 780

Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu Met Phe Ile
```

785 790 795 800

Ile Leu Gly Ile Pro Leu Pro Leu Gly Thr Ile Thr Ile Leu Cys Ile
805 810 815

Asp Leu Gly Thr Asp Met Val Pro Ala Ile Ser Leu Ala Tyr Glu Ser
820 825 830

Ala Glu Ser Asp Ile Met Lys Arg Leu Pro Arg Asn Pro Lys Thr Asp
835 840 845

Asn Leu Val Asn His Arg Leu Ile Gly Met Ala Tyr Gly Gln Ile Gly
850 855 860

Met Ile Gln Ala Leu Ala Gly Phe Phe Thr Tyr Phe Val Ile Leu Ala
865 870 875 880

Glu Asn Gly Phe Arg Pro Val Asp Leu Leu Gly Ile Arg Leu His Trp
885 890 895

Glu Asp Lys Tyr Leu Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp
900 905 910

Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr Cys Gln Thr Ala Phe
915 920 925

Phe Val Thr Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile Ser Lys
930 935 940

Thr Arg Arg Asn Ser Leu Phe Gln Gln Gly Met Arg Asn Lys Val Leu
945 950 955 960

Ile Phe Gly Ile Leu Glu Glu Thr Leu Leu Ala Ala Phe Leu Ser Tyr
965 970 975

Thr Pro Gly Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys Ile Thr
980 985 990

Trp Trp Leu Cys Ala Ile Pro Tyr Ser Ile Leu Ile Phe Val Tyr
Asp
995 1000 1005

Glu Ile Arg Lys Leu Leu Ile Arg Gln His Pro Asp Gly Trp Val

```
    1010                1015                1020


Glu Arg  Glu Thr Tyr Tyr
    1025


<210> 7549
<211> 165
<212> PRT
<213> Homo sapiens

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<220>
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      polypeptide; "

<220>
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<220>
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Met Ile Gln Ala Leu Ala Gly Phe Phe Thr Tyr Phe Val Ile Leu Ala
1               5                  10                  15


Glu Asn Gly Phe Arg Pro Val Asp Leu Leu Gly Ile Arg Leu His Trp
            20                  25                  30


Glu Asp Lys Tyr Leu Asn Asp Leu Glu Asp Ser Tyr Gly Gln Gln Trp
        35                  40                  45


Thr Tyr Glu Gln Arg Lys Val Val Glu Phe Thr Cys Gln Thr Ala Phe
    50                  55                  60


Phe Val Thr Ile Val Val Val Gln Trp Ala Asp Leu Ile Ile Ser Lys
65                  70                  75                  80


Thr Arg Arg Asn Ser Leu Phe Gln Gln Gly Met Arg Asn Lys Val Leu
                85                  90                  95
```

```
Ile Phe Gly Ile Leu Glu Glu Thr Leu Leu Ala Ala Phe Leu Ser Tyr
            100                 105                 110

Thr Pro Gly Met Asp Val Ala Leu Arg Met Tyr Pro Leu Lys Ile Thr
        115                 120                 125

Trp Trp Leu Cys Ala Ile Pro Tyr Ser Ile Leu Ile Phe Val Tyr Asp
    130                 135                 140

Glu Ile Arg Lys Leu Leu Ile Arg Gln His Pro Asp Gly Trp Val Glu
145                 150                 155                 160

Arg Glu Thr Tyr Tyr
                165
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<210> 7550
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<213> Homo sapiens

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ATPase, Na+/K+ transporting, alpha 4
polypeptide; "

<220>
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<400> 7550

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Met Gly Leu Trp Gly Lys Lys Gly Thr Val Ala Pro His Asp Gln Ser
1               5                   10                  15

Pro Arg Arg Arg Pro Lys Lys Gly Leu Ile Lys Lys Lys Met Val Lys
            20                  25                  30

Arg Glu Lys Gln Lys Arg Asn Met Glu Glu Leu Lys Lys Glu Val Val
        35                  40                  45
```

```
Met Asp Asp His Lys Leu Thr Leu Glu Glu Leu Ser Thr Lys Tyr Ser
    50                  55                  60

Val Asp Leu Thr Lys Gly His Ser His Gln Arg Ala Lys Glu Ile Leu
65                  70                  75                  80

Thr Arg Gly Gly Pro Asn Thr Val Thr Pro Pro Pro Thr Thr Pro Glu
                85                  90                  95

Trp Val Lys Phe Cys Lys Gln Leu Phe Gly Gly Phe Ser Leu Leu Leu
            100                 105                 110

Trp Thr Gly Ala Ile Leu Cys Phe Val Ala Tyr Ser Ile Gln Ile Tyr
        115                 120                 125

Phe Asn Glu Glu Pro Thr Lys Asp Asn Leu Tyr Leu Ser Ile Val Leu
    130                 135                 140

Ser Val Val Val Ile Val Thr Gly Cys Phe Ser Tyr Tyr Gln Glu Ala
145                 150                 155                 160

Lys Ser Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln Gln
                165                 170                 175

Ala Leu Val Ile Arg Gly Gly Glu Lys Met Gln Ile Asn Val Gln Glu
            180                 185                 190

Val Val Leu Gly Asp Leu Val Glu Ile Lys Gly Gly Asp Arg Val Pro
        195                 200                 205

Ala Asp Leu Arg Leu Ile Ser Ala Gln Gly Cys Lys Val Asp Asn Ser
    210                 215                 220

Ser Leu Thr Gly Glu Ser Glu Pro Gln Ser Arg Ser Pro Asp Phe Thr
225                 230                 235                 240

His Glu Asn Pro Leu Glu Thr Arg Asn Ile Cys Phe Phe Ser Thr Asn
                245                 250                 255

Cys Val Glu Gly Thr Ala Arg Gly Ile Val Ile Ala Thr Gly Asp Ser
            260                 265                 270
```

```
Thr Val Met Gly Arg Ile Ala Ser Leu Thr Ser Gly Leu Ala Val Gly
        275                 280                 285

Gln Thr Pro Ile Ala Ala Glu Ile Glu His Phe Ile His Leu Ile Thr
    290                 295                 300

Val Val Ala Val Phe Leu Gly Val Thr Phe Phe Ala Leu Ser Leu Leu
305                 310                 315                 320

Leu Gly Tyr Gly Trp Leu Glu Ala Ile Ile Phe Leu Ile Gly Ile Ile
                325                 330                 335

Val Ala Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys Leu
            340                 345                 350

Thr Leu Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys Asn
        355                 360                 365

Leu Glu Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser Asp
    370                 375                 380

Lys Thr Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met Trp
385                 390                 395                 400

Phe Asp Met Thr Val Tyr Glu Ala Asp Thr Thr Glu Glu Gln Thr Gly
                405                 410                 415

Lys Thr Phe Thr Lys Ser Ser Asp Thr Trp Phe Met Leu Ala Arg Ile
            420                 425                 430

Ala Gly Leu Cys Asn Arg Ala Asp Phe Lys Ala Asn Gln Glu Ile Leu
        435                 440                 445

Pro Ile Ala Lys Arg Ala Thr Thr Gly Asp Ala Ser Glu Ser Ala Leu
    450                 455                 460

Leu Lys Phe Ile Glu Gln Ser Tyr Ser Ser Val Ala Glu Met Arg Glu
465                 470                 475                 480

Lys Asn Pro Lys Val Ala Glu Ile Pro Phe Asn Ser Thr Asn Lys Tyr
                485                 490                 495

Gln Val Gln Asn Pro Gln Arg Cys Pro Ser Thr Phe Gly Arg Thr Ala
```

```
            500                 505                 510

Pro Arg Pro Thr Tyr
        515


<210> 7551
<211> 303
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000356789"

<400> 7551
Met Ala Arg Gly Lys Ala Lys Glu Glu Gly Ser Trp Lys Lys Phe Ile
1               5                  10                  15


Trp Asn Ser Glu Lys Lys Glu Phe Leu Gly Arg Thr Gly Gly Ser Trp
            20                  25                  30


Phe Lys Ile Leu Leu Phe Tyr Val Ile Phe Tyr Gly Cys Leu Ala Gly
        35                  40                  45


Ile Phe Ile Gly Thr Ile Gln Val Met Leu Leu Thr Ile Ser Glu Phe
    50                  55                  60


Lys Pro Thr Tyr Gln Asp Arg Val Ala Pro Pro Gly Leu Thr Gln Ile
65                  70                  75                  80


Pro Gln Ile Gln Lys Thr Glu Ile Ser Phe Arg Pro Asn Asp Pro Lys
                85                  90                  95
```

```
Ser Tyr Glu Ala Tyr Val Leu Asn Ile Val Arg Phe Leu Glu Lys Tyr
            100                 105                 110

Lys Asp Ser Ala Gln Arg Asp Asp Met Ile Phe Glu Asp Cys Gly Asp
        115                 120                 125

Val Pro Ser Glu Pro Lys Glu Arg Gly Asp Phe Asn His Glu Arg Gly
    130                 135                 140

Glu Arg Lys Val Cys Arg Phe Lys Leu Glu Trp Leu Gly Asn Cys Ser
145                 150                 155                 160

Gly Leu Asn Asp Glu Thr Tyr Gly Tyr Lys Glu Gly Lys Pro Cys Ile
                165                 170                 175

Ile Ile Lys Leu Asn Arg Val Leu Gly Phe Lys Pro Lys Pro Pro Lys
            180                 185                 190

Asn Glu Ser Leu Glu Thr Tyr Pro Val Met Lys Tyr Asn Pro Asn Val
        195                 200                 205

Leu Pro Val Gln Cys Thr Gly Lys Arg Asp Glu Asp Lys Asp Lys Val
    210                 215                 220

Gly Asn Val Glu Tyr Phe Gly Leu Gly Asn Ser Pro Gly Phe Pro Leu
225                 230                 235                 240

Gln Tyr Tyr Pro Tyr Tyr Gly Lys Leu Leu Gln Pro Lys Tyr Leu Gln
                245                 250                 255

Pro Leu Leu Ala Val Gln Phe Thr Asn Leu Thr Met Asp Thr Glu Ile
            260                 265                 270

Arg Ile Glu Cys Lys Ala Tyr Gly Glu Asn Ile Gly Tyr Ser Glu Lys
        275                 280                 285

Asp Arg Phe Gln Gly Arg Phe Asp Val Lys Ile Glu Val Lys Ser
    290                 295                 300
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<210> 7552
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<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP1B1; "

<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 1
polypeptide; "

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<223> /note="Uniprot ID: P05026; "

<220>
<221> source
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<400> 7552

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Met Ala Arg Gly Lys Ala Lys Glu Glu Gly Ser Trp Lys Lys Phe Ile
1               5                  10                  15


Trp Asn Ser Glu Lys Lys Glu Phe Leu Gly Arg Thr Gly Gly Ser Trp
            20                  25                  30


Phe Lys Ile Leu Leu Phe Tyr Val Ile Phe Tyr Gly Cys Leu Ala Gly
        35                  40                  45


Ile Phe Ile Gly Thr Ile Gln Val Met Leu Leu Thr Ile Ser Glu Phe
    50                  55                  60


Lys Pro Thr Tyr Gln Asp Arg Val Ala Pro Pro Gly Leu Thr Gln Ile
65                  70                  75                  80


Pro Gln Ile Gln Lys Thr Glu Ile Ser Phe Arg Pro Asn Asp Pro Lys
                85                  90                  95


Ser Tyr Glu Ala Tyr Val Leu Asn Ile Val Arg Phe Leu Glu Lys Tyr
            100                 105                 110


Lys Asp Ser Ala Gln Arg Asp Asp Met Ile Phe Glu Asp Cys Gly Asp
        115                 120                 125
```

```
Val Pro Ser Glu Pro Lys Glu Arg Gly Asp Phe Asn His Glu Arg Gly
    130                 135                 140

Glu Arg Lys Val Cys Arg Phe Lys Leu Glu Trp Leu Gly Asn Cys Ser
145                 150                 155                 160

Gly Leu Asn Asp Glu Thr Tyr Gly Tyr Lys Glu Gly Lys Pro Cys Ile
                165                 170                 175

Ile Ile Lys Leu Asn Arg Val Leu Gly Phe Lys Pro Lys Pro Pro Lys
            180                 185                 190

Asn Glu Ser Leu Glu Thr Tyr Pro Val Met Lys Tyr Asn Pro Asn Val
        195                 200                 205

Leu Pro Val Gln Cys Thr Gly Lys Arg Asp Glu Asp Lys Asp Lys Val
    210                 215                 220

Gly Asn Val Glu Tyr Phe Gly Leu Gly Asn Ser Pro Gly Phe Pro Leu
225                 230                 235                 240

Gln Tyr Tyr Pro Tyr Tyr Gly Lys Leu Leu Gln Pro Lys Tyr Leu Gln
                245                 250                 255

Pro Leu Leu Ala Val Gln Phe Thr Asn Leu Thr Met Asp Thr Glu Ile
            260                 265                 270

Arg Ile Glu Cys Lys Ala Tyr Gly Glu Asn Ile Gly Tyr Ser Glu Lys
        275                 280                 285

Asp Arg Phe Gln Gly Arg Phe Asp Val Lys Ile Glu Val Lys Ser
    290                 295                 300


<210> 7553
<211> 130
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP1B1; "
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<220>
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<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 1
polypeptide; "

<220>
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<223> /note="ENSP ID: ENSP00000477015"

<400> 7553
Met Leu Leu Thr Ile Ser Glu Phe Lys Pro Thr Tyr Gln Asp Arg Val
1 5 10 15

Ala Pro Pro Gly Leu Thr Gln Ile Pro Gln Ile Gln Lys Thr Glu Ile
20 25 30

Ser Phe Arg Pro Asn Asp Pro Lys Ser Tyr Glu Ala Tyr Val Leu Asn
35 40 45

Ile Val Arg Phe Leu Glu Lys Tyr Lys Asp Ser Ala Gln Arg Asp Asp
50 55 60

Met Ile Phe Glu Asp Cys Gly Asp Val Pro Ser Glu Pro Lys Glu Arg
65 70 75 80

Gly Asp Phe Asn His Glu Arg Gly Glu Arg Lys Val Cys Arg Phe Lys
85 90 95

Leu Glu Trp Leu Gly Asn Cys Ser Gly Leu Asn Asp Glu Thr Tyr Gly
100 105 110

Tyr Lys Glu Gly Lys Pro Cys Ile Ile Ile Lys Leu Asn Arg Val Leu
115 120 125

Gly Phe
130

<210> 7554
<211> 290
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1595; "

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<221> source
<223> /note="Gene Symbol: ATP1B2; "

<220>
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ATPase, Na+/K+ transporting, beta 2
polypeptide; "

<220>
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<223> /note="Uniprot ID: P14415; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000250111"

<400> 7554

Met	Val	Ile	Gln	Lys	Glu	Lys	Lys	Ser	Cys	Gly	Gln	Val	Val	Glu	Glu
1				5				10						15	

Trp	Lys	Glu	Phe	Val	Trp	Asn	Pro	Arg	Thr	His	Gln	Phe	Met	Gly	Arg
		20						25					30		

Thr	Gly	Thr	Ser	Trp	Ala	Phe	Ile	Leu	Leu	Phe	Tyr	Leu	Val	Phe	Tyr
	35						40					45			

Gly	Phe	Leu	Thr	Ala	Met	Phe	Thr	Leu	Thr	Met	Trp	Val	Met	Leu	Gln
	50					55					60				

Thr	Val	Ser	Asp	His	Thr	Pro	Lys	Tyr	Gln	Asp	Arg	Leu	Ala	Thr	Pro
65					70					75					80

Gly	Leu	Met	Ile	Arg	Pro	Lys	Thr	Glu	Asn	Leu	Asp	Val	Ile	Val	Asn
				85					90					95	

Val	Ser	Asp	Thr	Glu	Ser	Trp	Asp	Gln	His	Val	Gln	Lys	Leu	Asn	Lys
			100					105					110		

Phe	Leu	Glu	Pro	Tyr	Asn	Asp	Ser	Ile	Gln	Ala	Gln	Lys	Asn	Asp	Val
		115					120					125			

Cys	Arg	Pro	Gly	Arg	Tyr	Tyr	Glu	Gln	Pro	Asp	Asn	Gly	Val	Leu	Asn
	130					135					140				

Tyr	Pro	Lys	Arg	Ala	Cys	Gln	Phe	Asn	Arg	Thr	Gln	Leu	Gly	Asn	Cys
145					150					155					160

```
Ser Gly Ile Gly Asp Ser Thr His Tyr Gly Tyr Ser Thr Gly Gln Pro
                165                 170                 175

Cys Val Phe Ile Lys Met Asn Arg Val Ile Asn Phe Tyr Ala Gly Ala
            180                 185                 190

Asn Gln Ser Met Asn Val Thr Cys Ala Gly Lys Arg Asp Glu Asp Ala
        195                 200                 205

Glu Asn Leu Gly Asn Phe Val Met Phe Pro Ala Asn Gly Asn Ile Asp
    210                 215                 220

Leu Met Tyr Phe Pro Tyr Tyr Gly Lys Lys Phe His Val Asn Tyr Thr
225                 230                 235                 240

Gln Pro Leu Val Ala Val Lys Phe Leu Asn Val Thr Pro Asn Val Glu
                245                 250                 255

Val Asn Val Glu Cys Arg Ile Asn Ala Ala Asn Ile Ala Thr Asp Asp
            260                 265                 270

Glu Arg Asp Lys Phe Ala Gly Arg Val Ala Phe Lys Leu Arg Ile Asn
        275                 280                 285

Lys Thr
    290
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<210> 7555
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1595; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 2
polypeptide; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000459145"

<400> 7555
Met Ile Arg Pro Lys Thr Glu Asn Leu Asp Val Ile Val Asn Val Ser
1 5 10 15

Asp Thr Glu Ser Trp Asp Gln His Val Gln Lys Leu Asn Lys Phe Leu
20 25 30

Glu Pro Tyr Asn Asp Ser Ile Gln Ala Gln Lys Asn Asp Val Cys Arg
35 40 45

Pro Gly Arg Tyr Tyr Glu Gln Pro Asp Asn Gly Val Leu Asn Tyr Pro
50 55 60

Lys Arg Ala Cys Gln Phe Asn Arg Thr Gln Leu Gly Asn Cys Ser Gly
65 70 75 80

Ile Gly Asp Ser Thr His Tyr Gly Tyr Ser Thr Gly Gln Pro Cys Val
85 90 95

Phe Ile Lys Met Asn Arg Val Ile Asn Phe Tyr Ala Gly Ala Asn Gln
100 105 110

Ser Met Asn Val Thr Cys Ala Gly Lys Arg Asp Glu Asp Ala Glu Asn
115 120 125

Leu Gly Asn Phe Val Met Phe Pro Ala Asn Gly Asn Ile Asp Leu Met
130 135 140

Tyr Phe Pro Tyr Tyr Gly Lys Lys Phe His Val Asn Tyr Thr Gln Pro
145 150 155 160

Leu Val Ala Val Lys Phe
165

<210> 7556
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1595; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B2; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 2
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460499"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7556
Xaa Glu Gln Pro Asp Asn Gly Val Leu Asn Tyr Pro Lys Arg Ala Cys
1 5 10 15

Gln Phe Asn Arg Thr Gln Leu Gly Asn Cys Ser Gly Ile Gly Asp Ser
20 25 30

Thr His Tyr Gly Tyr Ser Thr Gly Gln Pro Cys Val Phe Ile Lys Met
35 40 45

Asn Arg Val Ile Asn Phe Tyr Ala Gly Ala Asn Gln Ser Met Asn Val
50 55 60

Thr Cys Ala Gly Lys Arg Pro His His His Arg Asn Lys Gly Lys Leu
65 70 75 80

Ile Pro Glu Asp Gly Arg Asp Glu Asp Ala Glu Asn Leu Gly Asn Phe
85 90 95

Val Met Phe Pro Ala Asn Gly Asn Ile Asp Leu Met Tyr Phe Pro Tyr
100 105 110

Tyr Gly Lys Lys Phe His Val Asn Tyr Thr Gln Pro Leu Val Ala Val
115 120 125

Lys Phe Leu Asn Val Thr Pro Asn Val Glu Val Asn Val Glu Cys Arg
130 135 140

```
Ile Asn Ala Ala Asn Ile Ala Thr Asp Asp Glu Arg Asp Lys Phe Ala
145                 150                 155                 160


Gly Arg Val Ala Phe Lys Leu Arg Ile Asn Lys Thr
                165                 170


<210> 7557
<211> 279
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1596; "

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<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:
      ATPase, Na+/K+ transporting, beta 3
      polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID:  P54709; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000286371"

<400> 7557
Met Thr Lys Asn Glu Lys Lys Ser Leu Asn Gln Ser Leu Ala Glu Trp
1               5                   10                  15


Lys Leu Phe Ile Tyr Asn Pro Thr Thr Gly Glu Phe Leu Gly Arg Thr
            20                  25                  30


Ala Lys Ser Trp Gly Leu Ile Leu Leu Phe Tyr Leu Val Phe Tyr Gly
        35                  40                  45


Phe Leu Ala Ala Leu Phe Ser Phe Thr Met Trp Val Met Leu Gln Thr
    50                  55                  60


Leu Asn Asp Glu Val Pro Lys Tyr Arg Asp Gln Ile Pro Ser Pro Gly
65                  70                  75                  80


Leu Met Val Phe Pro Lys Pro Val Thr Ala Leu Glu Tyr Thr Phe Ser
```

85 90 95

Arg Ser Asp Pro Thr Ser Tyr Ala Gly Tyr Ile Glu Asp Leu Lys Lys
100 105 110

Phe Leu Lys Pro Tyr Thr Leu Glu Glu Gln Lys Asn Leu Thr Val Cys
115 120 125

Pro Asp Gly Ala Leu Phe Glu Gln Lys Gly Pro Val Tyr Val Ala Cys
130 135 140

Gln Phe Pro Ile Ser Leu Leu Gln Ala Cys Ser Gly Met Asn Asp Pro
145 150 155 160

Asp Phe Gly Tyr Ser Gln Gly Asn Pro Cys Ile Leu Val Lys Met Asn
165 170 175

Arg Ile Ile Gly Leu Lys Pro Glu Gly Val Pro Arg Ile Asp Cys Val
180 185 190

Ser Lys Asn Glu Asp Ile Pro Asn Val Ala Val Tyr Pro His Asn Gly
195 200 205

Met Ile Asp Leu Lys Tyr Phe Pro Tyr Tyr Gly Lys Lys Leu His Val
210 215 220

Gly Tyr Leu Gln Pro Leu Val Ala Val Gln Val Ser Phe Ala Pro Asn
225 230 235 240

Asn Thr Gly Lys Glu Val Thr Val Glu Cys Lys Ile Asp Gly Ser Ala
245 250 255

Asn Leu Lys Ser Gln Asp Asp Arg Asp Lys Phe Leu Gly Arg Val Met
260 265 270

Phe Lys Ile Thr Ala Arg Ala
275

<210> 7558
<211> 133
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1596; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 3
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417522"

<400> 7558
Met Trp Val Met Leu Gln Thr Leu Asn Asp Glu Val Pro Lys Tyr Arg
1 5 10 15

Asp Gln Ile Pro Ser Pro Gly Leu Met Val Phe Pro Lys Pro Val Thr
20 25 30

Ala Leu Glu Tyr Thr Phe Ser Arg Ser Asp Pro Thr Ser Tyr Ala Gly
35 40 45

Tyr Ile Glu Asp Leu Lys Lys Phe Leu Lys Pro Tyr Thr Leu Glu Glu
50 55 60

Gln Lys Asn Leu Thr Val Cys Pro Asp Gly Ala Leu Phe Glu Gln Lys
65 70 75 80

Gly Pro Val Tyr Val Ala Cys Gln Phe Pro Ile Ser Leu Leu Gln Ala
85 90 95

Cys Ser Gly Met Asn Asp Pro Asp Phe Gly Tyr Ser Gln Gly Asn Pro
100 105 110

Cys Ile Leu Val Lys Met Asn Arg Ile Ile Gly Leu Lys Pro Glu Gly
115 120 125

Val Pro Arg Ile Asp
130

<210> 7559
<211> 27
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1596; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 3
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417608"

<400> 7559
Ile Ile Gly Leu Lys Pro Glu Gly Val Pro Arg Ile Asp Cys Val Ser
1 5 10 15

Lys Leu Val Gly Val Leu Val Ile Ser Ala Ile
20 25

<210> 7560
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1596; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 3
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418280"

<400> 7560
Met Thr Lys Asn Glu Lys Lys Ser Leu Asn Gln Ser Leu Ala Glu Trp
1 5 10 15

Lys Leu Phe Ile Tyr Asn Pro Thr Thr Gly Glu Phe Leu Gly Arg Thr
20 25 30

Ala Lys Ser Trp Gly Ser Gln Tyr Val Val Gly Lys
35 40

<210> 7561
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1596; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 3
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418353"

<400> 7561
Met Gly Ser Trp Leu His Ser Ser His Ser Arg Cys Gly Leu Cys Phe
1 5 10 15

Arg Leu Ser Thr Met Arg Phe Gln Asn Thr Val Thr Arg Phe Leu Ala
20 25 30

Gln Val Gly Tyr Leu Gln Pro Leu Val Ala Val Gln Val Ser Phe Ala
35 40 45

Pro Asn Asn Thr Gly Lys Glu Val Thr Val Glu Cys Lys Ile Asp Gly
50 55 60

Ser Ala Asn Leu Lys Ser Gln Asp Asp Arg Asp Lys Phe Leu Gly Arg
65 70 75 80

Val Met Phe Lys Ile Thr Ala Arg Ala
85

<210> 7562

<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1596; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 3
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418952"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7562
Xaa Lys Asn Glu Lys Lys Ser Leu Asn Gln Ser Leu Ala Glu Trp Lys
1 5 10 15

Leu Phe Ile Tyr Asn Pro Thr Thr Gly Glu Phe Leu Gly Arg Thr Ala
20 25 30

Lys Ser Trp Gly Ser Gln Tyr Val Val Gly Lys
35 40

<210> 7563
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1596; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B3; "

<220>
<221> source
<223> /note="Gene Name:

ATPase, Na+/K+ transporting, beta 3
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419962"

<400> 7563
Met Leu Ser Glu Gly Asp Ile Leu Phe Ser Ser Leu Leu Ser Ser Pro
1 5 10 15

Ser Leu Phe Trp Pro Pro Gly Leu Ile Leu Leu Phe Tyr Leu Val Phe
20 25 30

Tyr Gly Phe Leu Ala Ala Leu Phe Ser Phe Thr Met Trp Val Met Leu
35 40 45

Gln Thr Leu Asn Asp Glu Val Pro Lys Tyr Arg Asp Gln Ile Pro Ser
50 55 60

Pro Gly Leu Met Val Phe Pro Lys Pro Val Thr Ala Leu Glu Tyr Thr
65 70 75 80

Phe Ser Arg Ser Asp Pro Thr Ser Tyr Ala Gly Tyr Ile Glu Asp Leu
85 90 95

Lys Lys Phe Leu Lys Pro Tyr Thr Leu Glu Glu Gln Lys Asn Leu Thr
100 105 110

Val Cys Pro Asp Gly Ala Leu
115

<210> 7564
<211> 357
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1597; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 4

polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UN42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000218008"

<400> 7564
Met Arg Arg Gln Leu Arg Ser Arg Arg Ala Pro Ser Phe Pro Tyr Ser
1   5   10   15

Tyr Arg Tyr Arg Leu Asp Asp Pro Asp Glu Ala Asn Gln Asn Tyr Leu
            20   25   30

Ala Asp Glu Glu Glu Glu Ala Glu Glu Glu Ala Arg Val Thr Val Val
        35   40   45

Pro Lys Ser Glu Glu Glu Glu Glu Glu Glu Glu Lys Glu Glu Glu Glu
    50   55   60

Glu Glu Glu Lys Glu Glu Glu Glu Gly Gln Gly Gln Pro Thr Gly Asn
65   70   75   80

Ala Trp Trp Gln Lys Leu Gln Ile Met Ser Glu Tyr Leu Trp Asp Pro
                85   90   95

Glu Arg Arg Met Phe Leu Ala Arg Thr Gly Gln Ser Trp Ser Leu Ile
            100   105   110

Leu Leu Ile Tyr Phe Phe Phe Tyr Ala Ser Leu Ala Ala Val Ile Thr
        115   120   125

Leu Cys Met Tyr Thr Leu Phe Leu Thr Ile Ser Pro Tyr Ile Pro Thr
    130   135   140

Phe Thr Glu Arg Val Lys Pro Pro Gly Val Met Ile Arg Pro Phe Ala
145   150   155   160

His Ser Leu Asn Phe Asn Phe Asn Val Ser Glu Pro Asp Thr Trp Gln
                165   170   175

His Tyr Val Ile Ser Leu Asn Gly Phe Leu Gln Gly Tyr Asn Asp Ser
            180   185   190

```
Leu Gln Glu Glu Met Asn Val Asp Cys Pro Pro Gly Gln Tyr Phe Ile
        195                 200                 205

Gln Asp Gly Asn Glu Asp Glu Asp Lys Lys Ala Cys Gln Phe Lys Arg
    210                 215                 220

Ser Phe Leu Lys Asn Cys Ser Gly Leu Glu Asp Pro Thr Phe Gly Tyr
225                 230                 235                 240

Ser Thr Gly Gln Pro Cys Ile Leu Leu Lys Met Asn Arg Ile Val Gly
                245                 250                 255

Phe Arg Pro Glu Leu Gly Asp Pro Val Lys Val Ser Cys Lys Val Gln
            260                 265                 270

Arg Gly Asp Glu Asn Asp Ile Arg Ser Ile Ser Tyr Tyr Pro Glu Ser
        275                 280                 285

Ala Ser Phe Asp Leu Arg Tyr Tyr Pro Tyr Tyr Gly Lys Leu Thr His
    290                 295                 300

Val Asn Tyr Thr Ser Pro Leu Val Ala Met His Phe Thr Asp Val Val
305                 310                 315                 320

Lys Asn Gln Ala Val Pro Val Gln Cys Gln Leu Lys Gly Lys Gly Val
                325                 330                 335

Ile Asn Asp Val Ile Asn Asp Arg Phe Val Gly Arg Val Ile Phe Thr
            340                 345                 350

Leu Asn Ile Glu Thr
        355


<210> 7565
<211> 353
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1597; "

<220>
<221> source
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<223> /note="Gene Symbol: ATP1B4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 4
polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UN42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355346"

<400> 7565

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Met Arg Arg Gln Leu Arg Ser Arg Arg Ala Pro Ser Phe Pro Tyr Ser
1               5                   10                  15

Tyr Arg Tyr Arg Leu Asp Asp Pro Asp Glu Ala Asn Gln Asn Tyr Leu
            20                  25                  30

Ala Asp Glu Glu Glu Glu Ala Glu Glu Glu Ala Arg Val Thr Val Val
        35                  40                  45

Pro Lys Ser Glu Glu Glu Glu Glu Glu Glu Glu Lys Glu Glu Glu Glu
    50                  55                  60

Glu Glu Glu Lys Glu Glu Glu Glu Gly Gln Gly Gln Pro Thr Gly Asn
65                  70                  75                  80

Ala Trp Trp Gln Lys Leu Gln Ile Met Ser Glu Tyr Leu Trp Asp Pro
                85                  90                  95

Glu Arg Arg Met Phe Leu Ala Arg Thr Gly Leu Ile Leu Leu Ile Tyr
            100                 105                 110

Phe Phe Phe Tyr Ala Ser Leu Ala Ala Val Ile Thr Leu Cys Met Tyr
        115                 120                 125

Thr Leu Phe Leu Thr Ile Ser Pro Tyr Ile Pro Thr Phe Thr Glu Arg
    130                 135                 140

Val Lys Pro Pro Gly Val Met Ile Arg Pro Phe Ala His Ser Leu Asn
145                 150                 155                 160
```

```
Phe Asn Phe Asn Val Ser Glu Pro Asp Thr Trp Gln His Tyr Val Ile
                165                 170                 175

Ser Leu Asn Gly Phe Leu Gln Gly Tyr Asn Asp Ser Leu Gln Glu Glu
            180                 185                 190

Met Asn Val Asp Cys Pro Pro Gly Gln Tyr Phe Ile Gln Asp Gly Asn
        195                 200                 205

Glu Asp Glu Asp Lys Lys Ala Cys Gln Phe Lys Arg Ser Phe Leu Lys
    210                 215                 220

Asn Cys Ser Gly Leu Glu Asp Pro Thr Phe Gly Tyr Ser Thr Gly Gln
225                 230                 235                 240

Pro Cys Ile Leu Leu Lys Met Asn Arg Ile Val Gly Phe Arg Pro Glu
                245                 250                 255

Leu Gly Asp Pro Val Lys Val Ser Cys Lys Val Gln Arg Gly Asp Glu
            260                 265                 270

Asn Asp Ile Arg Ser Ile Ser Tyr Tyr Pro Glu Ser Ala Ser Phe Asp
        275                 280                 285

Leu Arg Tyr Tyr Pro Tyr Tyr Gly Lys Leu Thr His Val Asn Tyr Thr
    290                 295                 300

Ser Pro Leu Val Ala Met His Phe Thr Asp Val Val Lys Asn Gln Ala
305                 310                 315                 320

Val Pro Val Gln Cys Gln Leu Lys Gly Lys Gly Val Ile Asn Asp Val
                325                 330                 335

Ile Asn Asp Arg Phe Val Gly Arg Val Ile Phe Thr Leu Asn Ile Glu
            340                 345                 350

Thr
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<210> 7566
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1597; "

<220>
<221> source
<223> /note="Gene Symbol: ATP1B4; "

<220>
<221> source
<223> /note="Gene Name:
ATPase, Na+/K+ transporting, beta 4
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443334"

<400> 7566
Met Arg Arg Gln Leu Arg Ser Arg Arg Ala Pro Ser Phe Pro Tyr Ser
1 5 10 15

Tyr Arg Tyr Arg Leu Asp Asp Pro Asp Glu Ala Asn Gln Asn Tyr Leu
20 25 30

Ala Asp Glu Glu Glu Glu Ala Glu Glu Glu Ala Arg Val Thr Val Val
35 40 45

Pro Lys Ser Glu Glu Glu Glu Glu Glu Glu Glu Lys Glu Glu Glu Glu
50 55 60

Glu Glu Glu Lys Glu Glu Glu Glu Gly Gln Gly Gln Pro Thr Gly Asn
65 70 75 80

Ala Trp Trp Gln Lys Leu Gln Ile Met Ser Glu Tyr Leu Trp Asp Pro
85 90 95

Glu Arg Arg Met Phe Leu Ala Arg Thr Gly Gln Ser Trp Arg Val Met
100 105 110

Ile Arg Pro Phe Ala His Ser Leu Asn Phe Asn Phe Asn Val Ser Glu
115 120 125

Pro Asp Thr Trp Gln His Tyr Val Ile Ser Leu Asn Gly Phe Leu Gln
130 135 140

Gly Tyr Asn Asp Ser Leu Gln Glu Glu Met Asn Val Asp Cys Pro Pro
145 150 155 160

```
Gly Gln Tyr Phe Ile Gln Asp Gly Asn Glu Asp Glu Asp Lys Lys Ala
                165                 170                 175

Cys Gln Phe Lys Arg Ser Phe Leu Lys Asn Cys Ser Gly Leu Glu Asp
            180                 185                 190

Pro Thr Phe Gly Tyr Ser Thr Gly Gln Pro Cys Ile Leu Leu Lys Met
        195                 200                 205

Asn Arg Ile Val Gly Phe Arg Pro Glu Leu Gly Asp Pro Val Lys Val
    210                 215                 220

Ser Cys Lys Val Gln Arg Gly Asp Glu Asn Asp Ile Arg Ser Ile Ser
225                 230                 235                 240

Tyr Tyr Pro Glu Ser Ala Ser Phe Asp Leu Arg Tyr Tyr Pro Tyr Tyr
                245                 250                 255

Gly Lys Leu Thr His Val Asn Tyr Thr Ser Pro Leu Val Ala Met His
            260                 265                 270

Phe Thr Asp Val Val Lys Asn Gln Ala Val Pro Val Gln Cys Gln Leu
        275                 280                 285

Lys Gly Lys Gly Val Ile Asn Asp Val Ile Asn Asp Arg Phe Val Gly
    290                 295                 300

Arg Val Ile Phe Thr Leu Asn Ile Glu Thr
305                 310


<210> 7567
<211> 123
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1598; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA1; "

<220>
<221> source
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000363865"

<400> 7567
Met Pro Ser Ala Gly Thr Leu Pro Trp Val Gln Gly Ile Ile Cys Asn
1 5 10 15

Ala Asn Asn Pro Cys Phe Arg Tyr Pro Thr Pro Gly Glu Ala Pro Gly
20 25 30

Val Val Gly Asn Phe Asn Lys Ser Ile Val Ala Arg Leu Phe Ser Asp
35 40 45

Ala Arg Arg Leu Leu Leu Tyr Ser Gln Lys Asp Thr Ser Met Lys Asp
50 55 60

Met Arg Lys Val Leu Arg Thr Leu Gln Gln Ile Lys Lys Ser Ser Ser
65 70 75 80

Asn Leu Lys Leu Gln Asp Phe Leu Val Asp Asn Glu Thr Phe Ser Gly
85 90 95

Phe Leu Tyr His Asn Leu Ser Leu Pro Lys Ser Thr Val Asp Lys Met
100 105 110

Leu Arg Ala Asp Val Ile Leu His Lys Val Ser
115 120

<210> 7568
<211> 2261
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 1; "

<220>
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<223> /note="Uniprot ID: O95477; "

<220>
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<223> /note="ENSP ID: ENSP00000363868"

<400> 7568

```
Met Ala Cys Trp Pro Gln Leu Arg Leu Leu Leu Trp Lys Asn Leu Thr
1               5                  10                  15

Phe Arg Arg Arg Gln Thr Cys Gln Leu Leu Leu Glu Val Ala Trp Pro
            20                  25                  30

Leu Phe Ile Phe Leu Ile Leu Ile Ser Val Arg Leu Ser Tyr Pro Pro
        35                  40                  45

Tyr Glu Gln His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala
    50                  55                  60

Gly Thr Leu Pro Trp Val Gln Gly Ile Ile Cys Asn Ala Asn Asn Pro
65                  70                  75                  80

Cys Phe Arg Tyr Pro Thr Pro Gly Glu Ala Pro Gly Val Val Gly Asn
                85                  90                  95

Phe Asn Lys Ser Ile Val Ala Arg Leu Phe Ser Asp Ala Arg Arg Leu
            100                 105                 110

Leu Leu Tyr Ser Gln Lys Asp Thr Ser Met Lys Asp Met Arg Lys Val
        115                 120                 125

Leu Arg Thr Leu Gln Gln Ile Lys Lys Ser Ser Ser Asn Leu Lys Leu
    130                 135                 140

Gln Asp Phe Leu Val Asp Asn Glu Thr Phe Ser Gly Phe Leu Tyr His
145                 150                 155                 160

Asn Leu Ser Leu Pro Lys Ser Thr Val Asp Lys Met Leu Arg Ala Asp
                165                 170                 175
```

```
Val Ile Leu His Lys Val Phe Leu Gln Gly Tyr Gln Leu His Leu Thr
            180                 185                 190

Ser Leu Cys Asn Gly Ser Lys Ser Glu Glu Met Ile Gln Leu Gly Asp
        195                 200                 205

Gln Glu Val Ser Glu Leu Cys Gly Leu Pro Arg Glu Lys Leu Ala Ala
    210                 215                 220

Ala Glu Arg Val Leu Arg Ser Asn Met Asp Ile Leu Lys Pro Ile Leu
225                 230                 235                 240

Arg Thr Leu Asn Ser Thr Ser Pro Phe Pro Ser Lys Glu Leu Ala Glu
                245                 250                 255

Ala Thr Lys Thr Leu Leu His Ser Leu Gly Thr Leu Ala Gln Glu Leu
            260                 265                 270

Phe Ser Met Arg Ser Trp Ser Asp Met Arg Gln Glu Val Met Phe Leu
        275                 280                 285

Thr Asn Val Asn Ser Ser Ser Ser Ser Thr Gln Ile Tyr Gln Ala Val
    290                 295                 300

Ser Arg Ile Val Cys Gly His Pro Glu Gly Gly Gly Leu Lys Ile Lys
305                 310                 315                 320

Ser Leu Asn Trp Tyr Glu Asp Asn Asn Tyr Lys Ala Leu Phe Gly Gly
                325                 330                 335

Asn Gly Thr Glu Glu Asp Ala Glu Thr Phe Tyr Asp Asn Ser Thr Thr
            340                 345                 350

Pro Tyr Cys Asn Asp Leu Met Lys Asn Leu Glu Ser Ser Pro Leu Ser
        355                 360                 365

Arg Ile Ile Trp Lys Ala Leu Lys Pro Leu Leu Val Gly Lys Ile Leu
    370                 375                 380

Tyr Thr Pro Asp Thr Pro Ala Thr Arg Gln Val Met Ala Glu Val Asn
385                 390                 395                 400
```

```
Lys Thr Phe Gln Glu Leu Ala Val Phe His Asp Leu Glu Gly Met Trp
                405                 410                 415

Glu Glu Leu Ser Pro Lys Ile Trp Thr Phe Met Glu Asn Ser Gln Glu
            420                 425                 430

Met Asp Leu Val Arg Met Leu Leu Asp Ser Arg Asp Asn Asp His Phe
        435                 440                 445

Trp Glu Gln Gln Leu Asp Gly Leu Asp Trp Thr Ala Gln Asp Ile Val
    450                 455                 460

Ala Phe Leu Ala Lys His Pro Glu Asp Val Gln Ser Ser Asn Gly Ser
465                 470                 475                 480

Val Tyr Thr Trp Arg Glu Ala Phe Asn Glu Thr Asn Gln Ala Ile Arg
                485                 490                 495

Thr Ile Ser Arg Phe Met Glu Cys Val Asn Leu Asn Lys Leu Glu Pro
            500                 505                 510

Ile Ala Thr Glu Val Trp Leu Ile Asn Lys Ser Met Glu Leu Leu Asp
        515                 520                 525

Glu Arg Lys Phe Trp Ala Gly Ile Val Phe Thr Gly Ile Thr Pro Gly
    530                 535                 540

Ser Ile Glu Leu Pro His His Val Lys Tyr Lys Ile Arg Met Asp Ile
545                 550                 555                 560

Asp Asn Val Glu Arg Thr Asn Lys Ile Lys Asp Gly Tyr Trp Asp Pro
                565                 570                 575

Gly Pro Arg Ala Asp Pro Phe Glu Asp Met Arg Tyr Val Trp Gly Gly
            580                 585                 590

Phe Ala Tyr Leu Gln Asp Val Val Glu Gln Ala Ile Ile Arg Val Leu
        595                 600                 605

Thr Gly Thr Glu Lys Lys Thr Gly Val Tyr Met Gln Gln Met Pro Tyr
    610                 615                 620

Pro Cys Tyr Val Asp Asp Ile Phe Leu Arg Val Met Ser Arg Ser Met
```

625 630 635 640

Pro Leu Phe Met Thr Leu Ala Trp Ile Tyr Ser Val Ala Val Ile Ile
645 650 655

Lys Gly Ile Val Tyr Glu Lys Glu Ala Arg Leu Lys Glu Thr Met Arg
660 665 670

Ile Met Gly Leu Asp Asn Ser Ile Leu Trp Phe Ser Trp Phe Ile Ser
675 680 685

Ser Leu Ile Pro Leu Leu Val Ser Ala Gly Leu Leu Val Val Ile Leu
690 695 700

Lys Leu Gly Asn Leu Leu Pro Tyr Ser Asp Pro Ser Val Val Phe Val
705 710 715 720

Phe Leu Ser Val Phe Ala Val Val Thr Ile Leu Gln Cys Phe Leu Ile
725 730 735

Ser Thr Leu Phe Ser Arg Ala Asn Leu Ala Ala Ala Cys Gly Gly Ile
740 745 750

Ile Tyr Phe Thr Leu Tyr Leu Pro Tyr Val Leu Cys Val Ala Trp Gln
755 760 765

Asp Tyr Val Gly Phe Thr Leu Lys Ile Phe Ala Ser Leu Leu Ser Pro
770 775 780

Val Ala Phe Gly Phe Gly Cys Glu Tyr Phe Ala Leu Phe Glu Glu Gln
785 790 795 800

Gly Ile Gly Val Gln Trp Asp Asn Leu Phe Glu Ser Pro Val Glu Glu
805 810 815

Asp Gly Phe Asn Leu Thr Thr Ser Val Ser Met Met Leu Phe Asp Thr
820 825 830

Phe Leu Tyr Gly Val Met Thr Trp Tyr Ile Glu Ala Val Phe Pro Gly
835 840 845

Gln Tyr Gly Ile Pro Arg Pro Trp Tyr Phe Pro Cys Thr Lys Ser Tyr
850 855 860

```
Trp Phe Gly Glu Glu Ser Asp Glu Lys Ser His Pro Gly Ser Asn Gln
865                 870                 875                 880

Lys Arg Ile Ser Glu Ile Cys Met Glu Glu Glu Pro Thr His Leu Lys
                885                 890                 895

Leu Gly Val Ser Ile Gln Asn Leu Val Lys Val Tyr Arg Asp Gly Met
            900                 905                 910

Lys Val Ala Val Asp Gly Leu Ala Leu Asn Phe Tyr Glu Gly Gln Ile
        915                 920                 925

Thr Ser Phe Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Met Ser
    930                 935                 940

Ile Leu Thr Gly Leu Phe Pro Pro Thr Ser Gly Thr Ala Tyr Ile Leu
945                 950                 955                 960

Gly Lys Asp Ile Arg Ser Glu Met Ser Thr Ile Arg Gln Asn Leu Gly
                965                 970                 975

Val Cys Pro Gln His Asn Val Leu Phe Asp Met Leu Thr Val Glu Glu
            980                 985                 990

His Ile Trp Phe Tyr Ala Arg Leu  Lys Gly Leu Ser Glu  Lys His
Val
        995                 1000                1005

Lys Ala  Glu Met Glu Gln Met  Ala Leu Asp Val Gly  Leu Pro Ser
    1010                1015                1020

Ser Lys  Leu Lys Ser Lys Thr  Ser Gln Leu Ser Gly  Gly Met Gln
    1025                1030                1035

Arg Lys  Leu Ser Val Ala Leu  Ala Phe Val Gly Gly  Ser Lys Val
    1040                1045                1050

Val Ile  Leu Asp Glu Pro Thr  Ala Gly Val Asp Pro  Tyr Ser Arg
    1055                1060                1065

Arg Gly  Ile Trp Glu Leu Leu  Leu Lys Tyr Arg Gln  Gly Arg Thr
    1070                1075                1080
```

```
Ile Ile  Leu Ser Thr His His  Met Asp Glu Ala Asp  Val Leu Gly
    1085                 1090                 1095

Asp Arg  Ile Ala Ile Ile Ser  His Gly Lys Leu Cys  Cys Val Gly
    1100                 1105                 1110

Ser Ser  Leu Phe Leu Lys Asn  Gln Leu Gly Thr Gly  Tyr Tyr Leu
    1115                 1120                 1125

Thr Leu  Val Lys Lys Asp Val  Glu Ser Ser Leu Ser  Ser Cys Arg
    1130                 1135                 1140

Asn Ser  Ser Ser Thr Val Ser  Tyr Leu Lys Lys Glu  Asp Ser Val
    1145                 1150                 1155

Ser Gln  Ser Ser Ser Asp Ala  Gly Leu Gly Ser Asp  His Glu Ser
    1160                 1165                 1170

Asp Thr  Leu Thr Ile Asp Val  Ser Ala Ile Ser Asn  Leu Ile Arg
    1175                 1180                 1185

Lys His  Val Ser Glu Ala Arg  Leu Val Glu Asp Ile  Gly His Glu
    1190                 1195                 1200

Leu Thr  Tyr Val Leu Pro Tyr  Glu Ala Ala Lys Glu  Gly Ala Phe
    1205                 1210                 1215

Val Glu  Leu Phe His Glu Ile  Asp Asp Arg Leu Ser  Asp Leu Gly
    1220                 1225                 1230

Ile Ser  Ser Tyr Gly Ile Ser  Glu Thr Thr Leu Glu  Glu Ile Phe
    1235                 1240                 1245

Leu Lys  Val Ala Glu Glu Ser  Gly Val Asp Ala Glu  Thr Ser Asp
    1250                 1255                 1260

Gly Thr  Leu Pro Ala Arg Arg  Asn Arg Arg Ala Phe  Gly Asp Lys
    1265                 1270                 1275

Gln Ser  Cys Leu Arg Pro Phe  Thr Glu Asp Asp Ala  Ala Asp Pro
    1280                 1285                 1290
```

```
Asn Asp  Ser Asp Ile Asp Pro  Glu Ser Arg Glu Thr  Asp Leu Leu
    1295                1300                1305

Ser Gly  Met Asp Gly Lys Gly  Ser Tyr Gln Val Lys  Gly Trp Lys
    1310                1315                1320

Leu Thr  Gln Gln Gln Phe Val  Ala Leu Leu Trp Lys  Arg Leu Leu
    1325                1330                1335

Ile Ala  Arg Arg Ser Arg Lys  Gly Phe Phe Ala Gln  Ile Val Leu
    1340                1345                1350

Pro Ala  Val Phe Val Cys Ile  Ala Leu Val Phe Ser  Leu Ile Val
    1355                1360                1365

Pro Pro  Phe Gly Lys Tyr Pro  Ser Leu Glu Leu Gln  Pro Trp Met
    1370                1375                1380

Tyr Asn  Glu Gln Tyr Thr Phe  Val Ser Asn Asp Ala  Pro Glu Asp
    1385                1390                1395

Thr Gly  Thr Leu Glu Leu Leu  Asn Ala Leu Thr Lys  Asp Pro Gly
    1400                1405                1410

Phe Gly  Thr Arg Cys Met Glu  Gly Asn Pro Ile Pro  Asp Thr Pro
    1415                1420                1425

Cys Gln  Ala Gly Glu Glu Glu  Trp Thr Thr Ala Pro  Val Pro Gln
    1430                1435                1440

Thr Ile  Met Asp Leu Phe Gln  Asn Gly Asn Trp Thr  Met Gln Asn
    1445                1450                1455

Pro Ser  Pro Ala Cys Gln Cys  Ser Ser Asp Lys Ile  Lys Lys Met
    1460                1465                1470

Leu Pro  Val Cys Pro Pro Gly  Ala Gly Gly Leu Pro  Pro Pro Gln
    1475                1480                1485

Arg Lys  Gln Asn Thr Ala Asp  Ile Leu Gln Asp Leu  Thr Gly Arg
    1490                1495                1500
```

```
Asn Ile  Ser Asp Tyr Leu Val  Lys Thr Tyr Val Gln  Ile Ile Ala
    1505                1510                1515

Lys Ser  Leu Lys Asn Lys Ile  Trp Val Asn Glu Phe  Arg Tyr Gly
    1520                1525                1530

Gly Phe  Ser Leu Gly Val Ser  Asn Thr Gln Ala Leu  Pro Pro Ser
    1535                1540                1545

Gln Glu  Val Asn Asp Ala Ile  Lys Gln Met Lys Lys  His Leu Lys
    1550                1555                1560

Leu Ala  Lys Asp Ser Ser Ala  Asp Arg Phe Leu Asn  Ser Leu Gly
    1565                1570                1575

Arg Phe  Met Thr Gly Leu Asp  Thr Lys Asn Asn Val  Lys Val Trp
    1580                1585                1590

Phe Asn  Asn Lys Gly Trp His  Ala Ile Ser Ser Phe  Leu Asn Val
    1595                1600                1605

Ile Asn  Asn Ala Ile Leu Arg  Ala Asn Leu Gln Lys  Gly Glu Asn
    1610                1615                1620

Pro Ser  His Tyr Gly Ile Thr  Ala Phe Asn His Pro  Leu Asn Leu
    1625                1630                1635

Thr Lys  Gln Gln Leu Ser Glu  Val Ala Leu Met Thr  Thr Ser Val
    1640                1645                1650

Asp Val  Leu Val Ser Ile Cys  Val Ile Phe Ala Met  Ser Phe Val
    1655                1660                1665

Pro Ala  Ser Phe Val Val Phe  Leu Ile Gln Glu Arg  Val Ser Lys
    1670                1675                1680

Ala Lys  His Leu Gln Phe Ile  Ser Gly Val Lys Pro  Val Ile Tyr
    1685                1690                1695

Trp Leu  Ser Asn Phe Val Trp  Asp Met Cys Asn Tyr  Val Val Pro
    1700                1705                1710

Ala Thr  Leu Val Ile Ile Ile  Phe Ile Cys Phe Gln  Gln Lys Ser
```

1715 1720 1725

Tyr Val Ser Ser Thr Asn Leu Pro Val Leu Ala Leu Leu Leu Leu
1730 1735 1740

Leu Tyr Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala Ser Phe
1745 1750 1755

Val Phe Lys Ile Pro Ser Thr Ala Tyr Val Val Leu Thr Ser Val
1760 1765 1770

Asn Leu Phe Ile Gly Ile Asn Gly Ser Val Ala Thr Phe Val Leu
1775 1780 1785

Glu Leu Phe Thr Asp Asn Lys Leu Asn Asn Ile Asn Asp Ile Leu
1790 1795 1800

Lys Ser Val Phe Leu Ile Phe Pro His Phe Cys Leu Gly Arg Gly
1805 1810 1815

Leu Ile Asp Met Val Lys Asn Gln Ala Met Ala Asp Ala Leu Glu
1820 1825 1830

Arg Phe Gly Glu Asn Arg Phe Val Ser Pro Leu Ser Trp Asp Leu
1835 1840 1845

Val Gly Arg Asn Leu Phe Ala Met Ala Val Glu Gly Val Val Phe
1850 1855 1860

Phe Leu Ile Thr Val Leu Ile Gln Tyr Arg Phe Phe Ile Arg Pro
1865 1870 1875

Arg Pro Val Asn Ala Lys Leu Ser Pro Leu Asn Asp Glu Asp Glu
1880 1885 1890

Asp Val Arg Arg Glu Arg Gln Arg Ile Leu Asp Gly Gly Gly Gln
1895 1900 1905

Asn Asp Ile Leu Glu Ile Lys Glu Leu Thr Lys Ile Tyr Arg Arg
1910 1915 1920

Lys Arg Lys Pro Ala Val Asp Arg Ile Cys Val Gly Ile Pro Pro
1925 1930 1935

Gly Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Ser
1940 1945 1950

Ser Thr Phe Lys Met Leu Thr Gly Asp Thr Thr Val Thr Arg Gly
1955 1960 1965

Asp Ala Phe Leu Asn Lys Asn Ser Ile Leu Ser Asn Ile His Glu
1970 1975 1980

Val His Gln Asn Met Gly Tyr Cys Pro Gln Phe Asp Ala Ile Thr
1985 1990 1995

Glu Leu Leu Thr Gly Arg Glu His Val Glu Phe Phe Ala Leu Leu
2000 2005 2010

Arg Gly Val Pro Glu Lys Glu Val Gly Lys Val Gly Glu Trp Ala
2015 2020 2025

Ile Arg Lys Leu Gly Leu Val Lys Tyr Gly Glu Lys Tyr Ala Gly
2030 2035 2040

Asn Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ser Thr Ala Met Ala
2045 2050 2055

Leu Ile Gly Gly Pro Pro Val Val Phe Leu Asp Glu Pro Thr Thr
2060 2065 2070

Gly Met Asp Pro Lys Ala Arg Arg Phe Leu Trp Asn Cys Ala Leu
2075 2080 2085

Ser Val Val Lys Glu Gly Arg Ser Val Val Leu Thr Ser His Ser
2090 2095 2100

Met Glu Glu Cys Glu Ala Leu Cys Thr Arg Met Ala Ile Met Val
2105 2110 2115

Asn Gly Arg Phe Arg Cys Leu Gly Ser Val Gln His Leu Lys Asn
2120 2125 2130

Arg Phe Gly Asp Gly Tyr Thr Ile Val Val Arg Ile Ala Gly Ser
2135 2140 2145

```
Asn Pro  Asp Leu Lys Pro Val  Gln Asp Phe Phe Gly  Leu Ala Phe
    2150                2155                2160

Pro Gly  Ser Val Leu Lys Glu  Lys His Arg Asn Met  Leu Gln Tyr
    2165                2170                2175

Gln Leu  Pro Ser Ser Leu Ser  Ser Leu Ala Arg Ile  Phe Ser Ile
    2180                2185                2190

Leu Ser  Gln Ser Lys Lys Arg  Leu His Ile Glu Asp  Tyr Ser Val
    2195                2200                2205

Ser Gln  Thr Thr Leu Asp Gln  Val Phe Val Asn Phe  Ala Lys Asp
    2210                2215                2220

Gln Ser  Asp Asp Asp His Leu  Lys Asp Leu Ser Leu  His Lys Asn
    2225                2230                2235

Gln Thr  Val Val Asp Val Ala  Val Leu Thr Ser Phe  Leu Gln Asp
    2240                2245                2250

Glu Lys  Val Lys Glu Ser Tyr  Val
    2255                2260


<210> 7569
<211> 363
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1598; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416623"
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<400> 7569
Met Ala Cys Trp Pro Gln Leu Arg Leu Leu Leu Trp Lys Asn Leu Thr
1 5 10 15

Phe Arg Arg Arg Gln Thr Cys Gln Leu Leu Leu Glu Val Ala Trp Pro
20 25 30

Leu Phe Ile Phe Leu Ile Leu Ile Ser Val Arg Leu Ser Tyr Pro Pro
35 40 45

Tyr Glu Gln His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala
50 55 60

Gly Thr Leu Pro Trp Val Gln Gly Ile Ile Cys Asn Ala Asn Asn Pro
65 70 75 80

Cys Phe Arg Tyr Pro Thr Pro Gly Glu Ala Pro Gly Val Val Gly Asn
85 90 95

Phe Asn Lys Ser Ile Val Ala Arg Leu Phe Ser Asp Ala Arg Arg Leu
100 105 110

Leu Leu Tyr Ser Gln Lys Asp Thr Ser Met Lys Asp Met Arg Lys Val
115 120 125

Leu Arg Thr Leu Gln Gln Ile Lys Lys Ser Ser Ser Asn Leu Lys Leu
130 135 140

Gln Asp Phe Leu Val Asp Asn Glu Thr Phe Ser Gly Phe Leu Tyr His
145 150 155 160

Asn Leu Ser Leu Pro Lys Ser Thr Val Asp Lys Met Leu Arg Ala Asp
165 170 175

Val Ile Leu His Lys Val Phe Leu Gln Gly Tyr Gln Leu His Leu Thr
180 185 190

Ser Leu Cys Asn Gly Ser Lys Ser Glu Glu Met Ile Gln Leu Gly Asp
195 200 205

Gln Glu Val Ser Glu Leu Cys Gly Leu Pro Arg Glu Lys Leu Ala Ala
210 215 220

```
Ala Glu Arg Val Leu Arg Ser Asn Met Asp Ile Leu Lys Pro Ile Leu
225                 230                 235                 240

Met Asp Val Thr Cys Asp Asp Ile Ala His Gly Gln Leu Thr Val Pro
                245                 250                 255

Arg Ser Ala Ala Val Ala Ala Thr Gly Asp Ala Lys Pro Asn Met Met
            260                 265                 270

Gly Arg Glu Thr Leu Leu Ser Ile Cys Ala Ser Val Pro Lys Val Glu
        275                 280                 285

Phe His Glu Arg His Ile Leu Lys His Phe Ser Phe Cys Val Cys Val
    290                 295                 300

Ser Val Ser Leu Phe Pro Ala Lys Gly Ile Val Ser Phe Ser Trp Ala
305                 310                 315                 320

Ser Phe Arg Ile Trp Val Leu Trp Lys Ala Val Phe Trp Gln His Gly
                325                 330                 335

Glu Ser Met Ala Val Trp Glu Gly Gln Leu Gly Leu Gly Leu Asn Ile
            340                 345                 350

Ala Phe Glu Tyr Phe Thr Ser Ile Asp Val Gly
        355                 360


<210> 7570
<211> 1543
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 10; "

<220>
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<221> source
<223> /note="Uniprot ID: Q8WWZ4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000269081"

<400> 7570
Met Asn Lys Met Ala Leu Ala Ser Phe Met Lys Gly Arg Thr Val Ile
1   5   10   15

Gly Thr Pro Asp Glu Glu Thr Met Asp Ile Glu Leu Pro Lys Lys Tyr
            20   25   30

His Glu Met Val Gly Val Ile Phe Ser Asp Thr Phe Ser Tyr Arg Leu
        35   40   45

Lys Phe Asn Trp Gly Tyr Arg Ile Pro Val Ile Lys Glu His Ser Glu
    50   55   60

Tyr Thr Glu His Cys Trp Ala Met His Gly Glu Ile Phe Cys Tyr Leu
65   70   75   80

Ala Lys Tyr Trp Leu Lys Gly Phe Val Ala Phe Gln Ala Ala Ile Asn
                85   90   95

Ala Ala Ile Ile Glu Val Thr Thr Asn His Ser Val Met Glu Glu Leu
            100   105   110

Thr Ser Val Ile Gly Ile Asn Met Lys Ile Pro Pro Phe Ile Ser Lys
        115   120   125

Gly Glu Ile Met Asn Glu Trp Phe His Phe Thr Cys Leu Val Ser Phe
    130   135   140

Ser Ser Phe Ile Tyr Phe Ala Ser Leu Asn Val Ala Arg Glu Arg Gly
145   150   155   160

Lys Phe Lys Lys Leu Met Thr Val Met Gly Leu Arg Glu Ser Ala Phe
                165   170   175

Trp Leu Ser Trp Gly Leu Thr Tyr Ile Cys Phe Ile Phe Ile Met Ser
            180   185   190

Ile Phe Met Ala Leu Val Ile Thr Ser Ile Pro Ile Val Phe His Thr

```
        195                 200                 205

Gly Phe Met Val Ile Phe Thr Leu Tyr Ser Leu Tyr Gly Leu Ser Leu
    210                 215                 220

Ile Ala Leu Ala Phe Leu Met Ser Val Leu Ile Arg Lys Pro Met Leu
225                 230                 235                 240

Ala Gly Leu Ala Gly Phe Leu Phe Thr Val Phe Trp Gly Cys Leu Gly
                245                 250                 255

Phe Thr Val Leu Tyr Arg Gln Leu Pro Leu Ser Leu Gly Trp Val Leu
            260                 265                 270

Ser Leu Leu Ser Pro Phe Ala Phe Thr Ala Gly Met Ala Gln Ile Thr
        275                 280                 285

His Leu Asp Asn Tyr Leu Ser Gly Val Ile Phe Pro Asp Pro Ser Gly
    290                 295                 300

Asp Ser Tyr Lys Met Ile Ala Thr Phe Phe Ile Leu Ala Phe Asp Thr
305                 310                 315                 320

Leu Phe Tyr Leu Ile Phe Thr Leu Tyr Phe Glu Arg Val Leu Pro Asp
                325                 330                 335

Lys Asp Gly His Gly Asp Ser Pro Leu Phe Phe Leu Lys Ser Ser Phe
            340                 345                 350

Trp Ser Lys His Gln Asn Thr His His Glu Ile Phe Glu Asn Glu Ile
        355                 360                 365

Asn Pro Glu His Ser Ser Asp Asp Ser Phe Glu Pro Val Ser Pro Glu
    370                 375                 380

Phe His Gly Lys Glu Ala Ile Arg Ile Arg Asn Val Ile Lys Glu Tyr
385                 390                 395                 400

Asn Gly Lys Thr Gly Lys Val Glu Ala Leu Gln Gly Ile Phe Phe Asp
                405                 410                 415

Ile Tyr Glu Gly Gln Ile Thr Ala Ile Leu Gly His Asn Gly Ala Gly
            420                 425                 430
```

Lys Ser Thr Leu Leu Asn Ile Leu Ser Gly Leu Ser Val Ser Thr Glu
435 440 445

Gly Ser Ala Thr Ile Tyr Asn Thr Gln Leu Ser Glu Ile Thr Asp Met
450 455 460

Glu Glu Ile Arg Lys Asn Ile Gly Phe Cys Pro Gln Phe Asn Phe Gln
465 470 475 480

Phe Asp Phe Leu Thr Val Arg Glu Asn Leu Arg Val Phe Ala Lys Ile
485 490 495

Lys Gly Ile Gln Pro Lys Glu Val Glu Gln Glu Val Lys Arg Ile Ile
500 505 510

Met Glu Leu Asp Met Gln Ser Ile Gln Asp Ile Ile Ala Lys Lys Leu
515 520 525

Ser Gly Gly Gln Lys Arg Lys Leu Thr Leu Gly Ile Ala Ile Leu Gly
530 535 540

Asp Pro Gln Val Leu Leu Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro
545 550 555 560

Phe Ser Arg His Arg Val Trp Ser Leu Leu Lys Glu His Lys Val Asp
565 570 575

Arg Leu Ile Leu Phe Ser Thr Gln Phe Met Asp Glu Ala Asp Ile Leu
580 585 590

Ala Asp Arg Lys Val Phe Leu Ser Asn Gly Lys Leu Lys Cys Ala Gly
595 600 605

Ser Ser Leu Phe Leu Lys Arg Lys Trp Gly Ile Gly Tyr His Leu Ser
610 615 620

Leu His Arg Asn Glu Met Cys Asp Thr Glu Lys Ile Thr Ser Leu Ile
625 630 635 640

Lys Gln His Ile Pro Asp Ala Lys Leu Thr Thr Glu Ser Glu Glu Lys
645 650 655

```
Leu Val Tyr Ser Leu Pro Leu Glu Lys Thr Asn Lys Phe Pro Asp Leu
            660                 665                 670

Tyr Ser Asp Leu Asp Lys Cys Ser Asp Gln Gly Ile Arg Asn Tyr Ala
        675                 680                 685

Val Ser Val Thr Ser Leu Asn Glu Val Phe Leu Asn Leu Glu Gly Lys
    690                 695                 700

Ser Ala Ile Asp Glu Pro Asp Phe Asp Ile Gly Lys Gln Glu Lys Ile
705                 710                 715                 720

His Val Thr Arg Asn Thr Gly Asp Glu Ser Glu Met Glu Gln Val Leu
                725                 730                 735

Cys Ser Leu Pro Glu Thr Arg Lys Ala Val Ser Ser Ala Ala Leu Trp
            740                 745                 750

Arg Arg Gln Ile Tyr Ala Val Ala Thr Leu Arg Phe Leu Lys Leu Arg
        755                 760                 765

Arg Glu Arg Arg Ala Leu Leu Cys Leu Leu Leu Val Leu Gly Ile Ala
    770                 775                 780

Phe Ile Pro Ile Ile Leu Glu Lys Ile Met Tyr Lys Val Thr Arg Glu
785                 790                 795                 800

Thr His Cys Trp Glu Phe Ser Pro Ser Met Tyr Phe Leu Ser Leu Glu
                805                 810                 815

Gln Ile Pro Lys Thr Pro Leu Thr Ser Leu Leu Ile Val Asn Asn Thr
            820                 825                 830

Gly Ser Asn Ile Glu Asp Leu Val His Ser Leu Lys Cys Gln Asp Ile
        835                 840                 845

Val Leu Glu Ile Asp Asp Phe Arg Asn Arg Asn Gly Ser Asp Asp Pro
    850                 855                 860

Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Asp Gln Lys Asp Tyr Arg
865                 870                 875                 880
```

```
Phe Ser Val Ala Cys Asn Thr Lys Lys Leu Asn Cys Phe Pro Val Leu
                885                 890                 895

Met Gly Ile Val Ser Asn Ala Leu Met Gly Ile Phe Asn Phe Thr Glu
            900                 905                 910

Leu Ile Gln Met Glu Ser Thr Ser Phe Ser Arg Asp Asp Ile Val Leu
        915                 920                 925

Asp Leu Gly Phe Ile Asp Gly Ser Ile Phe Leu Leu Leu Ile Thr Asn
    930                 935                 940

Cys Val Ser Pro Phe Ile Gly Met Ser Ser Ile Ser Asp Tyr Lys Lys
945                 950                 955                 960

Asn Val Gln Ser Gln Leu Trp Ile Ser Gly Leu Trp Pro Ser Ala Tyr
                965                 970                 975

Trp Cys Gly Gln Ala Leu Val Asp Ile Pro Leu Tyr Phe Leu Ile Leu
            980                 985                 990

Phe Ser Ile His Leu Ile Tyr Tyr  Phe Ile Phe Leu Gly  Phe Gln
Leu
        995                 1000                1005

Ser Trp  Glu Leu Met Phe Val  Leu Val Val Cys Ile  Ile Gly Cys
    1010                1015                1020

Ala Val  Ser Leu Ile Phe Leu  Thr Tyr Val Leu Ser  Phe Ile Phe
    1025                1030                1035

Arg Lys  Trp Arg Lys Asn Asn  Gly Phe Trp Ser Phe  Gly Phe Phe
    1040                1045                1050

Ile Ile  Leu Ile Cys Val Ser  Thr Ile Met Val Ser  Thr Gln Tyr
    1055                1060                1065

Glu Lys  Leu Asn Leu Ile Leu  Cys Met Ile Phe Ile  Pro Ser Phe
    1070                1075                1080

Thr Leu  Leu Gly Tyr Val Met  Leu Leu Ile Gln Leu  Asp Phe Met
    1085                1090                1095
```

```
Arg Asn  Leu Asp Ser Leu Asp  Asn Arg Ile Asn Glu  Val Asn Lys
    1100                1105                1110

Thr Ile  Leu Leu Thr Thr Leu  Ile Pro Tyr Leu Gln  Ser Val Ile
    1115                1120                1125

Phe Leu  Phe Val Ile Arg Cys  Leu Glu Met Lys Tyr  Gly Asn Glu
    1130                1135                1140

Ile Met  Asn Lys Asp Pro Val  Phe Arg Ile Ser Pro  Arg Ser Arg
    1145                1150                1155

Glu Thr  His Pro Asn Pro Glu  Glu Pro Glu Glu Glu  Asp Glu Asp
    1160                1165                1170

Val Gln  Ala Glu Arg Val Gln  Ala Ala Asn Ala Leu  Thr Ala Pro
    1175                1180                1185

Asn Leu  Glu Glu Glu Pro Val  Ile Thr Ala Ser Cys  Leu His Lys
    1190                1195                1200

Glu Tyr  Tyr Glu Thr Lys Lys  Ser Cys Phe Ser Thr  Arg Lys Lys
    1205                1210                1215

Lys Ile  Ala Ile Arg Asn Val  Ser Phe Cys Val Lys  Lys Gly Glu
    1220                1225                1230

Val Leu  Gly Leu Leu Gly His  Asn Gly Ala Gly Lys  Ser Thr Ser
    1235                1240                1245

Ile Lys  Met Ile Thr Gly Cys  Thr Lys Pro Thr Ala  Gly Val Val
    1250                1255                1260

Val Leu  Gln Gly Ser Arg Ala  Ser Val Arg Gln Gln  His Asp Asn
    1265                1270                1275

Ser Leu  Lys Phe Leu Gly Tyr  Cys Pro Gln Glu Asn  Ser Leu Trp
    1280                1285                1290

Pro Lys  Leu Thr Met Lys Glu  His Leu Glu Leu Tyr  Ala Ala Val
    1295                1300                1305

Lys Gly  Leu Gly Lys Glu Asp  Ala Ala Leu Ser Ile  Ser Arg Leu
```

1310 1315 1320

Val Glu Ala Leu Lys Leu Gln Glu Gln Leu Lys Ala Pro Val Lys
1325 1330 1335

Thr Leu Ser Glu Gly Ile Lys Arg Lys Leu Cys Phe Val Leu Ser
1340 1345 1350

Ile Leu Gly Asn Pro Ser Val Val Leu Leu Asp Glu Pro Phe Thr
1355 1360 1365

Gly Met Asp Pro Glu Gly Gln Gln Gln Met Trp Gln Ile Leu Gln
1370 1375 1380

Ala Thr Val Lys Asn Lys Glu Arg Gly Thr Leu Leu Thr Thr His
1385 1390 1395

Tyr Met Ser Glu Ala Glu Ala Val Cys Asp Arg Met Ala Met Met
1400 1405 1410

Val Ser Gly Thr Leu Arg Cys Ile Gly Ser Ile Gln His Leu Lys
1415 1420 1425

Asn Lys Phe Gly Arg Asp Tyr Leu Leu Glu Ile Lys Met Lys Glu
1430 1435 1440

Pro Thr Gln Val Glu Ala Leu His Thr Glu Ile Leu Lys Leu Phe
1445 1450 1455

Pro Gln Ala Ala Trp Gln Glu Arg Tyr Ser Ser Leu Met Ala Tyr
1460 1465 1470

Lys Leu Pro Val Glu Asp Val His Pro Leu Ser Arg Ala Phe Phe
1475 1480 1485

Lys Leu Glu Ala Met Lys Gln Thr Phe Asn Leu Glu Glu Tyr Ser
1490 1495 1500

Leu Ser Gln Ala Thr Leu Glu Gln Val Phe Leu Glu Leu Cys Lys
1505 1510 1515

Glu Gln Glu Leu Gly Asn Val Asp Asp Lys Ile Asp Thr Thr Val
1520 1525 1530

```
Glu Trp  Lys Leu Leu Pro Gln  Glu Asp Pro
    1535                1540


<210> 7571
<211> 1326
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 10; "

<220>
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<223> /note="ENSP ID: ENSP00000428032"

<400> 7571
Met Asn Lys Met Ala Leu Ala Ser Phe Met Lys Gly Arg Thr Val Ile
1               5                  10                  15


Gly Thr Pro Asp Glu Glu Thr Met Asp Ile Glu Leu Pro Lys Lys Tyr
            20                  25                  30


His Glu Met Val Gly Val Ile Phe Ser Asp Thr Phe Ser Tyr Arg Leu
        35                  40                  45


Lys Phe Asn Trp Gly Tyr Arg Ile Pro Val Ile Lys Glu His Ser Glu
    50                  55                  60


Tyr Thr Glu His Cys Trp Ala Met His Gly Glu Ile Phe Cys Tyr Leu
65                  70                  75                  80


Ala Lys Tyr Trp Leu Lys Gly Phe Val Ala Phe Gln Ala Ala Ile Asn
                85                  90                  95


Ala Ala Ile Ile Glu Val Thr Thr Asn His Ser Val Met Glu Glu Leu
            100                 105                 110
```

```
Thr Ser Val Ile Gly Ile Asn Met Lys Ile Pro Pro Phe Ile Ser Lys
        115                 120                 125

Gly Glu Ile Met Asn Glu Trp Phe His Phe Thr Cys Leu Val Ser Phe
    130                 135                 140

Ser Ser Phe Ile Tyr Phe Ala Ser Leu Asn Val Ala Arg Glu Arg Gly
145                 150                 155                 160

Lys Phe Lys Lys Leu Met Thr Val Met Gly Leu Arg Glu Ser Ala Phe
                165                 170                 175

Trp Leu Ser Trp Gly Leu Thr Tyr Ile Cys Phe Ile Phe Ile Met Ser
            180                 185                 190

Ile Phe Met Ala Leu Val Ile Thr Ser Ile Pro Ile Val Phe His Thr
        195                 200                 205

Gly Phe Met Val Ile Phe Thr Leu Tyr Ser Leu Tyr Gly Leu Ser Leu
    210                 215                 220

Ile Ala Leu Ala Phe Leu Met Ser Val Leu Ile Arg Lys Pro Met Leu
225                 230                 235                 240

Ala Gly Leu Ala Gly Phe Leu Phe Thr Val Phe Trp Gly Cys Leu Gly
                245                 250                 255

Phe Thr Val Leu Tyr Arg Gln Leu Pro Leu Ser Leu Gly Trp Val Leu
            260                 265                 270

Ser Leu Leu Ser Pro Phe Ala Phe Thr Ala Gly Met Ala Gln Ile Thr
        275                 280                 285

His Leu Asp Asn Tyr Leu Ser Gly Val Ile Phe Pro Asp Pro Ser Gly
    290                 295                 300

Asp Ser Tyr Lys Met Ile Ala Thr Phe Phe Ile Leu Ala Phe Asp Thr
305                 310                 315                 320

Leu Phe Tyr Leu Ile Phe Thr Leu Tyr Phe Glu Arg Val Leu Pro Asp
                325                 330                 335
```

```
Lys Asp Gly His Gly Asp Ser Pro Leu Phe Phe Leu Lys Ser Ser Phe
            340                 345                 350

Trp Ser Lys His Gln Asn Thr His His Glu Ile Phe Glu Asn Glu Ile
        355                 360                 365

Asn Pro Glu His Ser Ser Asp Asp Ser Phe Glu Pro Val Ser Pro Glu
    370                 375                 380

Phe His Gly Lys Glu Ala Ile Arg Ile Arg Asn Val Ile Lys Glu Tyr
385                 390                 395                 400

Asn Gly Lys Thr Gly Lys Val Glu Ala Leu Gln Gly Ile Phe Phe Asp
                405                 410                 415

Ile Tyr Glu Gly Gln Ile Thr Ala Ile Leu Gly His Asn Gly Ala Gly
            420                 425                 430

Lys Ser Thr Leu Leu Asn Ile Leu Ser Gly Leu Ser Val Ser Thr Glu
        435                 440                 445

Gly Ser Ala Thr Ile Tyr Asn Thr Gln Leu Ser Glu Ile Thr Asp Met
    450                 455                 460

Glu Glu Ile Arg Lys Asn Ile Gly Phe Cys Pro Gln Phe Asn Phe Gln
465                 470                 475                 480

Phe Asp Phe Leu Thr Val Arg Glu Asn Leu Arg Val Phe Ala Lys Ile
                485                 490                 495

Lys Gly Ile Gln Pro Lys Glu Val Glu Gln Glu Val Lys Arg Ile Ile
            500                 505                 510

Met Glu Leu Asp Met Gln Ser Ile Gln Asp Ile Ile Ala Lys Lys Leu
        515                 520                 525

Ser Gly Gly Gln Lys Arg Lys Leu Thr Leu Gly Ile Ala Ile Leu Gly
    530                 535                 540

Asp Pro Gln Val Leu Leu Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro
545                 550                 555                 560
```

```
Phe Ser Arg His Arg Val Trp Ser Leu Leu Lys Glu His Lys Val Asp
                565                 570                 575

Arg Leu Ile Leu Phe Ser Thr Gln Phe Met Asp Glu Ala Asp Ile Leu
            580                 585                 590

Ala Asp Arg Lys Val Phe Leu Ser Asn Gly Lys Leu Lys Cys Ala Gly
        595                 600                 605

Ser Ser Leu Phe Leu Lys Arg Lys Trp Gly Ile Gly Tyr His Leu Ser
    610                 615                 620

Leu His Arg Asn Glu Met Cys Asp Thr Glu Lys Ile Thr Ser Leu Ile
625                 630                 635                 640

Lys Gln His Ile Pro Asp Ala Lys Leu Thr Thr Glu Ser Glu Glu Lys
                645                 650                 655

Leu Val Tyr Ser Leu Pro Leu Glu Lys Thr Asn Lys Phe Pro Asp Leu
            660                 665                 670

Tyr Ser Asp Leu Asp Lys Cys Ser Asp Gln Gly Ile Arg Asn Tyr Ala
        675                 680                 685

Val Ser Val Thr Ser Leu Asn Glu Val Phe Leu Asn Leu Glu Gly Lys
    690                 695                 700

Ser Ala Ile Asp Glu Pro Asp Phe Asp Ile Gly Lys Gln Glu Lys Ile
705                 710                 715                 720

His Val Thr Arg Asn Thr Gly Asp Glu Ser Glu Met Glu Gln Val Leu
                725                 730                 735

Cys Ser Leu Pro Glu Thr Arg Lys Ala Val Ser Ser Ala Ala Leu Trp
            740                 745                 750

Arg Arg Gln Ile Tyr Ala Val Ala Thr Leu Arg Phe Leu Lys Leu Arg
        755                 760                 765

Arg Glu Arg Arg Ala Leu Leu Cys Leu Leu Leu Val Leu Gly Ile Ala
    770                 775                 780

Phe Ile Pro Ile Ile Leu Glu Lys Ile Met Tyr Lys Val Thr Arg Glu
```

785 790 795 800

Thr His Cys Trp Glu Phe Ser Pro Ser Met Tyr Phe Leu Ser Leu Glu
805 810 815

Gln Ile Pro Lys Thr Pro Leu Thr Ser Leu Leu Ile Val Asn Asn Thr
820 825 830

Gly Ser Asn Ile Glu Asp Leu Val His Ser Leu Lys Cys Gln Asp Ile
835 840 845

Val Leu Glu Ile Asp Asp Phe Arg Asn Arg Asn Gly Ser Asp Asp Pro
850 855 860

Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Asp Gln Lys Asp Tyr Arg
865 870 875 880

Phe Ser Val Ala Cys Asn Thr Lys Lys Leu Asn Cys Phe Pro Val Leu
885 890 895

Met Gly Ile Val Ser Asn Ala Leu Met Gly Ile Phe Asn Phe Thr Glu
900 905 910

Leu Ile Gln Met Glu Ser Thr Ser Phe Ser Arg Asp Asp Ile Val Leu
915 920 925

Asp Leu Gly Phe Ile Asp Gly Ser Ile Phe Leu Leu Leu Ile Thr Asn
930 935 940

Cys Val Ser Pro Phe Ile Gly Met Ser Ser Ile Ser Asp Tyr Lys Lys
945 950 955 960

Asn Val Gln Ser Gln Leu Trp Ile Ser Gly Leu Trp Pro Ser Ala Tyr
965 970 975

Trp Cys Gly Gln Ala Leu Val Asp Ile Pro Leu Tyr Phe Leu Ile Leu
980 985 990

Phe Ser Ile His Leu Ile Tyr Tyr Phe Ile Phe Leu Gly Phe Gln
Leu
995 1000 1005

Ser Trp Glu Leu Met Phe Val Leu Val Val Cys Ile Ile Gly Cys

```
    1010                1015                1020

Ala Val  Ser Leu Ile Phe Leu  Thr Tyr Val Leu Ser  Phe Ile Phe
    1025                1030                1035

Arg Lys  Trp Arg Lys Asn Asn  Gly Phe Trp Ser Phe  Gly Phe Phe
    1040                1045                1050

Ile Ile  Leu Ile Cys Val Ser  Thr Ile Met Val Ser  Thr Gln Tyr
    1055                1060                1065

Glu Lys  Leu Asn Leu Ile Leu  Cys Met Ile Phe Ile  Pro Ser Phe
    1070                1075                1080

Thr Leu  Leu Gly Tyr Val Met  Leu Leu Ile Gln Leu  Asp Phe Met
    1085                1090                1095

Arg Asn  Leu Asp Ser Leu Asp  Asn Arg Ile Asn Glu  Val Asn Lys
    1100                1105                1110

Thr Ile  Leu Leu Thr Thr Leu  Ile Pro Tyr Leu Gln  Ser Val Ile
    1115                1120                1125

Phe Leu  Phe Val Ile Arg Cys  Leu Glu Met Lys Tyr  Gly Asn Glu
    1130                1135                1140

Ile Met  Asn Lys Asp Pro Val  Phe Arg Ile Ser Pro  Arg Ser Arg
    1145                1150                1155

Glu Thr  His Pro Asn Pro Glu  Glu Pro Glu Glu Glu  Asp Glu Asp
    1160                1165                1170

Val Gln  Ala Glu Arg Val Gln  Ala Ala Asn Ala Leu  Thr Ala Pro
    1175                1180                1185

Asn Leu  Glu Glu Glu Pro Val  Ile Thr Ala Ser Cys  Leu His Lys
    1190                1195                1200

Glu Tyr  Tyr Glu Thr Lys Lys  Ser Cys Phe Ser Thr  Arg Lys Lys
    1205                1210                1215

Lys Ile  Ala Ile Arg Asn Val  Ser Phe Cys Val Lys  Lys Gly Glu
    1220                1225                1230
```

```
Val Leu  Gly Leu Leu Gly His  Asn Gly Ala Gly Lys  Ser Thr Ser
    1235                1240                1245

Ile Lys  Met Ile Thr Gly Cys  Thr Lys Pro Thr Ala  Gly Val Val
    1250                1255                1260

Val Leu  Gln Gly Ser Arg Ala  Ser Val Arg Gln Gln  His Asp Asn
    1265                1270                1275

Ser Leu  Lys Phe Leu Gly Tyr  Cys Pro Gln Glu Asn  Ser Leu Trp
    1280                1285                1290

Pro Lys  Leu Thr Met Lys Glu  His Leu Glu Leu Tyr  Ala Ala Val
    1295                1300                1305

Lys Gly  Leu Gly Lys Glu Asp  Ala Ala Leu Ser Ile  Ser Arg Cys
    1310                1315                1320

Ala Leu  Cys
    1325
```

<210> 7572
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429795"

<220>
<221> MOD_RES

<222> (1)..(1)
<223> Any amino acid

<400> 7572
Xaa Ser Asp Thr Phe Ser Tyr Arg Leu Lys Phe Asn Trp Gly Tyr Arg
1 5 10 15

Ile Pro Val Ile Lys Glu His Ser Glu Tyr Thr Glu His Cys Trp Ala
20 25 30

Met His Gly Glu Ile Phe Cys Tyr Leu Ala Lys Tyr Trp Leu Lys Gly
35 40 45

Phe Val Ala Phe Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Val Thr
50 55 60

Thr Asn His Ser Val Met Glu Glu Leu Thr Ser Val Ile Gly Ile Asn
65 70 75 80

Met Lys Ile Pro Pro Phe Ile Ser Lys Gly Glu Ile Met Asn Glu Trp
85 90 95

Phe His Phe Thr Cys Leu Val Ser Phe Ser Ser Phe Ile Tyr Phe Ala
100 105 110

Ser Leu Asn Val Ala Arg Glu Arg Gly Lys Phe Lys Lys Leu Met Thr
115 120 125

Val Met Gly Leu Arg Glu Ser Ala Phe
130 135

<210> 7573
<211> 452
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family

A (ABC1),
member 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WWZ4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429853"

<400> 7573
Met Asn Lys Met Ala Leu Ala Ser Phe Met Lys Gly Arg Thr Val Ile
1   5   10   15

Gly Thr Pro Asp Glu Glu Thr Met Asp Ile Glu Leu Pro Lys Lys Tyr
            20   25   30

His Glu Met Val Gly Val Ile Phe Ser Asp Thr Phe Ser Tyr Arg Leu
        35   40   45

Lys Phe Asn Trp Gly Tyr Arg Ile Pro Val Ile Lys Glu His Ser Glu
    50   55   60

Tyr Thr Glu His Cys Trp Ala Met His Gly Glu Ile Phe Cys Tyr Leu
65   70   75   80

Ala Lys Tyr Trp Leu Lys Gly Phe Val Ala Phe Gln Ala Ala Ile Asn
                85   90   95

Ala Ala Ile Ile Glu Val Thr Thr Asn His Ser Val Met Glu Glu Leu
            100   105   110

Thr Ser Val Ile Gly Ile Asn Met Lys Ile Pro Pro Phe Ile Ser Lys
        115   120   125

Gly Glu Ile Met Asn Glu Trp Phe His Phe Thr Cys Leu Val Ser Phe
    130   135   140

Ser Ser Phe Ile Tyr Phe Ala Ser Leu Asn Val Ala Arg Glu Arg Gly
145   150   155   160

Lys Phe Lys Lys Leu Met Thr Val Met Gly Leu Arg Glu Ser Ala Phe
                165   170   175

Trp Leu Ser Trp Gly Leu Thr Tyr Ile Cys Phe Ile Phe Ile Met Ser

```
            180                 185                 190

Ile Phe Met Ala Leu Val Ile Thr Ser Ile Pro Ile Val Phe His Thr
        195                 200                 205

Gly Phe Met Val Ile Phe Thr Leu Tyr Ser Leu Tyr Gly Leu Ser Leu
    210                 215                 220

Ile Ala Leu Ala Phe Leu Met Ser Val Leu Ile Arg Lys Pro Met Leu
225                 230                 235                 240

Ala Gly Leu Ala Gly Phe Leu Phe Thr Val Phe Trp Gly Cys Leu Gly
                245                 250                 255

Phe Thr Val Leu Tyr Arg Gln Leu Pro Leu Ser Leu Gly Trp Val Leu
            260                 265                 270

Ser Leu Leu Ser Pro Phe Ala Phe Thr Ala Gly Met Ala Gln Ile Thr
        275                 280                 285

His Leu Asp Asn Tyr Leu Ser Gly Val Ile Phe Pro Asp Pro Ser Gly
    290                 295                 300

Asp Ser Tyr Lys Met Ile Ala Thr Phe Phe Ile Leu Ala Phe Asp Thr
305                 310                 315                 320

Leu Phe Tyr Leu Ile Phe Thr Leu Tyr Phe Glu Arg Val Leu Pro Asp
                325                 330                 335

Lys Asp Gly His Gly Asp Ser Pro Leu Phe Phe Leu Lys Ser Ser Phe
            340                 345                 350

Trp Ser Lys His Gln Asn Thr His His Glu Ile Phe Glu Asn Glu Ile
        355                 360                 365

Asn Pro Glu His Ser Ser Asp Asp Ser Phe Glu Pro Val Ser Pro Glu
    370                 375                 380

Phe His Gly Lys Glu Ala Ile Arg Ile Arg Asn Val Ile Lys Glu Tyr
385                 390                 395                 400

Asn Gly Lys Thr Gly Lys Val Glu Ala Leu Gln Gly Ser Glu Glu Arg
                405                 410                 415
```

```
Leu Cys Pro Ala Ala His Arg Leu Arg Cys Gly Glu Arg Leu Cys Pro
            420                 425                 430

Ala Ala His His Leu Gly Cys Glu Glu Arg Pro Cys Pro Ala Ala Thr
        435                 440                 445

Pro Ser Gly Asn
    450
```

<210> 7574
<211> 92
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WWZ4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429945"

<400> 7574

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Met Asn Lys Met Ala Leu Ala Ser Phe Met Lys Gly Arg Thr Val Ile
1               5                  10                  15

Gly Thr Pro Asp Glu Glu Thr Met Asp Ile Glu Leu Pro Lys Lys Tyr
            20                  25                  30

His Glu Met Val Gly Val Ile Phe Ser Asp Thr Phe Ser Tyr Arg Leu
        35                  40                  45

Lys Phe Asn Trp Gly Tyr Arg Ile Pro Val Ile Lys Glu His Ser Glu
    50                  55                  60
```

```
Tyr Thr Gly His Asn Lys Ser Phe Cys Asn Gly Gly Val Asp Ile Ser
65                  70                  75                  80


Tyr Trp Asn Lys Tyr Glu Asp Thr Thr Phe His Phe
                85                  90


<210> 7575
<211> 340
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430341"

<400> 7575
Met Asn Lys Met Ala Leu Ala Ser Phe Met Lys Gly Arg Thr Val Ile
1               5                   10                  15


Gly Thr Pro Asp Glu Glu Thr Met Asp Ile Glu Leu Pro Lys Lys Tyr
            20                  25                  30


His Glu Met Val Gly Val Ile Phe Ser Asp Thr Phe Ser Tyr Arg Leu
        35                  40                  45


Lys Phe Asn Trp Gly Tyr Arg Ile Pro Val Ile Lys Glu His Ser Glu
    50                  55                  60


Tyr Thr Glu His Cys Trp Ala Met His Gly Glu Ile Phe Cys Tyr Leu
65                  70                  75                  80


Ala Lys Tyr Trp Leu Lys Gly Phe Val Ala Phe Gln Ala Ala Ile Asn
                85                  90                  95
```

```
Ala Ala Ile Ile Glu Val Thr Thr Asn His Ser Val Met Glu Glu Leu
            100                 105                 110

Thr Ser Val Ile Gly Ile Asn Met Lys Ile Pro Pro Phe Ile Ser Lys
        115                 120                 125

Gly Glu Ile Met Asn Glu Trp Phe His Phe Thr Cys Leu Val Ser Phe
    130                 135                 140

Ser Ser Phe Ile Tyr Phe Ala Ser Leu Asn Val Ala Arg Glu Arg Gly
145                 150                 155                 160

Lys Phe Lys Lys Leu Met Thr Val Met Gly Leu Arg Glu Ser Ala Phe
                165                 170                 175

Trp Leu Ser Trp Gly Leu Thr Tyr Ile Cys Phe Ile Phe Ile Met Ser
            180                 185                 190

Ile Phe Met Ala Leu Val Ile Thr Ser Ile Pro Ile Val Phe His Thr
        195                 200                 205

Gly Phe Met Val Ile Phe Thr Leu Tyr Ser Leu Tyr Gly Leu Ser Leu
    210                 215                 220

Ile Ala Leu Ala Phe Leu Met Ser Val Leu Ile Arg Lys Pro Met Leu
225                 230                 235                 240

Ala Gly Leu Ala Gly Phe Leu Phe Thr Val Phe Trp Gly Cys Leu Gly
                245                 250                 255

Phe Thr Val Leu Tyr Arg Gln Leu Pro Leu Ser Leu Gly Trp Val Leu
            260                 265                 270

Ser Leu Leu Ser Pro Phe Ala Phe Thr Ala Gly Met Ala Gln Ile Thr
        275                 280                 285

His Leu Asp Asn Tyr Leu Ser Gly Val Ile Phe Pro Asp Pro Ser Gly
    290                 295                 300

Asp Ser Tyr Lys Met Ile Ala Thr Phe Phe Ile Leu Ala Phe Asp Thr
305                 310                 315                 320
```

Leu Phe Tyr Leu Ile Phe Thr Leu Tyr Phe Glu Arg Val Leu Pro Glu
325 330 335

Ser Glu Met Leu
340

<210> 7576
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466506"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7576
Xaa Tyr Ser Ser Leu Met Ala Tyr Lys Leu Pro Val Glu Asp Val His
1 5 10 15

Pro Leu Ser Arg Ala Phe Phe Lys Leu Glu Ala Met Lys Gln Thr Phe
20 25 30

Asn Leu Glu Glu Tyr Ser Leu Ser Gln Ala Thr Leu Glu Gln Lys Gln
35 40 45

Cys Glu Ala Ser Leu Asp Ala Asp Ile Gly Thr Thr Leu Leu Val Gln
50 55 60

Pro Val Val Ser Glu Ser Gln Leu Lys Lys Ser Ala

65 70 75

<210> 7577
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1599; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468351"

<400> 7577
Tyr Ser Ser Leu Met Ala Tyr Lys Leu Pro Val Glu Asp Val His Pro
1 5 10 15

Leu Ser Arg Ala Phe Phe Lys Leu Glu Ala Met Lys Gln Thr Phe Asn
20 25 30

Leu Glu Glu Tyr Ser Leu Ser Gln Ala Thr Leu Glu Gln
35 40 45

<210> 7578
<211> 2595
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1600; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family

A (ABC1),
member 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q86UK0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000272895"

<400> 7578

```
Met Ala Ser Leu Phe His Gln Leu Gln Ile Leu Val Trp Lys Asn Trp
1               5                  10                  15

Leu Gly Val Lys Arg Gln Pro Leu Trp Thr Leu Val Leu Ile Leu Trp
            20                  25                  30

Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro
        35                  40                  45

Pro Thr Ala Lys Pro Thr Cys Tyr Leu Ala Pro Arg Asn Leu Pro Ser
    50                  55                  60

Thr Gly Phe Phe Pro Phe Leu Gln Thr Leu Leu Cys Asp Thr Asp Ser
65                  70                  75                  80

Lys Cys Lys Asp Thr Pro Tyr Gly Pro Gln Asp Leu Leu Arg Arg Lys
                85                  90                  95

Gly Ile Asp Asp Ala Leu Phe Lys Asp Ser Glu Ile Leu Arg Lys Ser
            100                 105                 110

Ser Asn Leu Asp Lys Asp Ser Ser Leu Ser Phe Gln Ser Thr Gln Val
        115                 120                 125

Pro Glu Arg Arg His Ala Ser Leu Ala Thr Val Phe Pro Ser Pro Ser
    130                 135                 140

Ser Asp Leu Glu Ile Pro Gly Thr Tyr Thr Phe Asn Gly Ser Gln Val
145                 150                 155                 160

Leu Ala Arg Ile Leu Gly Leu Glu Lys Leu Leu Lys Gln Asn Ser Thr
                165                 170                 175

Ser Glu Asp Ile Arg Arg Glu Leu Cys Asp Ser Tyr Ser Gly Tyr Ile
```

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            180                 185                 190

Val Asp Asp Ala Phe Ser Trp Thr Phe Leu Gly Arg Asn Val Phe Asn
        195                 200                 205

Lys Phe Cys Leu Ser Asn Met Thr Leu Leu Glu Ser Ser Leu Gln Glu
    210                 215                 220

Leu Asn Lys Gln Phe Ser Gln Leu Ser Ser Asp Pro Asn Asn Gln Lys
225                 230                 235                 240

Ile Val Phe Gln Glu Ile Val Arg Met Leu Ser Phe Phe Ser Gln Val
                245                 250                 255

Gln Glu Gln Lys Ala Val Trp Gln Leu Leu Ser Ser Phe Pro Asn Val
            260                 265                 270

Phe Gln Asn Asp Thr Ser Leu Ser Asn Leu Phe Asp Val Leu Arg Lys
        275                 280                 285

Ala Asn Ser Val Leu Leu Val Val Gln Lys Val Tyr Pro Arg Phe Ala
    290                 295                 300

Thr Asn Glu Gly Phe Arg Thr Leu Gln Lys Ser Val Lys His Leu Leu
305                 310                 315                 320

Tyr Thr Leu Asp Ser Pro Ala Gln Gly Asp Ser Asp Asn Ile Thr His
                325                 330                 335

Val Trp Asn Glu Asp Asp Gly Gln Thr Leu Ser Pro Ser Ser Leu Ala
            340                 345                 350

Ala Gln Leu Leu Ile Leu Glu Asn Phe Glu Asp Ala Leu Leu Asn Ile
        355                 360                 365

Ser Ala Asn Ser Pro Tyr Ile Pro Tyr Leu Ala Cys Val Arg Asn Val
    370                 375                 380

Thr Asp Ser Leu Ala Arg Gly Ser Pro Glu Asn Leu Arg Leu Leu Gln
385                 390                 395                 400

Ser Thr Ile Arg Phe Lys Lys Ser Phe Leu Arg Asn Gly Ser Tyr Glu
                405                 410                 415
```

```
Asp Tyr Phe Pro Pro Val Pro Glu Val Leu Lys Ser Lys Leu Ser Gln
            420                 425                 430

Leu Arg Asn Leu Thr Glu Leu Leu Cys Glu Ser Glu Thr Phe Ser Leu
        435                 440                 445

Ile Glu Lys Ser Cys Gln Leu Ser Asp Met Ser Phe Gly Ser Leu Cys
    450                 455                 460

Glu Glu Ser Glu Phe Asp Leu Gln Leu Leu Glu Ala Ala Glu Leu Gly
465                 470                 475                 480

Thr Glu Ile Ala Ala Ser Leu Leu Tyr His Asp Asn Val Ile Ser Lys
                485                 490                 495

Lys Val Arg Asp Leu Leu Thr Gly Asp Pro Ser Lys Ile Asn Leu Asn
            500                 505                 510

Met Asp Gln Phe Leu Glu Gln Ala Leu Gln Met Asn Tyr Leu Glu Asn
        515                 520                 525

Ile Thr Gln Leu Ile Pro Ile Ile Glu Ala Met Leu His Val Asn Asn
    530                 535                 540

Ser Ala Asp Ala Ser Glu Lys Pro Gly Gln Leu Leu Glu Met Phe Lys
545                 550                 555                 560

Asn Val Glu Glu Leu Lys Glu Asp Leu Arg Arg Thr Thr Gly Met Ser
                565                 570                 575

Asn Arg Thr Ile Asp Lys Leu Leu Ala Ile Pro Ile Pro Asp Asn Arg
            580                 585                 590

Ala Glu Ile Ile Ser Gln Val Phe Trp Leu His Ser Cys Asp Thr Asn
        595                 600                 605

Ile Thr Thr Pro Lys Leu Glu Asp Ala Met Lys Glu Phe Cys Asn Leu
    610                 615                 620

Ser Leu Ser Glu Arg Ser Arg Gln Ser Tyr Leu Ile Gly Leu Thr Leu
625                 630                 635                 640
```

```
Leu His Tyr Leu Asn Ile Tyr Asn Phe Thr Tyr Lys Val Phe Phe Pro
                645                 650                 655

Arg Lys Asp Gln Lys Pro Val Glu Lys Met Met Glu Leu Phe Ile Arg
            660                 665                 670

Leu Lys Glu Ile Leu Asn Gln Met Ala Ser Gly Thr His Pro Leu Leu
        675                 680                 685

Asp Lys Met Arg Ser Leu Lys Gln Met His Leu Pro Arg Ser Val Pro
    690                 695                 700

Leu Thr Gln Ala Met Tyr Arg Ser Asn Arg Met Asn Thr Pro Gln Gly
705                 710                 715                 720

Ser Phe Ser Thr Ile Ser Gln Ala Leu Cys Ser Gln Gly Ile Thr Thr
                725                 730                 735

Glu Tyr Leu Thr Ala Met Leu Pro Ser Ser Gln Arg Pro Lys Gly Asn
            740                 745                 750

His Thr Lys Asp Phe Leu Thr Tyr Lys Leu Thr Lys Glu Gln Ile Ala
        755                 760                 765

Ser Lys Tyr Gly Ile Pro Ile Asn Ser Thr Pro Phe Cys Phe Ser Leu
    770                 775                 780

Tyr Lys Asp Ile Ile Asn Met Pro Ala Gly Pro Val Ile Trp Ala Phe
785                 790                 795                 800

Leu Lys Pro Met Leu Leu Gly Arg Ile Leu Tyr Ala Pro Tyr Asn Pro
                805                 810                 815

Val Thr Lys Ala Ile Met Glu Lys Ser Asn Val Thr Leu Arg Gln Leu
            820                 825                 830

Ala Glu Leu Arg Glu Lys Ser Gln Glu Trp Met Asp Lys Ser Pro Leu
        835                 840                 845

Phe Met Asn Ser Phe His Leu Leu Asn Gln Ala Ile Pro Met Leu Gln
    850                 855                 860
```

```
Asn Thr Leu Arg Asn Pro Phe Val Gln Val Phe Val Lys Phe Ser Val
865                 870                 875                 880

Gly Leu Asp Ala Val Glu Leu Leu Lys Gln Ile Asp Glu Leu Asp Ile
                885                 890                 895

Leu Arg Leu Lys Leu Glu Asn Asn Ile Asp Ile Ile Asp Gln Leu Asn
            900                 905                 910

Thr Leu Ser Ser Leu Thr Val Asn Ile Ser Ser Cys Val Leu Tyr Asp
        915                 920                 925

Arg Ile Gln Ala Ala Lys Thr Ile Asp Glu Met Glu Arg Glu Ala Lys
    930                 935                 940

Arg Leu Tyr Lys Ser Asn Glu Leu Phe Gly Ser Val Ile Phe Lys Leu
945                 950                 955                 960

Pro Ser Asn Arg Ser Trp His Arg Gly Tyr Asp Ser Gly Asn Val Phe
                965                 970                 975

Leu Pro Pro Val Ile Lys Tyr Thr Ile Arg Met Ser Leu Lys Thr Ala
            980                 985                 990

Gln Thr Thr Arg Ser Leu Arg Thr  Lys Ile Trp Ala Pro  Gly Pro
His
        995                 1000                1005

Asn Ser  Pro Ser His Asn Gln  Ile Tyr Gly Arg Ala  Phe Ile Tyr
    1010                1015                1020

Leu Gln  Asp Ser Ile Glu Arg  Ala Ile Ile Glu Leu  Gln Thr Gly
    1025                1030                1035

Arg Asn  Ser Gln Glu Ile Ala  Val Gln Val Gln Ala  Ile Pro Tyr
    1040                1045                1050

Pro Cys  Phe Met Lys Asp Asn  Phe Leu Thr Ser Val  Ser Tyr Ser
    1055                1060                1065

Leu Pro  Ile Val Leu Met Val  Ala Trp Val Val Phe  Ile Ala Ala
    1070                1075                1080
```

```
Phe Val  Lys Lys Leu Val Tyr  Glu Lys Asp Leu Arg  Leu His Glu
    1085                1090                1095

Tyr Met  Lys Met Met Gly Val  Asn Ser Cys Ser His  Phe Phe Ala
    1100                1105                1110

Trp Leu  Ile Glu Ser Val Gly  Phe Leu Leu Val Thr  Ile Val Ile
    1115                1120                1125

Leu Ile  Ile Ile Leu Lys Phe  Gly Asn Ile Leu Pro  Lys Thr Asn
    1130                1135                1140

Gly Phe  Ile Leu Phe Leu Tyr  Phe Ser Asp Tyr Ser  Phe Ser Val
    1145                1150                1155

Ile Ala  Met Ser Tyr Leu Ile  Ser Val Phe Phe Asn  Asn Thr Asn
    1160                1165                1170

Ile Ala  Ala Leu Ile Gly Ser  Leu Ile Tyr Ile Ile  Ala Phe Phe
    1175                1180                1185

Pro Phe  Ile Val Leu Val Thr  Val Glu Asn Glu Leu  Ser Tyr Val
    1190                1195                1200

Leu Lys  Val Phe Met Ser Leu  Leu Ser Pro Thr Ala  Phe Ser Tyr
    1205                1210                1215

Ala Ser  Gln Tyr Ile Ala Arg  Tyr Glu Glu Gln Gly  Ile Gly Leu
    1220                1225                1230

Gln Trp  Glu Asn Met Tyr Thr  Ser Pro Val Gln Asp  Asp Thr Thr
    1235                1240                1245

Ser Phe  Gly Trp Leu Cys Cys  Leu Ile Leu Ala Asp  Ser Phe Ile
    1250                1255                1260

Tyr Phe  Leu Ile Ala Trp Tyr  Val Arg Asn Val Phe  Pro Gly Thr
    1265                1270                1275

Tyr Gly  Met Ala Ala Pro Trp  Tyr Phe Pro Ile Leu  Pro Ser Tyr
    1280                1285                1290

Trp Lys  Glu Arg Phe Gly Cys  Ala Glu Val Lys Pro  Glu Lys Ser
```

1295 1300 1305

Asn Gly Leu Met Phe Thr Asn Ile Met Met Gln Asn Thr Asn Pro
1310 1315 1320

Ser Ala Ser Pro Glu Tyr Met Phe Ser Ser Asn Ile Glu Pro Glu
1325 1330 1335

Pro Lys Asp Leu Thr Val Gly Val Ala Leu His Gly Val Thr Lys
1340 1345 1350

Ile Tyr Gly Ser Lys Val Ala Val Asp Asn Leu Asn Leu Asn Phe
1355 1360 1365

Tyr Glu Gly His Ile Thr Ser Leu Leu Gly Pro Asn Gly Ala Gly
1370 1375 1380

Lys Thr Thr Thr Ile Ser Met Leu Thr Gly Leu Phe Gly Ala Ser
1385 1390 1395

Ala Gly Thr Ile Phe Val Tyr Gly Lys Asp Ile Lys Thr Asp Leu
1400 1405 1410

His Thr Val Arg Lys Asn Met Gly Val Cys Met Gln His Asp Val
1415 1420 1425

Leu Phe Ser Tyr Leu Thr Thr Lys Glu His Leu Leu Leu Tyr Gly
1430 1435 1440

Ser Ile Lys Val Pro His Trp Thr Lys Lys Gln Leu His Glu Glu
1445 1450 1455

Val Lys Arg Thr Leu Lys Asp Thr Gly Leu Tyr Ser His Arg His
1460 1465 1470

Lys Arg Val Gly Thr Leu Ser Gly Gly Met Lys Arg Lys Leu Ser
1475 1480 1485

Ile Ser Ile Ala Leu Ile Gly Gly Ser Arg Val Val Ile Leu Asp
1490 1495 1500

Glu Pro Ser Thr Gly Val Asp Pro Cys Ser Arg Arg Ser Ile Trp
1505 1510 1515

```
Asp Val  Ile Ser Lys Asn Lys  Thr Ala Arg Thr Ile  Ile Leu Ser
    1520                1525                1530

Thr His  His Leu Asp Glu Ala  Glu Val Leu Ser Asp  Arg Ile Ala
    1535                1540                1545

Phe Leu  Glu Gln Gly Gly Leu  Arg Cys Cys Gly Ser  Pro Phe Tyr
    1550                1555                1560

Leu Lys  Glu Ala Phe Gly Asp  Gly Tyr His Leu Thr  Leu Thr Lys
    1565                1570                1575

Lys Lys  Ser Pro Asn Leu Asn  Ala Asn Ala Val Cys  Asp Thr Met
    1580                1585                1590

Ala Val  Thr Ala Met Ile Gln  Ser His Leu Pro Glu  Ala Tyr Leu
    1595                1600                1605

Lys Glu  Asp Ile Gly Gly Glu  Leu Val Tyr Val Leu  Pro Pro Phe
    1610                1615                1620

Ser Thr  Lys Val Ser Gly Ala  Tyr Leu Ser Leu Leu  Arg Ala Leu
    1625                1630                1635

Asp Asn  Gly Met Gly Asp Leu  Asn Ile Gly Cys Tyr  Gly Ile Ser
    1640                1645                1650

Asp Thr  Thr Val Glu Glu Val  Phe Leu Asn Leu Thr  Lys Glu Ser
    1655                1660                1665

Gln Lys  Asn Ser Ala Met Ser  Leu Glu His Leu Thr  Gln Lys Lys
    1670                1675                1680

Ile Gly  Asn Ser Asn Ala Asn  Gly Ile Ser Thr Pro  Asp Asp Leu
    1685                1690                1695

Ser Val  Ser Ser Ser Asn Phe  Thr Asp Arg Asp Asp  Lys Ile Leu
    1700                1705                1710

Thr Arg  Gly Glu Arg Leu Asp  Gly Phe Gly Leu Leu  Leu Lys Lys
    1715                1720                1725
```

```
Ile Met  Ala Ile Leu Ile Lys  Arg Phe His His Thr  Arg Arg Asn
    1730                1735                1740

Trp Lys  Gly Leu Ile Ala Gln  Val Ile Leu Pro Ile  Val Phe Val
    1745                1750                1755

Thr Thr  Ala Met Gly Leu Gly  Thr Leu Arg Asn Ser  Ser Asn Ser
    1760                1765                1770

Tyr Pro  Glu Ile Gln Ile Ser  Pro Ser Leu Tyr Gly  Thr Ser Glu
    1775                1780                1785

Gln Thr  Ala Phe Tyr Ala Asn  Tyr His Pro Ser Thr  Glu Ala Leu
    1790                1795                1800

Val Ser  Ala Met Trp Asp Phe  Pro Gly Ile Asp Asn  Met Cys Leu
    1805                1810                1815

Asn Thr  Ser Asp Leu Gln Cys  Leu Asn Lys Asp Ser  Leu Glu Lys
    1820                1825                1830

Trp Asn  Thr Ser Gly Glu Pro  Ile Thr Asn Phe Gly  Val Cys Ser
    1835                1840                1845

Cys Ser  Glu Asn Val Gln Glu  Cys Pro Lys Phe Asn  Tyr Ser Pro
    1850                1855                1860

Pro His  Arg Arg Thr Tyr Ser  Ser Gln Val Ile Tyr  Asn Leu Thr
    1865                1870                1875

Gly Gln  Arg Val Glu Asn Tyr  Leu Ile Ser Thr Ala  Asn Glu Phe
    1880                1885                1890

Val Gln  Lys Arg Tyr Gly Gly  Trp Ser Phe Gly Leu  Pro Leu Thr
    1895                1900                1905

Lys Asp  Leu Arg Phe Asp Ile  Thr Gly Val Pro Ala  Asn Arg Thr
    1910                1915                1920

Leu Ala  Lys Val Trp Tyr Asp  Pro Glu Gly Tyr His  Ser Leu Pro
    1925                1930                1935
```

Ala Tyr Leu Asn Ser Leu Asn Asn Phe Leu Leu Arg Val Asn Met
1940 1945 1950

Ser Lys Tyr Asp Ala Ala Arg His Gly Ile Ile Met Tyr Ser His
1955 1960 1965

Pro Tyr Pro Gly Val Gln Asp Gln Glu Gln Ala Thr Ile Ser Ser
1970 1975 1980

Leu Ile Asp Ile Leu Val Ala Leu Ser Ile Leu Met Gly Tyr Ser
1985 1990 1995

Val Thr Thr Ala Ser Phe Val Thr Tyr Val Val Arg Glu His Gln
2000 2005 2010

Thr Lys Ala Lys Gln Leu Gln His Ile Ser Gly Ile Gly Val Thr
2015 2020 2025

Cys Tyr Trp Val Thr Asn Phe Ile Tyr Asp Met Val Phe Tyr Leu
2030 2035 2040

Val Pro Val Ala Phe Ser Ile Gly Ile Ile Ala Ile Phe Lys Leu
2045 2050 2055

Pro Ala Phe Tyr Ser Glu Asn Asn Leu Gly Ala Val Ser Leu Leu
2060 2065 2070

Leu Leu Leu Phe Gly Tyr Ala Thr Phe Ser Trp Met Tyr Leu Leu
2075 2080 2085

Ala Gly Leu Phe His Glu Thr Gly Met Ala Phe Ile Thr Tyr Val
2090 2095 2100

Cys Val Asn Leu Phe Phe Gly Ile Asn Ser Ile Val Ser Leu Ser
2105 2110 2115

Val Val Tyr Phe Leu Ser Lys Glu Lys Pro Asn Asp Pro Thr Leu
2120 2125 2130

Glu Leu Ile Ser Glu Thr Leu Lys Arg Ile Phe Leu Ile Phe Pro
2135 2140 2145

Gln Phe Cys Phe Gly Tyr Gly Leu Ile Glu Leu Ser Gln Gln Gln

2150 2155 2160

Ser Val Leu Asp Phe Leu Lys Ala Tyr Gly Val Glu Tyr Pro Asn
2165 2170 2175

Glu Thr Phe Glu Met Asn Lys Leu Gly Ala Met Phe Val Ala Leu
2180 2185 2190

Val Ser Gln Gly Thr Met Phe Phe Ser Leu Arg Leu Leu Ile Asn
2195 2200 2205

Glu Ser Leu Ile Lys Lys Leu Arg Leu Phe Phe Arg Lys Phe Asn
2210 2215 2220

Ser Ser His Val Arg Glu Thr Ile Asp Glu Asp Glu Asp Val Arg
2225 2230 2235

Ala Glu Arg Leu Arg Val Glu Ser Gly Ala Ala Glu Phe Asp Leu
2240 2245 2250

Val Gln Leu Tyr Cys Leu Thr Lys Thr Tyr Gln Leu Ile His Lys
2255 2260 2265

Lys Ile Ile Ala Val Asn Asn Ile Ser Ile Gly Ile Pro Ala Gly
2270 2275 2280

Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Thr
2285 2290 2295

Ile Phe Lys Met Leu Thr Gly Asp Ile Ile Pro Ser Ser Gly Asn
2300 2305 2310

Ile Leu Ile Arg Asn Lys Thr Gly Ser Leu Gly His Val Asp Ser
2315 2320 2325

His Ser Ser Leu Val Gly Tyr Cys Pro Gln Glu Asp Ala Leu Asp
2330 2335 2340

Asp Leu Val Thr Val Glu Glu His Leu Tyr Phe Tyr Ala Arg Val
2345 2350 2355

His Gly Ile Pro Glu Lys Asp Ile Lys Glu Thr Val His Lys Leu
2360 2365 2370

```
Leu Arg  Arg Leu His Leu Met  Pro Phe Lys Asp Arg  Ala Thr Ser
    2375                2380                2385

Met Cys  Ser Tyr Gly Thr Lys  Arg Lys Leu Ser Thr  Ala Leu Ala
    2390                2395                2400

Leu Ile  Gly Lys Pro Ser Ile  Leu Leu Leu Asp Glu  Pro Ser Ser
    2405                2410                2415

Gly Met  Asp Pro Lys Ser Lys  Arg His Leu Trp Lys  Ile Ile Ser
    2420                2425                2430

Glu Glu  Val Gln Asn Lys Cys  Ser Val Ile Leu Thr  Ser His Ser
    2435                2440                2445

Met Glu  Glu Cys Glu Ala Leu  Cys Thr Arg Leu Ala  Ile Met Val
    2450                2455                2460

Asn Gly  Lys Phe Gln Cys Ile  Gly Ser Leu Gln His  Ile Lys Ser
    2465                2470                2475

Arg Phe  Gly Arg Gly Phe Thr  Val Lys Val His Leu  Lys Asn Asn
    2480                2485                2490

Lys Val  Thr Met Glu Thr Leu  Thr Lys Phe Met Gln  Leu His Phe
    2495                2500                2505

Pro Lys  Thr Tyr Leu Lys Asp  Gln His Leu Ser Met  Leu Glu Tyr
    2510                2515                2520

His Val  Pro Val Thr Ala Gly  Gly Val Ala Asn Ile  Phe Asp Leu
    2525                2530                2535

Leu Glu  Thr Asn Lys Thr Ala  Leu Asn Ile Thr Asn  Phe Leu Val
    2540                2545                2550

Ser Gln  Thr Thr Leu Glu Glu  Val Phe Ile Asn Phe  Ala Lys Asp
    2555                2560                2565

Gln Lys  Ser Tyr Glu Thr Ala  Asp Thr Ser Ser Gln  Gly Ser Thr
    2570                2575                2580
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```
Ile Ser  Val Asp Ser Gln Asp  Asp Gln Met Glu Ser
    2585                2590                2595


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Thr His Val Trp Asn Glu Asp Asp Gly Gln Thr Leu Ser Pro Ser Ser
            20                  25                  30


Leu Ala Ala Gln Leu Leu Ile Leu Glu Asn Phe Glu Asp Ala Leu Leu
        35                  40                  45


Asn Ile Ser Ala Asn Ser Pro Tyr Ile Pro Tyr Leu Ala Cys Val Arg
    50                  55                  60


Asn Val Thr Asp Ser Leu Ala Arg Gly Ser Pro Glu Asn Leu Arg Leu
65                  70                  75                  80


Leu Gln Ser Thr Ile Arg Phe Lys Lys Ser Phe Leu Arg Asn Gly Ser
                85                  90                  95
```

```
Tyr Glu Asp Tyr Phe Pro Pro Val Pro Glu Val Leu Lys Ser Lys Leu
            100                 105                 110

Ser Gln Leu Arg Asn Leu Thr Glu Leu Leu Cys Glu Ser Glu Thr Phe
        115                 120                 125

Ser Leu Ile Glu Lys Ser Cys Gln Leu Ser Asp Met Ser Phe Gly Ser
    130                 135                 140

Leu Cys Glu Glu Ser Glu Phe Asp Leu Gln Leu Leu Glu Ala Ala Glu
145                 150                 155                 160

Leu Gly Thr Glu Ile Ala Ala Ser Leu Leu Tyr His Asp Asn Val Ile
                165                 170                 175

Ser Lys Lys Val Arg Asp Leu Leu Thr Gly Asp Pro Ser Lys Ile Asn
            180                 185                 190

Leu Asn Met Asp Gln Phe Leu Glu Gln Ala Leu Gln Met Asn Tyr Leu
        195                 200                 205

Glu Asn Ile Thr Gln Leu Ile Pro Ile Ile Glu Ala Met Leu His Val
    210                 215                 220

Asn Asn Ser Ala Asp Ala Ser Glu Lys Pro Gly Gln Leu Leu Glu Met
225                 230                 235                 240

Phe Lys Asn Val Glu Glu Leu Lys Glu Asp Leu Arg Arg Thr Thr Gly
                245                 250                 255

Met Ser Asn Arg Thr Ile Asp Lys Leu Leu Ala Ile Pro Ile Pro Asp
            260                 265                 270

Asn Arg Ala Glu Ile Ile Ser Gln Val Phe Trp Leu His Ser Cys Asp
        275                 280                 285

Thr Asn Ile Thr Thr Pro Lys Leu Glu Asp Ala Met Lys Glu Phe Cys
    290                 295                 300

Asn Leu Ser Leu Ser Glu Arg Ser Arg Gln Ser Tyr Leu Ile Gly Leu
305                 310                 315                 320
```

```
Thr Leu Leu His Tyr Leu Asn Ile Tyr Asn Phe Thr Tyr Lys Val Phe
                325                 330                 335

Phe Pro Arg Lys Asp Gln Lys Pro Val Glu Lys Met Met Glu Leu Phe
            340                 345                 350

Ile Arg Leu Lys Glu Ile Leu Asn Gln Met Ala Ser Gly Thr His Pro
        355                 360                 365

Leu Leu Asp Lys Met Arg Ser Leu Lys Gln Met His Leu Pro Arg Ser
    370                 375                 380

Val Pro Leu Thr Gln Ala Met Tyr Arg Ser Asn Arg Met Asn Thr Pro
385                 390                 395                 400

Gln Gly Ser Phe Ser Thr Ile Ser Gln Ala Leu Cys Ser Gln Gly Ile
                405                 410                 415

Thr Thr Glu Tyr Leu Thr Ala Met Leu Pro Ser Ser Gln Arg Pro Lys
            420                 425                 430

Gly Asn His Thr Lys Asp Phe Leu Thr Tyr Lys Leu Thr Lys Glu Gln
        435                 440                 445

Ile Ala Ser Lys Tyr Gly Ile Pro Ile Asn Ser Thr Pro Phe Cys Phe
    450                 455                 460

Ser Leu Tyr Lys Asp Ile Ile Asn Met Pro Ala Gly Pro Val Ile Trp
465                 470                 475                 480

Ala Phe Leu Lys Pro Met Leu Leu Gly Arg Ile Leu Tyr Ala Pro Tyr
                485                 490                 495

Asn Pro Val Thr Lys Ala Ile Met Glu Lys Ser Asn Val Thr Leu Arg
            500                 505                 510

Gln Leu Ala Glu Leu Arg Glu Lys Ser Gln Glu Trp Met Asp Lys Ser
        515                 520                 525

Pro Leu Phe Met Asn Ser Phe His Leu Leu Asn Gln Ala Ile Pro Met
    530                 535                 540

Leu Gln Asn Thr Leu Arg Asn Pro Phe Val Gln Val Phe Val Lys Phe
```

545 550 555 560

Ser Val Gly Leu Asp Ala Val Glu Leu Leu Lys Gln Ile Asp Glu Leu
565 570 575

Asp Ile Leu Arg Leu Lys Leu Glu Asn Asn Ile Asp Ile Ile Asp Gln
580 585 590

Leu Asn Thr Leu Ser Ser Leu Thr Val Asn Ile Ser Ser Cys Val Leu
595 600 605

Tyr Asp Arg Ile Gln Ala Ala Lys Thr Ile Asp Glu Met Glu Arg Glu
610 615 620

Ala Lys Arg Leu Tyr Lys Ser Asn Glu Leu Phe Gly Ser Val Ile Phe
625 630 635 640

Lys Leu Pro Ser Asn Arg Ser Trp His Arg Gly Tyr Asp Ser Gly Asn
645 650 655

Val Phe Leu Pro Pro Val Ile Lys Tyr Thr Ile Arg Met Ser Leu Lys
660 665 670

Thr Ala Gln Thr Thr Arg Ser Leu Arg Thr Lys Ile Trp Ala Pro Gly
675 680 685

Pro His Asn Ser Pro Ser His Asn Gln Ile Tyr Gly Arg Ala Phe Ile
690 695 700

Tyr Leu Gln Asp Ser Ile Glu Arg Ala Ile Ile Glu Leu Gln Thr Gly
705 710 715 720

Arg Asn Ser Gln Glu Ile Ala Val Gln Val Gln Ala Ile Pro Tyr Pro
725 730 735

Cys Phe Met Lys Asp Asn Phe Leu Thr Ser Val Ser Tyr Ser Leu Pro
740 745 750

Ile Val Leu Met Val Ala Trp Val Val Phe Ile Ala Ala Phe Val Lys
755 760 765

Lys Leu Val Tyr Glu Lys Asp Leu Arg Leu His Glu Tyr Met Lys Met
770 775 780

```
Met Gly Val Asn Ser Cys Ser His Phe Phe Ala Trp Leu Ile Glu Ser
785                 790                 795                 800

Val Gly Phe Leu Leu Val Thr Ile Val Ile Leu Ile Ile Ile Leu Lys
                805                 810                 815

Phe Gly Asn Ile Leu Pro Lys Thr Asn Gly Phe Ile Leu Phe Leu Tyr
            820                 825                 830

Phe Ser Asp Tyr Ser Phe Ser Val Ile Ala Met Ser Tyr Leu Ile Ser
        835                 840                 845

Val Phe Phe Asn Asn Thr Asn Ile Ala Ala Leu Ile Gly Ser Leu Ile
    850                 855                 860

Tyr Ile Ile Ala Phe Phe Pro Phe Ile Val Leu Val Thr Val Glu Asn
865                 870                 875                 880

Glu Leu Ser Tyr Val Leu Lys Val Phe Met Ser Leu Leu Ser Pro Thr
                885                 890                 895

Ala Phe Ser Tyr Ala Ser Gln Tyr Ile Ala Arg Tyr Glu Glu Gln Gly
            900                 905                 910

Ile Gly Leu Gln Trp Glu Asn Met Tyr Thr Ser Pro Val Gln Asp Asp
        915                 920                 925

Thr Thr Ser Phe Gly Trp Leu Cys Cys Leu Ile Leu Ala Asp Ser Phe
    930                 935                 940

Ile Tyr Phe Leu Ile Ala Trp Tyr Val Arg Asn Val Phe Pro Gly Thr
945                 950                 955                 960

Tyr Gly Met Ala Ala Pro Trp Tyr Phe Pro Ile Leu Pro Ser Tyr Trp
                965                 970                 975

Lys Glu Arg Phe Gly Cys Ala Glu Val Lys Pro Glu Lys Ser Asn Gly
            980                 985                 990

Leu Met Phe Thr Asn Ile Met Met  Gln Asn Thr Asn Pro  Ser Ala
Ser
        995                 1000                1005
```

```
Pro Glu  Tyr Met Phe Ser Ser  Asn Ile Glu Pro Glu  Pro Lys Asp
    1010                1015                1020

Leu Thr  Val Gly Val Ala Leu  His Gly Val Thr Lys  Ile Tyr Gly
    1025                1030                1035

Ser Lys  Val Ala Val Asp Asn  Leu Asn Leu Asn Phe  Tyr Glu Gly
    1040                1045                1050

His Ile  Thr Ser Leu Leu Gly  Pro Asn Gly Ala Gly  Lys Thr Thr
    1055                1060                1065

Thr Ile  Ser Met Leu Thr Gly  Leu Phe Gly Ala Ser  Ala Gly Thr
    1070                1075                1080

Ile Phe  Val Tyr Gly Lys Asp  Ile Lys Thr Asp Leu  His Thr Val
    1085                1090                1095

Arg Lys  Asn Met Gly Val Cys  Met Gln His Asp Val  Leu Phe Ser
    1100                1105                1110

Tyr Leu  Thr Thr Lys Glu His  Leu Leu Leu Tyr Gly  Ser Ile Lys
    1115                1120                1125

Val Pro  His Trp Thr Lys Lys  Gln Leu His Glu Glu  Val Lys Arg
    1130                1135                1140

Thr Leu  Lys Asp Thr Gly Leu  Tyr Ser His Arg His  Lys Arg Val
    1145                1150                1155

Gly Thr  Leu Ser Gly Gly Met  Lys Arg Lys Leu Ser  Ile Ser Ile
    1160                1165                1170

Ala Leu  Ile Gly Gly Ser Arg  Val Val Ile Leu Asp  Glu Pro Ser
    1175                1180                1185

Thr Gly  Val Asp Pro Cys Ser  Arg Arg Ser Ile Trp  Asp Val Ile
    1190                1195                1200

Ser Lys  Asn Lys Thr Ala Arg  Thr Ile Ile Leu Ser  Thr His His
    1205                1210                1215
```

```
Leu Asp  Glu Ala Glu Val Leu  Ser Asp Arg Ile Ala  Phe Leu Glu
    1220                 1225                 1230

Gln Gly  Gly Leu Arg Cys Cys  Gly Ser Pro Phe Tyr  Leu Lys Glu
    1235                 1240                 1245

Ala Phe  Gly Asp Gly Tyr His  Leu Thr Leu Thr Lys  Lys Lys Ser
    1250                 1255                 1260

Pro Asn  Leu Asn Ala Asn Ala  Val Cys Asp Thr Met  Ala Val Thr
    1265                 1270                 1275

Ala Met  Ile Gln Ser His Leu  Pro Glu Ala Tyr Leu  Lys Glu Asp
    1280                 1285                 1290

Ile Gly  Gly Glu Leu Val Tyr  Val Leu Pro Pro Phe  Ser Thr Lys
    1295                 1300                 1305

Val Ser  Gly Ala Tyr Leu Ser  Leu Leu Arg Ala Leu  Asp Asn Gly
    1310                 1315                 1320

Met Gly  Asp Leu Asn Ile Gly  Cys Tyr Gly Ile Ser  Asp Thr Thr
    1325                 1330                 1335

Val Glu  Glu Val Phe Leu Asn  Leu Thr Lys Glu Ser  Gln Lys Asn
    1340                 1345                 1350

Ser Ala  Met Ser Leu Glu His  Leu Thr Gln Lys Lys  Ile Gly Asn
    1355                 1360                 1365

Ser Asn  Ala Asn Gly Ile Ser  Thr Pro Asp Asp Leu  Ser Val Ser
    1370                 1375                 1380

Ser Ser  Asn Phe Thr Asp Arg  Asp Asp Lys Ile Leu  Thr Arg Gly
    1385                 1390                 1395

Glu Arg  Leu Asp Gly Phe Gly  Leu Leu Leu Lys Lys  Ile Met Ala
    1400                 1405                 1410

Ile Leu  Ile Lys Arg Phe His  His Thr Arg Arg Asn  Trp Lys Gly
    1415                 1420                 1425
```

```
Leu Ile  Ala Gln Val Ile Leu  Pro Ile Val Phe Val  Thr Thr Ala
    1430                1435                1440

Met Gly  Leu Gly Thr Leu Arg  Asn Ser Ser Asn Ser  Tyr Pro Glu
    1445                1450                1455

Ile Gln  Ile Ser Pro Ser Leu  Tyr Gly Thr Ser Glu  Gln Thr Ala
    1460                1465                1470

Phe Tyr  Ala Asn Tyr His Pro  Ser Thr Glu Ala Leu  Val Ser Ala
    1475                1480                1485

Met Trp  Asp Phe Pro Gly Ile  Asp Asn Met Cys Leu  Asn Thr Ser
    1490                1495                1500

Asp Leu  Gln Cys Leu Asn Lys  Asp Ser Leu Glu Lys  Trp Asn Thr
    1505                1510                1515

Ser Gly  Glu Pro Ile Thr Asn  Phe Gly Val Cys Ser  Cys Ser Glu
    1520                1525                1530

Asn Val  Gln Glu Cys Pro Lys  Phe Asn Tyr Ser Pro  Pro His Arg
    1535                1540                1545

Arg Thr  Tyr Ser Ser Gln Val  Ile Tyr Asn Leu Thr  Gly Gln Arg
    1550                1555                1560

Val Glu  Asn Tyr Leu Ile Ser  Thr Ala Asn Glu Phe  Val Gln Lys
    1565                1570                1575

Arg Tyr  Gly Gly Trp Ser Phe  Gly Leu Pro Leu Thr  Lys Asp Leu
    1580                1585                1590

Arg Phe  Asp Ile Thr Gly Val  Pro Ala Asn Arg Thr  Leu Ala Lys
    1595                1600                1605

Val Trp  Tyr Asp Pro Glu Gly  Tyr His Ser Leu Pro  Ala Tyr Leu
    1610                1615                1620

Asn Ser  Leu Asn Asn Phe Leu  Leu Arg Val Asn Met  Ser Lys Tyr
    1625                1630                1635

Asp Ala  Ala Arg His Gly Ile  Ile Met Tyr Ser His  Pro Tyr Pro
```

1640 1645 1650

Gly Val Gln Asp Gln Glu Gln Ala Thr Ile Ser Ser Leu Ile Asp
1655 1660 1665

Ile Leu Val Ala Leu Ser Ile Leu Met Gly Tyr Ser Val Thr Thr
1670 1675 1680

Ala Ser Phe Val Thr Tyr Val Val Arg Glu His Gln Thr Lys Ala
1685 1690 1695

Lys Gln Leu Gln His Ile Ser Gly Ile Gly Val Thr Cys Tyr Trp
1700 1705 1710

Val Thr Asn Phe Ile Tyr Asp Met Val Phe Tyr Leu Val Pro Val
1715 1720 1725

Ala Phe Ser Ile Gly Ile Ile Ala Ile Phe Lys Leu Pro Ala Phe
1730 1735 1740

Tyr Ser Glu Asn Asn Leu Gly Ala Val Ser Leu Leu Leu Leu Leu
1745 1750 1755

Phe Gly Tyr Ala Thr Phe Ser Trp Met Tyr Leu Leu Ala Gly Leu
1760 1765 1770

Phe His Glu Thr Gly Met Ala Phe Ile Thr Tyr Val Cys Val Asn
1775 1780 1785

Leu Phe Phe Gly Ile Asn Ser Ile Val Ser Leu Ser Val Val Tyr
1790 1795 1800

Phe Leu Ser Lys Glu Lys Pro Asn Asp Pro Thr Leu Glu Leu Ile
1805 1810 1815

Ser Glu Thr Leu Lys Arg Ile Phe Leu Ile Phe Pro Gln Phe Cys
1820 1825 1830

Phe Gly Tyr Gly Leu Ile Glu Leu Ser Gln Gln Gln Ser Val Leu
1835 1840 1845

Asp Phe Leu Lys Ala Tyr Gly Val Glu Tyr Pro Asn Glu Thr Phe
1850 1855 1860

```
Glu Met  Asn Lys Leu Gly Ala  Met Phe Val Ala Leu  Val Ser Gln
    1865                1870                1875

Gly Thr  Met Phe Phe Ser Leu  Arg Leu Leu Ile Asn  Glu Ser Leu
    1880                1885                1890

Ile Lys  Lys Leu Arg Leu Phe  Phe Arg Lys Phe Asn  Ser Ser His
    1895                1900                1905

Val Arg  Glu Thr Ile Asp Glu  Asp Glu Asp Val Arg  Ala Glu Arg
    1910                1915                1920

Leu Arg  Val Glu Ser Gly Ala  Ala Glu Phe Asp Leu  Val Gln Leu
    1925                1930                1935

Tyr Cys  Leu Thr Lys Thr Tyr  Gln Leu Ile His Lys  Lys Ile Ile
    1940                1945                1950

Ala Val  Asn Asn Ile Ser Ile  Gly Ile Pro Ala Gly  Glu Cys Phe
    1955                1960                1965

Gly Leu  Leu Gly Val Asn Gly  Ala Gly Lys Thr Thr  Ile Phe Lys
    1970                1975                1980

Met Leu  Thr Gly Asp Ile Ile  Pro Ser Ser Gly Asn  Ile Leu Ile
    1985                1990                1995

Arg Asn  Lys Thr Gly Ser Leu  Gly His Val Asp Ser  His Ser Ser
    2000                2005                2010

Leu Val  Gly Tyr Cys Pro Gln  Glu Asp Ala Leu Asp  Asp Leu Val
    2015                2020                2025

Thr Val  Glu Glu His Leu Tyr  Phe Tyr Ala Arg Val  His Gly Ile
    2030                2035                2040

Pro Glu  Lys Asp Ile Lys Glu  Thr Val His Lys Leu  Leu Arg Arg
    2045                2050                2055

Leu His  Leu Met Pro Phe Lys  Asp Arg Ala Thr Ser  Met Cys Ser
    2060                2065                2070
```

Tyr Gly Thr Lys Arg Lys Leu Ser Thr Ala Leu Ala Leu Ile Gly
2075 2080 2085

Lys Pro Ser Ile Leu Leu Leu Asp Glu Pro Ser Ser Gly Met Asp
2090 2095 2100

Pro Lys Ser Lys Arg His Leu Trp Lys Ile Ile Ser Glu Glu Val
2105 2110 2115

Gln Asn Lys Cys Ser Val Ile Leu Thr Ser His Ser Met Glu Glu
2120 2125 2130

Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val Asn Gly Lys
2135 2140 2145

Phe Gln Cys Ile Gly Ser Leu Gln His Ile Lys Ser Arg Phe Gly
2150 2155 2160

Arg Gly Phe Thr Val Lys Val His Leu Lys Asn Asn Lys Val Thr
2165 2170 2175

Met Glu Thr Leu Thr Lys Phe Met Gln Leu His Phe Pro Lys Thr
2180 2185 2190

Tyr Leu Lys Asp Gln His Leu Ser Met Leu Glu Tyr His Val Pro
2195 2200 2205

Val Thr Ala Gly Gly Val Ala Asn Ile Phe Asp Leu Leu Glu Thr
2210 2215 2220

Asn Lys Thr Ala Leu Asn Ile Thr Asn Phe Leu Val Ser Gln Thr
2225 2230 2235

Thr Leu Glu Glu Val Phe Ile Asn Phe Ala Lys Asp Gln Lys Ser
2240 2245 2250

Tyr Glu Thr Ala Asp Thr Ser Ser Gln Gly Ser Thr Ile Ser Val
2255 2260 2265

Asp Ser Gln Asp Asp Gln Met Glu Ser
2270 2275

<210> 7580
<211> 90
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1600; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 12; "

<220>
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<223> /note="ENSP ID: ENSP00000400231"

<400> 7580
Met Ala Ser Leu Phe His Gln Leu Gln Ile Leu Val Trp Lys Asn Trp
1 5 10 15

Leu Gly Val Lys Arg Gln Pro Leu Trp Thr Leu Val Leu Ile Leu Trp
20 25 30

Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro
35 40 45

Pro Thr Ala Lys Pro Thr Trp Asp Ser Ser Thr Trp Asn Thr Cys Asp
50 55 60

Gly Trp Met Ala Gln Ile Phe Phe Phe Ser Cys Ile Asn Glu Glu Thr
65 70 75 80

Asp Ser Arg Tyr Arg Val Met Ile Ala Gln
85 90

<210> 7581
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA13; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 13; "

<220>
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<223> /note="ENSP ID: ENSP00000389861"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7581

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Xaa Leu Glu Ser Ile Arg Gln Cys Gly Val Ala Leu Cys Ile Val Leu
1               5                  10                  15

Gly Phe Ser Ile Leu Ser Ala Ser Ile Gly Ser Ser Val Leu Phe Tyr
            20                  25                  30

Leu Val Ser Val Cys Leu Cys Val Ala Val Ile Val Ala Phe Gln Leu
        35                  40                  45

Thr Ala Phe Thr Phe Arg Lys Asn Leu Ala Ala Thr Ala Leu Leu Leu
    50                  55                  60

Ser Leu Phe Gly Tyr Ala Thr Leu Pro Trp Met Tyr Leu Met Ser Arg
65                  70                  75                  80

Ile Phe Ser Ser Ser Asp Val Ala Phe Ile Ser Tyr Val Ser Leu Asn
                85                  90                  95

Phe Ile Phe Gly Leu Cys Thr Met Leu Ile Thr Ile Met Pro Arg Leu
            100                 105                 110

Leu Ala Ile Ile Ser Lys Ala Lys Asn Leu Gln Asn Ile Tyr Asp Val
        115                 120                 125

Leu Lys Trp Val Phe Thr Ile Phe Pro Gln Phe Cys Leu Gly Gln Gly
    130                 135                 140
```

```
Leu Val Glu Leu Cys Tyr Asn Gln Ile Lys Tyr
145                 150                 155


<210> 7582
<211> 831
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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      ATP-binding cassette, sub-family
      A (ABC1),
      member 13; "

<220>
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<223> /note="ENSP ID: ENSP00000391042"

<400> 7582
Val Gln Gly Val Gln Leu Leu Arg Ala Gln Val Ala Ala Ile Leu Ala
1               5                   10                  15


Arg Arg Leu Arg Arg Thr Leu Arg Ala Gly Lys Ser Thr Leu Ala Asp
            20                  25                  30


Leu Leu Leu Pro Val Leu Phe Val Ala Leu Ala Met Gly Leu Phe Met
        35                  40                  45


Val Arg Pro Leu Ala Thr Glu Tyr Pro Pro Leu Arg Leu Thr Pro Gly
    50                  55                  60


His Tyr Gln Arg Ala Glu Thr Tyr Phe Phe Arg Lys Asn Ser Ser Cys
65                  70                  75                  80


Trp Arg Thr Asp Pro Phe Ser His Pro Glu Phe Gln Asp Ser Cys Gly
                85                  90                  95


Cys Leu Lys Cys Pro Asn Arg Ser Ala Ser Ala Pro Tyr Leu Thr Asn
            100                 105                 110
```

```
His Leu Gly His Thr Leu Leu Asn Leu Ser Gly Phe Asn Met Glu Glu
        115                 120                 125

Tyr Leu Leu Ala Pro Ser Glu Lys Pro Arg Leu Gly Gly Trp Ser Phe
    130                 135                 140

Gly Leu Lys Ile Pro Ser Glu Ala Gly Gly Ala Asn Gly Asn Ile Ser
145                 150                 155                 160

Lys Pro Pro Thr Leu Ala Lys Val Trp Tyr Asn Gln Lys Gly Phe His
                165                 170                 175

Ser Leu Pro Ser Tyr Leu Asn His Leu Asn Asn Leu Ile Leu Trp Gln
            180                 185                 190

His Leu Pro Pro Thr Val Asp Trp Arg Gln Tyr Gly Ile Thr Leu Tyr
        195                 200                 205

Ser His Pro Tyr Gly Gly Ala Leu Leu Asn Glu Asp Lys Ile Leu Glu
    210                 215                 220

Ser Ile Arg Gln Cys Gly Val Ala Leu Cys Ile Val Leu Gly Phe Ser
225                 230                 235                 240

Ile Leu Ser Ala Ser Ile Gly Ser Ser Val Val Arg Asp Arg Val Ile
                245                 250                 255

Gly Ala Lys Arg Leu Gln His Ile Ser Gly Leu Gly Tyr Arg Met Tyr
            260                 265                 270

Trp Phe Thr Asn Phe Leu Tyr Asp Met Leu Phe Tyr Leu Val Ser Val
        275                 280                 285

Cys Leu Cys Val Ala Val Ile Val Ala Phe Gln Leu Thr Ala Phe Thr
    290                 295                 300

Phe Arg Lys Asn Leu Ala Ala Thr Ala Leu Leu Leu Ser Leu Phe Gly
305                 310                 315                 320

Tyr Ala Thr Leu Pro Trp Met Tyr Leu Met Ser Arg Ile Phe Ser Ser
                325                 330                 335
```

```
Ser Asp Val Ala Phe Ile Ser Tyr Val Ser Leu Asn Phe Ile Phe Gly
            340                 345                 350

Leu Cys Thr Met Leu Ile Thr Ile Met Pro Arg Leu Leu Ala Ile Ile
        355                 360                 365

Ser Lys Ala Lys Asn Leu Gln Asn Ile Tyr Asp Val Leu Lys Trp Val
    370                 375                 380

Phe Thr Ile Phe Pro Gln Phe Cys Leu Gly Gln Gly Leu Val Glu Leu
385                 390                 395                 400

Cys Tyr Asn Gln Ile Lys Tyr Asp Leu Thr His Asn Phe Gly Ile Asp
                405                 410                 415

Ser Tyr Val Ser Pro Phe Glu Met Asn Phe Leu Gly Trp Ile Phe Val
            420                 425                 430

Gln Leu Ala Ser Gln Gly Thr Val Leu Leu Leu Leu Arg Val Leu Leu
        435                 440                 445

His Trp Asp Leu Leu Arg Trp Pro Arg Gly His Ser Thr Leu Gln Gly
    450                 455                 460

Thr Val Lys Ser Ser Lys Asp Thr Asp Val Glu Lys Glu Glu Lys Arg
465                 470                 475                 480

Val Phe Glu Gly Arg Thr Asn Gly Asp Ile Leu Val Leu Tyr Asn Leu
                485                 490                 495

Ser Lys His Tyr Arg Arg Phe Phe Gln Asn Ile Ile Ala Val Gln Asp
            500                 505                 510

Ile Ser Leu Gly Ile Pro Lys Gly Glu Cys Phe Gly Leu Leu Gly Val
        515                 520                 525

Asn Gly Ala Gly Lys Ser Thr Thr Phe Lys Met Leu Asn Gly Glu Val
    530                 535                 540

Ser Leu Thr Ser Gly His Ala Ile Ile Arg Thr Pro Met Gly Asp Ala
545                 550                 555                 560
```

```
Val Asp Leu Ser Ser Ala Gly Thr Ala Gly Val Leu Ile Gly Tyr Cys
                565                 570                 575

Pro Gln Gln Asp Ala Leu Asp Glu Leu Leu Thr Gly Trp Glu His Leu
            580                 585                 590

Tyr Tyr Tyr Cys Ser Leu Arg Gly Ile Pro Arg Gln Cys Ile Pro Glu
        595                 600                 605

Val Ala Gly Asp Leu Ile Arg Arg Leu His Leu Glu Ala His Ala Asp
    610                 615                 620

Lys Pro Val Ala Thr Tyr Ser Gly Gly Thr Lys Arg Lys Leu Ser Thr
625                 630                 635                 640

Ala Leu Ala Leu Val Gly Lys Pro Asp Ile Leu Leu Leu Asp Glu Pro
                645                 650                 655

Ser Ser Gly Met Asp Pro Cys Ser Lys Arg Tyr Leu Trp Gln Thr Ile
            660                 665                 670

Met Lys Glu Val Arg Glu Gly Cys Ala Ala Val Leu Thr Ser His Ser
        675                 680                 685

Met Glu Glu Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val Asn
    690                 695                 700

Gly Ser Phe Lys Cys Leu Gly Ser Pro Gln His Ile Lys Asn Arg Phe
705                 710                 715                 720

Gly Asp Gly Tyr Thr Val Lys Val Trp Leu Cys Lys Glu Ala Asn Gln
                725                 730                 735

His Cys Thr Val Ser Asp His Leu Lys Leu Tyr Phe Pro Gly Ile Gln
            740                 745                 750

Phe Lys Gly Gln His Leu Asn Leu Leu Glu Tyr His Val Pro Lys Arg
        755                 760                 765

Trp Gly Cys Leu Ala Asp Leu Phe Lys Val Ile Glu Asn Asn Lys Thr
    770                 775                 780

Phe Leu Asn Ile Lys His Tyr Ser Ile Asn Gln Thr Thr Leu Glu Gln
```

785 790 795 800

Val Phe Ile Asn Phe Ala Ser Glu Gln Gln Gln Thr Leu Gln Ser Thr
805 810 815

Leu Asp Pro Ser Thr Asp Ser His His Thr His His Leu Pro Ile
820 825 830

<210> 7583
<211> 1192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1601; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA13; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 13; "

<220>
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<223> /note="ENSP ID: ENSP00000396789"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7583
Xaa Ile Gln Trp Asn Asn Met Tyr Gln Ala Leu Glu Gln Gly Gly Met
1 5 10 15

Thr Phe Gly Trp Val Cys Trp Met Ile Leu Phe Asp Ser Ser Leu Tyr
20 25 30

Phe Leu Cys Gly Trp Tyr Leu Ser Asn Leu Ile Pro Gly Thr Phe Gly
35 40 45

Leu Arg Lys Pro Trp Tyr Phe Pro Phe Thr Ala Ser Tyr Trp Lys Ser
50 55 60

```
Val Gly Phe Leu Val Glu Lys Arg Gln Tyr Phe Leu Ser Ser Ser Leu
65                  70                  75                  80

Phe Phe Phe Asn Glu Asn Phe Asp Asn Lys Gly Ser Ser Leu Gln Asn
                85                  90                  95

Arg Glu Gly Glu Leu Glu Gly Ser Ala Pro Gly Val Thr Leu Val Ser
            100                 105                 110

Val Thr Lys Glu Tyr Glu Gly His Lys Ala Val Val Gln Asp Leu Ser
        115                 120                 125

Leu Thr Phe Tyr Arg Asp Gln Ile Thr Ala Leu Leu Gly Thr Asn Gly
    130                 135                 140

Ala Gly Lys Thr Thr Ile Ile Ser Met Leu Thr Gly Leu His Pro Pro
145                 150                 155                 160

Thr Ser Gly Thr Ile Ile Ile Asn Gly Lys Asn Leu Gln Thr Asp Leu
                165                 170                 175

Ser Arg Val Arg Met Glu Leu Gly Val Cys Pro Gln Gln Asp Ile Leu
            180                 185                 190

Leu Asp Asn Leu Thr Val Arg Glu His Leu Leu Leu Phe Ala Ser Ile
        195                 200                 205

Lys Ala Pro Gln Trp Thr Lys Lys Glu Leu His Gln Gln Val Asn Gln
    210                 215                 220

Thr Leu Gln Asp Val Asp Leu Thr Gln His Gln His Lys Gln Thr Arg
225                 230                 235                 240

Ala Leu Ser Gly Gly Leu Lys Arg Lys Leu Ser Leu Gly Ile Ala Phe
                245                 250                 255

Met Gly Met Ser Arg Thr Val Val Leu Asp Glu Pro Thr Ser Gly Val
            260                 265                 270

Asp Pro Cys Ser Arg His Ser Leu Trp Asp Ile Leu Leu Lys Tyr Arg
        275                 280                 285
```

```
Glu Gly Arg Thr Ile Ile Phe Thr Thr His His Leu Asp Glu Ala Glu
    290                 295                 300

Ala Leu Ser Asp Arg Val Ala Val Leu Gln His Gly Arg Leu Arg Cys
305                 310                 315                 320

Cys Gly Pro Pro Phe Cys Leu Lys Glu Ala Tyr Gly Gln Gly Leu Arg
                325                 330                 335

Leu Thr Leu Thr Arg Gln Pro Ser Val Leu Glu Ala His Asp Leu Lys
            340                 345                 350

Asp Met Ala Cys Val Thr Ser Leu Ile Lys Ile Tyr Ile Pro Gln Ala
        355                 360                 365

Phe Leu Lys Asp Ser Ser Gly Ser Glu Leu Thr Tyr Thr Ile Pro Lys
    370                 375                 380

Asp Thr Asp Lys Ala Cys Leu Lys Gly Leu Phe Gln Ala Leu Asp Glu
385                 390                 395                 400

Asn Leu His Gln Leu His Leu Thr Gly Tyr Gly Ile Ser Asp Thr Thr
                405                 410                 415

Leu Glu Glu Val Phe Leu Met Leu Leu Gln Asp Ser Asn Lys Lys Ser
            420                 425                 430

His Ile Ala Leu Gly Thr Glu Ser Glu Leu Gln Asn His Arg Pro Thr
        435                 440                 445

Gly His Leu Ser Gly Tyr Cys Gly Ser Leu Ala Arg Pro Ala Thr Val
    450                 455                 460

Gln Gly Val Gln Leu Leu Arg Ala Gln Val Ala Ala Ile Leu Ala Arg
465                 470                 475                 480

Arg Leu Arg Arg Thr Leu Arg Ala Gly Lys Ser Thr Leu Ala Asp Leu
                485                 490                 495

Leu Leu Pro Val Leu Phe Val Ala Leu Ala Met Gly Leu Phe Met Val
            500                 505                 510

Arg Pro Leu Ala Thr Glu Tyr Pro Pro Leu Arg Leu Thr Pro Gly His
```

```
        515                 520                 525

Tyr Gln Arg Ala Glu Thr Tyr Phe Phe Ser Ser Gly Gly Asp Asn Leu
    530                 535                 540

Asp Leu Thr Arg Val Leu Leu Arg Lys Phe Arg Asp Gln Asp Leu Pro
545                 550                 555                 560

Cys Ala Asp Leu Asn Pro Arg Gln Lys Asn Ser Ser Cys Trp Arg Thr
                565                 570                 575

Asp Pro Phe Ser His Pro Glu Phe Gln Asp Ser Cys Gly Cys Leu Lys
            580                 585                 590

Cys Pro Asn Arg Ser Ala Ser Ala Pro Tyr Leu Thr Asn His Leu Gly
        595                 600                 605

His Thr Leu Leu Asn Leu Ser Gly Phe Asn Met Glu Glu Tyr Leu Leu
    610                 615                 620

Ala Pro Ser Glu Lys Pro Arg Leu Gly Gly Trp Ser Phe Gly Leu Lys
625                 630                 635                 640

Ile Pro Ser Glu Ala Gly Gly Ala Asn Gly Asn Ile Ser Lys Pro Pro
                645                 650                 655

Thr Leu Ala Lys Val Trp Tyr Asn Gln Lys Gly Phe His Ser Leu Pro
            660                 665                 670

Ser Tyr Leu Asn His Leu Asn Asn Leu Ile Leu Trp Gln His Leu Pro
        675                 680                 685

Pro Thr Val Asp Trp Arg Gln Tyr Gly Ile Thr Leu Tyr Ser His Pro
    690                 695                 700

Tyr Gly Gly Ala Leu Leu Asn Glu Asp Lys Ile Leu Glu Ser Ile Arg
705                 710                 715                 720

Gln Cys Gly Val Ala Leu Cys Ile Val Leu Gly Phe Ser Ile Leu Ser
                725                 730                 735

Ala Ser Ile Gly Ser Ser Val Val Arg Asp Arg Val Ile Gly Ala Lys
            740                 745                 750
```

```
Arg Leu Gln His Ile Ser Gly Leu Gly Tyr Arg Met Tyr Trp Phe Thr
        755                 760                 765

Asn Phe Leu Tyr Asp Met Leu Phe Tyr Leu Val Ser Val Cys Leu Cys
    770                 775                 780

Val Ala Val Ile Val Ala Phe Gln Leu Thr Ala Phe Thr Phe Arg Lys
785                 790                 795                 800

Asn Leu Ala Ala Thr Ala Leu Leu Leu Ser Leu Phe Gly Tyr Ala Thr
                805                 810                 815

Leu Pro Trp Met Tyr Leu Met Ser Arg Ile Phe Ser Ser Ser Asp Val
            820                 825                 830

Ala Phe Ile Ser Tyr Val Ser Leu Asn Phe Ile Phe Gly Leu Cys Thr
        835                 840                 845

Met Leu Ile Thr Ile Met Pro Arg Leu Leu Ala Ile Ile Ser Lys Ala
    850                 855                 860

Lys Asn Leu Gln Asn Ile Tyr Asp Val Leu Lys Trp Val Phe Thr Ile
865                 870                 875                 880

Phe Pro Gln Phe Cys Leu Gly Gln Gly Leu Val Glu Leu Cys Tyr Asn
                885                 890                 895

Gln Ile Lys Tyr Asp Leu Thr His Asn Phe Gly Ile Asp Ser Tyr Val
            900                 905                 910

Ser Pro Phe Glu Met Asn Phe Leu Gly Trp Ile Phe Val Gln Leu Ala
        915                 920                 925

Ser Gln Gly Thr Val Leu Leu Leu Leu Arg Val Leu Leu His Trp Asp
    930                 935                 940

Leu Leu Arg Trp Pro Arg Gly His Ser Thr Leu Gln Gly Thr Val Lys
945                 950                 955                 960

Ser Ser Lys Asp Thr Asp Val Glu Lys Glu Glu Lys Arg Val Phe Glu
                965                 970                 975
```

```
Gly Arg Thr Asn Gly Asp Ile Leu Val Leu Tyr Asn Leu Ser Lys His
            980                 985                 990

Tyr Arg Arg Phe Phe Gln Asn Ile  Ile Ala Val Gln Asp  Ile Ser
Leu
        995                 1000                1005

Gly Ile  Pro Lys Gly Glu Cys  Phe Gly Leu Leu Gly  Val Asn Gly
    1010                1015                1020

Ala Gly  Lys Ser Thr Thr Phe  Lys Met Leu Asn Gly  Glu Val Ser
    1025                1030                1035

Leu Thr  Ser Gly His Ala Ile  Ile Arg Thr Pro Met  Gly Asp Ala
    1040                1045                1050

Val Asp  Leu Ser Ser Ala Gly  Thr Ala Gly Val Leu  Ile Gly Tyr
    1055                1060                1065

Cys Pro  Gln Gln Asp Ala Leu  Asp Glu Leu Leu Thr  Gly Trp Glu
    1070                1075                1080

His Leu  Tyr Tyr Tyr Cys Ser  Leu Arg Gly Ile Pro  Arg Gln Cys
    1085                1090                1095

Ile Pro  Glu Val Ala Gly Asp  Leu Ile Arg Arg Leu  His Leu Glu
    1100                1105                1110

Ala His  Ala Asp Lys Pro Val  Ala Thr Tyr Ser Gly  Gly Thr Lys
    1115                1120                1125

Arg Lys  Leu Ser Thr Ala Leu  Ala Leu Val Gly Lys  Pro Asp Ile
    1130                1135                1140

Leu Leu  Leu Asp Glu Pro Ser  Ser Gly Met Asp Pro  Cys Ser Lys
    1145                1150                1155

Arg Tyr  Leu Trp Gln Thr Ile  Met Lys Glu Val Arg  Glu Gly Cys
    1160                1165                1170

Ala Ala  Val Leu Thr Ser His  Arg Phe Trp Tyr Gln  Asp Asp Ala
    1175                1180                1185
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Gly Leu Ile Lys
    1190

<210> 7584
<211> 317
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1601; "

<220>
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<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 13; "

<220>
<221> source
<223> /note="Uniprot ID: Q86UQ4; "

<220>
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<400> 7584
Met Gly His Ala Gly Cys Gln Phe Lys Ala Leu Leu Trp Lys Asn Trp
1   5   10   15

Leu Cys Arg Leu Arg Asn Pro Val Leu Phe Leu Ala Glu Phe Phe Trp
            20   25   30

Pro Cys Ile Leu Phe Val Ile Leu Thr Val Leu Arg Phe Gln Glu Pro
        35   40   45

Pro Arg Tyr Arg Asp Ile Cys Tyr Leu Gln Pro Arg Asp Leu Pro Ser
    50   55   60

Cys Gly Val Ile Pro Phe Val Gln Ser Leu Leu Cys Asn Thr Gly Ser
65   70   75   80

Arg Cys Arg Asn Phe Ser Tyr Glu Gly Ser Met Glu His His Phe Arg
                85   90   95

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Leu Ser Arg Phe Gln Thr Ala Ala Asp Pro Lys Lys Val Asn Asn Leu
            100                 105                 110

Ala Phe Leu Lys Glu Ile Gln Asp Leu Ala Glu Glu Ile His Gly Met
        115                 120                 125

Met Asp Lys Ala Lys Asn Leu Lys Arg Leu Trp Val Glu Arg Ser Asn
    130                 135                 140

Thr Pro Asp Ser Ser Tyr Gly Ser Ser Phe Phe Thr Met Asp Leu Asn
145                 150                 155                 160

Lys Thr Glu Glu Val Ile Leu Lys Leu Glu Ser Leu His Gln Gln Pro
                165                 170                 175

His Ile Trp Asp Phe Leu Leu Leu Leu Pro Arg Leu His Thr Ser His
            180                 185                 190

Asp His Val Glu Asp Gly Met Asp Val Ala Val Asn Leu Leu Gln Thr
        195                 200                 205

Ile Leu Asn Ser Leu Ile Ser Leu Glu Asp Leu Asp Trp Leu Pro Leu
    210                 215                 220

Asn Gln Thr Phe Ser Gln Val Ser Glu Leu Val Leu Asn Val Thr Ile
225                 230                 235                 240

Ser Thr Leu Thr Phe Leu Gln Gln His Gly Val Ala Val Thr Glu Pro
                245                 250                 255

Val Tyr His Leu Ser Met Gln Asn Ile Val Trp Asp Pro Gln Lys Val
            260                 265                 270

Gln Tyr Asp Leu Lys Ser Gln Phe Gly Phe Asp Asp Leu His Thr Glu
        275                 280                 285

Gln Ile Leu Asn Ser Ser Ala Glu Leu Lys Glu Val His Met Leu Asp
    290                 295                 300

Cys Phe Ser His Arg Trp Ala Phe Pro Gly Asp Trp Ile
305                 310                 315
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<210> 7585
<211> 5058
<212> PRT
<213> Homo sapiens

<220>
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ATP-binding cassette, sub-family
A (ABC1),
member 13; "

<220>
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Met Gly His Ala Gly Cys Gln Phe Lys Ala Leu Leu Trp Lys Asn Trp
1 5 10 15

Leu Cys Arg Leu Arg Asn Pro Val Leu Phe Leu Ala Glu Phe Phe Trp
20 25 30

Pro Cys Ile Leu Phe Val Ile Leu Thr Val Leu Arg Phe Gln Glu Pro
35 40 45

Pro Arg Tyr Arg Asp Ile Cys Tyr Leu Gln Pro Arg Asp Leu Pro Ser
50 55 60

Cys Gly Val Ile Pro Phe Val Gln Ser Leu Leu Cys Asn Thr Gly Ser
65 70 75 80

Arg Cys Arg Asn Phe Ser Tyr Glu Gly Ser Met Glu His His Phe Arg
85 90 95

Leu Ser Arg Phe Gln Thr Ala Ala Asp Pro Lys Lys Val Asn Asn Leu
100 105 110

Ala Phe Leu Lys Glu Ile Gln Asp Leu Ala Glu Glu Ile His Gly Met
115 120 125

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Met Asp Lys Ala Lys Asn Leu Lys Arg Leu Trp Val Glu Arg Ser Asn
    130                 135                 140

Thr Pro Asp Ser Ser Tyr Gly Ser Ser Phe Phe Thr Met Asp Leu Asn
145                 150                 155                 160

Lys Thr Glu Glu Val Ile Leu Lys Leu Glu Ser Leu His Gln Gln Pro
                165                 170                 175

His Ile Trp Asp Phe Leu Leu Leu Leu Pro Arg Leu His Thr Ser His
            180                 185                 190

Asp His Val Glu Asp Gly Met Asp Val Ala Val Asn Leu Leu Gln Thr
        195                 200                 205

Ile Leu Asn Ser Leu Ile Ser Leu Glu Asp Leu Asp Trp Leu Pro Leu
    210                 215                 220

Asn Gln Thr Phe Ser Gln Val Ser Glu Leu Val Leu Asn Val Thr Ile
225                 230                 235                 240

Ser Thr Leu Thr Phe Leu Gln Gln His Gly Val Ala Val Thr Glu Pro
                245                 250                 255

Val Tyr His Leu Ser Met Gln Asn Ile Val Trp Asp Pro Gln Lys Val
            260                 265                 270

Gln Tyr Asp Leu Lys Ser Gln Phe Gly Phe Asp Asp Leu His Thr Glu
        275                 280                 285

Gln Ile Leu Asn Ser Ser Ala Glu Leu Lys Glu Ile Pro Thr Asp Thr
    290                 295                 300

Ser Leu Glu Lys Met Val Cys Ser Val Leu Ser Ser Thr Ser Glu Asp
305                 310                 315                 320

Glu Ala Glu Lys Trp Gly His Val Gly Gly Cys His Pro Lys Trp Ser
                325                 330                 335

Glu Ala Lys Asn Tyr Leu Val His Ala Val Ser Trp Leu Arg Val Tyr
            340                 345                 350

Gln Gln Val Phe Val Gln Trp Gln Gln Gly Ser Leu Leu Gln Lys Thr
```

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        355                 360                 365

Leu Thr Gly Met Gly His Ser Leu Glu Ala Leu Arg Asn Gln Phe Glu
    370                 375                 380

Glu Glu Ser Lys Pro Trp Lys Val Val Glu Ala Leu His Thr Ala Leu
385                 390                 395                 400

Leu Leu Leu Asn Asp Ser Leu Ser Ala Asp Gly Pro Lys Asp Asn His
                405                 410                 415

Thr Phe Pro Lys Ile Leu Gln His Leu Trp Lys Leu Gln Ser Leu Leu
            420                 425                 430

Gln Asn Leu Pro Gln Trp Pro Ala Leu Lys Arg Phe Leu Gln Leu Asp
        435                 440                 445

Gly Ala Leu Arg Asn Ala Ile Ala Gln Asn Leu His Phe Val Gln Glu
    450                 455                 460

Val Leu Ile Cys Leu Glu Thr Ser Ala Asn Asp Phe Lys Trp Phe Glu
465                 470                 475                 480

Leu Asn Gln Leu Lys Leu Glu Lys Asp Val Phe Phe Trp Glu Leu Lys
                485                 490                 495

Gln Met Leu Ala Lys Asn Ala Val Cys Pro Asn Gly Arg Phe Ser Glu
            500                 505                 510

Lys Glu Val Phe Leu Pro Pro Gly Asn Ser Ser Ile Trp Gly Gly Leu
        515                 520                 525

Gln Gly Leu Leu Cys Tyr Cys Asn Ser Ser Glu Thr Ser Val Leu Asn
    530                 535                 540

Lys Leu Leu Gly Ser Val Glu Asp Ala Asp Arg Ile Leu Gln Glu Val
545                 550                 555                 560

Ile Thr Trp His Lys Asn Met Ser Val Leu Ile Pro Glu Glu Tyr Leu
                565                 570                 575

Asp Trp Gln Glu Leu Glu Met Gln Leu Ser Glu Ala Ser Leu Ser Cys
            580                 585                 590
```

Thr Arg Leu Phe Leu Leu Leu Gly Ala Asp Pro Ser Pro Glu Asn Asp
595 600 605

Val Phe Ser Ser Asp Cys Lys His Gln Leu Val Ser Thr Val Ile Phe
610 615 620

His Thr Leu Glu Lys Thr Gln Phe Phe Leu Glu Gln Ala Tyr Tyr Trp
625 630 635 640

Lys Ala Phe Lys Lys Phe Ile Arg Lys Thr Cys Glu Val Ala Gln Tyr
645 650 655

Val Asn Met Gln Glu Ser Phe Gln Asn Arg Leu Leu Ala Phe Pro Glu
660 665 670

Glu Ser Pro Cys Phe Glu Glu Asn Met Asp Trp Lys Met Ile Ser Asp
675 680 685

Asn Tyr Phe Gln Phe Leu Asn Asn Leu Leu Lys Ser Pro Thr Ala Ser
690 695 700

Ile Ser Arg Ala Leu Asn Phe Thr Lys His Leu Leu Met Met Glu Lys
705 710 715 720

Lys Leu His Thr Leu Glu Asp Glu Gln Met Asn Phe Leu Leu Ser Phe
725 730 735

Val Glu Phe Phe Glu Lys Leu Leu Leu Pro Asn Leu Phe Asp Ser Ser
740 745 750

Ile Val Pro Ser Phe His Ser Leu Pro Ser Leu Thr Glu Asp Ile Leu
755 760 765

Asn Ile Ser Ser Leu Trp Thr Asn His Leu Lys Ser Leu Lys Arg Asp
770 775 780

Pro Ser Ala Thr Asp Ala Gln Lys Leu Leu Glu Phe Gly Asn Glu Val
785 790 795 800

Ile Trp Lys Met Gln Thr Leu Gly Ser His Trp Ile Arg Lys Glu Pro
805 810 815

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Lys Asn Leu Leu Arg Phe Ile Glu Leu Ile Leu Phe Glu Ile Asn Pro
            820                 825                 830

Lys Leu Leu Glu Leu Trp Ala Tyr Gly Ile Ser Lys Gly Lys Arg Ala
        835                 840                 845

Lys Leu Glu Asn Phe Phe Thr Leu Leu Asn Phe Ser Val Pro Glu Asn
    850                 855                 860

Glu Ile Leu Ser Thr Ser Phe Asn Phe Ser Gln Leu Phe His Ser Asp
865                 870                 875                 880

Trp Pro Lys Ser Pro Ala Met Asn Ile Asp Phe Val Arg Leu Ser Glu
                885                 890                 895

Ala Ile Ile Thr Ser Leu His Glu Phe Gly Phe Leu Glu Gln Glu Gln
            900                 905                 910

Ile Ser Glu Ala Leu Asn Thr Val Tyr Ala Ile Arg Asn Ala Ser Asp
        915                 920                 925

Leu Phe Ser Ala Leu Ser Glu Pro Gln Lys Gln Glu Val Asp Lys Ile
    930                 935                 940

Leu Thr His Ile His Leu Asn Val Phe Gln Asp Lys Asp Ser Ala Leu
945                 950                 955                 960

Leu Leu Gln Ile Tyr Ser Ser Phe Tyr Arg Tyr Ile Tyr Glu Leu Leu
                965                 970                 975

Asn Ile Gln Ser Arg Gly Ser Ser Leu Thr Phe Leu Thr Gln Ile Ser
            980                 985                 990

Lys His Ile Leu Asp Ile Ile Lys  Gln Phe Asn Phe Gln  Asn Ile
Ser
        995                 1000                1005

Lys Ala  Phe Ala Phe Leu Phe  Lys Thr Ala Glu Val  Leu Gly Gly
    1010                1015                1020

Ile Ser  Asn Val Ser Tyr Cys  Gln Gln Leu Leu Ser  Ile Phe Asn
    1025                1030                1035
```

```
Phe Leu  Glu Leu Gln Ala Gln  Ser Phe Met Ser Thr  Glu Gly Gln
    1040                1045                1050

Glu Leu  Glu Val Ile His Thr  Thr Leu Thr Gly Leu  Lys Gln Leu
    1055                1060                1065

Leu Ile  Ile Asp Glu Asp Phe  Arg Ile Ser Leu Phe  Gln Tyr Met
    1070                1075                1080

Ser Gln  Phe Phe Asn Ser Ser  Val Glu Asp Leu Leu  Asp Asn Lys
    1085                1090                1095

Cys Leu  Ile Ser Asp Asn Lys  His Ile Ser Ser Val  Asn Tyr Ser
    1100                1105                1110

Thr Ser  Glu Glu Ser Ser Phe  Val Phe Pro Leu Ala  Gln Ile Phe
    1115                1120                1125

Ser Asn  Leu Ser Ala Asn Val  Ser Val Phe Asn Lys  Phe Met Ser
    1130                1135                1140

Ile His  Cys Thr Val Ser Trp  Leu Gln Met Trp Thr  Glu Ile Trp
    1145                1150                1155

Glu Thr  Ile Ser Gln Leu Phe  Lys Phe Asp Met Asn  Val Phe Thr
    1160                1165                1170

Ser Leu  His His Gly Phe Thr  Gln Leu Leu Asp Glu  Leu Glu Asp
    1175                1180                1185

Asp Val  Lys Val Ser Lys Ser  Cys Gln Gly Ile Leu  Pro Thr His
    1190                1195                1200

Asn Val  Ala Arg Leu Ile Leu  Asn Leu Phe Lys Asn  Val Thr Gln
    1205                1210                1215

Ala Asn  Asp Phe His Asn Trp  Glu Asp Phe Leu Asp  Leu Arg Asp
    1220                1225                1230

Phe Leu  Val Ala Leu Gly Asn  Ala Leu Val Ser Val  Lys Lys Leu
    1235                1240                1245
```

```
Asn Leu  Glu Gln Val Glu Lys  Ser Leu Phe Thr Met  Glu Ala Ala
    1250                1255                1260

Leu His  Gln Leu Lys Thr Phe  Pro Phe Asn Glu Ser  Thr Ser Arg
    1265                1270                1275

Glu Phe  Leu Asn Ser Leu Leu  Glu Val Phe Ile Glu  Phe Ser Ser
    1280                1285                1290

Thr Ser  Glu Tyr Ile Val Arg  Asn Leu Asp Ser Ile  Asn Asp Phe
    1295                1300                1305

Leu Ser  Asn Asn Leu Thr Asn  Tyr Gly Glu Lys Phe  Glu Asn Ile
    1310                1315                1320

Ile Thr  Glu Leu Arg Glu Ala  Ile Val Phe Leu Arg  Asn Val Ser
    1325                1330                1335

His Asp  Arg Asp Leu Phe Ser  Cys Ala Asp Ile Phe  Gln Asn Val
    1340                1345                1350

Thr Glu  Cys Ile Leu Glu Asp  Gly Phe Leu Tyr Val  Asn Thr Ser
    1355                1360                1365

Gln Arg  Met Leu Arg Ile Leu  Asp Thr Leu Asn Ser  Thr Phe Ser
    1370                1375                1380

Ser Glu  Asn Thr Ile Ser Ser  Leu Lys Gly Cys Ile  Val Trp Leu
    1385                1390                1395

Asp Val  Ile Asn His Leu Tyr  Leu Leu Ser Asn Ser  Ser Phe Ser
    1400                1405                1410

Gln Gly  His Leu Gln Asn Ile  Leu Gly Asn Phe Arg  Asp Ile Glu
    1415                1420                1425

Asn Lys  Met Asn Ser Ile Leu  Lys Ile Val Thr Trp  Val Leu Asn
    1430                1435                1440

Ile Lys  Lys Pro Leu Cys Ser  Ser Asn Gly Ser His  Ile Asn Cys
    1445                1450                1455

Val Asn  Ile Tyr Leu Lys Asp  Val Thr Asp Phe Leu  Asn Ile Val
```

1460 1465 1470

Leu Thr Thr Val Phe Glu Lys Glu Lys Lys Pro Lys Phe Glu Ile
1475 1480 1485

Leu Leu Ala Leu Leu Asn Asp Ser Thr Lys Gln Val Arg Met Ser
1490 1495 1500

Ile Asn Asn Leu Thr Thr Asp Phe Asp Phe Ala Ser Gln Ser Asn
1505 1510 1515

Trp Arg Tyr Phe Thr Glu Leu Ile Leu Arg Pro Ile Glu Met Ser
1520 1525 1530

Asp Glu Ile Pro Asn Gln Phe Gln Asn Ile Trp Leu His Leu Ile
1535 1540 1545

Thr Leu Gly Lys Glu Phe Gln Lys Leu Val Lys Gly Ile Tyr Phe
1550 1555 1560

Asn Ile Leu Glu Asn Asn Ser Ser Ser Lys Thr Glu Asn Leu Leu
1565 1570 1575

Asn Ile Phe Ala Thr Ser Pro Lys Glu Lys Asp Val Asn Ser Val
1580 1585 1590

Gly Asn Ser Ile Tyr His Leu Ala Ser Tyr Leu Ala Phe Ser Leu
1595 1600 1605

Ser His Asp Leu Gln Asn Ser Pro Lys Ile Ile Ile Ser Pro Glu
1610 1615 1620

Ile Met Lys Ala Thr Gly Leu Gly Ile Gln Leu Ile Arg Asp Val
1625 1630 1635

Phe Asn Ser Leu Met Pro Val Val His His Thr Ser Pro Gln Asn
1640 1645 1650

Ala Gly Tyr Met Gln Ala Leu Lys Lys Val Thr Ser Val Met Arg
1655 1660 1665

Thr Leu Lys Lys Ala Asp Ile Asp Leu Leu Val Asp Gln Leu Glu
1670 1675 1680

```
Gln Val  Ser Val Asn Leu Met  Asp Phe Phe Lys Asn  Ile Ser Ser
    1685                1690                1695

Val Gly  Thr Gly Asn Leu Val  Val Asn Leu Leu Val  Gly Leu Met
    1700                1705                1710

Glu Lys  Phe Ala Asp Ser Ser  His Ser Trp Asn Val  Asn His Leu
    1715                1720                1725

Leu Gln  Leu Ser Arg Leu Phe  Pro Lys Asp Val Val  Asp Ala Val
    1730                1735                1740

Ile Asp  Val Tyr Tyr Val Leu  Pro His Ala Val Arg  Leu Leu Gln
    1745                1750                1755

Gly Val  Pro Gly Lys Asn Ile  Thr Glu Gly Leu Lys  Asp Val Tyr
    1760                1765                1770

Ser Phe  Thr Leu Leu His Gly  Ile Thr Ile Ser Asn  Ile Thr Lys
    1775                1780                1785

Glu Asp  Phe Ala Ile Val Ile  Lys Ile Leu Leu Asp  Thr Ile Glu
    1790                1795                1800

Leu Val  Ser Asp Lys Pro Asp  Ile Ile Ser Glu Ala  Leu Ala Cys
    1805                1810                1815

Phe Pro  Val Val Trp Cys Trp  Asn His Thr Asn Ser  Gly Phe Arg
    1820                1825                1830

Gln Asn  Ser Lys Ile Asp Pro  Cys Asn Val His Gly  Leu Met Ser
    1835                1840                1845

Ser Ser  Phe Tyr Gly Lys Val  Ala Ser Ile Leu Asp  His Phe His
    1850                1855                1860

Leu Ser  Pro Gln Gly Glu Asp  Ser Pro Cys Ser Asn  Glu Ser Ser
    1865                1870                1875

Arg Met  Glu Ile Thr Arg Lys  Val Val Cys Ile Ile  His Glu Leu
    1880                1885                1890
```

```
Val Asp  Trp Asn Ser Ile Leu  Leu Glu Leu Ser Glu  Val Phe His
    1895                 1900                 1905

Val Asn  Ile Ser Leu Val Lys  Thr Val Gln Lys Phe  Trp His Lys
    1910                 1915                 1920

Ile Leu  Pro Phe Val Pro Pro  Ser Ile Asn Gln Thr  Arg Asp Ser
    1925                 1930                 1935

Ile Ser  Glu Leu Cys Pro Ser  Gly Ser Ile Lys Gln  Val Ala Leu
    1940                 1945                 1950

Gln Ile  Ile Glu Lys Leu Lys  Asn Val Asn Phe Thr  Lys Val Thr
    1955                 1960                 1965

Ser Gly  Glu Asn Ile Leu Asp  Lys Leu Ser Ser Leu  Asn Lys Ile
    1970                 1975                 1980

Leu Asn  Ile Asn Glu Asp Thr  Glu Thr Ser Val Gln  Asn Ile Ile
    1985                 1990                 1995

Ser Ser  Asn Leu Glu Arg Thr  Val Gln Leu Ile Ser  Glu Asp Trp
    2000                 2005                 2010

Ser Leu  Glu Lys Ser Thr His  Asn Leu Leu Ser Leu  Phe Met Met
    2015                 2020                 2025

Leu Gln  Asn Ala Asn Val Thr  Gly Ser Ser Leu Glu  Ala Leu Ser
    2030                 2035                 2040

Ser Phe  Ile Glu Lys Ser Glu  Thr Pro Tyr Asn Phe  Glu Glu Leu
    2045                 2050                 2055

Trp Pro  Lys Phe Gln Gln Ile  Met Lys Asp Leu Thr  Gln Asp Phe
    2060                 2065                 2070

Arg Ile  Arg His Leu Leu Ser  Glu Met Asn Lys Gly  Ile Lys Ser
    2075                 2080                 2085

Ile Asn  Ser Met Ala Leu Gln  Lys Ile Thr Leu Gln  Phe Ala His
    2090                 2095                 2100
```

```
Phe Leu  Glu Ile Leu Asp Ser  Pro Ser Leu Lys Thr  Leu Glu Ile
    2105                 2110                 2115

Ile Glu  Asp Phe Leu Leu Val  Thr Lys Asn Trp Leu  Gln Glu Tyr
    2120                 2125                 2130

Ala Asn  Glu Asp Tyr Ser Arg  Met Ile Glu Thr Leu  Phe Ile Pro
    2135                 2140                 2145

Val Thr  Asn Glu Ser Ser Thr  Glu Asp Ile Ala Leu  Leu Ala Lys
    2150                 2155                 2160

Ala Ile  Ala Thr Phe Trp Gly  Ser Leu Lys Asn Ile  Ser Arg Ala
    2165                 2170                 2175

Gly Asn  Phe Asp Val Ala Phe  Leu Thr His Leu Leu  Asn Gln Glu
    2180                 2185                 2190

Gln Leu  Thr Asn Phe Ser Val  Val Gln Leu Leu Phe  Glu Asn Ile
    2195                 2200                 2205

Leu Ile  Asn Leu Ile Asn Asn  Leu Ala Gly Asn Ser  Gln Glu Ala
    2210                 2215                 2220

Ala Trp  Asn Leu Asn Asp Thr  Asp Leu Gln Ile Met  Asn Phe Ile
    2225                 2230                 2235

Asn Leu  Ile Leu Asn His Met  Gln Ser Glu Thr Ser  Arg Lys Thr
    2240                 2245                 2250

Val Leu  Ser Leu Arg Ser Ile  Val Asp Phe Thr Glu  Gln Phe Leu
    2255                 2260                 2265

Lys Thr  Phe Phe Ser Leu Phe  Leu Lys Glu Asp Ser  Glu Asn Lys
    2270                 2275                 2280

Ile Ser  Leu Leu Leu Lys Tyr  Phe His Lys Asp Val  Ile Ala Glu
    2285                 2290                 2295

Met Ser  Phe Val Pro Lys Asp  Lys Ile Leu Glu Ile  Leu Lys Leu
    2300                 2305                 2310

Asp Gln  Phe Leu Thr Leu Met  Ile Gln Asp Arg Leu  Met Asn Ile
```

2315 2320 2325

Phe Ser Ser Leu Lys Glu Thr Ile Tyr His Leu Met Lys Ser Ser
2330 2335 2340

Phe Ile Leu Asp Asn Gly Glu Phe Tyr Phe Asp Thr His Gln Gly
2345 2350 2355

Leu Lys Phe Met Gln Asp Leu Phe Asn Ala Leu Leu Arg Glu Thr
2360 2365 2370

Ser Met Lys Asn Lys Thr Glu Asn Asn Ile Asp Phe Phe Thr Val
2375 2380 2385

Val Ser Gln Leu Phe Phe His Val Asn Lys Ser Glu Asp Leu Phe
2390 2395 2400

Lys Leu Asn Gln Asp Leu Gly Ser Ala Leu His Leu Val Arg Glu
2405 2410 2415

Cys Ser Thr Glu Met Ala Arg Leu Leu Asp Thr Ile Leu His Ser
2420 2425 2430

Pro Asn Lys Asp Phe Tyr Ala Leu Tyr Pro Thr Leu Gln Glu Val
2435 2440 2445

Ile Leu Ala Asn Leu Thr Asp Leu Leu Phe Phe Ile Asn Asn Ser
2450 2455 2460

Phe Pro Leu Arg Asn Arg Ala Thr Leu Glu Ile Thr Lys Arg Leu
2465 2470 2475

Val Gly Ala Ile Ser Arg Ala Ser Glu Glu Ser His Val Leu Lys
2480 2485 2490

Pro Leu Leu Glu Met Ser Gly Thr Leu Val Met Leu Leu Asn Asp
2495 2500 2505

Ser Ala Asp Leu Arg Asp Leu Ala Thr Ser Met Asp Ser Ile Val
2510 2515 2520

Lys Leu Leu Lys Leu Val Lys Lys Val Ser Gly Lys Met Ser Thr
2525 2530 2535

```
Val Phe  Lys Thr His Phe Ile  Ser Asn Thr Lys Asp  Ser Val Lys
    2540                2545                2550

Phe Phe  Asp Thr Leu Tyr Ser  Ile Met Gln Gln Ser  Val Gln Asn
    2555                2560                2565

Leu Val  Lys Glu Ile Ala Thr  Leu Lys Lys Ile Asp  His Phe Thr
    2570                2575                2580

Phe Glu  Lys Ile Asn Asp Leu  Leu Val Pro Phe Leu  Asp Leu Ala
    2585                2590                2595

Phe Glu  Met Ile Gly Val Glu  Pro Tyr Ile Ser Ser  Asn Ser Asp
    2600                2605                2610

Ile Phe  Ser Met Ser Pro Ser  Ile Leu Ser Tyr Met  Asn Gln Ser
    2615                2620                2625

Lys Asp  Phe Ser Asp Ile Leu  Glu Glu Ile Ala Glu  Phe Leu Thr
    2630                2635                2640

Ser Val  Lys Met Asn Leu Glu  Asp Met Arg Ser Leu  Ala Val Ala
    2645                2650                2655

Phe Asn  Asn Glu Thr Gln Thr  Phe Ser Met Asp Ser  Val Asn Leu
    2660                2665                2670

Arg Glu  Glu Ile Leu Gly Cys  Leu Val Pro Ile Asn  Asn Ile Thr
    2675                2680                2685

Asn Gln  Met Asp Phe Leu Tyr  Pro Asn Pro Ile Ser  Thr His Ser
    2690                2695                2700

Gly Pro  Gln Asp Ile Lys Trp  Glu Ile Ile His Glu  Val Ile Pro
    2705                2710                2715

Phe Leu  Asp Lys Ile Leu Ser  Gln Asn Ser Thr Glu  Ile Gly Ser
    2720                2725                2730

Phe Leu  Lys Met Val Ile Cys  Leu Thr Leu Glu Ala  Leu Trp Lys
    2735                2740                2745
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Asn Leu  Lys Lys Asp Asn Trp  Asn Val Ser Asn Val  Leu Met Thr
    2750                2755                2760

Phe Thr  Gln His Pro Asn Asn  Leu Leu Lys Thr Ile  Glu Thr Val
    2765                2770                2775

Leu Glu  Ala Ser Ser Gly Ile  Lys Ser Asp Tyr Glu  Gly Asp Leu
    2780                2785                2790

Asn Lys  Ser Leu Tyr Phe Asp  Thr Pro Leu Ser Gln  Asn Ile Thr
    2795                2800                2805

His His  Gln Leu Glu Lys Ala  Ile His Asn Val Leu  Ser Arg Ile
    2810                2815                2820

Ala Leu  Trp Arg Lys Gly Leu  Leu Phe Asn Asn Ser  Glu Trp Ile
    2825                2830                2835

Thr Ser  Thr Arg Thr Leu Phe  Gln Pro Leu Phe Glu  Ile Phe Ile
    2840                2845                2850

Lys Ala  Thr Thr Gly Lys Asn  Val Thr Ser Glu Lys  Glu Glu Arg
    2855                2860                2865

Thr Lys  Lys Glu Met Ile Asp  Phe Pro Tyr Ser Phe  Lys Pro Phe
    2870                2875                2880

Phe Cys  Leu Glu Lys Tyr Leu  Gly Gly Leu Phe Val  Leu Thr Lys
    2885                2890                2895

Tyr Trp  Gln Gln Ile Pro Leu  Thr Asp Gln Ser Val  Val Glu Ile
    2900                2905                2910

Cys Glu  Val Phe Gln Gln Thr  Val Lys Pro Ser Glu  Ala Met Glu
    2915                2920                2925

Met Leu  Gln Lys Val Lys Met  Met Val Val Arg Val  Leu Thr Ile
    2930                2935                2940

Val Ala  Glu Asn Pro Ser Trp  Thr Lys Asp Ile Leu  Cys Ala Thr
    2945                2950                2955
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Leu Ser Cys Lys Gln Asn Gly Ile Arg His Leu Ile Leu Ser Ala
2960 2965 2970

Ile Gln Gly Val Thr Leu Ala Gln Asp His Phe Gln Glu Ile Glu
2975 2980 2985

Lys Ile Trp Ser Ser Pro Asn Gln Leu Asn Cys Glu Ser Leu Ser
2990 2995 3000

Lys Asn Leu Ser Ser Thr Leu Glu Ser Phe Lys Ser Ser Leu Glu
3005 3010 3015

Asn Ala Thr Gly Gln Asp Cys Thr Ser Gln Pro Arg Leu Glu Thr
3020 3025 3030

Val Gln Gln His Leu Tyr Met Leu Ala Lys Ser Leu Glu Glu Thr
3035 3040 3045

Trp Ser Ser Gly Asn Pro Ile Met Thr Phe Leu Ser Asn Phe Thr
3050 3055 3060

Val Thr Glu Asp Val Lys Ile Lys Asp Leu Met Lys Asn Ile Thr
3065 3070 3075

Lys Leu Thr Glu Glu Leu Arg Ser Ser Ile Gln Ile Ser Asn Glu
3080 3085 3090

Thr Ile His Ser Ile Leu Glu Ala Asn Ile Ser His Ser Lys Val
3095 3100 3105

Leu Phe Ser Ala Leu Thr Val Ala Leu Ser Gly Lys Cys Asp Gln
3110 3115 3120

Glu Ile Leu His Leu Leu Leu Thr Phe Pro Lys Gly Glu Lys Ser
3125 3130 3135

Trp Ile Ala Ala Glu Glu Leu Cys Ser Leu Pro Gly Ser Lys Val
3140 3145 3150

Tyr Ser Leu Ile Val Leu Leu Ser Arg Asn Leu Asp Val Arg Ala
3155 3160 3165

Phe Ile Tyr Lys Thr Leu Met Pro Ser Glu Ala Asn Gly Leu Leu

3170 3175 3180

Asn Ser Leu Leu Asp Ile Val Ser Ser Leu Ser Ala Leu Leu Ala
3185 3190 3195

Lys Ala Gln His Val Phe Glu Tyr Leu Pro Glu Phe Leu His Thr
3200 3205 3210

Phe Lys Ile Thr Ala Leu Leu Glu Thr Leu Asp Phe Gln Gln Val
3215 3220 3225

Ser Gln Asn Val Gln Ala Arg Ser Ser Ala Phe Gly Ser Phe Gln
3230 3235 3240

Phe Val Met Lys Met Val Cys Lys Asp Gln Ala Ser Phe Leu Ser
3245 3250 3255

Asp Ser Asn Met Phe Ile Asn Leu Pro Arg Val Lys Glu Leu Leu
3260 3265 3270

Glu Asp Asp Lys Glu Lys Phe Asn Ile Pro Glu Asp Ser Thr Pro
3275 3280 3285

Phe Cys Leu Lys Leu Tyr Gln Glu Ile Leu Gln Leu Pro Asn Gly
3290 3295 3300

Ala Leu Val Trp Thr Phe Leu Lys Pro Ile Leu His Gly Lys Ile
3305 3310 3315

Leu Tyr Thr Pro Asn Thr Pro Glu Ile Asn Lys Val Ile Gln Lys
3320 3325 3330

Ala Asn Tyr Thr Phe Tyr Ile Val Asp Lys Leu Lys Thr Leu Ser
3335 3340 3345

Glu Thr Leu Leu Glu Met Ser Ser Leu Phe Gln Arg Ser Gly Ser
3350 3355 3360

Gly Gln Met Phe Asn Gln Leu Gln Glu Ala Leu Arg Asn Lys Phe
3365 3370 3375

Val Arg Asn Phe Val Glu Asn Gln Leu His Ile Asp Val Asp Lys
3380 3385 3390

```
Leu Thr  Glu Lys Leu Gln Thr  Tyr Gly Gly Leu Leu  Asp Glu Met
    3395                 3400                 3405

Phe Asn  His Ala Gly Ala Gly  Arg Phe Arg Phe Leu  Gly Ser Ile
    3410                 3415                 3420

Leu Val  Asn Leu Ser Ser Cys  Val Ala Leu Asn Arg  Phe Gln Ala
    3425                 3430                 3435

Leu Gln  Ser Val Asp Ile Leu  Glu Thr Lys Ala His  Glu Leu Leu
    3440                 3445                 3450

Gln Gln  Asn Ser Phe Leu Ala  Ser Ile Ile Phe Ser  Asn Ser Leu
    3455                 3460                 3465

Phe Asp  Lys Asn Phe Arg Ser  Glu Ser Val Lys Leu  Pro Pro His
    3470                 3475                 3480

Val Ser  Tyr Thr Ile Arg Thr  Asn Val Leu Tyr Ser  Val Arg Thr
    3485                 3490                 3495

Asp Val  Val Lys Asn Pro Ser  Trp Lys Phe His Pro  Gln Asn Leu
    3500                 3505                 3510

Pro Ala  Asp Gly Phe Lys Tyr  Asn Tyr Val Phe Ala  Pro Leu Gln
    3515                 3520                 3525

Asp Met  Ile Glu Arg Ala Ile  Ile Leu Val Gln Thr  Gly Gln Glu
    3530                 3535                 3540

Ala Leu  Glu Pro Ala Ala Gln  Thr Gln Ala Ala Pro  Tyr Pro Cys
    3545                 3550                 3555

His Thr  Ser Asp Leu Phe Leu  Asn Asn Val Gly Phe  Phe Phe Pro
    3560                 3565                 3570

Leu Ile  Met Met Leu Thr Trp  Met Val Ser Val Ala  Ser Met Val
    3575                 3580                 3585

Arg Lys  Leu Val Tyr Glu Gln  Glu Ile Gln Ile Glu  Glu Tyr Met
    3590                 3595                 3600
```

```
Arg Met  Met Gly Val His Pro  Val Ile His Phe Leu  Ala Trp Phe
    3605                 3610                 3615

Leu Glu  Asn Met Ala Val Leu  Thr Ile Ser Ser Ala  Thr Leu Ala
    3620                 3625                 3630

Ile Val  Leu Lys Thr Ser Gly  Ile Phe Ala His Ser  Asn Thr Phe
    3635                 3640                 3645

Ile Val  Phe Leu Phe Leu Leu  Asp Phe Gly Met Ser  Val Val Met
    3650                 3655                 3660

Leu Ser  Tyr Leu Leu Ser Ala  Phe Phe Ser Gln Ala  Asn Thr Ala
    3665                 3670                 3675

Ala Leu  Cys Thr Ser Leu Val  Tyr Met Ile Ser Phe  Leu Pro Tyr
    3680                 3685                 3690

Ile Val  Leu Leu Val Leu His  Asn Gln Leu Ser Phe  Val Asn Gln
    3695                 3700                 3705

Thr Phe  Leu Cys Leu Leu Ser  Thr Thr Ala Phe Gly  Gln Gly Val
    3710                 3715                 3720

Phe Phe  Ile Thr Phe Leu Glu  Gly Gln Glu Thr Gly  Ile Gln Trp
    3725                 3730                 3735

Asn Asn  Met Tyr Gln Ala Leu  Glu Gln Gly Gly Met  Thr Phe Gly
    3740                 3745                 3750

Trp Val  Cys Trp Met Ile Leu  Phe Asp Ser Ser Leu  Tyr Phe Leu
    3755                 3760                 3765

Cys Gly  Trp Tyr Leu Ser Asn  Leu Ile Pro Gly Thr  Phe Gly Leu
    3770                 3775                 3780

Arg Lys  Pro Trp Tyr Phe Pro  Phe Thr Ala Ser Tyr  Trp Lys Ser
    3785                 3790                 3795

Val Gly  Phe Leu Val Glu Lys  Arg Gln Tyr Phe Leu  Ser Ser Ser
    3800                 3805                 3810
```

```
Leu Phe  Phe Phe Asn Glu Asn  Phe Asp Asn Lys Gly  Ser Ser Leu
    3815                3820                3825

Gln Asn  Arg Glu Gly Glu Leu  Glu Gly Ser Ala Pro  Gly Val Thr
    3830                3835                3840

Leu Val  Ser Val Thr Lys Glu  Tyr Glu Gly His Lys  Ala Val Val
    3845                3850                3855

Gln Asp  Leu Ser Leu Thr Phe  Tyr Arg Asp Gln Ile  Thr Ala Leu
    3860                3865                3870

Leu Gly  Thr Asn Gly Ala Gly  Lys Thr Thr Ile Ile  Ser Met Leu
    3875                3880                3885

Thr Gly  Leu His Pro Pro Thr  Ser Gly Thr Ile Ile  Ile Asn Gly
    3890                3895                3900

Lys Asn  Leu Gln Thr Asp Leu  Ser Arg Val Arg Met  Glu Leu Gly
    3905                3910                3915

Val Cys  Pro Gln Gln Asp Ile  Leu Leu Asp Asn Leu  Thr Val Arg
    3920                3925                3930

Glu His  Leu Leu Leu Phe Ala  Ser Ile Lys Ala Pro  Gln Trp Thr
    3935                3940                3945

Lys Lys  Glu Leu His Gln Gln  Val Asn Gln Thr Leu  Gln Asp Val
    3950                3955                3960

Asp Leu  Thr Gln His Gln His  Lys Gln Thr Arg Ala  Leu Ser Gly
    3965                3970                3975

Gly Leu  Lys Arg Lys Leu Ser  Leu Gly Ile Ala Phe  Met Gly Met
    3980                3985                3990

Ser Arg  Thr Val Val Leu Asp  Glu Pro Thr Ser Gly  Val Asp Pro
    3995                4000                4005

Cys Ser  Arg His Ser Leu Trp  Asp Ile Leu Leu Lys  Tyr Arg Glu
    4010                4015                4020

Gly Arg  Thr Ile Ile Phe Thr  Thr His His Leu Asp  Glu Ala Glu
```

4025 4030 4035

Ala Leu Ser Asp Arg Val Ala Val Leu Gln His Gly Arg Leu Arg
4040 4045 4050

Cys Cys Gly Pro Pro Phe Cys Leu Lys Glu Ala Tyr Gly Gln Gly
4055 4060 4065

Leu Arg Leu Thr Leu Thr Arg Gln Pro Ser Val Leu Glu Ala His
4070 4075 4080

Asp Leu Lys Asp Met Ala Cys Val Thr Ser Leu Ile Lys Ile Tyr
4085 4090 4095

Ile Pro Gln Ala Phe Leu Lys Asp Ser Ser Gly Ser Glu Leu Thr
4100 4105 4110

Tyr Thr Ile Pro Lys Asp Thr Asp Lys Ala Cys Leu Lys Gly Leu
4115 4120 4125

Phe Gln Ala Leu Asp Glu Asn Leu His Gln Leu His Leu Thr Gly
4130 4135 4140

Tyr Gly Ile Ser Asp Thr Thr Leu Glu Glu Val Phe Leu Met Leu
4145 4150 4155

Leu Gln Asp Ser Asn Lys Lys Ser His Ile Ala Leu Gly Thr Glu
4160 4165 4170

Ser Glu Leu Gln Asn His Arg Pro Thr Gly His Leu Ser Gly Tyr
4175 4180 4185

Cys Gly Ser Leu Ala Arg Pro Ala Thr Val Gln Gly Val Gln Leu
4190 4195 4200

Leu Arg Ala Gln Val Ala Ala Ile Leu Ala Arg Arg Leu Arg Arg
4205 4210 4215

Thr Leu Arg Ala Gly Lys Ser Thr Leu Ala Asp Leu Leu Leu Pro
4220 4225 4230

Val Leu Phe Val Ala Leu Ala Met Gly Leu Phe Met Val Arg Pro
4235 4240 4245

```
Leu Ala  Thr Glu Tyr Pro Pro  Leu Arg Leu Thr Pro  Gly His Tyr
    4250                4255                4260

Gln Arg  Ala Glu Thr Tyr Phe  Phe Ser Ser Gly Gly  Asp Asn Leu
    4265                4270                4275

Asp Leu  Thr Arg Val Leu Leu  Arg Lys Phe Arg Asp  Gln Asp Leu
    4280                4285                4290

Pro Cys  Ala Asp Leu Asn Pro  Arg Gln Lys Asn Ser  Ser Cys Trp
    4295                4300                4305

Arg Thr  Asp Pro Phe Ser His  Pro Glu Phe Gln Asp  Ser Cys Gly
    4310                4315                4320

Cys Leu  Lys Cys Pro Asn Arg  Ser Ala Ser Ala Pro  Tyr Leu Thr
    4325                4330                4335

Asn His  Leu Gly His Thr Leu  Leu Asn Leu Ser Gly  Phe Asn Met
    4340                4345                4350

Glu Glu  Tyr Leu Leu Ala Pro  Ser Glu Lys Pro Arg  Leu Gly Gly
    4355                4360                4365

Trp Ser  Phe Gly Leu Lys Ile  Pro Ser Glu Ala Gly  Gly Ala Asn
    4370                4375                4380

Gly Asn  Ile Ser Lys Pro Pro  Thr Leu Ala Lys Val  Trp Tyr Asn
    4385                4390                4395

Gln Lys  Gly Phe His Ser Leu  Pro Ser Tyr Leu Asn  His Leu Asn
    4400                4405                4410

Asn Leu  Ile Leu Trp Gln His  Leu Pro Pro Thr Val  Asp Trp Arg
    4415                4420                4425

Gln Tyr  Gly Ile Thr Leu Tyr  Ser His Pro Tyr Gly  Gly Ala Leu
    4430                4435                4440

Leu Asn  Glu Asp Lys Ile Leu  Glu Ser Ile Arg Gln  Cys Gly Val
    4445                4450                4455
```

```
Ala Leu  Cys Ile Val Leu Gly  Phe Ser Ile Leu Ser  Ala Ser Ile
    4460                 4465                 4470

Gly Ser  Ser Val Val Arg Asp  Arg Val Ile Gly Ala  Lys Arg Leu
    4475                 4480                 4485

Gln His  Ile Ser Gly Leu Gly  Tyr Arg Met Tyr Trp  Phe Thr Asn
    4490                 4495                 4500

Phe Leu  Tyr Asp Met Leu Phe  Tyr Leu Val Ser Val  Cys Leu Cys
    4505                 4510                 4515

Val Ala  Val Ile Val Ala Phe  Gln Leu Thr Ala Phe  Thr Phe Arg
    4520                 4525                 4530

Lys Asn  Leu Ala Ala Thr Ala  Leu Leu Leu Ser Leu  Phe Gly Tyr
    4535                 4540                 4545

Ala Thr  Leu Pro Trp Met Tyr  Leu Met Ser Arg Ile  Phe Ser Ser
    4550                 4555                 4560

Ser Asp  Val Ala Phe Ile Ser  Tyr Val Ser Leu Asn  Phe Ile Phe
    4565                 4570                 4575

Gly Leu  Cys Thr Met Leu Ile  Thr Ile Met Pro Arg  Leu Leu Ala
    4580                 4585                 4590

Ile Ile  Ser Lys Ala Lys Asn  Leu Gln Asn Ile Tyr  Asp Val Leu
    4595                 4600                 4605

Lys Trp  Val Phe Thr Ile Phe  Pro Gln Phe Cys Leu  Gly Gln Gly
    4610                 4615                 4620

Leu Val  Glu Leu Cys Tyr Asn  Gln Ile Lys Tyr Asp  Leu Thr His
    4625                 4630                 4635

Asn Phe  Gly Ile Asp Ser Tyr  Val Ser Pro Phe Glu  Met Asn Phe
    4640                 4645                 4650

Leu Gly  Trp Ile Phe Val Gln  Leu Ala Ser Gln Gly  Thr Val Leu
    4655                 4660                 4665
```

```
Leu Leu  Leu Arg Val Leu Leu  His Trp Asp Leu Leu  Arg Trp Pro
    4670                4675                4680

Arg Gly  His Ser Thr Leu Gln  Gly Thr Val Lys Ser  Ser Lys Asp
    4685                4690                4695

Thr Asp  Val Glu Lys Glu Glu  Lys Arg Val Phe Glu  Gly Arg Thr
    4700                4705                4710

Asn Gly  Asp Ile Leu Val Leu  Tyr Asn Leu Ser Lys  His Tyr Arg
    4715                4720                4725

Arg Phe  Phe Gln Asn Ile Ile  Ala Val Gln Asp Ile  Ser Leu Gly
    4730                4735                4740

Ile Pro  Lys Gly Glu Cys Phe  Gly Leu Leu Gly Val  Asn Gly Ala
    4745                4750                4755

Gly Lys  Ser Thr Thr Phe Lys  Met Leu Asn Gly Glu  Val Ser Leu
    4760                4765                4770

Thr Ser  Gly His Ala Ile Ile  Arg Thr Pro Met Gly  Asp Ala Val
    4775                4780                4785

Asp Leu  Ser Ser Ala Gly Thr  Ala Gly Val Leu Ile  Gly Tyr Cys
    4790                4795                4800

Pro Gln  Gln Asp Ala Leu Asp  Glu Leu Leu Thr Gly  Trp Glu His
    4805                4810                4815

Leu Tyr  Tyr Tyr Cys Ser Leu  Arg Gly Ile Pro Arg  Gln Cys Ile
    4820                4825                4830

Pro Glu  Val Ala Gly Asp Leu  Ile Arg Arg Leu His  Leu Glu Ala
    4835                4840                4845

His Ala  Asp Lys Pro Val Ala  Thr Tyr Ser Gly Gly  Thr Lys Arg
    4850                4855                4860

Lys Leu  Ser Thr Ala Leu Ala  Leu Val Gly Lys Pro  Asp Ile Leu
    4865                4870                4875

Leu Leu  Asp Glu Pro Ser Ser  Gly Met Asp Pro Cys  Ser Lys Arg
```

```
    4880                4885                4890

Tyr Leu  Trp Gln Thr Ile Met  Lys Glu Val Arg Glu  Gly Cys Ala
    4895                4900                4905

Ala Val  Leu Thr Ser His Ser  Met Glu Glu Cys Glu  Ala Leu Cys
    4910                4915                4920

Thr Arg  Leu Ala Ile Met Val  Asn Gly Ser Phe Lys  Cys Leu Gly
    4925                4930                4935

Ser Pro  Gln His Ile Lys Asn  Arg Phe Gly Asp Gly  Tyr Thr Val
    4940                4945                4950

Lys Val  Trp Leu Cys Lys Glu  Ala Asn Gln His Cys  Thr Val Ser
    4955                4960                4965

Asp His  Leu Lys Leu Tyr Phe  Pro Gly Ile Gln Phe  Lys Gly Gln
    4970                4975                4980

His Leu  Asn Leu Leu Glu Tyr  His Val Pro Lys Arg  Trp Gly Cys
    4985                4990                4995

Leu Ala  Asp Leu Phe Lys Val  Ile Glu Asn Asn Lys  Thr Phe Leu
    5000                5005                5010

Asn Ile  Lys His Tyr Ser Ile  Asn Gln Thr Thr Leu  Glu Gln Val
    5015                5020                5025

Phe Ile  Asn Phe Ala Ser Glu  Gln Gln Gln Thr Leu  Gln Ser Thr
    5030                5035                5040

Leu Asp  Pro Ser Thr Asp Ser  His His Thr His His  Leu Pro Ile
    5045                5050                5055


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member 13; "

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Xaa Tyr Pro Asn Pro Ile Ser Thr His Ser Gly Pro Gln Asp Ile Lys
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Trp Glu Ile Ile His Glu Val Ile Pro Phe Leu Asp Lys Ile Leu Ser
            20                  25                  30

Gln Asn Ser Thr Glu Ile Gly Ser Phe Leu Lys Met Val Ile Cys Leu
        35                  40                  45

Thr Leu Glu Ala Leu Trp Lys Asn Leu Lys Lys Asp Asn Trp Asn Val
    50                  55                  60

Ser Asn Val Leu Met Thr Phe Thr Gln His Pro Asn Asn Leu Leu Lys
65                  70                  75                  80

Thr Ile Glu Thr Val Leu Glu Ala Ser Ser Gly Ile Lys Ser Asp Tyr
                85                  90                  95

Glu Gly Asp Leu Asn Lys Ser Leu Tyr Phe Asp Thr Pro Leu Ser Gln
            100                 105                 110

Asn Ile Thr His His Gln Leu Glu Lys Ala Ile His Asn Val Leu Ser
        115                 120                 125

Arg Ile Ala Leu Trp Arg Lys Gly Leu Leu Phe Asn Asn Ser Glu Trp
    130                 135                 140
```

```
Ile Thr Ser Thr Arg Thr Leu Phe Gln Pro Leu Phe Glu Ile Phe Ile
145                 150                 155                 160

Lys Ala Thr Thr Gly Lys Asn Val Thr Ser Glu Lys Glu Glu Arg Thr
                165                 170                 175

Lys Lys Glu Met Ile Asp Phe Pro Tyr Ser Phe Lys Pro Phe Phe Cys
            180                 185                 190

Leu Glu Lys Tyr Leu Gly Gly Leu Phe Val Leu Thr Lys Tyr Trp Gln
        195                 200                 205

Gln Ile Pro Leu Thr Asp Gln Ser Val Val Glu Ile Cys Glu Val Phe
    210                 215                 220

Gln Gln Thr Val Lys Pro Ser Glu Ala Met Glu Met Leu Gln Lys Val
225                 230                 235                 240

Lys Met Met Val Val Arg Val Leu Thr Ile Val Ala Glu Asn Pro Ser
                245                 250                 255

Trp Thr Lys Asp Ile Leu Cys Ala Thr Leu Ser Cys Lys Gln Asn Gly
            260                 265                 270

Ile Arg His Leu Ile Leu Ser Ala Ile Gln Gly Val Thr Leu Ala Gln
        275                 280                 285

Asp His Phe Gln Glu Ile Glu Lys Ile Trp Ser Ser Pro Asn Gln Leu
    290                 295                 300

Asn Cys Glu Ser Leu Ser Lys Asn Leu Ser Ser Thr Leu Glu Ser Phe
305                 310                 315                 320

Lys Ser Ser Leu Glu Asn Ala Thr Gly Gln Asp Cys Thr Ser Gln Pro
                325                 330                 335

Arg Leu Glu Thr Val Gln Gln His Leu Tyr Met Leu Ala Lys Ser Leu
            340                 345                 350

Glu Glu Thr Trp Ser Ser Gly Asn Pro Ile Met Thr Phe Leu Ser Asn
        355                 360                 365

Phe Thr Val Thr Glu Asp Val Lys Ile Lys Asp Leu Met Lys Asn Ile
```

370 375 380

Thr Lys Leu Thr Glu Glu Leu Arg Ser Ser Ile Gln Ile Ser Asn Glu
385 390 395 400

Thr Ile His Ser Ile Leu Glu Ala Asn Ile Ser His Ser Lys Val Leu
405 410 415

Phe Ser Ala Leu Thr Val Ala Leu Ser Gly Lys Cys Asp Gln Glu Ile
420 425 430

Leu His Leu Leu Leu Thr Phe Pro Lys Gly Glu Lys Ser Trp Ile Ala
435 440 445

Ala Glu Glu Leu Cys Ser Leu Pro Gly Ser Lys Val Tyr Ser Leu Ile
450 455 460

Val Leu Leu Ser Arg Asn Leu Asp Val Arg Ala Phe Ile Tyr Lys Thr
465 470 475 480

Leu Met Pro Ser Glu Ala Asn Gly Leu Leu Asn Ser Leu Leu Asp Ile
485 490 495

Val Ser Ser Leu Ser Ala Leu Leu Ala Lys Ala Gln His Val Phe Glu
500 505 510

Tyr Leu Pro Glu Phe Leu His Thr Phe Lys Ile Thr Ala Leu Leu Glu
515 520 525

Thr Leu Asp Phe Gln Gln Val Ser Gln Asn Val Gln Ala Arg Ser Ser
530 535 540

Ala Phe Gly Ser Phe Gln Phe Val Met Lys Met Val Cys Lys Asp Gln
545 550 555 560

Ala Ser Phe Leu Ser Asp Ser Asn Met Phe Ile Asn Leu Pro Arg Val
565 570 575

Lys Glu Leu Leu Glu Asp Asp Lys Glu Lys Phe Asn Ile Pro Glu Asp
580 585 590

Ser Thr Pro Phe Cys Leu Lys Leu Tyr Gln Glu Ile Leu Gln Leu Pro
595 600 605

```
Asn Gly Ala Leu Val Trp Thr Phe Leu Lys Pro Ile Leu His Gly Lys
    610                 615                 620

Ile Leu Tyr Thr Pro Asn Thr Pro Glu Ile Asn Lys Val Ile Gln Lys
625                 630                 635                 640

Ala Asn Tyr Thr Phe Tyr Ile Val Asp Lys Leu Lys Thr Leu Ser Glu
                645                 650                 655

Thr Leu Leu Glu Met Ser Ser Leu Phe Gln Arg Ser Gly Ser Gly Gln
            660                 665                 670

Met Phe Asn Gln Leu Gln Glu Ala Leu Arg Asn Lys Phe Val Arg Asn
        675                 680                 685

Phe Val Glu Asn Gln Leu His Ile Asp Val Asp Lys Leu Thr Glu Lys
    690                 695                 700

Leu Gln Thr Tyr Gly Gly Leu Leu Asp Glu Met Phe Asn His Ala Gly
705                 710                 715                 720

Ala Gly Arg Phe Arg Phe Leu Gly Ser Ile Leu Val Asn Leu Ser Ser
                725                 730                 735

Cys Val Ala Leu Asn Arg Phe Gln Ala Leu Gln Ser Val Asp Ile Leu
            740                 745                 750

Glu Thr Lys Ala His Glu Leu Leu Gln Gln Asn Ser Phe Leu Ala Ser
        755                 760                 765

Ile Ile Phe Ser Asn Ser Leu Phe Asp Lys Asn Phe Arg Ser Glu Ser
    770                 775                 780

Val Lys Leu Pro Pro His Val Ser Tyr Thr Ile Arg Thr Asn Val Leu
785                 790                 795                 800

Tyr Ser Val Arg Thr Asp Val Val Lys Asn Pro Ser Trp Lys Phe His
                805                 810                 815

Pro Gln Asn Leu Pro Ala Asp Gly Phe Lys Tyr Asn Tyr Val Phe Ala
            820                 825                 830
```

```
Pro Leu Gln Asp Met Ile Glu Arg Ala Ile Ile Leu Val Gln Thr Gly
        835                 840                 845

Gln Glu Ala Leu Glu Pro Ala Ala Gln Thr Gln Ala Ala Pro Tyr Pro
    850                 855                 860

Cys His Thr Ser Asp Leu Phe Leu Asn Asn Val Gly Phe Phe Phe Pro
865                 870                 875                 880

Leu Ile Met Met Leu Thr Trp Met Val Ser Val Ala Ser Met Val Arg
                885                 890                 895

Lys Leu Val Tyr Glu Gln Glu Ile Gln Ile Glu Glu Tyr Met Arg Met
            900                 905                 910

Met Gly Val His Pro Val Ile His Phe Leu Ala Trp Phe Leu Glu Asn
        915                 920                 925

Met Ala Val Leu Thr Ile Ser Ser Ala Thr Leu Ala Ile Val Leu Lys
    930                 935                 940

Thr Ser Gly Ile Phe Ala His Ser Asn Thr Phe Ile Val Phe Leu Phe
945                 950                 955                 960

Leu Leu Asp Phe Gly Met Ser Val Val Met Leu Ser Tyr Leu Leu Ser
                965                 970                 975

Ala Phe Phe Ser Gln Ala Asn Thr Ala Ala Leu Cys Thr Ser Leu Val
            980                 985                 990

Tyr Met Ile Ser Phe Leu Pro Tyr  Ile Val Leu Leu Val  Leu His
Asn
        995                 1000                1005

Gln Leu  Ser Phe Val Asn Gln  Thr Phe Leu Cys Leu  Leu Ser Thr
    1010                1015                1020

Thr Ala  Phe Gly Gln Gly Val  Phe Phe Ile Thr Phe  Leu Glu Gly
    1025                1030                1035

Gln Glu  Thr Gly Ile Gln Trp  Asn Asn Met Tyr Gln  Ala Leu Glu
    1040                1045                1050
```

```
Gln Gly  Gly Met Thr Phe Gly  Trp Val Cys Trp Met  Ile Leu Phe
    1055                1060                1065

Asp Ser  Ser Leu Tyr Phe Leu  Cys Gly Trp Tyr Leu  Ser Asn Leu
    1070                1075                1080

Ile Pro  Gly Thr Phe Gly Leu  Arg Lys Pro Trp Tyr  Phe Pro Phe
    1085                1090                1095

Thr Ala  Ser Tyr Trp Lys Ser  Val Gly Phe Leu Val  Glu Lys Arg
    1100                1105                1110

Gln Tyr  Phe Leu Ser Ser Ser  Leu Phe Phe Phe Asn  Glu Asn Phe
    1115                1120                1125

Asp Asn  Lys Gly Ser Ser Leu  Gln Asn Arg Glu Gly  Glu Leu Glu
    1130                1135                1140

Gly Ser  Ala Pro Gly Val Thr  Leu Val Ser Val Thr  Lys Glu Tyr
    1145                1150                1155

Glu Gly  His Lys Ala Val Val  Gln Asp Leu Ser Leu  Thr Phe Tyr
    1160                1165                1170

Arg Asp  Gln Ile Thr Ala Leu  Leu Gly Thr Asn Gly  Ala Gly Lys
    1175                1180                1185

Thr Thr  Ile Ile Ser Met Leu  Thr Gly Leu His Pro  Pro Thr Ser
    1190                1195                1200

Gly Thr  Ile Ile Ile Asn Gly  Lys Asn Leu Gln Thr  Asp Leu Ser
    1205                1210                1215

Arg Val  Arg Met Glu Leu Gly  Val Cys Pro Gln Gln  Asp Ile Leu
    1220                1225                1230

Leu Asp  Asn Leu Thr Val Arg  Glu His Leu Leu Leu  Phe Ala Ser
    1235                1240                1245

Ile Lys  Ala Pro Gln Trp Thr  Lys Lys Glu Leu His  Gln Gln Val
    1250                1255                1260
```

```
Asn Gln  Thr Leu Gln Asp Val  Asp Leu Thr Gln His  Gln His Lys
    1265                1270                1275

Gln Thr  Arg Ala Leu Ser Gly  Gly Leu Lys Arg Lys  Leu Ser Leu
    1280                1285                1290

Gly Ile  Ala Phe Met Gly Met  Ser Arg Thr Val Val  Leu Asp Glu
    1295                1300                1305

Pro Thr  Ser Gly Val Asp Pro  Cys Ser Arg His Ser  Leu Trp Asp
    1310                1315                1320

Ile Leu  Leu Lys Tyr Arg Glu  Gly Arg Thr Ile Ile  Phe Thr Thr
    1325                1330                1335

His His  Leu Asp Glu Ala Glu  Ala Leu Ser Asp Arg  Val Ala Val
    1340                1345                1350

Leu Gln  His Gly Arg Leu Arg  Cys Cys Gly Pro Pro  Phe Cys Leu
    1355                1360                1365

Lys Glu  Ala Tyr Gly Gln Gly  Leu Arg Leu Thr Leu  Thr Arg Gln
    1370                1375                1380

Pro Ser  Val Leu Glu Ala His  Asp Leu Lys Asp Met  Ala Cys Val
    1385                1390                1395

Thr Ser  Leu Ile Lys Ile Tyr  Ile Pro Gln Ala Phe  Leu Lys Asp
    1400                1405                1410

Ser Ser  Gly Ser Glu Leu Thr  Tyr Thr Ile Pro Lys  Asp Thr Asp
    1415                1420                1425

Lys Ala  Cys Leu Lys Gly Leu  Phe Gln Ala Leu Asp  Glu Asn Leu
    1430                1435                1440

His Gln  Leu His Leu Thr Gly  Tyr Gly Ile Ser Asp  Thr Thr Leu
    1445                1450                1455

Glu Glu  Val Phe Leu Met Leu  Leu Gln Asp Ser Asn  Lys Lys Ser
    1460                1465                1470

His Ile  Ala Leu Gly Thr Glu  Ser Glu Leu Gln Asn  His Arg Pro
```

1475 1480 1485

Thr Gly His Leu Ser Gly Tyr Cys Gly Ser Leu Ala Arg Pro Ala
1490 1495 1500

Thr Val Gln Gly Val Gln Leu Leu Arg Ala Gln Val Ala Ala Ile
1505 1510 1515

Leu Ala Arg Arg Leu Arg Arg Thr Leu Arg Ala Gly Lys Ser Thr
1520 1525 1530

Leu Ala Asp Leu Leu Leu Pro Val Leu Phe Val Ala Leu Ala Met
1535 1540 1545

Gly Leu Phe Met Val Arg Pro Leu Ala Thr Glu Tyr Pro Pro Leu
1550 1555 1560

Arg Leu Thr Pro Gly His Tyr Gln Arg Ala Glu Thr Tyr Phe Phe
1565 1570 1575

Ser Ser Ser Gly Gly Asp Asn Leu Asp Leu Thr Arg Val Leu Leu
1580 1585 1590

Arg Lys Phe Arg Asp Gln Asp Leu Pro Cys Ala Asp Leu Asn Pro
1595 1600 1605

Arg Gln Lys Asn Ser Ser Cys Trp Arg Thr Asp Pro Phe Ser His
1610 1615 1620

Pro Glu Phe Gln Asp Ser Cys Gly Cys Leu Lys Cys Pro Asn Arg
1625 1630 1635

Ser Ala Ser Ala Pro Tyr Leu Thr Asn His Leu Gly His Thr Leu
1640 1645 1650

Leu Asn Leu Ser Gly Phe Asn Met Glu Glu Tyr Leu Leu Ala Pro
1655 1660 1665

Ser Glu Lys Pro Arg Leu Gly Gly Trp Ser Phe Gly Leu Lys Ile
1670 1675 1680

Pro Ser Glu Ala Gly Gly Ala Asn Gly Asn Ile Ser Lys Pro Pro
1685 1690 1695

```
Thr Leu  Ala Lys Val Trp Tyr  Asn Gln Lys Gly Phe  His Ser Leu
    1700                1705                1710

Pro Ser  Tyr Leu Asn His Leu  Asn Asn Leu Ile Leu  Trp Gln His
    1715                1720                1725

Leu Pro  Pro Thr Val Asp Trp  Arg Gln Tyr Gly Ile  Thr Leu Tyr
    1730                1735                1740

Ser His  Pro Tyr Gly Gly Ala  Leu Leu Asn Glu Asp  Lys Ile Leu
    1745                1750                1755

Glu Ser  Ile Arg Gln Cys Gly  Val Ala Leu Cys Ile  Val Leu Gly
    1760                1765                1770

Phe Ser  Ile Leu Ser Ala Ser  Ile Gly Ser Ser Val  Val Arg Asp
    1775                1780                1785

Arg Val  Ile Gly Ala Lys Arg  Leu Gln His Ile Ser  Gly Leu Gly
    1790                1795                1800

Tyr Arg  Met Tyr Trp Phe Thr  Asn Phe Leu Tyr Asp  Met Leu Phe
    1805                1810                1815

Tyr Leu  Val Ser Val Cys Leu  Cys Val Ala Val Ile  Val Ala Phe
    1820                1825                1830

Gln Leu  Thr Ala Phe Thr Phe  Arg Lys Asn Leu Ala  Ala Thr Ala
    1835                1840                1845

Leu Leu  Leu Ser Leu Phe Gly  Tyr Ala Thr Leu Pro  Trp Met Tyr
    1850                1855                1860

Leu Met  Ser Arg Ile Phe Ser  Ser Ser Asp Val Ala  Phe Ile Ser
    1865                1870                1875

Tyr Val  Ser Leu Asn Phe Ile  Phe Gly Leu Cys Thr  Met Leu Ile
    1880                1885                1890

Thr Ile  Met Pro Arg Leu Leu  Ala Ile Ile Ser Lys  Ala Lys Asn
    1895                1900                1905
```

```
Leu Gln  Asn Ile Tyr Asp Val  Leu Lys Trp Val Phe  Thr Ile Phe
    1910                1915                1920

Pro Gln  Phe Cys Leu Gly Gln  Gly Leu Val Glu Leu  Cys Tyr Asn
    1925                1930                1935

Gln Ile  Lys Tyr Asp Leu Thr  His Asn Phe Gly Ile  Asp Ser Tyr
    1940                1945                1950

Val Ser  Pro Phe Glu Met Asn  Phe Leu Gly Trp Ile  Phe Val Gln
    1955                1960                1965

Leu Ala  Ser Gln Gly Thr Val  Leu Leu Leu Leu Arg  Val Leu Leu
    1970                1975                1980

His Trp  Asp Leu Leu Arg Trp  Pro Arg Gly His Ser  Thr Leu Gln
    1985                1990                1995

Gly Thr  Val Lys Ser Ser Lys  Asp Thr Asp Val Glu  Lys Glu Glu
    2000                2005                2010

Lys Arg  Val Phe Glu Gly Arg  Thr Asn Gly Asp Ile  Leu Val Leu
    2015                2020                2025

Tyr Asn  Leu Ser Lys His Tyr  Arg Arg Phe Phe Gln  Asn Ile Ile
    2030                2035                2040

Ala Val  Gln Asp Ile Ser Leu  Gly Ile Pro Lys Gly  Glu Cys Phe
    2045                2050                2055

Gly Leu  Leu Gly Val Asn Gly  Ala Gly Lys Ser Thr  Thr Phe Lys
    2060                2065                2070

Met Leu  Asn Gly Glu Val Ser  Leu Thr Ser Gly His  Ala Ile Ile
    2075                2080                2085

Arg Thr  Pro Met Gly Asp Ala  Val Asp Leu Ser Ser  Ala Gly Thr
    2090                2095                2100

Ala Gly  Val Leu Ile Gly Tyr  Cys Pro Gln Gln Asp  Ala Leu Asp
    2105                2110                2115
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Glu Leu Leu Thr Gly Trp Glu His Leu Tyr Tyr Tyr Cys Ser Leu
2120 2125 2130

Arg Gly Ile Pro Arg Gln Cys Ile Pro Glu Val Ala Gly Asp Leu
2135 2140 2145

Ile Arg Arg Leu His Leu Glu Ala His Ala Asp Lys Pro Val Ala
2150 2155 2160

Thr Tyr Ser Gly Gly Thr Lys Arg Lys Leu Ser Thr Ala Leu Ala
2165 2170 2175

Leu Val Gly Lys Pro Asp Ile Leu Leu Leu Asp Glu Pro Ser Ser
2180 2185 2190

Gly Met Asp Pro Cys Ser Lys Arg Tyr Leu Trp Gln Thr Ile Met
2195 2200 2205

Lys Glu Val Arg Glu Gly Cys Ala Ala Val Leu Thr Ser His Ser
2210 2215 2220

Met Glu Glu Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val
2225 2230 2235

Asn Gly Ser Phe Lys Cys Leu Gly Ser Pro Gln His Ile Lys Asn
2240 2245 2250

Arg Phe Gly Asp Gly Tyr Thr Val Lys Val Trp Leu Cys Lys Glu
2255 2260 2265

Ala Asn Gln His Cys Thr Val Ser Asp His Leu Lys Leu Tyr Phe
2270 2275 2280

Pro Gly Ile Gln Phe Lys Gly Gln His Leu Asn Leu Leu Glu Tyr
2285 2290 2295

His Val Pro Lys Arg Trp Gly Cys Leu Ala Asp Leu Phe Lys Val
2300 2305 2310

Ile Glu Asn Asn Lys Thr Phe Leu Asn Ile Lys His Tyr Ser Ile
2315 2320 2325

Asn Gln Thr Thr Leu Glu Gln Val Phe Ile Asn Phe Ala Ser Glu

2330 2335 2340

Gln Gln Gln Thr Leu Gln Ser Thr Leu Asp Pro Ser Thr Asp Ser
2345 2350 2355

His His Thr His His Leu Pro Ile
2360 2365

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A (ABC1),
member 2; "

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Leu Lys Arg Arg Ser Pro Trp Val Leu Ala Phe Glu Ile Phe Ile Pro
20 25 30

Leu Val Leu Phe Phe Ile Leu Leu Gly Leu Arg Gln Lys Lys Pro Thr
35 40 45

Ile Ser Val Lys Glu Val Ala Phe Tyr Thr Ala Ala Pro Leu Thr Ser
50 55 60

Ala Gly Ile Leu Pro Val Met Gln Ser Leu Cys Pro Asp Gly Gln Arg
65 70 75 80

Asp Glu Phe Gly Phe Leu Gln Tyr Ala Asn Ser Thr Val Thr Gln Leu

```
                85                  90                  95

Leu Glu Arg Leu Asp Arg Val Val Glu Glu Gly Asn Leu Phe Asp Pro
            100                 105                 110

Ala Arg Pro Ser Leu Gly Ser Glu Leu Glu Ala Leu Arg Gln His Leu
        115                 120                 125

Glu Ala Leu Ser Ala Gly Pro Gly Thr Ser Gly Ser His Leu Asp Arg
    130                 135                 140

Ser Thr Val Ser Ser Phe Ser Leu Asp Ser Val Ala Arg Asn Pro Gln
145                 150                 155                 160

Glu Leu Trp Arg Phe Leu Thr Gln Asn Leu Ser Leu Pro Asn Ser Thr
                165                 170                 175

Ala Gln Ala Leu Leu Ala Ala Arg Val Asp Pro Pro Glu Val Tyr His
            180                 185                 190

Leu Leu Phe Gly Pro Ser Ser Ala Leu Asp Ser Gln Ser Gly Leu His
        195                 200                 205

Lys Gly Gln Glu Pro Trp Ser Arg Leu Gly Gly Asn Pro Leu Phe Arg
    210                 215                 220

Met Glu Glu Leu Leu Leu Ala Pro Ala Leu Leu Glu Gln Leu Thr Cys
225                 230                 235                 240

Thr Pro Gly Ser Gly Glu Leu Gly Arg Ile Leu Thr Val Pro Glu Ser
                245                 250                 255

Gln Lys Gly Ala Leu Gln Gly Tyr Arg Asp Ala Val Cys Ser Gly Gln
            260                 265                 270

Ala Ala Ala Arg Ala Arg Arg Phe Ser Gly Leu Ser Ala Glu Leu Arg
        275                 280                 285

Asn Gln Leu Asp Val Ala Lys Val Ser Gln Gln Leu Gly Leu Asp Ala
    290                 295                 300

Pro Asn Gly Ser Asp Ser Ser Pro Gln Ala Pro Pro Pro Arg Arg Leu
305                 310                 315                 320
```

```
Gln Ala Leu Leu Gly Asp Leu Leu Asp Ala Gln Lys Val Leu Gln Asp
                325                 330                 335

Val Asp Val Leu Ser Ala Leu Ala Leu Leu Leu Pro Gln Gly Ala Cys
            340                 345                 350

Thr Gly Arg Thr Pro Gly Pro Pro Ala Ser Gly Ala Gly Gly Ala Ala
        355                 360                 365

Asn Gly Thr Gly Ala Gly Ala Val Met Gly Pro Asn Ala Thr Ala Glu
    370                 375                 380

Glu Gly Ala Pro Ser Ala Ala Ala Leu Ala Thr Pro Asp Thr Leu Gln
385                 390                 395                 400

Gly Gln Cys Ser Ala Phe Val Gln Leu Trp Ala Gly Leu Gln Pro Ile
                405                 410                 415

Leu Cys Gly Asn Asn Arg Thr Ile Glu Pro Glu Ala Leu Arg Arg Gly
            420                 425                 430

Asn Met Ser Ser Leu Gly Phe Thr Ser Lys Glu Gln Arg Asn Leu Gly
        435                 440                 445

Leu Leu Val His Leu Met Thr Ser Asn Pro Lys Ile Leu Tyr Ala Pro
    450                 455                 460

Ala Gly Ser Glu Val Asp Arg Val Ile Leu Lys Ala Asn Glu Thr Phe
465                 470                 475                 480

Ala Phe Val Gly Asn Val Thr His Tyr Ala Gln Val Trp Leu Asn Ile
                485                 490                 495

Ser Ala Glu Ile Arg Ser Phe Leu Glu Gln Gly Arg Leu Gln Gln His
            500                 505                 510

Leu Arg Trp Leu Gln Gln Tyr Val Ala Glu Leu Arg Leu His Pro Glu
        515                 520                 525

Ala Leu Asn Leu Ser Leu Asp Glu Leu Pro Pro Ala Leu Arg Gln Asp
    530                 535                 540
```

```
Asn Phe Ser Leu Pro Ser Gly Met Ala Leu Leu Gln Gln Leu Asp Thr
545                 550                 555                 560

Ile Asp Asn Ala Ala Cys Gly Trp Ile Gln Phe Met Ser Lys Val Ser
                565                 570                 575

Val Asp Ile Phe Lys Gly Phe Pro Asp Glu Glu Ser Ile Val Asn Tyr
            580                 585                 590

Thr Leu Asn Gln Ala Tyr Gln Asp Asn Val Thr Val Phe Ala Ser Val
        595                 600                 605

Ile Phe Gln Thr Arg Lys Asp Gly Ser Leu Pro Pro His Val His Tyr
    610                 615                 620

Lys Ile Arg Gln Asn Ser Ser Phe Thr Glu Lys Thr Asn Glu Ile Arg
625                 630                 635                 640

Arg Ala Tyr Trp Arg Pro Gly Pro Asn Thr Gly Gly Arg Phe Tyr Phe
                645                 650                 655

Leu Tyr Gly Phe Val Trp Ile Gln Asp Met Met Glu Arg Ala Ile Ile
            660                 665                 670

Asp Thr Phe Val Gly His Asp Val Val Glu Pro Gly Ser Tyr Val Gln
        675                 680                 685

Met Phe Pro Tyr Pro Cys Tyr Thr Arg Asp Asp Phe Leu Phe Val Ile
    690                 695                 700

Glu His Met Met Pro Leu Cys Met Val Ile Ser Trp Val Tyr Ser Val
705                 710                 715                 720

Ala Met Thr Ile Gln His Ile Val Ala Glu Lys Glu His Arg Leu Lys
                725                 730                 735

Glu Val Met Lys Thr Met Gly Leu Asn Asn Ala Val His Trp Val Ala
            740                 745                 750

Trp Phe Ile Thr Gly Phe Val Gln Leu Ser Ile Ser Val Thr Ala Leu
        755                 760                 765
```

```
Thr Ala Ile Leu Lys Tyr Gly Gln Val Leu Met His Ser His Val Val
    770                 775                 780

Ile Ile Trp Leu Phe Leu Ala Val Tyr Ala Val Ala Thr Ile Met Phe
785                 790                 795                 800

Cys Phe Leu Val Ser Val Leu Tyr Ser Lys Ala Lys Leu Ala Ser Ala
                805                 810                 815

Cys Gly Gly Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr Met Tyr Val
            820                 825                 830

Ala Ile Arg Glu Glu Val Ala His Asp Lys Ile Thr Ala Phe Glu Lys
        835                 840                 845

Cys Ile Ala Ser Leu Met Ser Thr Thr Ala Phe Gly Leu Gly Ser Lys
    850                 855                 860

Tyr Phe Ala Leu Tyr Glu Val Ala Gly Val Gly Ile Gln Trp His Thr
865                 870                 875                 880

Phe Ser Gln Ser Pro Val Glu Gly Asp Asp Phe Asn Leu Leu Leu Ala
                885                 890                 895

Val Thr Met Leu Met Val Asp Ala Val Val Tyr Gly Ile Leu Thr Trp
            900                 905                 910

Tyr Ile Glu Ala Val His Pro Gly Met Tyr Gly Leu Pro Arg Pro Trp
        915                 920                 925

Tyr Phe Pro Leu Gln Lys Ser Tyr Trp Leu Gly Ser Gly Arg Thr Glu
    930                 935                 940

Ala Trp Glu Trp Ser Trp Pro Trp Ala Arg Thr Pro Arg Leu Ser Val
945                 950                 955                 960

Met Glu Glu Asp Gln Ala Cys Ala Met Glu Ser Arg Arg Phe Glu Glu
                965                 970                 975

Thr Arg Gly Met Glu Glu Glu Pro Thr His Leu Pro Leu Val Val Cys
            980                 985                 990

Val Asp Lys Leu Thr Lys Val Tyr  Lys Asp Asp Lys Lys  Leu Ala
```

Leu
995 1000 1005

Asn Lys Leu Ser Leu Asn Leu Tyr Glu Asn Gln Val Val Ser Phe
1010 1015 1020

Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Met Ser Ile Leu
1025 1030 1035

Thr Gly Leu Phe Pro Pro Thr Ser Gly Ser Ala Thr Ile Tyr Gly
1040 1045 1050

His Asp Ile Arg Thr Glu Met Asp Glu Ile Arg Lys Asn Leu Gly
1055 1060 1065

Met Cys Pro Gln His Asn Val Leu Phe Asp Arg Leu Thr Val Glu
1070 1075 1080

Glu His Leu Trp Phe Tyr Ser Arg Leu Lys Ser Met Ala Gln Glu
1085 1090 1095

Glu Ile Arg Arg Glu Met Asp Lys Met Ile Glu Asp Leu Glu Leu
1100 1105 1110

Ser Asn Lys Arg His Ser Leu Val Gln Thr Leu Ser Gly Gly Met
1115 1120 1125

Lys Arg Lys Leu Ser Val Ala Ile Ala Phe Val Gly Gly Ser Arg
1130 1135 1140

Ala Ile Ile Leu Asp Glu Pro Thr Ala Gly Val Asp Pro Tyr Ala
1145 1150 1155

Arg Arg Ala Ile Trp Asp Leu Ile Leu Lys Tyr Lys Pro Gly Arg
1160 1165 1170

Thr Ile Leu Leu Ser Thr His His Met Asp Glu Ala Asp Leu Leu
1175 1180 1185

Gly Asp Arg Ile Ala Ile Ile Ser His Gly Lys Leu Lys Cys Cys
1190 1195 1200

Gly Ser Pro Leu Phe Leu Lys Gly Thr Tyr Gly Asp Gly Tyr Arg

```
    1205                1210                1215

Leu Thr  Leu Val Lys Arg Pro  Ala Glu Pro Gly Gly  Pro Gln Glu
    1220                1225                1230

Pro Gly  Leu Ala Ser Ser Pro  Pro Gly Arg Ala Pro  Leu Ser Ser
    1235                1240                1245

Cys Ser  Glu Leu Gln Val Ser  Gln Phe Ile Arg Lys  His Val Ala
    1250                1255                1260

Ser Cys  Leu Leu Val Ser Asp  Thr Ser Thr Glu Leu  Ser Tyr Ile
    1265                1270                1275

Leu Pro  Ser Glu Ala Ala Lys  Lys Gly Ala Phe Glu  Arg Leu Phe
    1280                1285                1290

Gln His  Leu Glu Arg Ser Leu  Asp Ala Leu His Leu  Ser Ser Phe
    1295                1300                1305

Gly Leu  Met Asp Thr Thr Leu  Glu Glu Val Phe Leu  Lys Val Ser
    1310                1315                1320

Glu Glu  Asp Gln Ser Leu Glu  Asn Ser Glu Ala Asp  Val Lys Glu
    1325                1330                1335

Ser Arg  Lys Asp Val Leu Pro  Gly Ala Glu Gly Pro  Ala Ser Gly
    1340                1345                1350

Glu Gly  His Ala Gly Asn Leu  Ala Arg Cys Ser Glu  Leu Thr Gln
    1355                1360                1365

Ser Gln  Ala Ser Leu Gln Ser  Ala Ser Ser Val Gly  Ser Ala Arg
    1370                1375                1380

Gly Asp  Glu Gly Ala Gly Tyr  Thr Asp Val Tyr Gly  Asp Tyr Arg
    1385                1390                1395

Pro Leu  Phe Asp Asn Pro Gln  Asp Pro Asp Asn Val  Ser Leu Gln
    1400                1405                1410

Glu Val  Glu Ala Glu Ala Leu  Ser Arg Val Gly Gln  Gly Ser Arg
    1415                1420                1425
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```
Lys Leu  Asp Gly Gly Trp Leu  Lys Val Arg Gln Phe  His Gly Leu
    1430                1435                1440

Leu Val  Lys Arg Phe His Cys  Ala Arg Arg Asn Ser  Lys Ala Leu
    1445                1450                1455

Phe Ser  Gln Ile Leu Leu Pro  Ala Phe Phe Val Cys  Val Ala Met
    1460                1465                1470

Thr Val  Ala Leu Ser Val Pro  Glu Ile Gly Asp Leu  Pro Pro Leu
    1475                1480                1485

Val Leu  Ser Pro Ser Gln Tyr  His Asn Tyr Thr Gln  Pro Arg Gly
    1490                1495                1500

Asn Phe  Ile Pro Tyr Ala Asn  Glu Glu Arg Arg Glu  Tyr Arg Leu
    1505                1510                1515

Arg Leu  Ser Pro Asp Ala Ser  Pro Gln Gln Leu Val  Ser Thr Phe
    1520                1525                1530

Arg Leu  Pro Ser Gly Val Gly  Ala Thr Cys Val Leu  Lys Ser Pro
    1535                1540                1545

Ala Asn  Gly Ser Leu Gly Pro  Thr Leu Asn Leu Ser  Ser Gly Glu
    1550                1555                1560

Ser Arg  Leu Leu Ala Ala Arg  Phe Phe Asp Ser Met  Cys Leu Glu
    1565                1570                1575

Ser Phe  Thr Gln Gly Leu Pro  Leu Ser Asn Phe Val  Pro Pro Pro
    1580                1585                1590

Pro Ser  Pro Ala Pro Ser Asp  Ser Pro Ala Ser Pro  Asp Glu Asp
    1595                1600                1605

Leu Gln  Ala Trp Asn Val Ser  Leu Pro Pro Thr Ala  Gly Pro Glu
    1610                1615                1620

Met Trp  Thr Ser Ala Pro Ser  Leu Pro Arg Leu Val  Arg Glu Pro
    1625                1630                1635
```

```
Val Arg  Cys Thr Cys Ser Ala  Gln Gly Thr Gly Phe  Ser Cys Pro
    1640                1645                1650

Ser Ser  Val Gly Gly His Pro  Pro Gln Met Arg Val  Val Thr Gly
    1655                1660                1665

Asp Ile  Leu Thr Asp Ile Thr  Gly His Asn Val Ser  Glu Tyr Leu
    1670                1675                1680

Leu Phe  Thr Ser Asp Arg Phe  Arg Leu His Arg Tyr  Gly Ala Ile
    1685                1690                1695

Thr Phe  Gly Asn Val Leu Lys  Ser Ile Pro Ala Ser  Phe Gly Thr
    1700                1705                1710

Arg Ala  Pro Pro Met Val Arg  Lys Ile Ala Val Arg  Arg Ala Ala
    1715                1720                1725

Gln Val  Phe Tyr Asn Asn Lys  Gly Tyr His Ser Met  Pro Thr Tyr
    1730                1735                1740

Leu Asn  Ser Leu Asn Asn Ala  Ile Leu Arg Ala Asn  Leu Pro Lys
    1745                1750                1755

Ser Lys  Gly Asn Pro Ala Ala  Tyr Gly Ile Thr Val  Thr Asn His
    1760                1765                1770

Pro Met  Asn Lys Thr Ser Ala  Ser Leu Ser Leu Asp  Tyr Leu Leu
    1775                1780                1785

Gln Gly  Thr Asp Val Val Ile  Ala Ile Phe Ile Ile  Val Ala Met
    1790                1795                1800

Ser Phe  Val Pro Ala Ser Phe  Val Val Phe Leu Val  Ala Glu Lys
    1805                1810                1815

Ser Thr  Lys Ala Lys His Leu  Gln Phe Val Ser Gly  Cys Asn Pro
    1820                1825                1830

Ile Ile  Tyr Trp Leu Ala Asn  Tyr Val Trp Asp Met  Leu Asn Tyr
    1835                1840                1845
```

```
Leu Val  Pro Ala Thr Cys Cys  Val Ile Ile Leu Phe  Val Phe Asp
    1850                1855                1860

Leu Pro  Ala Tyr Thr Ser Pro  Thr Asn Phe Pro Ala  Val Leu Ser
    1865                1870                1875

Leu Phe  Leu Leu Tyr Gly Trp  Ser Ile Thr Pro Ile  Met Tyr Pro
    1880                1885                1890

Ala Ser  Phe Trp Phe Glu Val  Pro Ser Ser Ala Tyr  Val Phe Leu
    1895                1900                1905

Ile Val  Ile Asn Leu Phe Ile  Gly Ile Thr Ala Thr  Val Ala Thr
    1910                1915                1920

Phe Leu  Leu Gln Leu Phe Glu  His Asp Lys Asp Leu  Lys Val Val
    1925                1930                1935

Asn Ser  Tyr Leu Lys Ser Cys  Phe Leu Ile Phe Pro  Asn Tyr Asn
    1940                1945                1950

Leu Gly  His Gly Leu Met Glu  Met Ala Tyr Asn Glu  Tyr Ile Asn
    1955                1960                1965

Glu Tyr  Tyr Ala Lys Ile Gly  Gln Phe Asp Lys Met  Lys Ser Pro
    1970                1975                1980

Phe Glu  Trp Asp Ile Val Thr  Arg Gly Leu Val Ala  Met Ala Val
    1985                1990                1995

Glu Gly  Val Val Gly Phe Leu  Leu Thr Ile Met Cys  Gln Tyr Asn
    2000                2005                2010

Phe Leu  Arg Arg Pro Gln Arg  Met Pro Val Ser Thr  Lys Pro Val
    2015                2020                2025

Glu Asp  Asp Val Asp Val Ala  Ser Glu Arg Gln Arg  Val Leu Arg
    2030                2035                2040

Gly Asp  Ala Asp Asn Asp Met  Val Lys Ile Glu Asn  Leu Thr Lys
    2045                2050                2055

Val Tyr  Lys Ser Arg Lys Ile  Gly Arg Ile Leu Ala  Val Asp Arg
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2060 2065 2070

Leu Cys Leu Gly Val Arg Pro Gly Glu Cys Phe Gly Leu Leu Gly
2075 2080 2085

Val Asn Gly Ala Gly Lys Thr Ser Thr Phe Lys Met Leu Thr Gly
2090 2095 2100

Asp Glu Ser Thr Thr Gly Gly Glu Ala Phe Val Asn Gly His Ser
2105 2110 2115

Val Leu Lys Glu Leu Leu Gln Val Gln Gln Ser Leu Gly Tyr Cys
2120 2125 2130

Pro Gln Cys Asp Ala Leu Phe Asp Glu Leu Thr Ala Arg Glu His
2135 2140 2145

Leu Gln Leu Tyr Thr Arg Leu Arg Gly Ile Ser Trp Lys Asp Glu
2150 2155 2160

Ala Arg Val Val Lys Trp Ala Leu Glu Lys Leu Glu Leu Thr Lys
2165 2170 2175

Tyr Ala Asp Lys Pro Ala Gly Thr Tyr Ser Gly Gly Asn Lys Arg
2180 2185 2190

Lys Leu Ser Thr Ala Ile Ala Leu Ile Gly Tyr Pro Ala Phe Ile
2195 2200 2205

Phe Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Lys Ala Arg Arg
2210 2215 2220

Phe Leu Trp Asn Leu Ile Leu Asp Leu Ile Lys Thr Gly Arg Ser
2225 2230 2235

Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys
2240 2245 2250

Thr Arg Leu Ala Ile Met Val Asn Gly Arg Leu Arg Cys Leu Gly
2255 2260 2265

Ser Ile Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Met Ile
2270 2275 2280

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Thr Val  Arg Thr Lys Ser Ser  Gln Ser Val Lys Asp  Val Val Arg
    2285                2290                2295

Phe Phe  Asn Arg Asn Phe Pro  Glu Ala Met Leu Lys  Glu Arg His
    2300                2305                2310

His Thr  Lys Val Gln Tyr Gln  Leu Lys Ser Glu His  Ile Ser Leu
    2315                2320                2325

Ala Gln  Val Phe Ser Lys Met  Glu Gln Val Ser Gly  Val Leu Gly
    2330                2335                2340

Ile Glu  Asp Tyr Ser Val Ser  Gln Thr Thr Leu Asp  Asn Val Phe
    2345                2350                2355

Val Asn  Phe Ala Lys Lys Gln  Ser Asp Asn Leu Glu  Gln Gln Glu
    2360                2365                2370

Thr Glu  Pro Pro Ser Ala Leu  Gln Ser Pro Leu Gly  Cys Leu Leu
    2375                2380                2385

Ser Leu  Leu Arg Pro Arg Ser  Ala Pro Thr Glu Leu  Arg Ala Leu
    2390                2395                2400

Val Ala  Asp Glu Pro Glu Asp  Leu Asp Thr Glu Asp  Glu Gly Leu
    2405                2410                2415

Ile Ser  Phe Glu Glu Glu Arg  Ala Gln Leu Ser Phe  Asn Thr Asp
    2420                2425                2430

Thr Leu  Cys
    2435


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Leu Lys Arg Arg Ser Pro Trp Val Leu Ala Phe Glu Ile Phe Ile Pro
            20                  25                  30

Leu Val Leu Phe Phe Ile Leu Leu Gly Leu Arg Gln Lys Lys Pro Thr
        35                  40                  45

Ile Ser Val Lys Glu Val Ser Phe Tyr Thr Ala Ala Pro Leu Thr Ser
    50                  55                  60

Ala Gly Ile Leu Pro Val Met Gln Ser Leu Cys Pro Asp Gly Gln Arg
65                  70                  75                  80

Asp Glu Phe Gly Phe Leu Gln Tyr Ala Asn Ser Thr Val Thr Gln Leu
                85                  90                  95

Leu Glu Arg Leu Asp Arg Val Val Glu Glu Gly Asn Leu Phe Asp Pro
            100                 105                 110

Ala Arg Pro Ser Leu Gly Ser Glu Leu Glu Ala Leu Arg Gln His Leu
        115                 120                 125

Glu Ala Leu Ser Ala Gly Pro Gly Thr Ser Gly Ser His Leu Asp Arg
    130                 135                 140

Ser Thr Val Ser Ser Phe Ser Leu Asp Ser Val Ala Arg Asn Pro Gln
145                 150                 155                 160
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```
Glu Leu Trp Arg Phe Leu Thr Gln Asn Leu Ser Leu Pro Asn Ser Thr
                165                 170                 175

Ala Gln Ala Leu Leu Ala Ala Arg Val Asp Pro Pro Glu Val Tyr His
            180                 185                 190

Leu Leu Phe Gly Pro Ser Ser Ala Leu Asp Ser Gln Ser Gly Leu His
        195                 200                 205

Lys Gly Gln Glu Pro Trp Ser Arg Leu Gly Gly Asn Pro Leu Phe Arg
    210                 215                 220

Met Glu Glu Leu Leu Leu Ala Pro Ala Leu Leu Glu Gln Leu Thr Cys
225                 230                 235                 240

Thr Pro Gly Ser Gly Glu Leu Gly Arg Ile Leu Thr Val Pro Glu Ser
                245                 250                 255

Gln Lys Gly Ala Leu Gln Gly Tyr Arg Asp Ala Val Cys Ser Gly Gln
            260                 265                 270

Ala Ala Ala Arg Ala Arg Arg Phe Ser Gly Leu Ser Ala Glu Leu Arg
        275                 280                 285

Asn Gln Leu Asp Val Ala Lys Val Ser Gln Gln Leu Gly Leu Asp Ala
    290                 295                 300

Pro Asn Gly Ser Asp Ser Ser Pro Gln Ala Pro Pro Pro Arg Arg Leu
305                 310                 315                 320

Gln Ala Leu Leu Gly Asp Leu Leu Asp Ala Gln Lys Val Leu Gln Asp
                325                 330                 335

Val Asp Val Leu Ser Ala Leu Ala Leu Leu Leu Pro Gln Gly Ala Cys
            340                 345                 350

Thr Gly Arg Thr Pro Gly Pro Pro Ala Ser Gly Ala Gly Gly Ala Ala
        355                 360                 365

Asn Gly Thr Gly Ala Gly Ala Val Met Gly Pro Asn Ala Thr Ala Glu
    370                 375                 380
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```
Glu Gly Ala Pro Ser Ala Ala Ala Leu Ala Thr Pro Asp Thr Leu Gln
385                 390                 395                 400

Gly Gln Cys Ser Ala Phe Val Gln Leu Trp Ala Gly Leu Gln Pro Ile
                405                 410                 415

Leu Cys Gly Asn Asn Arg Thr Ile Glu Pro Glu Ala Leu Arg Arg Gly
            420                 425                 430

Asn Met Ser Ser Leu Gly Phe Thr Ser Lys Glu Gln Arg Asn Leu Gly
        435                 440                 445

Leu Leu Val His Leu Met Thr Ser Asn Pro Lys Ile Leu Tyr Ala Pro
    450                 455                 460

Ala Gly Ser Glu Val Asp Arg Val Ile Leu Lys Ala Asn Glu Thr Phe
465                 470                 475                 480

Ala Phe Val Gly Asn Val Thr His Tyr Ala Gln Val Trp Leu Asn Ile
                485                 490                 495

Ser Ala Glu Ile Arg Ser Phe Leu Glu Gln Gly Arg Leu Gln Gln His
            500                 505                 510

Leu Arg Trp Leu Gln Gln Tyr Val Ala Glu Leu Arg Leu His Pro Glu
        515                 520                 525

Ala Leu Asn Leu Ser Leu Asp Glu Leu Pro Pro Ala Leu Arg Gln Asp
    530                 535                 540

Asn Phe Ser Leu Pro Ser Gly Met Ala Leu Leu Gln Gln Leu Asp Thr
545                 550                 555                 560

Ile Asp Asn Ala Ala Cys Gly Trp Ile Gln Phe Met Ser Lys Val Ser
                565                 570                 575

Val Asp Ile Phe Lys Gly Phe Pro Asp Glu Glu Ser Ile Val Asn Tyr
            580                 585                 590

Thr Leu Asn Gln Ala Tyr Gln Asp Asn Val Thr Val Phe Ala Ser Val
        595                 600                 605

Ile Phe Gln Thr Arg Lys Asp Gly Ser Leu Pro Pro His Val His Tyr
```

610 615 620

Lys Ile Arg Gln Asn Ser Ser Phe Thr Glu Lys Thr Asn Glu Ile Arg
625 630 635 640

Arg Ala Tyr Trp Arg Pro Gly Pro Asn Thr Gly Gly Arg Phe Tyr Phe
645 650 655

Leu Tyr Gly Phe Val Trp Ile Gln Asp Met Met Glu Arg Ala Ile Ile
660 665 670

Asp Thr Phe Val Gly His Asp Val Val Glu Pro Gly Ser Tyr Val Gln
675 680 685

Met Phe Pro Tyr Pro Cys Tyr Thr Arg Asp Asp Phe Leu Phe Val Ile
690 695 700

Glu His Met Met Pro Leu Cys Met Val Ile Ser Trp Val Tyr Ser Val
705 710 715 720

Ala Met Thr Ile Gln His Ile Val Ala Glu Lys Glu His Arg Leu Lys
725 730 735

Glu Val Met Lys Thr Met Gly Leu Asn Asn Ala Val His Trp Val Ala
740 745 750

Trp Phe Ile Thr Gly Phe Val Gln Leu Ser Ile Ser Val Thr Ala Leu
755 760 765

Thr Ala Ile Leu Lys Tyr Gly Gln Val Leu Met His Ser His Val Val
770 775 780

Ile Ile Trp Leu Phe Leu Ala Val Tyr Ala Val Ala Thr Ile Met Phe
785 790 795 800

Cys Phe Leu Val Ser Val Leu Tyr Ser Lys Ala Lys Leu Ala Ser Ala
805 810 815

Cys Gly Gly Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr Met Tyr Val
820 825 830

Ala Ile Arg Glu Glu Val Ala His Asp Lys Ile Thr Ala Phe Glu Lys
835 840 845

```
Cys Ile Ala Ser Leu Met Ser Thr Thr Ala Phe Gly Leu Gly Ser Lys
    850                 855                 860

Tyr Phe Ala Leu Tyr Glu Val Ala Gly Val Gly Ile Gln Trp His Thr
865                 870                 875                 880

Phe Ser Gln Ser Pro Val Glu Gly Asp Asp Phe Asn Leu Leu Leu Ala
                885                 890                 895

Val Thr Met Leu Met Val Asp Ala Val Val Tyr Gly Ile Leu Thr Trp
            900                 905                 910

Tyr Ile Glu Ala Val His Pro Gly Met Tyr Gly Leu Pro Arg Pro Trp
        915                 920                 925

Tyr Phe Pro Leu Gln Lys Ser Tyr Trp Leu Gly Ser Gly Arg Thr Glu
    930                 935                 940

Ala Trp Glu Trp Ser Trp Pro Trp Ala Arg Thr Pro Arg Leu Ser Val
945                 950                 955                 960

Met Glu Glu Asp Gln Ala Cys Ala Met Glu Ser Arg Arg Phe Glu Glu
                965                 970                 975

Thr Arg Gly Met Glu Glu Glu Pro Thr His Leu Pro Leu Val Val Cys
            980                 985                 990

Val Asp Lys Leu Thr Lys Val Tyr  Lys Asp Asp Lys Lys  Leu Ala
Leu
        995                 1000                1005

Asn Lys  Leu Ser Leu Asn Leu  Tyr Glu Asn Gln Val  Val Ser Phe
    1010                1015                1020

Leu Gly  His Asn Gly Ala Gly  Lys Thr Thr Thr Met  Ser Ile Leu
    1025                1030                1035

Thr Gly  Leu Phe Pro Pro Thr  Ser Gly Ser Ala Thr  Ile Tyr Gly
    1040                1045                1050

His Asp  Ile Arg Thr Glu Met  Asp Glu Ile Arg Lys  Asn Leu Gly
    1055                1060                1065
```

```
Met Cys  Pro Gln His Asn Val  Leu Phe Asp Arg Leu  Thr Val Glu
    1070                1075                1080

Glu His  Leu Trp Phe Tyr Ser  Arg Leu Lys Ser Met  Ala Gln Glu
    1085                1090                1095

Glu Ile  Arg Arg Glu Met Asp  Lys Met Ile Glu Asp  Leu Glu Leu
    1100                1105                1110

Ser Asn  Lys Arg His Ser Leu  Val Gln Thr Leu Ser  Gly Gly Met
    1115                1120                1125

Lys Arg  Lys Leu Ser Val Ala  Ile Ala Phe Val Gly  Gly Ser Arg
    1130                1135                1140

Ala Ile  Ile Leu Asp Glu Pro  Thr Ala Gly Val Asp  Pro Tyr Ala
    1145                1150                1155

Arg Arg  Ala Ile Trp Asp Leu  Ile Leu Lys Tyr Lys  Pro Gly Arg
    1160                1165                1170

Thr Ile  Leu Leu Ser Thr His  His Met Asp Glu Ala  Asp Leu Leu
    1175                1180                1185

Gly Asp  Arg Ile Ala Ile Ile  Ser His Gly Lys Leu  Lys Cys Cys
    1190                1195                1200

Gly Ser  Pro Leu Phe Leu Lys  Gly Thr Tyr Gly Asp  Gly Tyr Arg
    1205                1210                1215

Leu Thr  Leu Val Lys Arg Pro  Ala Glu Pro Gly Gly  Pro Gln Glu
    1220                1225                1230

Pro Gly  Leu Ala Ser Ser Pro  Pro Gly Arg Ala Pro  Leu Ser Ser
    1235                1240                1245

Cys Ser  Glu Leu Gln Val Ser  Gln Phe Ile Arg Lys  His Val Ala
    1250                1255                1260

Ser Cys  Leu Leu Val Ser Asp  Thr Ser Thr Glu Leu  Ser Tyr Ile
    1265                1270                1275
```

```
Leu Pro  Ser Glu Ala Ala Lys  Lys Gly Ala Phe Glu  Arg Leu Phe
    1280                 1285                 1290

Gln His  Leu Glu Arg Ser Leu  Asp Ala Leu His Leu  Ser Ser Phe
    1295                 1300                 1305

Gly Leu  Met Asp Thr Thr Leu  Glu Glu Val Phe Leu  Lys Val Ser
    1310                 1315                 1320

Glu Glu  Asp Gln Ser Leu Glu  Asn Ser Glu Ala Asp  Val Lys Glu
    1325                 1330                 1335

Ser Arg  Lys Asp Val Leu Pro  Gly Ala Glu Gly Pro  Ala Ser Gly
    1340                 1345                 1350

Glu Gly  His Ala Gly Asn Leu  Ala Arg Cys Ser Glu  Leu Thr Gln
    1355                 1360                 1365

Ser Gln  Ala Ser Leu Gln Ser  Ala Ser Ser Val Gly  Ser Ala Arg
    1370                 1375                 1380

Gly Asp  Glu Gly Ala Gly Tyr  Thr Asp Val Tyr Gly  Asp Tyr Arg
    1385                 1390                 1395

Pro Leu  Phe Asp Asn Pro Gln  Asp Pro Asp Asn Val  Ser Leu Gln
    1400                 1405                 1410

Glu Val  Glu Ala Glu Ala Leu  Ser Arg Val Gly Gln  Gly Ser Arg
    1415                 1420                 1425

Lys Leu  Asp Gly Gly Trp Leu  Lys Val Arg Gln Phe  His Gly Leu
    1430                 1435                 1440

Leu Val  Lys Arg Phe His Cys  Ala Arg Arg Asn Ser  Lys Ala Leu
    1445                 1450                 1455

Phe Ser  Gln Ile Leu Leu Pro  Ala Phe Phe Val Cys  Val Ala Met
    1460                 1465                 1470

Thr Val  Ala Leu Ser Val Pro  Glu Ile Gly Asp Leu  Pro Pro Leu
    1475                 1480                 1485
```

```
Val Leu  Ser Pro Ser Gln Tyr  His Asn Tyr Thr Gln  Pro Arg Gly
    1490                1495                1500

Asn Phe  Ile Pro Tyr Ala Asn  Glu Glu Arg Arg Glu  Tyr Arg Leu
    1505                1510                1515

Arg Leu  Ser Pro Asp Ala Ser  Pro Gln Gln Leu Val  Ser Thr Phe
    1520                1525                1530

Arg Leu  Pro Ser Gly Val Gly  Ala Thr Cys Val Leu  Lys Ser Pro
    1535                1540                1545

Ala Asn  Gly Ser Leu Gly Pro  Thr Leu Asn Leu Ser  Ser Gly Glu
    1550                1555                1560

Ser Arg  Leu Leu Ala Ala Arg  Phe Phe Asp Ser Met  Cys Leu Glu
    1565                1570                1575

Ser Phe  Thr Gln Gly Leu Pro  Leu Ser Asn Phe Val  Pro Pro Pro
    1580                1585                1590

Pro Ser  Pro Ala Pro Ser Asp  Ser Pro Ala Ser Pro  Asp Glu Asp
    1595                1600                1605

Leu Gln  Ala Trp Asn Val Ser  Leu Pro Pro Thr Ala  Gly Pro Glu
    1610                1615                1620

Met Trp  Thr Ser Ala Pro Ser  Leu Pro Arg Leu Val  Arg Glu Pro
    1625                1630                1635

Val Arg  Cys Thr Cys Ser Ala  Gln Gly Thr Gly Phe  Ser Cys Pro
    1640                1645                1650

Ser Ser  Val Gly Gly His Pro  Pro Gln Met Arg Val  Val Thr Gly
    1655                1660                1665

Asp Ile  Leu Thr Asp Ile Thr  Gly His Asn Val Ser  Glu Tyr Leu
    1670                1675                1680

Leu Phe  Thr Ser Asp Arg Phe  Arg Leu His Arg Tyr  Gly Ala Ile
    1685                1690                1695

Thr Phe  Gly Asn Val Leu Lys  Ser Ile Pro Ala Ser  Phe Gly Thr
```

```
    1700                1705                1710

Arg Ala  Pro Pro Met Val Arg  Lys Ile Ala Val Arg  Arg Ala Ala
    1715                1720                1725

Gln Val  Phe Tyr Asn Asn Lys  Gly Tyr His Ser Met  Pro Thr Tyr
    1730                1735                1740

Leu Asn  Ser Leu Asn Asn Ala  Ile Leu Arg Ala Asn  Leu Pro Lys
    1745                1750                1755

Ser Lys  Gly Asn Pro Ala Ala  Tyr Gly Ile Thr Val  Thr Asn His
    1760                1765                1770

Pro Met  Asn Lys Thr Ser Ala  Ser Leu Ser Leu Asp  Tyr Leu Leu
    1775                1780                1785

Gln Gly  Thr Asp Val Val Ile  Ala Ile Phe Ile Ile  Val Ala Met
    1790                1795                1800

Ser Phe  Val Pro Ala Ser Phe  Val Val Phe Leu Val  Ala Glu Lys
    1805                1810                1815

Ser Thr  Lys Ala Lys His Leu  Gln Phe Val Ser Gly  Cys Asn Pro
    1820                1825                1830

Ile Ile  Tyr Trp Leu Ala Asn  Tyr Val Trp Asp Met  Leu Asn Tyr
    1835                1840                1845

Leu Val  Pro Ala Thr Cys Cys  Val Ile Ile Leu Phe  Val Phe Asp
    1850                1855                1860

Leu Pro  Ala Tyr Thr Ser Pro  Thr Asn Phe Pro Ala  Val Leu Ser
    1865                1870                1875

Leu Phe  Leu Leu Tyr Gly Trp  Ser Ile Thr Pro Ile  Met Tyr Pro
    1880                1885                1890

Ala Ser  Phe Trp Phe Glu Val  Pro Ser Ser Ala Tyr  Val Phe Leu
    1895                1900                1905

Ile Val  Ile Asn Leu Phe Ile  Gly Ile Thr Ala Thr  Val Ala Thr
    1910                1915                1920
```

```
Phe Leu  Leu Gln Leu Phe Glu  His Asp Lys Asp Leu  Lys Val Val
    1925                1930                1935

Asn Ser  Tyr Leu Lys Ser Cys  Phe Leu Ile Phe Pro  Asn Tyr Asn
    1940                1945                1950

Leu Gly  His Gly Leu Met Glu  Met Ala Tyr Asn Glu  Tyr Ile Asn
    1955                1960                1965

Glu Tyr  Tyr Ala Lys Ile Gly  Gln Phe Asp Lys Met  Lys Ser Pro
    1970                1975                1980

Phe Glu  Trp Asp Ile Val Thr  Arg Gly Leu Val Ala  Met Ala Val
    1985                1990                1995

Glu Gly  Val Val Gly Phe Leu  Leu Thr Ile Met Cys  Gln Tyr Asn
    2000                2005                2010

Phe Leu  Arg Arg Pro Gln Arg  Met Pro Val Ser Thr  Lys Pro Val
    2015                2020                2025

Glu Asp  Asp Val Asp Val Ala  Ser Glu Arg Gln Arg  Val Leu Arg
    2030                2035                2040

Gly Asp  Ala Asp Asn Asp Met  Val Lys Ile Glu Asn  Leu Thr Lys
    2045                2050                2055

Val Tyr  Lys Ser Arg Lys Ile  Gly Arg Ile Leu Ala  Val Asp Arg
    2060                2065                2070

Leu Cys  Leu Gly Val Arg Pro  Gly Glu Cys Phe Gly  Leu Leu Gly
    2075                2080                2085

Val Asn  Gly Ala Gly Lys Thr  Ser Thr Phe Lys Met  Leu Thr Gly
    2090                2095                2100

Asp Glu  Ser Thr Thr Gly Gly  Glu Ala Phe Val Asn  Gly His Ser
    2105                2110                2115

Val Leu  Lys Glu Leu Leu Gln  Val Gln Gln Ser Leu  Gly Tyr Cys
    2120                2125                2130
```

```
Pro Gln  Cys Asp Ala Leu Phe  Asp Glu Leu Thr Ala  Arg Glu His
    2135                2140                2145

Leu Gln  Leu Tyr Thr Arg Leu  Arg Gly Ile Ser Trp  Lys Asp Glu
    2150                2155                2160

Ala Arg  Val Val Lys Trp Ala  Leu Glu Lys Leu Glu  Leu Thr Lys
    2165                2170                2175

Tyr Ala  Asp Lys Pro Ala Gly  Thr Tyr Ser Gly Gly  Asn Lys Arg
    2180                2185                2190

Lys Leu  Ser Thr Ala Ile Ala  Leu Ile Gly Tyr Pro  Ala Phe Ile
    2195                2200                2205

Phe Leu  Asp Glu Pro Thr Thr  Gly Met Asp Pro Lys  Ala Arg Arg
    2210                2215                2220

Phe Leu  Trp Asn Leu Ile Leu  Asp Leu Ile Lys Thr  Gly Arg Ser
    2225                2230                2235

Val Val  Leu Thr Ser His Ser  Met Glu Glu Cys Glu  Ala Leu Cys
    2240                2245                2250

Thr Arg  Leu Ala Ile Met Val  Asn Gly Arg Leu Arg  Cys Leu Gly
    2255                2260                2265

Ser Ile  Gln His Leu Lys Asn  Arg Phe Gly Asp Gly  Tyr Met Ile
    2270                2275                2280

Thr Val  Arg Thr Lys Ser Ser  Gln Ser Val Lys Asp  Val Val Arg
    2285                2290                2295

Phe Phe  Asn Arg Asn Phe Pro  Glu Ala Met Leu Lys  Glu Arg His
    2300                2305                2310

His Thr  Lys Val Gln Tyr Gln  Leu Lys Ser Glu His  Ile Ser Leu
    2315                2320                2325

Ala Gln  Val Phe Ser Lys Met  Glu Gln Val Ser Gly  Val Leu Gly
    2330                2335                2340
```

```
Ile Glu  Asp Tyr Ser Val Ser  Gln Thr Thr Leu Asp  Asn Val Phe
    2345                2350                2355

Val Asn  Phe Ala Lys Lys Gln  Ser Asp Asn Leu Glu  Gln Gln Glu
    2360                2365                2370

Thr Glu  Pro Pro Ser Ala Leu  Gln Ser Pro Leu Gly  Cys Leu Leu
    2375                2380                2385

Ser Leu  Leu Arg Pro Arg Ser  Ala Pro Thr Glu Leu  Arg Ala Leu
    2390                2395                2400

Val Ala  Asp Glu Pro Glu Asp  Leu Asp Thr Glu Asp  Glu Gly Leu
    2405                2410                2415

Ile Ser  Phe Glu Glu Glu Arg  Ala Gln Leu Ser Phe  Asn Thr Asp
    2420                2425                2430

Thr Leu  Cys
    2435
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Met Gly Phe Leu His Gln Leu Gln Leu Leu Leu Trp Lys Asn Val Thr
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Leu Lys Arg Arg Ser Pro Trp Val Leu Ala Phe Glu Ile Phe Ile Pro
            20                  25                  30

Leu Val Leu Phe Phe Ile Leu Leu Gly Leu Arg Gln Lys Lys Pro Thr
        35                  40                  45

Ile Ser Val Lys Glu Ala Phe Tyr Thr Ala Ala Pro Leu Thr Ser Ala
    50                  55                  60

Gly Ile Leu Pro Val Met Gln Ser Leu Cys Pro Asp Gly Gln Arg Asp
65                  70                  75                  80

Glu Phe Gly Phe Leu Gln Tyr Ala Asn Ser Thr Val Thr Gln Leu Leu
                85                  90                  95

Glu Arg Leu Asp Arg Val Val Glu Glu Gly Asn Leu Phe Asp Pro Ala
            100                 105                 110

Arg Pro Ser Leu Gly Ser Glu Leu Glu Ala Leu Arg Gln His Leu Glu
        115                 120                 125

Ala Leu Ser Ala Gly Pro Gly Thr Ser Gly Ser His Leu Asp Arg Ser
    130                 135                 140

Thr Val Ser Ser Phe Ser Leu Asp Ser Val Ala Arg Asn Pro Gln Glu
145                 150                 155                 160

Leu Trp Arg Phe Leu Thr Gln Asn Leu Ser Leu Pro Asn Ser Thr Ala
                165                 170                 175

Gln Ala Leu Leu Ala Ala Arg Val Asp Pro Pro Glu Val Tyr His Leu
            180                 185                 190

Leu Phe Gly Pro Ser Ser Ala Leu Asp Ser Gln Ser Gly Leu His Lys
        195                 200                 205

Gly Gln Glu Pro Trp Ser Arg Leu Gly Gly Asn Pro Leu Phe Arg Met
    210                 215                 220

Glu Glu Leu Leu Leu Ala Pro Ala Leu Leu Glu Gln Leu Thr Cys Thr
```

225 230 235 240

Pro Gly Ser Gly Glu Leu Gly Arg Ile Leu Thr Val Pro Glu Ser Gln
245 250 255

Lys Gly Ala Leu Gln Gly Tyr Arg Asp Ala Val Cys Ser Gly Gln Ala
260 265 270

Ala Ala Arg Ala Arg Arg Phe Ser Gly Leu Ser Ala Glu Leu Arg Asn
275 280 285

Gln Leu Asp Val Ala Lys Val Ser Gln Gln Leu Gly Leu Asp Ala Pro
290 295 300

Asn Gly Ser Asp Ser Ser Pro Gln Ala Pro Pro Pro Arg Arg Leu Gln
305 310 315 320

Ala Leu Leu Gly Asp Leu Leu Asp Ala Gln Lys Val Leu Gln Asp Val
325 330 335

Asp Val Leu Ser Ala Leu Ala Leu Leu Leu Pro Gln Gly Ala Cys Thr
340 345 350

Gly Arg Thr Pro Gly Pro Pro Ala Ser Gly Ala Gly Gly Ala Ala Asn
355 360 365

Gly Thr Gly Ala Gly Ala Val Met Gly Pro Asn Ala Thr Ala Glu Glu
370 375 380

Gly Ala Pro Ser Ala Ala Ala Leu Ala Thr Pro Asp Thr Leu Gln Gly
385 390 395 400

Gln Cys Ser Ala Phe Val Gln Leu Trp Ala Gly Leu Gln Pro Ile Leu
405 410 415

Cys Gly Asn Asn Arg Thr Ile Glu Pro Glu Ala Leu Arg Arg Gly Asn
420 425 430

Met Ser Ser Leu Gly Phe Thr Ser Lys Glu Gln Arg Asn Leu Gly Leu
435 440 445

Leu Val His Leu Met Thr Ser Asn Pro Lys Ile Leu Tyr Ala Pro Ala
450 455 460

```
Gly Ser Glu Val Asp Arg Val Ile Leu Lys Ala Asn Glu Thr Phe Ala
465                 470                 475                 480

Phe Val Gly Asn Val Thr His Tyr Ala Gln Val Trp Leu Asn Ile Ser
                485                 490                 495

Ala Glu Ile Arg Ser Phe Leu Glu Gln Gly Arg Leu Gln Gln His Leu
            500                 505                 510

Arg Trp Leu Gln Gln Tyr Val Ala Glu Leu Arg Leu His Pro Glu Ala
        515                 520                 525

Leu Asn Leu Ser Leu Asp Glu Leu Pro Pro Ala Leu Arg Gln Asp Asn
    530                 535                 540

Phe Ser Leu Pro Ser Gly Met Ala Leu Leu Gln Gln Leu Asp Thr Ile
545                 550                 555                 560

Asp Asn Ala Ala Cys Gly Trp Ile Gln Phe Met Ser Lys Val Ser Val
                565                 570                 575

Asp Ile Phe Lys Gly Phe Pro Asp Glu Glu Ser Ile Val Asn Tyr Thr
            580                 585                 590

Leu Asn Gln Ala Tyr Gln Asp Asn Val Thr Val Phe Ala Ser Val Ile
        595                 600                 605

Phe Gln Thr Arg Lys Asp Gly Ser Leu Pro Pro His Val His Tyr Lys
    610                 615                 620

Ile Arg Gln Asn Ser Ser Phe Thr Glu Lys Thr Asn Glu Ile Arg Arg
625                 630                 635                 640

Ala Tyr Trp Arg Pro Gly Pro Asn Thr Gly Gly Arg Phe Tyr Phe Leu
                645                 650                 655

Tyr Gly Phe Val Trp Ile Gln Asp Met Met Glu Arg Ala Ile Ile Asp
            660                 665                 670

Thr Phe Val Gly His Asp Val Val Glu Pro Gly Ser Tyr Val Gln Met
        675                 680                 685
```

```
Phe Pro Tyr Pro Cys Tyr Thr Arg Asp Asp Phe Leu Phe Val Ile Glu
    690                 695                 700

His Met Met Pro Leu Cys Met Val Ile Ser Trp Val Tyr Ser Val Ala
705                 710                 715                 720

Met Thr Ile Gln His Ile Val Ala Glu Lys Glu His Arg Leu Lys Glu
                725                 730                 735

Val Met Lys Thr Met Gly Leu Asn Asn Ala Val His Trp Val Ala Trp
            740                 745                 750

Phe Ile Thr Gly Phe Val Gln Leu Ser Ile Ser Val Thr Ala Leu Thr
        755                 760                 765

Ala Ile Leu Lys Tyr Gly Gln Val Leu Met His Ser His Val Val Ile
    770                 775                 780

Ile Trp Leu Phe Leu Ala Val Tyr Ala Val Ala Thr Ile Met Phe Cys
785                 790                 795                 800

Phe Leu Val Ser Val Leu Tyr Ser Lys Ala Lys Leu Ala Ser Ala Cys
                805                 810                 815

Gly Gly Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr Met Tyr Val Ala
            820                 825                 830

Ile Arg Glu Glu Val Ala His Asp Lys Ile Thr Ala Phe Glu Lys Cys
        835                 840                 845

Ile Ala Ser Leu Met Ser Thr Thr Ala Phe Gly Leu Gly Ser Lys Tyr
    850                 855                 860

Phe Ala Leu Tyr Glu Val Ala Gly Val Gly Ile Gln Trp His Thr Phe
865                 870                 875                 880

Ser Gln Ser Pro Val Glu Gly Asp Asp Phe Asn Leu Leu Leu Ala Val
                885                 890                 895

Thr Met Leu Met Val Asp Ala Val Val Tyr Gly Ile Leu Thr Trp Tyr
            900                 905                 910
```

```
Ile Glu Ala Val His Pro Gly Met Tyr Gly Leu Pro Arg Pro Trp Tyr
        915                 920                 925

Phe Pro Leu Gln Lys Ser Tyr Trp Leu Gly Ser Gly Arg Thr Glu Ala
    930                 935                 940

Trp Glu Trp Ser Trp Pro Trp Ala Arg Thr Pro Arg Leu Ser Val Met
945                 950                 955                 960

Glu Glu Asp Gln Ala Cys Ala Met Glu Ser Arg Arg Phe Glu Glu Thr
                965                 970                 975

Arg Gly Met Glu Glu Glu Pro Thr His Leu Pro Leu Val Val Cys Val
            980                 985                 990

Asp Lys Leu Thr Lys Val Tyr Lys  Asp Asp Lys Lys Leu  Ala Leu
Asn
        995                 1000                1005

Lys Leu  Ser Leu Asn Leu Tyr  Glu Asn Gln Val Val  Ser Phe Leu
    1010                1015                1020

Gly His  Asn Gly Ala Gly Lys  Thr Thr Thr Met Ser  Ile Leu Thr
    1025                1030                1035

Gly Leu  Phe Pro Pro Thr Ser  Gly Ser Ala Thr Ile  Tyr Gly His
    1040                1045                1050

Asp Ile  Arg Thr Glu Met Asp  Glu Ile Arg Lys Asn  Leu Gly Met
    1055                1060                1065

Cys Pro  Gln His Asn Val Leu  Phe Asp Arg Leu Thr  Val Glu Glu
    1070                1075                1080

His Leu  Trp Phe Tyr Ser Arg  Leu Lys Ser Met Ala  Gln Glu Glu
    1085                1090                1095

Ile Arg  Arg Glu Met Asp Lys  Met Ile Glu Asp Leu  Glu Leu Ser
    1100                1105                1110

Asn Lys  Arg His Ser Leu Val  Gln Thr Leu Ser Gly  Gly Met Lys
    1115                1120                1125
```

```
Arg Lys  Leu Ser Val Ala Ile  Ala Phe Val Gly Gly  Ser Arg Ala
    1130                1135                1140

Ile Ile  Leu Asp Glu Pro Thr  Ala Gly Val Asp Pro  Tyr Ala Arg
    1145                1150                1155

Arg Ala  Ile Trp Asp Leu Ile  Leu Lys Tyr Lys Pro  Gly Arg Thr
    1160                1165                1170

Ile Leu  Leu Ser Thr His His  Met Asp Glu Ala Asp  Leu Leu Gly
    1175                1180                1185

Asp Arg  Ile Ala Ile Ile Ser  His Gly Lys Leu Lys  Cys Cys Gly
    1190                1195                1200

Ser Pro  Leu Phe Leu Lys Gly  Thr Tyr Gly Asp Gly  Tyr Arg Leu
    1205                1210                1215

Thr Leu  Val Lys Arg Pro Ala  Glu Pro Gly Gly Pro  Gln Glu Pro
    1220                1225                1230

Gly Leu  Ala Ser Ser Pro Pro  Gly Arg Ala Pro Leu  Ser Ser Cys
    1235                1240                1245

Ser Glu  Leu Gln Val Ser Gln  Phe Ile Arg Lys His  Val Ala Ser
    1250                1255                1260

Cys Leu  Leu Val Ser Asp Thr  Ser Thr Glu Leu Ser  Tyr Ile Leu
    1265                1270                1275

Pro Ser  Glu Ala Ala Lys Lys  Gly Ala Phe Glu Arg  Leu Phe Gln
    1280                1285                1290

His Leu  Glu Arg Ser Leu Asp  Ala Leu His Leu Ser  Ser Phe Gly
    1295                1300                1305

Leu Met  Asp Thr Thr Leu Glu  Glu Val Phe Leu Lys  Val Ser Glu
    1310                1315                1320

Glu Asp  Gln Ser Leu Glu Asn  Ser Glu Ala Asp Val  Lys Glu Ser
    1325                1330                1335

Arg Lys  Asp Val Leu Pro Gly  Ala Glu Gly Pro Ala  Ser Gly Glu
```

```
    1340                1345                1350

Gly His  Ala Gly Asn Leu Ala  Arg Cys Ser Glu Leu  Thr Gln Ser
    1355                1360                1365

Gln Ala  Ser Leu Gln Ser Ala  Ser Ser Val Gly Ser  Ala Arg Gly
    1370                1375                1380

Asp Glu  Gly Ala Gly Tyr Thr  Asp Val Tyr Gly Asp  Tyr Arg Pro
    1385                1390                1395

Leu Phe  Asp Asn Pro Gln Asp  Pro Asp Asn Val Ser  Leu Gln Glu
    1400                1405                1410

Val Glu  Ala Glu Ala Leu Ser  Arg Val Gly Gln Gly  Ser Arg Lys
    1415                1420                1425

Leu Asp  Gly Gly Trp Leu Lys  Val Arg Gln Phe His  Gly Leu Leu
    1430                1435                1440

Val Lys  Arg Phe His Cys Ala  Arg Arg Asn Ser Lys  Ala Leu Phe
    1445                1450                1455

Ser Gln  Ile Leu Leu Pro Ala  Phe Phe Val Cys Val  Ala Met Thr
    1460                1465                1470

Val Ala  Leu Ser Val Pro Glu  Ile Gly Asp Leu Pro  Pro Leu Val
    1475                1480                1485

Leu Ser  Pro Ser Gln Tyr His  Asn Tyr Thr Gln Pro  Arg Gly Asn
    1490                1495                1500

Phe Ile  Pro Tyr Ala Asn Glu  Glu Arg Arg Glu Tyr  Arg Leu Arg
    1505                1510                1515

Leu Ser  Pro Asp Ala Ser Pro  Gln Gln Leu Val Ser  Thr Phe Arg
    1520                1525                1530

Leu Pro  Ser Gly Val Gly Ala  Thr Cys Val Leu Lys  Ser Pro Ala
    1535                1540                1545

Asn Gly  Ser Leu Gly Pro Thr  Leu Asn Leu Ser Ser  Gly Glu Ser
    1550                1555                1560
```

```
Arg Leu  Leu Ala Ala Arg Phe  Phe Asp Ser Met Cys  Leu Glu Ser
    1565                1570                1575

Phe Thr  Gln Gly Leu Pro Leu  Ser Asn Phe Val Pro  Pro Pro Pro
    1580                1585                1590

Ser Pro  Ala Pro Ser Asp Ser  Pro Ala Ser Pro Asp  Glu Asp Leu
    1595                1600                1605

Gln Ala  Trp Asn Val Ser Leu  Pro Pro Thr Ala Gly  Pro Glu Met
    1610                1615                1620

Trp Thr  Ser Ala Pro Ser Leu  Pro Arg Leu Val Arg  Glu Pro Val
    1625                1630                1635

Arg Cys  Thr Cys Ser Ala Gln  Gly Thr Gly Phe Ser  Cys Pro Ser
    1640                1645                1650

Ser Val  Gly Gly His Pro Pro  Gln Met Arg Val Val  Thr Gly Asp
    1655                1660                1665

Ile Leu  Thr Asp Ile Thr Gly  His Asn Val Ser Glu  Tyr Leu Leu
    1670                1675                1680

Phe Thr  Ser Asp Arg Phe Arg  Leu His Arg Tyr Gly  Ala Ile Thr
    1685                1690                1695

Phe Gly  Asn Val Leu Lys Ser  Ile Pro Ala Ser Phe  Gly Thr Arg
    1700                1705                1710

Ala Pro  Pro Met Val Arg Lys  Ile Ala Val Arg Arg  Ala Ala Gln
    1715                1720                1725

Val Phe  Tyr Asn Asn Lys Gly  Tyr His Ser Met Pro  Thr Tyr Leu
    1730                1735                1740

Asn Ser  Leu Asn Asn Ala Ile  Leu Arg Ala Asn Leu  Pro Lys Ser
    1745                1750                1755

Lys Gly  Asn Pro Ala Ala Tyr  Gly Ile Thr Val Thr  Asn His Pro
    1760                1765                1770
```

```
Met Asn  Lys Thr Ser Ala Ser  Leu Ser Leu Asp Tyr  Leu Leu Gln
    1775                1780                1785

Gly Thr  Asp Val Val Ile Ala  Ile Phe Ile Ile Val  Ala Met Ser
    1790                1795                1800

Phe Val  Pro Ala Ser Phe Val  Val Phe Leu Val Ala  Glu Lys Ser
    1805                1810                1815

Thr Lys  Ala Lys His Leu Gln  Phe Val Ser Gly Cys  Asn Pro Ile
    1820                1825                1830

Ile Tyr  Trp Leu Ala Asn Tyr  Val Trp Asp Met Leu  Asn Tyr Leu
    1835                1840                1845

Val Pro  Ala Thr Cys Cys Val  Ile Ile Leu Phe Val  Phe Asp Leu
    1850                1855                1860

Pro Ala  Tyr Thr Ser Pro Thr  Asn Phe Pro Ala Val  Leu Ser Leu
    1865                1870                1875

Phe Leu  Leu Tyr Gly Trp Ser  Ile Thr Pro Ile Met  Tyr Pro Ala
    1880                1885                1890

Ser Phe  Trp Phe Glu Val Pro  Ser Ser Ala Tyr Val  Phe Leu Ile
    1895                1900                1905

Val Ile  Asn Leu Phe Ile Gly  Ile Thr Ala Thr Val  Ala Thr Phe
    1910                1915                1920

Leu Leu  Gln Leu Phe Glu His  Asp Lys Asp Leu Lys  Val Val Asn
    1925                1930                1935

Ser Tyr  Leu Lys Ser Cys Phe  Leu Ile Phe Pro Asn  Tyr Asn Leu
    1940                1945                1950

Gly His  Gly Leu Met Glu Met  Ala Tyr Asn Glu Tyr  Ile Asn Glu
    1955                1960                1965

Tyr Tyr  Ala Lys Ile Gly Gln  Phe Asp Lys Met Lys  Ser Pro Phe
    1970                1975                1980
```

```
Glu Trp  Asp Ile Val Thr Arg  Gly Leu Val Ala Met  Ala Val Glu
    1985                 1990                 1995

Gly Val  Val Gly Phe Leu Leu  Thr Ile Met Cys Gln  Tyr Asn Phe
    2000                 2005                 2010

Leu Arg  Arg Pro Gln Arg Met  Pro Val Ser Thr Lys  Pro Val Glu
    2015                 2020                 2025

Asp Asp  Val Asp Val Ala Ser  Glu Arg Gln Arg Val  Leu Arg Gly
    2030                 2035                 2040

Asp Ala  Asp Asn Asp Met Val  Lys Ile Glu Asn Leu  Thr Lys Val
    2045                 2050                 2055

Tyr Lys  Ser Arg Lys Ile Gly  Arg Ile Leu Ala Val  Asp Arg Leu
    2060                 2065                 2070

Cys Leu  Gly Val Arg Pro Gly  Glu Cys Phe Gly Leu  Leu Gly Val
    2075                 2080                 2085

Asn Gly  Ala Gly Lys Thr Ser  Thr Phe Lys Met Leu  Thr Gly Asp
    2090                 2095                 2100

Glu Ser  Thr Thr Gly Gly Glu  Ala Phe Val Asn Gly  His Ser Val
    2105                 2110                 2115

Leu Lys  Glu Leu Leu Gln Val  Gln Gln Ser Leu Gly  Tyr Cys Pro
    2120                 2125                 2130

Gln Cys  Asp Ala Leu Phe Asp  Glu Leu Thr Ala Arg  Glu His Leu
    2135                 2140                 2145

Gln Leu  Tyr Thr Arg Leu Arg  Gly Ile Ser Trp Lys  Asp Glu Ala
    2150                 2155                 2160

Arg Val  Val Lys Trp Ala Leu  Glu Lys Leu Glu Leu  Thr Lys Tyr
    2165                 2170                 2175

Ala Asp  Lys Pro Ala Gly Thr  Tyr Ser Gly Gly Asn  Lys Arg Lys
    2180                 2185                 2190

Leu Ser  Thr Ala Ile Ala Leu  Ile Gly Tyr Pro Ala  Phe Ile Phe
```

2195 2200 2205

Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Lys Ala Arg Arg Phe
2210 2215 2220

Leu Trp Asn Leu Ile Leu Asp Leu Ile Lys Thr Gly Arg Ser Val
2225 2230 2235

Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys Thr
2240 2245 2250

Arg Leu Ala Ile Met Val Asn Gly Arg Leu Arg Cys Leu Gly Ser
2255 2260 2265

Ile Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Met Ile Thr
2270 2275 2280

Val Arg Thr Lys Ser Ser Gln Ser Val Lys Asp Val Val Arg Phe
2285 2290 2295

Phe Asn Arg Asn Phe Pro Glu Ala Met Leu Lys Glu Arg His His
2300 2305 2310

Thr Lys Val Gln Tyr Gln Leu Lys Ser Glu His Ile Ser Leu Ala
2315 2320 2325

Gln Val Phe Ser Lys Met Glu Gln Val Ser Gly Val Leu Gly Ile
2330 2335 2340

Glu Asp Tyr Ser Val Ser Gln Thr Thr Leu Asp Asn Val Phe Val
2345 2350 2355

Asn Phe Ala Lys Lys Gln Ser Asp Asn Leu Glu Gln Gln Glu Thr
2360 2365 2370

Glu Pro Pro Ser Ala Leu Gln Ser Pro Leu Gly Cys Leu Leu Ser
2375 2380 2385

Leu Leu Arg Pro Arg Ser Ala Pro Thr Glu Leu Arg Ala Leu Val
2390 2395 2400

Ala Asp Glu Pro Glu Asp Leu Asp Thr Glu Asp Glu Gly Leu Ile
2405 2410 2415

Ser Phe Glu Glu Glu Arg Ala Gln Leu Ser Phe Asn Thr Asp Thr
2420 2425 2430

Leu Cys
2435

<210> 7590
<211> 989
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1602; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418662"

<400> 7590
Met Gly Arg Lys Thr Ser Arg Val Gln Gln Gly Pro Pro Arg Ser Pro
1 5 10 15

Ala Cys Ser Ala His Gly Glu Arg Ser Trp Gly Leu Glu Phe Pro Pro
20 25 30

Phe Arg Trp Leu Leu Gly Ile Ala Gly Arg Thr His Leu Ala Ala Leu
35 40 45

Pro Pro Phe Gln Trp Val Leu Ala Phe Glu Ile Phe Ile Pro Leu Val
50 55 60

Leu Phe Phe Ile Leu Leu Gly Leu Arg Gln Lys Lys Pro Thr Ile Ser
65 70 75 80

Val Lys Glu Ala Phe Tyr Thr Ala Ala Pro Leu Thr Ser Ala Gly Ile
85 90 95

```
Leu Pro Val Met Gln Ser Leu Cys Pro Asp Gly Gln Arg Asp Glu Phe
            100                 105                 110

Gly Phe Leu Gln Tyr Ala Asn Ser Thr Val Thr Gln Leu Leu Glu Arg
        115                 120                 125

Leu Asp Arg Val Val Glu Glu Gly Asn Leu Phe Asp Pro Ala Arg Pro
    130                 135                 140

Ser Leu Gly Ser Glu Leu Glu Ala Leu Arg Gln His Leu Glu Ala Leu
145                 150                 155                 160

Ser Ala Gly Pro Gly Thr Ser Gly Ser His Leu Asp Arg Ser Thr Val
                165                 170                 175

Ser Ser Phe Ser Leu Asp Ser Val Ala Arg Asn Pro Gln Glu Leu Trp
            180                 185                 190

Arg Phe Leu Thr Gln Asn Leu Ser Leu Pro Asn Ser Thr Ala Gln Ala
        195                 200                 205

Leu Leu Ala Ala Arg Val Asp Pro Pro Glu Val Tyr His Leu Leu Phe
    210                 215                 220

Gly Pro Ser Ser Ala Leu Asp Ser Gln Ser Gly Leu His Lys Gly Gln
225                 230                 235                 240

Glu Pro Trp Ser Arg Leu Gly Gly Asn Pro Leu Phe Arg Met Glu Glu
                245                 250                 255

Leu Leu Leu Ala Pro Ala Leu Leu Glu Gln Leu Thr Cys Thr Pro Gly
            260                 265                 270

Ser Gly Glu Leu Gly Arg Ile Leu Thr Val Pro Glu Ser Gln Lys Gly
        275                 280                 285

Ala Leu Gln Gly Tyr Arg Asp Ala Val Cys Ser Gly Gln Ala Ala Ala
    290                 295                 300

Arg Ala Arg Arg Phe Ser Gly Leu Ser Ala Glu Leu Arg Asn Gln Leu
305                 310                 315                 320
```

```
Asp Val Ala Lys Val Ser Gln Gln Leu Gly Leu Asp Ala Pro Asn Gly
                325                 330                 335

Ser Asp Ser Ser Pro Gln Ala Pro Pro Pro Arg Arg Leu Gln Ala Leu
            340                 345                 350

Leu Gly Asp Leu Leu Asp Ala Gln Lys Val Leu Gln Asp Val Asp Val
        355                 360                 365

Leu Ser Ala Leu Ala Leu Leu Leu Pro Gln Gly Ala Cys Thr Gly Arg
    370                 375                 380

Thr Pro Gly Pro Pro Ala Ser Gly Ala Gly Gly Ala Ala Asn Gly Thr
385                 390                 395                 400

Gly Ala Gly Ala Val Met Gly Pro Asn Ala Thr Ala Glu Glu Gly Ala
                405                 410                 415

Pro Ser Ala Ala Ala Leu Ala Thr Pro Asp Thr Leu Gln Gly Gln Cys
            420                 425                 430

Ser Ala Phe Val Gln Leu Trp Ala Gly Leu Gln Pro Ile Leu Cys Gly
        435                 440                 445

Asn Asn Arg Thr Ile Glu Pro Glu Ala Leu Arg Arg Gly Asn Met Ser
    450                 455                 460

Ser Leu Gly Phe Thr Ser Lys Glu Gln Arg Asn Leu Gly Leu Leu Val
465                 470                 475                 480

His Leu Met Thr Ser Asn Pro Lys Ile Leu Tyr Ala Pro Ala Gly Ser
                485                 490                 495

Glu Val Asp Arg Val Ile Leu Lys Ala Asn Glu Thr Phe Ala Phe Val
            500                 505                 510

Gly Asn Val Thr His Tyr Ala Gln Val Trp Leu Asn Ile Ser Ala Glu
        515                 520                 525

Ile Arg Ser Phe Leu Glu Gln Gly Arg Leu Gln Gln His Leu Arg Trp
    530                 535                 540
```

```
Leu Gln Gln Tyr Val Ala Glu Leu Arg Leu His Pro Glu Ala Leu Asn
545                 550                 555                 560

Leu Ser Leu Asp Glu Leu Pro Pro Ala Leu Arg Gln Asp Asn Phe Ser
                565                 570                 575

Leu Pro Ser Gly Met Ala Leu Leu Gln Gln Leu Asp Thr Ile Asp Asn
            580                 585                 590

Ala Ala Cys Gly Trp Ile Gln Phe Met Ser Lys Val Ser Val Asp Ile
        595                 600                 605

Phe Lys Gly Phe Pro Asp Glu Glu Ser Ile Val Asn Tyr Thr Leu Asn
    610                 615                 620

Gln Ala Tyr Gln Asp Asn Val Thr Val Phe Ala Ser Val Ile Phe Gln
625                 630                 635                 640

Thr Arg Lys Asp Gly Ser Leu Pro Pro His Val His Tyr Lys Ile Arg
                645                 650                 655

Gln Asn Ser Ser Phe Thr Glu Lys Thr Asn Glu Ile Arg Arg Ala Tyr
            660                 665                 670

Trp Arg Pro Gly Pro Asn Thr Gly Gly Arg Phe Tyr Phe Leu Tyr Gly
        675                 680                 685

Phe Val Trp Ile Gln Asp Met Met Glu Arg Ala Ile Ile Asp Thr Phe
    690                 695                 700

Val Gly His Asp Val Val Glu Pro Gly Ser Tyr Val Gln Met Phe Pro
705                 710                 715                 720

Tyr Pro Cys Tyr Thr Arg Asp Asp Phe Leu Phe Val Ile Glu His Met
                725                 730                 735

Met Pro Leu Cys Met Val Ile Ser Trp Val Tyr Ser Val Ala Met Thr
            740                 745                 750

Ile Gln His Ile Val Ala Glu Lys Glu His Arg Leu Lys Glu Val Met
        755                 760                 765

Lys Thr Met Gly Leu Asn Asn Ala Val His Trp Val Ala Trp Phe Ile
```

770 775 780

Thr Gly Phe Val Gln Leu Ser Ile Ser Val Thr Ala Leu Thr Ala Ile
785 790 795 800

Leu Lys Tyr Gly Gln Val Leu Met His Ser His Val Val Ile Ile Trp
805 810 815

Leu Phe Leu Ala Val Tyr Ala Val Ala Thr Ile Met Phe Cys Phe Leu
820 825 830

Val Ser Val Leu Tyr Ser Lys Ala Lys Leu Ala Ser Ala Cys Gly Gly
835 840 845

Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr Met Tyr Val Ala Ile Arg
850 855 860

Glu Glu Val Ala His Asp Lys Ile Thr Ala Phe Glu Lys Cys Ile Ala
865 870 875 880

Ser Leu Met Ser Thr Thr Ala Phe Gly Leu Gly Ser Lys Tyr Phe Ala
885 890 895

Leu Tyr Glu Val Ala Gly Val Gly Ile Gln Trp His Thr Phe Ser Gln
900 905 910

Ser Pro Val Glu Gly Asp Asp Phe Asn Leu Leu Leu Ala Val Thr Met
915 920 925

Leu Met Val Asp Ala Val Val Tyr Gly Ile Leu Thr Trp Tyr Ile Glu
930 935 940

Ala Val His Pro Glu Val Leu Leu Ala Gly Gln Trp Ala Asp Arg Ser
945 950 955 960

Leu Gly Val Glu Leu Ala Val Gly Thr His Pro Pro Pro Gln Cys His
965 970 975

Gly Gly Gly Pro Gly Leu Cys His Gly Glu Pro Ala Leu
980 985

<210> 7591
<211> 1066

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1602; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419850"

<400> 7591

```
Phe Tyr Phe Leu Tyr Gly Phe Val Trp Ile Gln Asp Met Met Glu Arg
1               5                  10                  15

Ala Ile Ile Asp Thr Phe Val Gly His Asp Val Val Glu Pro Gly Ser
            20                  25                  30

Tyr Val Gln Met Phe Pro Tyr Pro Cys Tyr Thr Arg Asp Asp Phe Leu
        35                  40                  45

Phe Val Ile Glu His Met Met Pro Leu Cys Met Val Ile Ser Trp Val
    50                  55                  60

Tyr Ser Val Ala Met Thr Ile Gln His Ile Val Ala Glu Lys Glu His
65                  70                  75                  80

Arg Leu Lys Glu Val Met Lys Thr Met Gly Leu Asn Asn Ala Val His
                85                  90                  95

Trp Val Ala Trp Phe Ile Thr Gly Phe Val Gln Leu Ser Ile Ser Val
            100                 105                 110

Thr Ala Leu Thr Ala Ile Leu Lys Tyr Gly Gln Val Leu Met His Ser
        115                 120                 125

His Val Val Ile Ile Trp Leu Phe Leu Ala Val Tyr Ala Val Ala Thr
    130                 135                 140
```

```
Ile Met Phe Cys Phe Leu Val Ser Val Leu Tyr Ser Lys Ala Lys Leu
145                 150                 155                 160

Ala Ser Ala Cys Gly Gly Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr
                165                 170                 175

Met Tyr Val Ala Ile Arg Glu Glu Val Ala His Asp Lys Ile Thr Ala
            180                 185                 190

Phe Glu Lys Cys Ile Ala Ser Leu Met Ser Thr Thr Ala Phe Gly Leu
        195                 200                 205

Gly Ser Lys Tyr Phe Ala Leu Tyr Glu Val Ala Gly Val Gly Ile Gln
    210                 215                 220

Trp His Thr Phe Ser Gln Ser Pro Val Glu Gly Asp Asp Phe Asn Leu
225                 230                 235                 240

Leu Leu Ala Val Thr Met Leu Met Val Asp Ala Val Val Tyr Gly Ile
                245                 250                 255

Leu Thr Trp Tyr Ile Glu Ala Val His Pro Gly Met Tyr Gly Leu Pro
            260                 265                 270

Arg Pro Trp Tyr Phe Pro Leu Gln Lys Ser Tyr Trp Leu Gly Ser Gly
        275                 280                 285

Arg Thr Glu Ala Trp Glu Trp Ser Trp Pro Trp Ala Arg Thr Pro Arg
    290                 295                 300

Leu Ser Val Met Glu Glu Asp Gln Ala Cys Ala Met Glu Ser Arg Arg
305                 310                 315                 320

Phe Glu Glu Thr Arg Gly Met Glu Glu Glu Pro Thr His Leu Pro Leu
                325                 330                 335

Val Val Cys Val Asp Lys Leu Thr Lys Val Tyr Lys Asp Asp Lys Lys
            340                 345                 350

Leu Ala Leu Asn Lys Leu Ser Leu Asn Leu Tyr Glu Asn Gln Val Val
        355                 360                 365
```

```
Ser Phe Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Met Ser Ile
    370                 375                 380

Leu Thr Gly Leu Phe Pro Pro Thr Ser Gly Ser Ala Thr Ile Tyr Gly
385                 390                 395                 400

His Asp Ile Arg Thr Glu Met Asp Glu Ile Arg Lys Asn Leu Gly Met
                405                 410                 415

Cys Pro Gln His Asn Val Leu Phe Asp Arg Leu Thr Val Glu Glu His
            420                 425                 430

Leu Trp Phe Tyr Ser Arg Leu Lys Ser Met Ala Gln Glu Glu Ile Arg
        435                 440                 445

Arg Glu Met Asp Lys Met Ile Glu Asp Leu Glu Leu Ser Asn Lys Arg
    450                 455                 460

His Ser Leu Val Gln Thr Leu Ser Gly Gly Met Lys Arg Lys Leu Ser
465                 470                 475                 480

Val Ala Ile Ala Phe Val Gly Gly Ser Arg Ala Ile Ile Leu Asp Glu
                485                 490                 495

Pro Thr Ala Gly Val Asp Pro Tyr Ala Arg Arg Ala Ile Trp Asp Leu
            500                 505                 510

Ile Leu Lys Tyr Lys Pro Gly Arg Thr Ile Leu Leu Ser Thr His His
        515                 520                 525

Met Asp Glu Ala Asp Leu Leu Gly Asp Arg Ile Ala Ile Ile Ser His
    530                 535                 540

Gly Lys Leu Lys Cys Cys Gly Ser Pro Leu Phe Leu Lys Gly Thr Tyr
545                 550                 555                 560

Gly Asp Gly Tyr Arg Leu Thr Leu Val Lys Arg Pro Ala Glu Pro Gly
                565                 570                 575

Gly Pro Gln Glu Pro Gly Leu Ala Ser Ser Pro Pro Gly Arg Ala Pro
            580                 585                 590
```

```
Leu Ser Ser Cys Ser Glu Leu Gln Val Ser Gln Phe Ile Arg Lys His
        595                 600                 605

Val Ala Ser Cys Leu Leu Val Ser Asp Thr Ser Thr Glu Leu Ser Tyr
    610                 615                 620

Ile Leu Pro Ser Glu Ala Ala Lys Lys Gly Ala Phe Glu Arg Leu Phe
625                 630                 635                 640

Gln His Leu Glu Arg Ser Leu Asp Ala Leu His Leu Ser Ser Phe Gly
                645                 650                 655

Leu Met Asp Thr Thr Leu Glu Glu Val Phe Leu Lys Val Ser Glu Glu
            660                 665                 670

Asp Gln Ser Leu Glu Asn Ser Glu Ala Asp Val Lys Glu Ser Arg Lys
        675                 680                 685

Asp Val Leu Pro Gly Ala Glu Gly Pro Ala Ser Gly Glu Gly His Ala
    690                 695                 700

Gly Asn Leu Ala Arg Cys Ser Glu Leu Thr Gln Ser Gln Ala Ser Leu
705                 710                 715                 720

Gln Ser Ala Ser Ser Val Gly Ser Ala Arg Gly Asp Glu Gly Ala Gly
                725                 730                 735

Tyr Thr Asp Val Tyr Gly Asp Tyr Arg Pro Leu Phe Asp Asn Pro Gln
            740                 745                 750

Asp Pro Asp Asn Val Ser Leu Gln Glu Val Glu Ala Glu Ala Leu Ser
        755                 760                 765

Arg Val Gly Gln Gly Ser Arg Lys Leu Asp Gly Gly Trp Leu Lys Val
    770                 775                 780

Arg Gln Phe His Gly Leu Leu Val Lys Arg Phe His Cys Ala Arg Arg
785                 790                 795                 800

Asn Ser Lys Ala Leu Phe Ser Gln Ile Leu Leu Pro Ala Phe Phe Val
                805                 810                 815

Cys Val Ala Met Thr Val Ala Leu Ser Val Pro Glu Ile Gly Asp Leu
```

```
            820                 825                 830

Pro Pro Leu Val Leu Ser Pro Ser Gln Tyr His Asn Tyr Thr Gln Pro
        835                 840                 845

Arg Gly Asn Phe Ile Pro Tyr Ala Asn Glu Glu Arg Arg Glu Tyr Arg
    850                 855                 860

Leu Arg Leu Ser Pro Asp Ala Ser Pro Gln Gln Leu Val Ser Thr Phe
865                 870                 875                 880

Arg Leu Pro Ser Gly Val Gly Ala Thr Cys Val Leu Lys Ser Pro Ala
                885                 890                 895

Asn Gly Ser Leu Gly Pro Thr Leu Asn Leu Ser Ser Gly Glu Ser Arg
            900                 905                 910

Leu Leu Ala Ala Arg Phe Phe Asp Ser Met Cys Leu Glu Ser Phe Thr
        915                 920                 925

Gln Gly Leu Pro Leu Ser Asn Phe Val Pro Pro Pro Pro Ser Pro Ala
    930                 935                 940

Pro Ser Asp Ser Pro Ala Ser Pro Asp Glu Asp Leu Gln Ala Trp Asn
945                 950                 955                 960

Val Ser Leu Pro Pro Thr Ala Gly Pro Glu Met Trp Thr Ser Ala Pro
                965                 970                 975

Ser Leu Pro Arg Leu Val Arg Glu Pro Val Arg Cys Thr Cys Ser Ala
            980                 985                 990

Gln Gly Thr Gly Phe Ser Cys Pro  Ser Ser Val Gly Gly  His Pro
Pro
        995                 1000                1005

Gln Met  Arg Val Val Thr Gly  Asp Ile Leu Thr Asp  Ile Thr Gly
    1010                1015                1020

His Asn  Val Ser Glu Tyr Leu  Leu Phe Thr Ser Asp  Arg Phe Arg
    1025                1030                1035

Leu His  Arg Leu Thr Ala Cys  Leu Ala Ser Pro Pro  Leu Pro Pro
```

```
    1040                1045                1050

Ala Cys  Pro Gly Met Gly Pro  Ser Pro Leu Glu Thr  Ser
    1055                1060                1065


<210> 7592
<211> 1441
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1602; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA2; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420084"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7592
Xaa Gly Arg Phe Tyr Phe Leu Tyr Gly Phe Val Trp Ile Gln Asp Met
1               5                   10                  15


Met Glu Arg Ala Ile Ile Asp Thr Phe Val Gly His Asp Val Val Glu
            20                  25                  30


Pro Gly Ser Tyr Val Gln Met Phe Pro Tyr Pro Cys Tyr Thr Arg Asp
        35                  40                  45


Asp Phe Leu Phe Val Ile Glu His Met Met Pro Leu Cys Met Val Ile
    50                  55                  60


Ser Trp Val Tyr Ser Val Ala Met Thr Ile Gln His Ile Val Ala Glu
65                  70                  75                  80
```

```
Lys Glu His Arg Leu Lys Glu Val Met Lys Thr Met Gly Leu Asn Asn
                85                  90                  95

Ala Val His Trp Val Ala Trp Phe Ile Thr Gly Phe Val Gln Leu Ser
            100                 105                 110

Ile Ser Val Thr Ala Leu Thr Ala Ile Leu Lys Tyr Gly Gln Val Leu
        115                 120                 125

Met His Ser His Val Val Ile Ile Trp Leu Phe Leu Ala Val Tyr Ala
    130                 135                 140

Val Ala Thr Ile Met Phe Cys Phe Leu Val Ser Val Leu Tyr Ser Lys
145                 150                 155                 160

Ala Lys Leu Ala Ser Ala Cys Gly Gly Ile Ile Tyr Phe Leu Ser Tyr
                165                 170                 175

Val Pro Tyr Met Tyr Val Ala Ile Arg Glu Glu Val Ala His Asp Lys
            180                 185                 190

Ile Thr Ala Phe Glu Lys Cys Ile Ala Ser Leu Met Ser Thr Thr Ala
        195                 200                 205

Phe Gly Leu Gly Ser Lys Tyr Phe Ala Leu Tyr Glu Val Ala Gly Val
    210                 215                 220

Gly Ile Gln Trp His Thr Phe Ser Gln Ser Pro Val Glu Gly Asp Asp
225                 230                 235                 240

Phe Asn Leu Leu Leu Ala Val Thr Met Leu Met Val Asp Ala Val Val
                245                 250                 255

Tyr Gly Ile Leu Thr Trp Tyr Ile Glu Ala Val His Pro Gly Met Tyr
            260                 265                 270

Gly Leu Pro Arg Pro Trp Tyr Phe Pro Leu Gln Lys Ser Tyr Trp Leu
        275                 280                 285

Gly Ser Gly Arg Thr Glu Ala Trp Glu Trp Ser Trp Pro Trp Ala Arg
    290                 295                 300
```

```
Thr Pro Arg Leu Ser Val Met Glu Glu Asp Gln Ala Cys Ala Met Glu
305                 310                 315                 320

Ser Arg Arg Phe Glu Glu Thr Arg Gly Met Glu Glu Glu Pro Thr His
                325                 330                 335

Leu Pro Leu Val Val Cys Val Asp Lys Leu Thr Lys Val Tyr Lys Asp
            340                 345                 350

Asp Lys Lys Leu Ala Leu Asn Lys Leu Ser Leu Asn Leu Tyr Glu Asn
        355                 360                 365

Gln Val Val Ser Phe Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr
    370                 375                 380

Met Ser Ile Leu Thr Gly Leu Phe Pro Pro Thr Ser Gly Ser Ala Thr
385                 390                 395                 400

Ile Tyr Gly His Asp Ile Arg Thr Glu Met Asp Glu Ile Arg Lys Asn
                405                 410                 415

Leu Gly Met Cys Pro Gln His Asn Val Leu Phe Asp Arg Leu Thr Val
            420                 425                 430

Glu Glu His Leu Trp Phe Tyr Ser Arg Leu Lys Ser Met Ala Gln Glu
        435                 440                 445

Glu Ile Arg Arg Glu Met Asp Lys Met Ile Glu Asp Leu Glu Leu Ser
    450                 455                 460

Asn Lys Arg His Ser Leu Val Gln Thr Leu Ser Gly Gly Met Lys Arg
465                 470                 475                 480

Lys Leu Ser Val Ala Ile Ala Phe Val Gly Gly Ser Arg Ala Ile Ile
                485                 490                 495

Leu Asp Glu Pro Thr Ala Gly Val Asp Pro Tyr Ala Arg Arg Ala Ile
            500                 505                 510

Trp Asp Leu Ile Leu Lys Tyr Lys Pro Gly Arg Thr Ile Leu Leu Ser
        515                 520                 525

Thr His His Met Asp Glu Ala Asp Leu Leu Gly Asp Arg Ile Ala Ile
```

530 535 540

Ile Ser His Gly Lys Leu Lys Cys Cys Gly Ser Pro Leu Phe Leu Lys
545 550 555 560

Gly Thr Tyr Gly Asp Gly Tyr Arg Leu Thr Leu Val Lys Arg Pro Ala
565 570 575

Glu Pro Gly Gly Pro Gln Glu Pro Gly Leu Ala Ser Ser Pro Pro Gly
580 585 590

Arg Ala Pro Leu Ser Ser Cys Ser Glu Leu Gln Val Ser Gln Phe Ile
595 600 605

Arg Lys His Val Ala Ser Cys Leu Leu Val Ser Asp Thr Ser Thr Glu
610 615 620

Leu Ser Tyr Ile Leu Pro Ser Glu Ala Ala Lys Lys Gly Ala Phe Glu
625 630 635 640

Arg Leu Phe Gln His Leu Glu Arg Ser Leu Asp Ala Leu His Leu Ser
645 650 655

Ser Phe Gly Leu Met Asp Thr Thr Leu Glu Glu Val Phe Leu Lys Val
660 665 670

Ser Glu Glu Asp Gln Ser Leu Glu Asn Ser Glu Ala Asp Val Lys Glu
675 680 685

Ser Arg Lys Asp Val Leu Pro Gly Ala Glu Gly Pro Ala Ser Gly Glu
690 695 700

Gly His Ala Gly Asn Leu Ala Arg Cys Ser Glu Leu Thr Gln Ser Gln
705 710 715 720

Ala Ser Leu Gln Ser Ala Ser Ser Val Gly Ser Ala Arg Gly Asp Glu
725 730 735

Gly Ala Gly Tyr Thr Asp Val Tyr Gly Asp Tyr Arg Pro Leu Phe Asp
740 745 750

Asn Pro Gln Asp Pro Asp Asn Val Ser Leu Gln Glu Val Glu Ala Glu
755 760 765

```
Ala Leu Ser Arg Val Gly Gln Gly Ser Arg Lys Leu Asp Gly Gly Trp
    770                 775                 780

Leu Lys Val Arg Gln Phe His Gly Leu Leu Val Lys Arg Phe His Cys
785                 790                 795                 800

Ala Arg Arg Asn Ser Lys Ala Leu Phe Ser Gln Ile Leu Leu Pro Ala
                805                 810                 815

Phe Phe Val Cys Val Ala Met Thr Val Ala Leu Ser Val Pro Glu Ile
            820                 825                 830

Gly Asp Leu Pro Pro Leu Val Leu Ser Pro Ser Gln Tyr His Asn Tyr
        835                 840                 845

Thr Gln Pro Arg Gly Asn Phe Ile Pro Tyr Ala Asn Glu Glu Arg Arg
    850                 855                 860

Glu Tyr Arg Leu Arg Leu Ser Pro Asp Ala Ser Pro Gln Gln Leu Val
865                 870                 875                 880

Ser Thr Phe Arg Leu Pro Ser Gly Val Gly Ala Thr Cys Val Leu Lys
                885                 890                 895

Ser Pro Ala Asn Gly Ser Leu Gly Pro Thr Leu Asn Leu Ser Ser Gly
            900                 905                 910

Glu Ser Arg Leu Leu Ala Ala Arg Phe Phe Asp Ser Met Cys Leu Glu
        915                 920                 925

Ser Phe Thr Gln Gly Leu Pro Leu Ser Asn Phe Val Pro Pro Pro Pro
    930                 935                 940

Ser Pro Ala Pro Ser Asp Ser Pro Ala Ser Pro Asp Glu Asp Leu Gln
945                 950                 955                 960

Ala Trp Asn Val Ser Leu Pro Pro Thr Ala Gly Pro Glu Met Trp Thr
                965                 970                 975

Ser Ala Pro Ser Leu Pro Arg Leu Val Arg Glu Pro Val Arg Cys Thr
            980                 985                 990
```

Cys Ser Ala Gln Gly Thr Gly Phe Ser Cys Pro Ser Ser Val Gly Gly
995 1000 1005

His Pro Pro Gln Met Arg Val Val Thr Gly Asp Ile Leu Thr Asp
1010 1015 1020

Ile Thr Gly His Asn Val Ser Glu Tyr Leu Leu Phe Thr Ser Asp
1025 1030 1035

Arg Phe Arg Leu His Arg Tyr Gly Ala Ile Thr Phe Gly Asn Val
1040 1045 1050

Leu Lys Ser Ile Pro Ala Ser Phe Gly Thr Arg Ala Pro Pro Met
1055 1060 1065

Val Arg Lys Ile Ala Val Arg Arg Ala Ala Gln Val Phe Tyr Asn
1070 1075 1080

Asn Lys Gly Tyr His Ser Met Pro Thr Tyr Leu Asn Ser Leu Asn
1085 1090 1095

Asn Ala Ile Leu Arg Ala Asn Leu Pro Lys Ser Lys Gly Asn Pro
1100 1105 1110

Ala Ala Tyr Gly Ile Thr Val Thr Asn His Pro Met Asn Lys Thr
1115 1120 1125

Ser Ala Ser Leu Ser Leu Asp Tyr Leu Leu Gln Gly Thr Asp Val
1130 1135 1140

Val Ile Ala Ile Phe Ile Ile Val Ala Met Ser Phe Val Pro Ala
1145 1150 1155

Ser Phe Val Val Phe Leu Val Ala Glu Lys Ser Thr Lys Ala Lys
1160 1165 1170

His Leu Gln Phe Val Ser Gly Cys Asn Pro Ile Ile Tyr Trp Leu
1175 1180 1185

Ala Asn Tyr Val Trp Asp Met Leu Asn Tyr Leu Val Pro Ala Thr
1190 1195 1200

```
Cys Cys  Val Ile Ile Leu Phe  Val Phe Asp Leu Pro  Ala Tyr Thr
    1205                 1210                 1215

Ser Pro  Thr Asn Phe Pro Ala  Val Leu Ser Leu Phe  Leu Leu Tyr
    1220                 1225                 1230

Gly Trp  Ser Ile Thr Pro Ile  Met Tyr Pro Ala Ser  Phe Trp Phe
    1235                 1240                 1245

Glu Val  Pro Ser Ser Ala Tyr  Val Phe Leu Ile Val  Ile Asn Leu
    1250                 1255                 1260

Phe Ile  Gly Ile Thr Ala Thr  Val Ala Thr Phe Leu  Leu Gln Leu
    1265                 1270                 1275

Phe Glu  His Asp Lys Asp Leu  Lys Val Val Asn Ser  Tyr Leu Lys
    1280                 1285                 1290

Ser Cys  Phe Leu Ile Phe Pro  Asn Tyr Asn Leu Gly  His Gly Leu
    1295                 1300                 1305

Met Glu  Met Ala Tyr Asn Glu  Tyr Ile Asn Glu Tyr  Tyr Ala Lys
    1310                 1315                 1320

Ile Gly  Gln Phe Asp Lys Met  Lys Ser Pro Phe Glu  Trp Asp Ile
    1325                 1330                 1335

Val Thr  Arg Gly Leu Val Ala  Met Ala Val Glu Gly  Val Val Gly
    1340                 1345                 1350

Phe Leu  Leu Thr Ile Met Cys  Gln Tyr Asn Phe Leu  Arg Arg Pro
    1355                 1360                 1365

Gln Arg  Met Pro Val Ser Thr  Lys Pro Val Glu Asp  Asp Val Asp
    1370                 1375                 1380

Val Ala  Ser Glu Arg Gln Arg  Val Leu Arg Gly Asp  Ala Asp Asn
    1385                 1390                 1395

Asp Met  Val Lys Ile Glu Asn  Leu Thr Lys Val Gly  Ser Gly His
    1400                 1405                 1410
```

```
Val Gly  Trp Gly Leu Gly Gly  Val Gly Gln Gly Gln  Gly Gly Gly
    1415                 1420                 1425


Ala Pro  Ala Val Glu Val Glu  Pro Gly Trp Ala Gly  Pro
    1430                 1435                 1440


<210> 7593
<211> 44
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA2; "

<220>
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      ATP-binding cassette, sub-family
      A (ABC1),
      member 2; "

<220>
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<220>
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<222> (1)..(1)
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<400> 7593
Xaa Gly Ala Pro Ser Ala Ala Ala Leu Ala Thr Pro Asp Thr Leu Gln
1               5                  10                  15


Gly Gln Cys Ser Ala Phe Val Gln Leu Trp Ala Gly Leu Gln Pro Ile
            20                  25                  30


Leu Cys Gly Asn Asn Arg Arg Cys Gly Gly Ala Thr
        35                  40


<210> 7594
<211> 195
<212> PRT
<213> Homo sapiens

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A (ABC1),
member 2; "

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<400> 7594

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Ile Lys Thr Gly Arg Ser Val Val Leu Thr Ser His Ser Met Glu Glu
1               5                  10                  15


Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val Asn Gly Arg Leu
            20                  25                  30


Arg Cys Leu Gly Ser Ile Gln His Leu Lys Asn Arg Phe Gly Asp Gly
        35                  40                  45


Tyr Met Ile Thr Val Arg Thr Lys Ser Ser Gln Ser Val Lys Asp Val
    50                  55                  60


Val Arg Phe Phe Asn Arg Asn Phe Pro Glu Ala Met Leu Lys Glu Arg
65                  70                  75                  80


His His Thr Lys Val Gln Tyr Gln Leu Lys Ser Glu His Ile Ser Leu
                85                  90                  95


Ala Gln Val Phe Ser Lys Met Glu Gln Val Ser Gly Val Leu Gly Ile
            100                 105                 110


Glu Asp Tyr Ser Val Ser Gln Thr Thr Leu Asp Asn Ser Asp Asn Leu
        115                 120                 125


Glu Gln Gln Glu Thr Glu Pro Pro Ser Ala Leu Gln Ser Pro Leu Gly
    130                 135                 140


Cys Leu Leu Ser Leu Leu Arg Pro Arg Ser Ala Pro Thr Glu Leu Arg
145                 150                 155                 160
```

Ala Leu Val Ala Asp Glu Pro Glu Asp Leu Asp Thr Glu Asp Glu Gly
165 170 175

Leu Ile Ser Phe Glu Glu Glu Arg Ala Gln Leu Ser Phe Asn Thr Asp
180 185 190

Thr Leu Cys
195

<210> 7595
<211> 2466
<212> PRT
<213> Homo sapiens

<220>
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ATP-binding cassette, sub-family
A (ABC1),
member 2; "

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Met Gly Arg Lys Thr Ser Arg Val Gln Gln Gly Pro Pro Arg Ser Pro
1 5 10 15

Ala Cys Ser Ala His Gly Glu Arg Ser Trp Gly Leu Glu Phe Pro Pro
20 25 30

Phe Arg Trp Leu Leu Gly Ile Ala Gly Arg Thr His Leu Ala Ala Leu
35 40 45

Pro Pro Phe Gln Trp Val Leu Ala Phe Glu Ile Phe Ile Pro Leu Val
50 55 60

Leu Phe Phe Ile Leu Leu Gly Leu Arg Gln Lys Lys Pro Thr Ile Ser
65 70 75 80

```
Val Lys Glu Val Ala Phe Tyr Thr Ala Ala Pro Leu Thr Ser Ala Gly
                85                  90                  95

Ile Leu Pro Val Met Gln Ser Leu Cys Pro Asp Gly Gln Arg Asp Glu
            100                 105                 110

Phe Gly Phe Leu Gln Tyr Ala Asn Ser Thr Val Thr Gln Leu Leu Glu
        115                 120                 125

Arg Leu Asp Arg Val Val Glu Glu Gly Asn Leu Phe Asp Pro Ala Arg
    130                 135                 140

Pro Ser Leu Gly Ser Glu Leu Glu Ala Leu Arg Gln His Leu Glu Ala
145                 150                 155                 160

Leu Ser Ala Gly Pro Gly Thr Ser Gly Ser His Leu Asp Arg Ser Thr
                165                 170                 175

Val Ser Ser Phe Ser Leu Asp Ser Val Ala Arg Asn Pro Gln Glu Leu
            180                 185                 190

Trp Arg Phe Leu Thr Gln Asn Leu Ser Leu Pro Asn Ser Thr Ala Gln
        195                 200                 205

Ala Leu Leu Ala Ala Arg Val Asp Pro Pro Glu Val Tyr His Leu Leu
    210                 215                 220

Phe Gly Pro Ser Ser Ala Leu Asp Ser Gln Ser Gly Leu His Lys Gly
225                 230                 235                 240

Gln Glu Pro Trp Ser Arg Leu Gly Gly Asn Pro Leu Phe Arg Met Glu
                245                 250                 255

Glu Leu Leu Leu Ala Pro Ala Leu Leu Glu Gln Leu Thr Cys Thr Pro
            260                 265                 270

Gly Ser Gly Glu Leu Gly Arg Ile Leu Thr Val Pro Glu Ser Gln Lys
        275                 280                 285

Gly Ala Leu Gln Gly Tyr Arg Asp Ala Val Cys Ser Gly Gln Ala Ala
    290                 295                 300
```

```
Ala Arg Ala Arg Arg Phe Ser Gly Leu Ser Ala Glu Leu Arg Asn Gln
305                 310                 315                 320

Leu Asp Val Ala Lys Val Ser Gln Gln Leu Gly Leu Asp Ala Pro Asn
                325                 330                 335

Gly Ser Asp Ser Ser Pro Gln Ala Pro Pro Pro Arg Arg Leu Gln Ala
            340                 345                 350

Leu Leu Gly Asp Leu Leu Asp Ala Gln Lys Val Leu Gln Asp Val Asp
        355                 360                 365

Val Leu Ser Ala Leu Ala Leu Leu Leu Pro Gln Gly Ala Cys Thr Gly
    370                 375                 380

Arg Thr Pro Gly Pro Pro Ala Ser Gly Ala Gly Gly Ala Ala Asn Gly
385                 390                 395                 400

Thr Gly Ala Gly Ala Val Met Gly Pro Asn Ala Thr Ala Glu Glu Gly
                405                 410                 415

Ala Pro Ser Ala Ala Ala Leu Ala Thr Pro Asp Thr Leu Gln Gly Gln
            420                 425                 430

Cys Ser Ala Phe Val Gln Leu Trp Ala Gly Leu Gln Pro Ile Leu Cys
        435                 440                 445

Gly Asn Asn Arg Thr Ile Glu Pro Glu Ala Leu Arg Arg Gly Asn Met
    450                 455                 460

Ser Ser Leu Gly Phe Thr Ser Lys Glu Gln Arg Asn Leu Gly Leu Leu
465                 470                 475                 480

Val His Leu Met Thr Ser Asn Pro Lys Ile Leu Tyr Ala Pro Ala Gly
                485                 490                 495

Ser Glu Val Asp Arg Val Ile Leu Lys Ala Asn Glu Thr Phe Ala Phe
            500                 505                 510

Val Gly Asn Val Thr His Tyr Ala Gln Val Trp Leu Asn Ile Ser Ala
        515                 520                 525
```

```
Glu Ile Arg Ser Phe Leu Glu Gln Gly Arg Leu Gln Gln His Leu Arg
    530                 535                 540

Trp Leu Gln Gln Tyr Val Ala Glu Leu Arg Leu His Pro Glu Ala Leu
545                 550                 555                 560

Asn Leu Ser Leu Asp Glu Leu Pro Pro Ala Leu Arg Gln Asp Asn Phe
                565                 570                 575

Ser Leu Pro Ser Gly Met Ala Leu Leu Gln Gln Leu Asp Thr Ile Asp
            580                 585                 590

Asn Ala Ala Cys Gly Trp Ile Gln Phe Met Ser Lys Val Ser Val Asp
        595                 600                 605

Ile Phe Lys Gly Phe Pro Asp Glu Glu Ser Ile Val Asn Tyr Thr Leu
    610                 615                 620

Asn Gln Ala Tyr Gln Asp Asn Val Thr Val Phe Ala Ser Val Ile Phe
625                 630                 635                 640

Gln Thr Arg Lys Asp Gly Ser Leu Pro Pro His Val His Tyr Lys Ile
                645                 650                 655

Arg Gln Asn Ser Ser Phe Thr Glu Lys Thr Asn Glu Ile Arg Arg Ala
            660                 665                 670

Tyr Trp Arg Pro Gly Pro Asn Thr Gly Gly Arg Phe Tyr Phe Leu Tyr
        675                 680                 685

Gly Phe Val Trp Ile Gln Asp Met Met Glu Arg Ala Ile Ile Asp Thr
    690                 695                 700

Phe Val Gly His Asp Val Val Glu Pro Gly Ser Tyr Val Gln Met Phe
705                 710                 715                 720

Pro Tyr Pro Cys Tyr Thr Arg Asp Asp Phe Leu Phe Val Ile Glu His
                725                 730                 735

Met Met Pro Leu Cys Met Val Ile Ser Trp Val Tyr Ser Val Ala Met
            740                 745                 750

Thr Ile Gln His Ile Val Ala Glu Lys Glu His Arg Leu Lys Glu Val
```

```
        755                 760                 765

Met Lys Thr Met Gly Leu Asn Asn Ala Val His Trp Val Ala Trp Phe
    770                 775                 780

Ile Thr Gly Phe Val Gln Leu Ser Ile Ser Val Thr Ala Leu Thr Ala
785                 790                 795                 800

Ile Leu Lys Tyr Gly Gln Val Leu Met His Ser His Val Val Ile Ile
                805                 810                 815

Trp Leu Phe Leu Ala Val Tyr Ala Val Ala Thr Ile Met Phe Cys Phe
            820                 825                 830

Leu Val Ser Val Leu Tyr Ser Lys Ala Lys Leu Ala Ser Ala Cys Gly
        835                 840                 845

Gly Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr Met Tyr Val Ala Ile
    850                 855                 860

Arg Glu Glu Val Ala His Asp Lys Ile Thr Ala Phe Glu Lys Cys Ile
865                 870                 875                 880

Ala Ser Leu Met Ser Thr Thr Ala Phe Gly Leu Gly Ser Lys Tyr Phe
                885                 890                 895

Ala Leu Tyr Glu Val Ala Gly Val Gly Ile Gln Trp His Thr Phe Ser
            900                 905                 910

Gln Ser Pro Val Glu Gly Asp Asp Phe Asn Leu Leu Leu Ala Val Thr
        915                 920                 925

Met Leu Met Val Asp Ala Val Val Tyr Gly Ile Leu Thr Trp Tyr Ile
    930                 935                 940

Glu Ala Val His Pro Gly Met Tyr Gly Leu Pro Arg Pro Trp Tyr Phe
945                 950                 955                 960

Pro Leu Gln Lys Ser Tyr Trp Leu Gly Ser Gly Arg Thr Glu Ala Trp
                965                 970                 975

Glu Trp Ser Trp Pro Trp Ala Arg Thr Pro Arg Leu Ser Val Met Glu
            980                 985                 990
```

Glu Asp Gln Ala Cys Ala Met Glu Ser Arg Arg Phe Glu Glu Thr Arg
995 1000 1005

Gly Met Glu Glu Glu Pro Thr His Leu Pro Leu Val Val Cys Val
1010 1015 1020

Asp Lys Leu Thr Lys Val Tyr Lys Asp Asp Lys Lys Leu Ala Leu
1025 1030 1035

Asn Lys Leu Ser Leu Asn Leu Tyr Glu Asn Gln Val Val Ser Phe
1040 1045 1050

Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Met Ser Ile Leu
1055 1060 1065

Thr Gly Leu Phe Pro Pro Thr Ser Gly Ser Ala Thr Ile Tyr Gly
1070 1075 1080

His Asp Ile Arg Thr Glu Met Asp Glu Ile Arg Lys Asn Leu Gly
1085 1090 1095

Met Cys Pro Gln His Asn Val Leu Phe Asp Arg Leu Thr Val Glu
1100 1105 1110

Glu His Leu Trp Phe Tyr Ser Arg Leu Lys Ser Met Ala Gln Glu
1115 1120 1125

Glu Ile Arg Arg Glu Met Asp Lys Met Ile Glu Asp Leu Glu Leu
1130 1135 1140

Ser Asn Lys Arg His Ser Leu Val Gln Thr Leu Ser Gly Gly Met
1145 1150 1155

Lys Arg Lys Leu Ser Val Ala Ile Ala Phe Val Gly Gly Ser Arg
1160 1165 1170

Ala Ile Ile Leu Asp Glu Pro Thr Ala Gly Val Asp Pro Tyr Ala
1175 1180 1185

Arg Arg Ala Ile Trp Asp Leu Ile Leu Lys Tyr Lys Pro Gly Arg
1190 1195 1200

```
Thr Ile  Leu Leu Ser Thr His  His Met Asp Glu Ala  Asp Leu Leu
    1205                 1210                 1215

Gly Asp  Arg Ile Ala Ile Ile  Ser His Gly Lys Leu  Lys Cys Cys
    1220                 1225                 1230

Gly Ser  Pro Leu Phe Leu Lys  Gly Thr Tyr Gly Asp  Gly Tyr Arg
    1235                 1240                 1245

Leu Thr  Leu Val Lys Arg Pro  Ala Glu Pro Gly Gly  Pro Gln Glu
    1250                 1255                 1260

Pro Gly  Leu Ala Ser Ser Pro  Pro Gly Arg Ala Pro  Leu Ser Ser
    1265                 1270                 1275

Cys Ser  Glu Leu Gln Val Ser  Gln Phe Ile Arg Lys  His Val Ala
    1280                 1285                 1290

Ser Cys  Leu Leu Val Ser Asp  Thr Ser Thr Glu Leu  Ser Tyr Ile
    1295                 1300                 1305

Leu Pro  Ser Glu Ala Ala Lys  Lys Gly Ala Phe Glu  Arg Leu Phe
    1310                 1315                 1320

Gln His  Leu Glu Arg Ser Leu  Asp Ala Leu His Leu  Ser Ser Phe
    1325                 1330                 1335

Gly Leu  Met Asp Thr Thr Leu  Glu Glu Val Phe Leu  Lys Val Ser
    1340                 1345                 1350

Glu Glu  Asp Gln Ser Leu Glu  Asn Ser Glu Ala Asp  Val Lys Glu
    1355                 1360                 1365

Ser Arg  Lys Asp Val Leu Pro  Gly Ala Glu Gly Pro  Ala Ser Gly
    1370                 1375                 1380

Glu Gly  His Ala Gly Asn Leu  Ala Arg Cys Ser Glu  Leu Thr Gln
    1385                 1390                 1395

Ser Gln  Ala Ser Leu Gln Ser  Ala Ser Ser Val Gly  Ser Ala Arg
    1400                 1405                 1410
```

```
Gly Asp  Glu Gly Ala Gly Tyr  Thr Asp Val Tyr Gly  Asp Tyr Arg
    1415                 1420                 1425

Pro Leu  Phe Asp Asn Pro Gln  Asp Pro Asp Asn Val  Ser Leu Gln
    1430                 1435                 1440

Glu Val  Glu Ala Glu Ala Leu  Ser Arg Val Gly Gln  Gly Ser Arg
    1445                 1450                 1455

Lys Leu  Asp Gly Gly Trp Leu  Lys Val Arg Gln Phe  His Gly Leu
    1460                 1465                 1470

Leu Val  Lys Arg Phe His Cys  Ala Arg Arg Asn Ser  Lys Ala Leu
    1475                 1480                 1485

Phe Ser  Gln Ile Leu Leu Pro  Ala Phe Phe Val Cys  Val Ala Met
    1490                 1495                 1500

Thr Val  Ala Leu Ser Val Pro  Glu Ile Gly Asp Leu  Pro Pro Leu
    1505                 1510                 1515

Val Leu  Ser Pro Ser Gln Tyr  His Asn Tyr Thr Gln  Pro Arg Gly
    1520                 1525                 1530

Asn Phe  Ile Pro Tyr Ala Asn  Glu Glu Arg Arg Glu  Tyr Arg Leu
    1535                 1540                 1545

Arg Leu  Ser Pro Asp Ala Ser  Pro Gln Gln Leu Val  Ser Thr Phe
    1550                 1555                 1560

Arg Leu  Pro Ser Gly Val Gly  Ala Thr Cys Val Leu  Lys Ser Pro
    1565                 1570                 1575

Ala Asn  Gly Ser Leu Gly Pro  Thr Leu Asn Leu Ser  Ser Gly Glu
    1580                 1585                 1590

Ser Arg  Leu Leu Ala Ala Arg  Phe Phe Asp Ser Met  Cys Leu Glu
    1595                 1600                 1605

Ser Phe  Thr Gln Gly Leu Pro  Leu Ser Asn Phe Val  Pro Pro Pro
    1610                 1615                 1620
```

```
Pro Ser  Pro Ala Pro Ser Asp  Ser Pro Ala Ser Pro  Asp Glu Asp
    1625                1630                1635

Leu Gln  Ala Trp Asn Val Ser  Leu Pro Pro Thr Ala  Gly Pro Glu
    1640                1645                1650

Met Trp  Thr Ser Ala Pro Ser  Leu Pro Arg Leu Val  Arg Glu Pro
    1655                1660                1665

Val Arg  Cys Thr Cys Ser Ala  Gln Gly Thr Gly Phe  Ser Cys Pro
    1670                1675                1680

Ser Ser  Val Gly Gly His Pro  Pro Gln Met Arg Val  Val Thr Gly
    1685                1690                1695

Asp Ile  Leu Thr Asp Ile Thr  Gly His Asn Val Ser  Glu Tyr Leu
    1700                1705                1710

Leu Phe  Thr Ser Asp Arg Phe  Arg Leu His Arg Tyr  Gly Ala Ile
    1715                1720                1725

Thr Phe  Gly Asn Val Leu Lys  Ser Ile Pro Ala Ser  Phe Gly Thr
    1730                1735                1740

Arg Ala  Pro Pro Met Val Arg  Lys Ile Ala Val Arg  Arg Ala Ala
    1745                1750                1755

Gln Val  Phe Tyr Asn Asn Lys  Gly Tyr His Ser Met  Pro Thr Tyr
    1760                1765                1770

Leu Asn  Ser Leu Asn Asn Ala  Ile Leu Arg Ala Asn  Leu Pro Lys
    1775                1780                1785

Ser Lys  Gly Asn Pro Ala Ala  Tyr Gly Ile Thr Val  Thr Asn His
    1790                1795                1800

Pro Met  Asn Lys Thr Ser Ala  Ser Leu Ser Leu Asp  Tyr Leu Leu
    1805                1810                1815

Gln Gly  Thr Asp Val Val Ile  Ala Ile Phe Ile Ile  Val Ala Met
    1820                1825                1830

Ser Phe  Val Pro Ala Ser Phe  Val Val Phe Leu Val  Ala Glu Lys
```

1835 1840 1845

Ser Thr Lys Ala Lys His Leu Gln Phe Val Ser Gly Cys Asn Pro
1850 1855 1860

Ile Ile Tyr Trp Leu Ala Asn Tyr Val Trp Asp Met Leu Asn Tyr
1865 1870 1875

Leu Val Pro Ala Thr Cys Cys Val Ile Ile Leu Phe Val Phe Asp
1880 1885 1890

Leu Pro Ala Tyr Thr Ser Pro Thr Asn Phe Pro Ala Val Leu Ser
1895 1900 1905

Leu Phe Leu Leu Tyr Gly Trp Ser Ile Thr Pro Ile Met Tyr Pro
1910 1915 1920

Ala Ser Phe Trp Phe Glu Val Pro Ser Ser Ala Tyr Val Phe Leu
1925 1930 1935

Ile Val Ile Asn Leu Phe Ile Gly Ile Thr Ala Thr Val Ala Thr
1940 1945 1950

Phe Leu Leu Gln Leu Phe Glu His Asp Lys Asp Leu Lys Val Val
1955 1960 1965

Asn Ser Tyr Leu Lys Ser Cys Phe Leu Ile Phe Pro Asn Tyr Asn
1970 1975 1980

Leu Gly His Gly Leu Met Glu Met Ala Tyr Asn Glu Tyr Ile Asn
1985 1990 1995

Glu Tyr Tyr Ala Lys Ile Gly Gln Phe Asp Lys Met Lys Ser Pro
2000 2005 2010

Phe Glu Trp Asp Ile Val Thr Arg Gly Leu Val Ala Met Ala Val
2015 2020 2025

Glu Gly Val Val Gly Phe Leu Leu Thr Ile Met Cys Gln Tyr Asn
2030 2035 2040

Phe Leu Arg Arg Pro Gln Arg Met Pro Val Ser Thr Lys Pro Val
2045 2050 2055

```
Glu Asp  Asp Val Asp Val Ala  Ser Glu Arg Gln Arg  Val Leu Arg
    2060                 2065                 2070

Gly Asp  Ala Asp Asn Asp Met  Val Lys Ile Glu Asn  Leu Thr Lys
    2075                 2080                 2085

Val Tyr  Lys Ser Arg Lys Ile  Gly Arg Ile Leu Ala  Val Asp Arg
    2090                 2095                 2100

Leu Cys  Leu Gly Val Arg Pro  Gly Glu Cys Phe Gly  Leu Leu Gly
    2105                 2110                 2115

Val Asn  Gly Ala Gly Lys Thr  Ser Thr Phe Lys Met  Leu Thr Gly
    2120                 2125                 2130

Asp Glu  Ser Thr Thr Gly Gly  Glu Ala Phe Val Asn  Gly His Ser
    2135                 2140                 2145

Val Leu  Lys Glu Leu Leu Gln  Val Gln Gln Ser Leu  Gly Tyr Cys
    2150                 2155                 2160

Pro Gln  Cys Asp Ala Leu Phe  Asp Glu Leu Thr Ala  Arg Glu His
    2165                 2170                 2175

Leu Gln  Leu Tyr Thr Arg Leu  Arg Gly Ile Ser Trp  Lys Asp Glu
    2180                 2185                 2190

Ala Arg  Val Val Lys Trp Ala  Leu Glu Lys Leu Glu  Leu Thr Lys
    2195                 2200                 2205

Tyr Ala  Asp Lys Pro Ala Gly  Thr Tyr Ser Gly Gly  Asn Lys Arg
    2210                 2215                 2220

Lys Leu  Ser Thr Ala Ile Ala  Leu Ile Gly Tyr Pro  Ala Phe Ile
    2225                 2230                 2235

Phe Leu  Asp Glu Pro Thr Thr  Gly Met Asp Pro Lys  Ala Arg Arg
    2240                 2245                 2250

Phe Leu  Trp Asn Leu Ile Leu  Asp Leu Ile Lys Thr  Gly Arg Ser
    2255                 2260                 2265
```

```
Val Val  Leu Thr Ser His Ser  Met Glu Glu Cys Glu  Ala Leu Cys
    2270                2275                2280

Thr Arg  Leu Ala Ile Met Val  Asn Gly Arg Leu Arg  Cys Leu Gly
    2285                2290                2295

Ser Ile  Gln His Leu Lys Asn  Arg Phe Gly Asp Gly  Tyr Met Ile
    2300                2305                2310

Thr Val  Arg Thr Lys Ser Ser  Gln Ser Val Lys Asp  Val Val Arg
    2315                2320                2325

Phe Phe  Asn Arg Asn Phe Pro  Glu Ala Met Leu Lys  Glu Arg His
    2330                2335                2340

His Thr  Lys Val Gln Tyr Gln  Leu Lys Ser Glu His  Ile Ser Leu
    2345                2350                2355

Ala Gln  Val Phe Ser Lys Met  Glu Gln Val Ser Gly  Val Leu Gly
    2360                2365                2370

Ile Glu  Asp Tyr Ser Val Ser  Gln Thr Thr Leu Asp  Asn Val Phe
    2375                2380                2385

Val Asn  Phe Ala Lys Lys Gln  Ser Asp Asn Leu Glu  Gln Gln Glu
    2390                2395                2400

Thr Glu  Pro Pro Ser Ala Leu  Gln Ser Pro Leu Gly  Cys Leu Leu
    2405                2410                2415

Ser Leu  Leu Arg Pro Arg Ser  Ala Pro Thr Glu Leu  Arg Ala Leu
    2420                2425                2430

Val Ala  Asp Glu Pro Glu Asp  Leu Asp Thr Glu Asp  Glu Gly Leu
    2435                2440                2445

Ile Ser  Phe Glu Glu Glu Arg  Ala Gln Leu Ser Phe  Asn Thr Asp
    2450                2455                2460

Thr Leu  Cys
    2465
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<210> 7596
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485459"

<400> 7596

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Met Gly Arg Lys Thr Ser Arg Val Gln Gln Gly Pro Pro Arg Ser Pro
1               5                  10                  15


Ala Cys Ser Ala His Gly Glu Arg Ser Trp Gly Leu Glu Phe Pro Pro
            20                  25                  30


Phe Arg Trp Leu Leu Gly Ile Ala Gly Arg Thr His Leu Ala Ala Leu
        35                  40                  45


Pro Pro Phe Gln Trp Val Leu Ala Phe Glu Ile Phe Ile Pro Leu Val
    50                  55                  60


Leu Phe Phe Ile Leu Leu Gly Leu Arg Gln Lys Lys Pro Thr Ile Ser
65                  70                  75                  80


Val Lys Glu Val Ser Phe Tyr Thr Ala Ala Pro Leu Thr Ser Ala Gly
                85                  90                  95


Ile Leu Pro Val Met Gln Ser Leu Cys Pro Asp Gly Gln Arg Asp Glu
            100                 105                 110


Phe Gly Phe Leu Gln Tyr Ala Asn Ser
        115                 120
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<210> 7597
<211> 1704
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q99758; "

<220>
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<400> 7597
Met Ala Val Leu Arg Gln Leu Ala Leu Leu Leu Trp Lys Asn Tyr Thr
1   5   10   15

Leu Gln Lys Arg Lys Val Leu Val Thr Val Leu Glu Leu Phe Leu Pro
            20   25   30

Leu Leu Phe Ser Gly Ile Leu Ile Trp Leu Arg Leu Lys Ile Gln Ser
        35   40   45

Glu Asn Val Pro Asn Ala Thr Ile Tyr Pro Gly Gln Ser Ile Gln Glu
    50   55   60

Leu Pro Leu Phe Phe Thr Phe Pro Pro Pro Gly Asp Thr Trp Glu Leu
65   70   75   80

Ala Tyr Ile Pro Ser His Ser Asp Ala Ala Lys Thr Val Thr Glu Thr
                85   90   95

Val Arg Arg Ala Leu Val Ile Asn Met Arg Val Arg Gly Phe Pro Ser
            100   105   110

```
Glu Lys Asp Phe Glu Asp Tyr Ile Arg Tyr Asp Asn Cys Ser Ser Ser
        115                 120                 125

Val Leu Ala Ala Val Val Phe Glu His Pro Phe Asn His Ser Lys Glu
    130                 135                 140

Pro Leu Pro Leu Ala Val Lys Tyr His Leu Arg Phe Ser Tyr Thr Arg
145                 150                 155                 160

Arg Asn Tyr Met Trp Thr Gln Thr Gly Ser Phe Phe Leu Lys Glu Thr
                165                 170                 175

Glu Gly Trp His Thr Thr Ser Leu Phe Pro Leu Phe Pro Asn Pro Gly
            180                 185                 190

Pro Arg Glu Pro Thr Ser Pro Asp Gly Gly Glu Pro Gly Tyr Ile Arg
        195                 200                 205

Glu Gly Phe Leu Ala Val Gln His Ala Val Asp Arg Ala Ile Met Glu
    210                 215                 220

Tyr His Ala Asp Ala Ala Thr Arg Gln Leu Phe Gln Arg Leu Thr Val
225                 230                 235                 240

Thr Ile Lys Arg Phe Pro Tyr Pro Pro Phe Ile Ala Asp Pro Phe Leu
                245                 250                 255

Val Ala Ile Gln Tyr Gln Leu Pro Leu Leu Leu Leu Leu Ser Phe Thr
            260                 265                 270

Tyr Thr Ala Leu Thr Ile Ala Arg Ala Val Val Gln Glu Lys Glu Arg
        275                 280                 285

Arg Leu Lys Glu Tyr Met Arg Met Met Gly Leu Ser Ser Trp Leu His
    290                 295                 300

Trp Ser Ala Trp Phe Leu Leu Phe Phe Leu Phe Leu Leu Ile Ala Ala
305                 310                 315                 320

Ser Phe Met Thr Leu Leu Phe Cys Val Lys Val Lys Pro Asn Val Ala
                325                 330                 335

Val Leu Ser Arg Ser Asp Pro Ser Leu Val Leu Ala Phe Leu Leu Cys
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            340                 345                 350

Phe Ala Ile Ser Thr Ile Ser Phe Ser Phe Met Val Ser Thr Phe Phe
        355                 360                 365

Ser Lys Ala Asn Met Ala Ala Ala Phe Gly Gly Phe Leu Tyr Phe Phe
    370                 375                 380

Thr Tyr Ile Pro Tyr Phe Phe Val Ala Pro Arg Tyr Asn Trp Met Thr
385                 390                 395                 400

Leu Ser Gln Lys Leu Cys Ser Cys Leu Leu Ser Asn Val Ala Met Ala
                405                 410                 415

Met Gly Ala Gln Leu Ile Gly Lys Phe Glu Ala Lys Gly Met Gly Ile
            420                 425                 430

Gln Trp Arg Asp Leu Leu Ser Pro Val Asn Val Asp Asp Asp Phe Cys
        435                 440                 445

Phe Gly Gln Val Leu Gly Met Leu Leu Leu Asp Ser Val Leu Tyr Gly
    450                 455                 460

Leu Val Thr Trp Tyr Met Glu Ala Val Phe Pro Gly Gln Phe Gly Val
465                 470                 475                 480

Pro Gln Pro Trp Tyr Phe Phe Ile Met Pro Ser Tyr Trp Cys Gly Lys
                485                 490                 495

Pro Arg Ala Val Ala Gly Lys Glu Glu Glu Asp Ser Asp Pro Glu Lys
            500                 505                 510

Ala Leu Arg Asn Glu Tyr Phe Glu Ala Glu Pro Glu Asp Leu Val Ala
        515                 520                 525

Gly Ile Lys Ile Lys His Leu Ser Lys Val Phe Arg Val Gly Asn Lys
    530                 535                 540

Asp Arg Ala Ala Val Arg Asp Leu Asn Leu Asn Leu Tyr Glu Gly Gln
545                 550                 555                 560

Ile Thr Val Leu Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Leu
                565                 570                 575
```

```
Ser Met Leu Thr Gly Leu Phe Pro Pro Thr Ser Gly Arg Ala Tyr Ile
            580                 585                 590

Ser Gly Tyr Glu Ile Ser Gln Asp Met Val Gln Ile Arg Lys Ser Leu
        595                 600                 605

Gly Leu Cys Pro Gln His Asp Ile Leu Phe Asp Asn Leu Thr Val Ala
    610                 615                 620

Glu His Leu Tyr Phe Tyr Ala Gln Leu Lys Gly Leu Ser Arg Gln Lys
625                 630                 635                 640

Cys Pro Glu Glu Val Lys Gln Met Leu His Ile Ile Gly Leu Glu Asp
                645                 650                 655

Lys Trp Asn Ser Arg Ser Arg Phe Leu Ser Gly Gly Met Arg Arg Lys
            660                 665                 670

Leu Ser Ile Gly Ile Ala Leu Ile Ala Gly Ser Lys Val Leu Ile Leu
        675                 680                 685

Asp Glu Pro Thr Ser Gly Met Asp Ala Ile Ser Arg Arg Ala Ile Trp
    690                 695                 700

Asp Leu Leu Gln Arg Gln Lys Ser Asp Arg Thr Ile Val Leu Thr Thr
705                 710                 715                 720

His Phe Met Asp Glu Ala Asp Leu Leu Gly Asp Arg Ile Ala Ile Met
                725                 730                 735

Ala Lys Gly Glu Leu Gln Cys Cys Gly Ser Ser Leu Phe Leu Lys Gln
            740                 745                 750

Lys Tyr Gly Ala Gly Tyr His Met Thr Leu Val Lys Glu Pro His Cys
        755                 760                 765

Asn Pro Glu Asp Ile Ser Gln Leu Val His His His Val Pro Asn Ala
    770                 775                 780

Thr Leu Glu Ser Ser Ala Gly Ala Glu Leu Ser Phe Ile Leu Pro Arg
785                 790                 795                 800
```

```
Glu Ser Thr His Arg Phe Glu Gly Leu Phe Ala Lys Leu Glu Lys Lys
                805                 810                 815

Gln Lys Glu Leu Gly Ile Ala Ser Phe Gly Ala Ser Ile Thr Thr Met
            820                 825                 830

Glu Glu Val Phe Leu Arg Val Gly Lys Leu Val Asp Ser Ser Met Asp
        835                 840                 845

Ile Gln Ala Ile Gln Leu Pro Ala Leu Gln Tyr Gln His Glu Arg Arg
    850                 855                 860

Ala Ser Asp Trp Ala Val Asp Ser Asn Leu Cys Gly Ala Met Asp Pro
865                 870                 875                 880

Ser Asp Gly Ile Gly Ala Leu Ile Glu Glu Glu Arg Thr Ala Val Lys
                885                 890                 895

Leu Asn Thr Gly Leu Ala Leu His Cys Gln Gln Phe Trp Ala Met Phe
            900                 905                 910

Leu Lys Lys Ala Ala Tyr Ser Trp Arg Glu Trp Lys Met Val Ala Ala
        915                 920                 925

Gln Val Leu Val Pro Leu Thr Cys Val Thr Leu Ala Leu Leu Ala Ile
    930                 935                 940

Asn Tyr Ser Ser Glu Leu Phe Asp Asp Pro Met Leu Arg Leu Thr Leu
945                 950                 955                 960

Gly Glu Tyr Gly Arg Thr Val Val Pro Phe Ser Val Pro Gly Thr Ser
                965                 970                 975

Gln Leu Gly Gln Gln Leu Ser Glu His Leu Lys Asp Ala Leu Gln Ala
            980                 985                 990

Glu Gly Gln Glu Pro Arg Glu Val  Leu Gly Asp Leu Glu  Glu Phe
Leu
        995                 1000                1005

Ile Phe  Arg Ala Ser Val Glu  Gly Gly Gly Phe Asn  Glu Arg Cys
    1010                1015                1020
```

Leu Val Ala Ala Ser Phe Arg Asp Val Gly Glu Arg Thr Val Val
1025 1030 1035

Asn Ala Leu Phe Asn Asn Gln Ala Tyr His Ser Pro Ala Thr Ala
1040 1045 1050

Leu Ala Val Val Asp Asn Leu Leu Phe Lys Leu Leu Cys Gly Pro
1055 1060 1065

His Ala Ser Ile Val Val Ser Asn Phe Pro Gln Pro Arg Ser Ala
1070 1075 1080

Leu Gln Ala Ala Lys Asp Gln Phe Asn Glu Gly Arg Lys Gly Phe
1085 1090 1095

Asp Ile Ala Leu Asn Leu Leu Phe Ala Met Ala Phe Leu Ala Ser
1100 1105 1110

Thr Phe Ser Ile Leu Ala Val Ser Glu Arg Ala Val Gln Ala Lys
1115 1120 1125

His Val Gln Phe Val Ser Gly Val His Val Ala Ser Phe Trp Leu
1130 1135 1140

Ser Ala Leu Leu Trp Asp Leu Ile Ser Phe Leu Ile Pro Ser Leu
1145 1150 1155

Leu Leu Leu Val Val Phe Lys Ala Phe Asp Val Arg Ala Phe Thr
1160 1165 1170

Arg Asp Gly His Met Ala Asp Thr Leu Leu Leu Leu Leu Leu Tyr
1175 1180 1185

Gly Trp Ala Ile Ile Pro Leu Met Tyr Leu Met Asn Phe Phe Phe
1190 1195 1200

Leu Gly Ala Ala Thr Ala Tyr Thr Arg Leu Thr Ile Phe Asn Ile
1205 1210 1215

Leu Ser Gly Ile Ala Thr Phe Leu Met Val Thr Ile Met Arg Ile
1220 1225 1230

```
Pro Ala  Val Lys Leu Glu Glu  Leu Ser Lys Thr Leu  Asp His Val
    1235                1240                1245

Phe Leu  Val Leu Pro Asn His  Cys Leu Gly Met Ala  Val Ser Ser
    1250                1255                1260

Phe Tyr  Glu Asn Tyr Glu Thr  Arg Arg Tyr Cys Thr  Ser Ser Glu
    1265                1270                1275

Val Ala  Ala His Tyr Cys Lys  Lys Tyr Asn Ile Gln  Tyr Gln Glu
    1280                1285                1290

Asn Phe  Tyr Ala Trp Ser Ala  Pro Gly Val Gly Arg  Phe Val Ala
    1295                1300                1305

Ser Met  Ala Ala Ser Gly Cys  Ala Tyr Leu Ile Leu  Leu Phe Leu
    1310                1315                1320

Ile Glu  Thr Asn Leu Leu Gln  Arg Leu Arg Gly Ile  Leu Cys Ala
    1325                1330                1335

Leu Arg  Arg Arg Arg Thr Leu  Thr Glu Leu Tyr Thr  Arg Met Pro
    1340                1345                1350

Val Leu  Pro Glu Asp Gln Asp  Val Ala Asp Glu Arg  Thr Arg Ile
    1355                1360                1365

Leu Ala  Pro Ser Pro Asp Ser  Leu Leu His Thr Pro  Leu Ile Ile
    1370                1375                1380

Lys Glu  Leu Ser Lys Val Tyr  Glu Gln Arg Val Pro  Leu Leu Ala
    1385                1390                1395

Val Asp  Arg Leu Ser Leu Ala  Val Gln Lys Gly Glu  Cys Phe Gly
    1400                1405                1410

Leu Leu  Gly Phe Asn Gly Ala  Gly Lys Thr Thr Thr  Phe Lys Met
    1415                1420                1425

Leu Thr  Gly Glu Glu Ser Leu  Thr Ser Gly Asp Ala  Phe Val Gly
    1430                1435                1440

Gly His  Arg Ile Ser Ser Asp  Val Gly Lys Val Arg  Gln Arg Ile
```

1445 1450 1455

Gly Tyr Cys Pro Gln Phe Asp Ala Leu Leu Asp His Met Thr Gly
1460 1465 1470

Arg Glu Met Leu Val Met Tyr Ala Arg Leu Arg Gly Ile Pro Glu
1475 1480 1485

Arg His Ile Gly Ala Cys Val Glu Asn Thr Leu Arg Gly Leu Leu
1490 1495 1500

Leu Glu Pro His Ala Asn Lys Leu Val Arg Thr Tyr Ser Gly Gly
1505 1510 1515

Asn Lys Arg Lys Leu Ser Thr Gly Ile Ala Leu Ile Gly Glu Pro
1520 1525 1530

Ala Val Ile Phe Leu Asp Glu Pro Ser Thr Gly Met Asp Pro Val
1535 1540 1545

Ala Arg Arg Leu Leu Trp Asp Thr Val Ala Arg Ala Arg Glu Ser
1550 1555 1560

Gly Lys Ala Ile Ile Ile Thr Ser His Ser Met Glu Glu Cys Glu
1565 1570 1575

Ala Leu Cys Thr Arg Leu Ala Ile Met Val Gln Gly Gln Phe Lys
1580 1585 1590

Cys Leu Gly Ser Pro Gln His Leu Lys Ser Lys Phe Gly Ser Gly
1595 1600 1605

Tyr Ser Leu Arg Ala Lys Val Gln Ser Glu Gly Gln Gln Glu Ala
1610 1615 1620

Leu Glu Glu Phe Lys Ala Phe Val Asp Leu Thr Phe Pro Gly Ser
1625 1630 1635

Val Leu Glu Asp Glu His Gln Gly Met Val His Tyr His Leu Pro
1640 1645 1650

Gly Arg Asp Leu Ser Trp Ala Lys Val Phe Gly Ile Leu Glu Lys
1655 1660 1665

```
Ala Lys  Glu Lys Tyr Gly Val  Asp Asp Tyr Ser Val  Ser Gln Ile
    1670                1675                1680


Ser Leu  Glu Gln Val Phe Leu  Ser Phe Ala His Leu  Gln Pro Pro
    1685                1690                1695


Thr Ala  Glu Glu Gly Arg
    1700


<210> 7598
<211> 1646
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1603; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA3; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 3; "

<220>
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<223> /note="ENSP ID: ENSP00000371818"

<400> 7598
Met Ala Val Leu Arg Gln Leu Ala Leu Leu Leu Trp Lys Asn Tyr Thr
1               5                  10                  15


Leu Gln Lys Arg Lys Val Leu Val Thr Val Leu Glu Leu Phe Leu Pro
            20                  25                  30


Leu Leu Phe Ser Gly Ile Leu Ile Trp Leu Arg Leu Lys Ile Gln Ser
        35                  40                  45


Glu Asn Val Pro Asn Ala Thr Ile Tyr Pro Gly Gln Ser Ile Gln Glu
    50                  55                  60


Leu Pro Leu Phe Phe Thr Phe Pro Pro Pro Gly Asp Thr Trp Glu Leu
65                  70                  75                  80
```

```
Ala Tyr Ile Pro Ser His Ser Asp Ala Ala Lys Thr Val Thr Glu Thr
                85                  90                  95

Val Arg Arg Ala Leu Val Ile Asn Met Arg Val Arg Gly Phe Pro Ser
            100                 105                 110

Glu Lys Asp Phe Glu Asp Tyr Ile Arg Tyr Asp Asn Cys Ser Ser Ser
        115                 120                 125

Val Leu Ala Ala Val Val Phe Glu His Pro Phe Asn His Ser Lys Glu
    130                 135                 140

Pro Leu Pro Leu Ala Val Lys Tyr His Leu Arg Phe Ser Tyr Thr Arg
145                 150                 155                 160

Arg Asn Tyr Met Trp Thr Gln Thr Gly Ser Phe Phe Leu Lys Glu Thr
                165                 170                 175

Glu Gly Trp His Thr Thr Ser Leu Phe Pro Leu Phe Pro Asn Pro Gly
            180                 185                 190

Pro Arg Glu Pro Thr Ser Pro Asp Gly Gly Glu Pro Gly Tyr Ile Arg
        195                 200                 205

Glu Gly Phe Leu Ala Val Gln His Ala Val Asp Arg Ala Ile Met Glu
    210                 215                 220

Tyr His Ala Asp Ala Ala Thr Arg Gln Leu Phe Gln Arg Leu Thr Val
225                 230                 235                 240

Thr Ile Lys Arg Phe Pro Tyr Pro Pro Phe Ile Ala Asp Pro Phe Leu
                245                 250                 255

Val Ala Ile Gln Tyr Gln Leu Pro Leu Leu Leu Leu Leu Ser Phe Thr
            260                 265                 270

Tyr Thr Ala Leu Thr Ile Ala Arg Ala Val Val Gln Glu Lys Glu Arg
        275                 280                 285

Arg Leu Lys Glu Tyr Met Arg Met Met Gly Leu Ser Ser Trp Leu His
    290                 295                 300
```

```
Trp Ser Ala Trp Phe Leu Leu Phe Phe Leu Phe Leu Leu Ile Ala Ala
305                 310                 315                 320

Ser Phe Met Thr Leu Leu Phe Cys Val Lys Val Lys Pro Asn Val Ala
                325                 330                 335

Val Leu Ser Arg Ser Asp Pro Ser Leu Val Leu Ala Phe Leu Leu Cys
            340                 345                 350

Phe Ala Ile Ser Thr Ile Ser Phe Ser Phe Met Val Ser Thr Phe Phe
        355                 360                 365

Ser Lys Gly Met Gly Ile Gln Trp Arg Asp Leu Leu Ser Pro Val Asn
    370                 375                 380

Val Asp Asp Asp Phe Cys Phe Gly Gln Val Leu Gly Met Leu Leu Leu
385                 390                 395                 400

Asp Ser Val Leu Tyr Gly Leu Val Thr Trp Tyr Met Glu Ala Val Phe
                405                 410                 415

Pro Gly Gln Phe Gly Val Pro Gln Pro Trp Tyr Phe Phe Ile Met Pro
            420                 425                 430

Ser Tyr Trp Cys Gly Lys Pro Arg Ala Val Ala Gly Lys Glu Glu Glu
        435                 440                 445

Asp Ser Asp Pro Glu Lys Ala Leu Arg Asn Glu Tyr Phe Glu Ala Glu
    450                 455                 460

Pro Glu Asp Leu Val Ala Gly Ile Lys Ile Lys His Leu Ser Lys Val
465                 470                 475                 480

Phe Arg Val Gly Asn Lys Asp Arg Ala Ala Val Arg Asp Leu Asn Leu
                485                 490                 495

Asn Leu Tyr Glu Gly Gln Ile Thr Val Leu Leu Gly His Asn Gly Ala
            500                 505                 510

Gly Lys Thr Thr Thr Leu Ser Met Leu Thr Gly Leu Phe Pro Pro Thr
        515                 520                 525
```

```
Ser Gly Arg Ala Tyr Ile Ser Gly Tyr Glu Ile Ser Gln Asp Met Val
    530                 535                 540

Gln Ile Arg Lys Ser Leu Gly Leu Cys Pro Gln His Asp Ile Leu Phe
545                 550                 555                 560

Asp Asn Leu Thr Val Ala Glu His Leu Tyr Phe Tyr Ala Gln Leu Lys
                565                 570                 575

Gly Leu Ser Arg Gln Lys Cys Pro Glu Glu Val Lys Gln Met Leu His
            580                 585                 590

Ile Ile Gly Leu Glu Asp Lys Trp Asn Ser Arg Ser Arg Phe Leu Ser
        595                 600                 605

Gly Gly Met Arg Arg Lys Leu Ser Ile Gly Ile Ala Leu Ile Ala Gly
    610                 615                 620

Ser Lys Val Leu Ile Leu Asp Glu Pro Thr Ser Gly Met Asp Ala Ile
625                 630                 635                 640

Ser Arg Arg Ala Ile Trp Asp Leu Leu Gln Arg Gln Lys Ser Asp Arg
                645                 650                 655

Thr Ile Val Leu Thr Thr His Phe Met Asp Glu Ala Asp Leu Leu Gly
            660                 665                 670

Asp Arg Ile Ala Ile Met Ala Lys Gly Glu Leu Gln Cys Cys Gly Ser
        675                 680                 685

Ser Leu Phe Leu Lys Gln Lys Tyr Gly Ala Gly Tyr His Met Thr Leu
    690                 695                 700

Val Lys Glu Pro His Cys Asn Pro Glu Asp Ile Ser Gln Leu Val His
705                 710                 715                 720

His His Val Pro Asn Ala Thr Leu Glu Ser Ser Ala Gly Ala Glu Leu
                725                 730                 735

Ser Phe Ile Leu Pro Arg Glu Ser Thr His Arg Phe Glu Gly Leu Phe
            740                 745                 750

Ala Lys Leu Glu Lys Lys Gln Lys Glu Leu Gly Ile Ala Ser Phe Gly
```

```
        755                 760                 765

Ala Ser Ile Thr Thr Met Glu Glu Val Phe Leu Arg Val Gly Lys Leu
    770                 775                 780

Val Asp Ser Ser Met Asp Ile Gln Ala Ile Gln Leu Pro Ala Leu Gln
785                 790                 795                 800

Tyr Gln His Glu Arg Arg Ala Ser Asp Trp Ala Val Asp Ser Asn Leu
                805                 810                 815

Cys Gly Ala Met Asp Pro Ser Asp Gly Ile Gly Ala Leu Ile Glu Glu
            820                 825                 830

Glu Arg Thr Ala Val Lys Leu Asn Thr Gly Leu Ala Leu His Cys Gln
        835                 840                 845

Gln Phe Trp Ala Met Phe Leu Lys Lys Ala Ala Tyr Ser Trp Arg Glu
    850                 855                 860

Trp Lys Met Val Ala Ala Gln Val Leu Val Pro Leu Thr Cys Val Thr
865                 870                 875                 880

Leu Ala Leu Leu Ala Ile Asn Tyr Ser Ser Glu Leu Phe Asp Asp Pro
                885                 890                 895

Met Leu Arg Leu Thr Leu Gly Glu Tyr Gly Arg Thr Val Val Pro Phe
            900                 905                 910

Ser Val Pro Gly Thr Ser Gln Leu Gly Gln Gln Leu Ser Glu His Leu
        915                 920                 925

Lys Asp Ala Leu Gln Ala Glu Gly Gln Glu Pro Arg Glu Val Leu Gly
    930                 935                 940

Asp Leu Glu Glu Phe Leu Ile Phe Arg Ala Ser Val Glu Gly Gly Gly
945                 950                 955                 960

Phe Asn Glu Arg Cys Leu Val Ala Ala Ser Phe Arg Asp Val Gly Glu
                965                 970                 975

Arg Thr Val Val Asn Ala Leu Phe Asn Asn Gln Ala Tyr His Ser Pro
            980                 985                 990
```

Ala Thr Ala Leu Ala Val Val Asp Asn Leu Leu Phe Lys Leu Leu Cys
995 1000 1005

Gly Pro His Ala Ser Ile Val Val Ser Asn Phe Pro Gln Pro Arg
1010 1015 1020

Ser Ala Leu Gln Ala Ala Lys Asp Gln Phe Asn Glu Gly Arg Lys
1025 1030 1035

Gly Phe Asp Ile Ala Leu Asn Leu Leu Phe Ala Met Ala Phe Leu
1040 1045 1050

Ala Ser Thr Phe Ser Ile Leu Ala Val Ser Glu Arg Ala Val Gln
1055 1060 1065

Ala Lys His Val Gln Phe Val Ser Gly Val His Val Ala Ser Phe
1070 1075 1080

Trp Leu Ser Ala Leu Leu Trp Asp Leu Ile Ser Phe Leu Ile Pro
1085 1090 1095

Ser Leu Leu Leu Leu Val Val Phe Lys Ala Phe Asp Val Arg Ala
1100 1105 1110

Phe Thr Arg Asp Gly His Met Ala Asp Thr Leu Leu Leu Leu Leu
1115 1120 1125

Leu Tyr Gly Trp Ala Ile Ile Pro Leu Met Tyr Leu Met Asn Phe
1130 1135 1140

Phe Phe Leu Gly Ala Ala Thr Ala Tyr Thr Arg Leu Thr Ile Phe
1145 1150 1155

Asn Ile Leu Ser Gly Ile Ala Thr Phe Leu Met Val Thr Ile Met
1160 1165 1170

Arg Ile Pro Ala Val Lys Leu Glu Glu Leu Ser Lys Thr Leu Asp
1175 1180 1185

His Val Phe Leu Val Leu Pro Asn His Cys Leu Gly Met Ala Val
1190 1195 1200

```
Ser Ser  Phe Tyr Glu Asn Tyr  Glu Thr Arg Arg Tyr  Cys Thr Ser
    1205                 1210                 1215

Ser Glu  Val Ala Ala His Tyr  Cys Lys Lys Tyr Asn  Ile Gln Tyr
    1220                 1225                 1230

Gln Glu  Asn Phe Tyr Ala Trp  Ser Ala Pro Gly Val  Gly Arg Phe
    1235                 1240                 1245

Val Ala  Ser Met Ala Ala Ser  Gly Cys Ala Tyr Leu  Ile Leu Leu
    1250                 1255                 1260

Phe Leu  Ile Glu Thr Asn Leu  Leu Gln Arg Leu Arg  Gly Ile Leu
    1265                 1270                 1275

Cys Ala  Leu Arg Arg Arg Arg  Thr Leu Thr Glu Leu  Tyr Thr Arg
    1280                 1285                 1290

Met Pro  Val Leu Pro Glu Asp  Gln Asp Val Ala Asp  Glu Arg Thr
    1295                 1300                 1305

Arg Ile  Leu Ala Pro Ser Pro  Asp Ser Leu Leu His  Thr Pro Leu
    1310                 1315                 1320

Ile Ile  Lys Glu Leu Ser Lys  Val Tyr Glu Gln Arg  Val Pro Leu
    1325                 1330                 1335

Leu Ala  Val Asp Arg Leu Ser  Leu Ala Val Gln Lys  Gly Glu Cys
    1340                 1345                 1350

Phe Gly  Leu Leu Gly Phe Asn  Gly Ala Gly Lys Thr  Thr Thr Phe
    1355                 1360                 1365

Lys Met  Leu Thr Gly Glu Glu  Ser Leu Thr Ser Gly  Asp Ala Phe
    1370                 1375                 1380

Val Gly  Gly His Arg Ile Ser  Ser Asp Val Gly Lys  Val Arg Gln
    1385                 1390                 1395

Arg Ile  Gly Tyr Cys Pro Gln  Phe Asp Ala Leu Leu  Asp His Met
    1400                 1405                 1410
```

```
Thr Gly  Arg Glu Met Leu Val  Met Tyr Ala Arg Leu  Arg Gly Ile
    1415                 1420                 1425

Pro Glu  Arg His Ile Gly Ala  Cys Val Glu Asn Thr  Leu Arg Gly
    1430                 1435                 1440

Leu Leu  Leu Glu Pro His Ala  Asn Lys Leu Val Arg  Thr Tyr Ser
    1445                 1450                 1455

Gly Gly  Asn Lys Arg Lys Leu  Ser Thr Gly Ile Ala  Leu Ile Gly
    1460                 1465                 1470

Glu Pro  Ala Val Ile Phe Leu  Asp Glu Pro Ser Thr  Gly Met Asp
    1475                 1480                 1485

Pro Val  Ala Arg Arg Leu Leu  Trp Asp Thr Val Ala  Arg Ala Arg
    1490                 1495                 1500

Glu Ser  Gly Lys Ala Ile Ile  Ile Thr Ser His Ser  Met Glu Glu
    1505                 1510                 1515

Cys Glu  Ala Leu Cys Thr Arg  Leu Ala Ile Met Val  Gln Gly Gln
    1520                 1525                 1530

Phe Lys  Cys Leu Gly Ser Pro  Gln His Leu Lys Ser  Lys Phe Gly
    1535                 1540                 1545

Ser Gly  Tyr Ser Leu Arg Ala  Lys Val Gln Ser Glu  Gly Gln Gln
    1550                 1555                 1560

Glu Ala  Leu Glu Glu Phe Lys  Ala Phe Val Asp Leu  Thr Phe Pro
    1565                 1570                 1575

Gly Ser  Val Leu Glu Asp Glu  His Gln Gly Met Val  His Tyr His
    1580                 1585                 1590

Leu Pro  Gly Arg Asp Leu Ser  Trp Ala Lys Val Phe  Gly Ile Leu
    1595                 1600                 1605

Glu Lys  Ala Lys Glu Lys Tyr  Gly Val Asp Asp Tyr  Ser Val Ser
    1610                 1615                 1620
```

```
Gln Ile  Ser Leu Glu Gln Val  Phe Leu Ser Phe Ala  His Leu Gln
    1625                1630                1635


Pro Pro  Thr Ala Glu Glu Gly  Arg
    1640                1645


<210> 7599
<211> 209
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1603; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA3; "

<220>
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<223> /note="Gene Name:
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      A (ABC1),
      member 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q99758; "

<220>
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Met Ala Val Leu Arg Gln Leu Ala Leu Leu Leu Trp Lys Asn Tyr Thr
1               5                   10                  15


Leu Gln Lys Arg Lys Val Leu Val Thr Val Leu Glu Leu Phe Leu Pro
            20                  25                  30


Leu Leu Phe Ser Gly Ile Leu Ile Trp Leu Arg Leu Lys Ile Gln Ser
        35                  40                  45


Glu Asn Val Pro Asn Ala Thr Ile Tyr Pro Gly Gln Ser Ile Gln Glu
    50                  55                  60


Leu Pro Leu Phe Phe Thr Phe Pro Pro Pro Gly Asp Thr Trp Glu Leu
65                  70                  75                  80
```

```
Ala Tyr Ile Pro Ser His Ser Asp Ala Ala Lys Thr Val Thr Glu Thr
                85                  90                  95

Val Arg Arg Ala Leu Val Ile Asn Met Arg Val Arg Gly Phe Pro Ser
            100                 105                 110

Glu Lys Asp Phe Glu Asp Tyr Ile Arg Tyr Asp Asn Cys Ser Ser Ser
        115                 120                 125

Val Leu Ala Ala Val Val Phe Glu His Pro Phe Asn His Ser Lys Glu
    130                 135                 140

Pro Leu Pro Leu Ala Val Lys Tyr His Leu Arg Phe Ser Tyr Thr Arg
145                 150                 155                 160

Arg Asn Tyr Met Trp Thr Gln Thr Gly Ser Phe Phe Leu Lys Glu Thr
                165                 170                 175

Glu Gly Trp His Thr Thr Ser Leu Phe Pro Leu Phe Pro Asn Pro Gly
            180                 185                 190

Pro Arg Glu Pro Thr Ser Pro Asp Gly Gly Glu Pro Gly Glu Lys Leu
        195                 200                 205

Gly
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<210> 7600
<211> 2273
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 4; "

<220>

<221> source
<223> /note="Uniprot ID: P78363; "

<220>
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<223> /note="ENSP ID: ENSP00000359245"

<400> 7600
Met Gly Phe Val Arg Gln Ile Gln Leu Leu Leu Trp Lys Asn Trp Thr
1   5   10   15

Leu Arg Lys Arg Gln Lys Ile Arg Phe Val Val Glu Leu Val Trp Pro
            20   25   30

Leu Ser Leu Phe Leu Val Leu Ile Trp Leu Arg Asn Ala Asn Pro Leu
        35   40   45

Tyr Ser His His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala
    50   55   60

Gly Met Leu Pro Trp Leu Gln Gly Ile Phe Cys Asn Val Asn Asn Pro
65   70   75   80

Cys Phe Gln Ser Pro Thr Pro Gly Glu Ser Pro Gly Ile Val Ser Asn
                85   90   95

Tyr Asn Asn Ser Ile Leu Ala Arg Val Tyr Arg Asp Phe Gln Glu Leu
            100   105   110

Leu Met Asn Ala Pro Glu Ser Gln His Leu Gly Arg Ile Trp Thr Glu
        115   120   125

Leu His Ile Leu Ser Gln Phe Met Asp Thr Leu Arg Thr His Pro Glu
    130   135   140

Arg Ile Ala Gly Arg Gly Ile Arg Ile Arg Asp Ile Leu Lys Asp Glu
145   150   155   160

Glu Thr Leu Thr Leu Phe Leu Ile Lys Asn Ile Gly Leu Ser Asp Ser
                165   170   175

Val Val Tyr Leu Leu Ile Asn Ser Gln Val Arg Pro Glu Gln Phe Ala
            180   185   190

His Gly Val Pro Asp Leu Ala Leu Lys Asp Ile Ala Cys Ser Glu Ala

195 200 205

Leu Leu Glu Arg Phe Ile Ile Phe Ser Gln Arg Arg Gly Ala Lys Thr
210 215 220

Val Arg Tyr Ala Leu Cys Ser Leu Ser Gln Gly Thr Leu Gln Trp Ile
225 230 235 240

Glu Asp Thr Leu Tyr Ala Asn Val Asp Phe Phe Lys Leu Phe Arg Val
245 250 255

Leu Pro Thr Leu Leu Asp Ser Arg Ser Gln Gly Ile Asn Leu Arg Ser
260 265 270

Trp Gly Gly Ile Leu Ser Asp Met Ser Pro Arg Ile Gln Glu Phe Ile
275 280 285

His Arg Pro Ser Met Gln Asp Leu Leu Trp Val Thr Arg Pro Leu Met
290 295 300

Gln Asn Gly Gly Pro Glu Thr Phe Thr Lys Leu Met Gly Ile Leu Ser
305 310 315 320

Asp Leu Leu Cys Gly Tyr Pro Glu Gly Gly Gly Ser Arg Val Leu Ser
325 330 335

Phe Asn Trp Tyr Glu Asp Asn Asn Tyr Lys Ala Phe Leu Gly Ile Asp
340 345 350

Ser Thr Arg Lys Asp Pro Ile Tyr Ser Tyr Asp Arg Arg Thr Thr Ser
355 360 365

Phe Cys Asn Ala Leu Ile Gln Ser Leu Glu Ser Asn Pro Leu Thr Lys
370 375 380

Ile Ala Trp Arg Ala Ala Lys Pro Leu Leu Met Gly Lys Ile Leu Tyr
385 390 395 400

Thr Pro Asp Ser Pro Ala Ala Arg Arg Ile Leu Lys Asn Ala Asn Ser
405 410 415

Thr Phe Glu Glu Leu Glu His Val Arg Lys Leu Val Lys Ala Trp Glu
420 425 430

```
Glu Val Gly Pro Gln Ile Trp Tyr Phe Phe Asp Asn Ser Thr Gln Met
        435                 440                 445

Asn Met Ile Arg Asp Thr Leu Gly Asn Pro Thr Val Lys Asp Phe Leu
    450                 455                 460

Asn Arg Gln Leu Gly Glu Glu Gly Ile Thr Ala Glu Ala Ile Leu Asn
465                 470                 475                 480

Phe Leu Tyr Lys Gly Pro Arg Glu Ser Gln Ala Asp Asp Met Ala Asn
                485                 490                 495

Phe Asp Trp Arg Asp Ile Phe Asn Ile Thr Asp Arg Thr Leu Arg Leu
            500                 505                 510

Val Asn Gln Tyr Leu Glu Cys Leu Val Leu Asp Lys Phe Glu Ser Tyr
        515                 520                 525

Asn Asp Glu Thr Gln Leu Thr Gln Arg Ala Leu Ser Leu Leu Glu Glu
    530                 535                 540

Asn Met Phe Trp Ala Gly Val Val Phe Pro Asp Met Tyr Pro Trp Thr
545                 550                 555                 560

Ser Ser Leu Pro Pro His Val Lys Tyr Lys Ile Arg Met Asp Ile Asp
                565                 570                 575

Val Val Glu Lys Thr Asn Lys Ile Lys Asp Arg Tyr Trp Asp Ser Gly
            580                 585                 590

Pro Arg Ala Asp Pro Val Glu Asp Phe Arg Tyr Ile Trp Gly Gly Phe
        595                 600                 605

Ala Tyr Leu Gln Asp Met Val Glu Gln Gly Ile Thr Arg Ser Gln Val
    610                 615                 620

Gln Ala Glu Ala Pro Val Gly Ile Tyr Leu Gln Gln Met Pro Tyr Pro
625                 630                 635                 640

Cys Phe Val Asp Asp Ser Phe Met Ile Ile Leu Asn Arg Cys Phe Pro
                645                 650                 655
```

```
Ile Phe Met Val Leu Ala Trp Ile Tyr Ser Val Ser Met Thr Val Lys
            660                 665                 670

Ser Ile Val Leu Glu Lys Glu Leu Arg Leu Lys Glu Thr Leu Lys Asn
        675                 680                 685

Gln Gly Val Ser Asn Ala Val Ile Trp Cys Thr Trp Phe Leu Asp Ser
    690                 695                 700

Phe Ser Ile Met Ser Met Ser Ile Phe Leu Leu Thr Ile Phe Ile Met
705                 710                 715                 720

His Gly Arg Ile Leu His Tyr Ser Asp Pro Phe Ile Leu Phe Leu Phe
                725                 730                 735

Leu Leu Ala Phe Ser Thr Ala Thr Ile Met Leu Cys Phe Leu Leu Ser
            740                 745                 750

Thr Phe Phe Ser Lys Ala Ser Leu Ala Ala Ala Cys Ser Gly Val Ile
        755                 760                 765

Tyr Phe Thr Leu Tyr Leu Pro His Ile Leu Cys Phe Ala Trp Gln Asp
    770                 775                 780

Arg Met Thr Ala Glu Leu Lys Lys Ala Val Ser Leu Leu Ser Pro Val
785                 790                 795                 800

Ala Phe Gly Phe Gly Thr Glu Tyr Leu Val Arg Phe Glu Glu Gln Gly
                805                 810                 815

Leu Gly Leu Gln Trp Ser Asn Ile Gly Asn Ser Pro Thr Glu Gly Asp
            820                 825                 830

Glu Phe Ser Phe Leu Leu Ser Met Gln Met Met Leu Leu Asp Ala Ala
        835                 840                 845

Val Tyr Gly Leu Leu Ala Trp Tyr Leu Asp Gln Val Phe Pro Gly Asp
    850                 855                 860

Tyr Gly Thr Pro Leu Pro Trp Tyr Phe Leu Leu Gln Glu Ser Tyr Trp
865                 870                 875                 880
```

```
Leu Gly Gly Glu Gly Cys Ser Thr Arg Glu Glu Arg Ala Leu Glu Lys
                885                 890                 895

Thr Glu Pro Leu Thr Glu Glu Thr Glu Asp Pro Glu His Pro Glu Gly
            900                 905                 910

Ile His Asp Ser Phe Phe Glu Arg Glu His Pro Gly Trp Val Pro Gly
        915                 920                 925

Val Cys Val Lys Asn Leu Val Lys Ile Phe Glu Pro Cys Gly Arg Pro
    930                 935                 940

Ala Val Asp Arg Leu Asn Ile Thr Phe Tyr Glu Asn Gln Ile Thr Ala
945                 950                 955                 960

Phe Leu Gly His Asn Gly Ala Gly Lys Thr Thr Thr Leu Ser Ile Leu
                965                 970                 975

Thr Gly Leu Leu Pro Pro Thr Ser Gly Thr Val Leu Val Gly Gly Arg
            980                 985                 990

Asp Ile Glu Thr Ser Leu Asp Ala  Val Arg Gln Ser Leu  Gly Met
Cys
        995                 1000                1005

Pro Gln  His Asn Ile Leu Phe  His His Leu Thr Val  Ala Glu His
    1010                1015                1020

Met Leu  Phe Tyr Ala Gln Leu  Lys Gly Lys Ser Gln  Glu Glu Ala
    1025                1030                1035

Gln Leu  Glu Met Glu Ala Met  Leu Glu Asp Thr Gly  Leu His His
    1040                1045                1050

Lys Arg  Asn Glu Glu Ala Gln  Asp Leu Ser Gly Gly  Met Gln Arg
    1055                1060                1065

Lys Leu  Ser Val Ala Ile Ala  Phe Val Gly Asp Ala  Lys Val Val
    1070                1075                1080

Ile Leu  Asp Glu Pro Thr Ser  Gly Val Asp Pro Tyr  Ser Arg Arg
    1085                1090                1095
```

```
Ser Ile  Trp Asp Leu Leu Leu  Lys Tyr Arg Ser Gly  Arg Thr Ile
    1100                1105                1110

Ile Met  Ser Thr His His Met  Asp Glu Ala Asp Leu  Leu Gly Asp
    1115                1120                1125

Arg Ile  Ala Ile Ile Ala Gln  Gly Arg Leu Tyr Cys  Ser Gly Thr
    1130                1135                1140

Pro Leu  Phe Leu Lys Asn Cys  Phe Gly Thr Gly Leu  Tyr Leu Thr
    1145                1150                1155

Leu Val  Arg Lys Met Lys Asn  Ile Gln Ser Gln Arg  Lys Gly Ser
    1160                1165                1170

Glu Gly  Thr Cys Ser Cys Ser  Ser Lys Gly Phe Ser  Thr Thr Cys
    1175                1180                1185

Pro Ala  His Val Asp Asp Leu  Thr Pro Glu Gln Val  Leu Asp Gly
    1190                1195                1200

Asp Val  Asn Glu Leu Met Asp  Val Val Leu His His  Val Pro Glu
    1205                1210                1215

Ala Lys  Leu Val Glu Cys Ile  Gly Gln Glu Leu Ile  Phe Leu Leu
    1220                1225                1230

Pro Asn  Lys Asn Phe Lys His  Arg Ala Tyr Ala Ser  Leu Phe Arg
    1235                1240                1245

Glu Leu  Glu Glu Thr Leu Ala  Asp Leu Gly Leu Ser  Ser Phe Gly
    1250                1255                1260

Ile Ser  Asp Thr Pro Leu Glu  Glu Ile Phe Leu Lys  Val Thr Glu
    1265                1270                1275

Asp Ser  Asp Ser Gly Pro Leu  Phe Ala Gly Gly Ala  Gln Gln Lys
    1280                1285                1290

Arg Glu  Asn Val Asn Pro Arg  His Pro Cys Leu Gly  Pro Arg Glu
    1295                1300                1305

Lys Ala  Gly Gln Thr Pro Gln  Asp Ser Asn Val Cys  Ser Pro Gly
```

1310 1315 1320

Ala Pro Ala Ala His Pro Glu Gly Gln Pro Pro Pro Glu Pro Glu
1325 1330 1335

Cys Pro Gly Pro Gln Leu Asn Thr Gly Thr Gln Leu Val Leu Gln
1340 1345 1350

His Val Gln Ala Leu Leu Val Lys Arg Phe Gln His Thr Ile Arg
1355 1360 1365

Ser His Lys Asp Phe Leu Ala Gln Ile Val Leu Pro Ala Thr Phe
1370 1375 1380

Val Phe Leu Ala Leu Met Leu Ser Ile Val Ile Pro Pro Phe Gly
1385 1390 1395

Glu Tyr Pro Ala Leu Thr Leu His Pro Trp Ile Tyr Gly Gln Gln
1400 1405 1410

Tyr Thr Phe Phe Ser Met Asp Glu Pro Gly Ser Glu Gln Phe Thr
1415 1420 1425

Val Leu Ala Asp Val Leu Leu Asn Lys Pro Gly Phe Gly Asn Arg
1430 1435 1440

Cys Leu Lys Glu Gly Trp Leu Pro Glu Tyr Pro Cys Gly Asn Ser
1445 1450 1455

Thr Pro Trp Lys Thr Pro Ser Val Ser Pro Asn Ile Thr Gln Leu
1460 1465 1470

Phe Gln Lys Gln Lys Trp Thr Gln Val Asn Pro Ser Pro Ser Cys
1475 1480 1485

Arg Cys Ser Thr Arg Glu Lys Leu Thr Met Leu Pro Glu Cys Pro
1490 1495 1500

Glu Gly Ala Gly Gly Leu Pro Pro Pro Gln Arg Thr Gln Arg Ser
1505 1510 1515

Thr Glu Ile Leu Gln Asp Leu Thr Asp Arg Asn Ile Ser Asp Phe
1520 1525 1530

```
Leu Val  Lys Thr Tyr Pro Ala  Leu Ile Arg Ser Ser  Leu Lys Ser
    1535                1540                1545

Lys Phe  Trp Val Asn Glu Gln  Arg Tyr Gly Gly Ile  Ser Ile Gly
    1550                1555                1560

Gly Lys  Leu Pro Val Val Pro  Ile Thr Gly Glu Ala  Leu Val Gly
    1565                1570                1575

Phe Leu  Ser Asp Leu Gly Arg  Ile Met Asn Val Ser  Gly Gly Pro
    1580                1585                1590

Ile Thr  Arg Glu Ala Ser Lys  Glu Ile Pro Asp Phe  Leu Lys His
    1595                1600                1605

Leu Glu  Thr Glu Asp Asn Ile  Lys Val Trp Phe Asn  Asn Lys Gly
    1610                1615                1620

Trp His  Ala Leu Val Ser Phe  Leu Asn Val Ala His  Asn Ala Ile
    1625                1630                1635

Leu Arg  Ala Ser Leu Pro Lys  Asp Arg Ser Pro Glu  Glu Tyr Gly
    1640                1645                1650

Ile Thr  Val Ile Ser Gln Pro  Leu Asn Leu Thr Lys  Glu Gln Leu
    1655                1660                1665

Ser Glu  Ile Thr Val Leu Thr  Thr Ser Val Asp Ala  Val Val Ala
    1670                1675                1680

Ile Cys  Val Ile Phe Ser Met  Ser Phe Val Pro Ala  Ser Phe Val
    1685                1690                1695

Leu Tyr  Leu Ile Gln Glu Arg  Val Asn Lys Ser Lys  His Leu Gln
    1700                1705                1710

Phe Ile  Ser Gly Val Ser Pro  Thr Thr Tyr Trp Val  Thr Asn Phe
    1715                1720                1725

Leu Trp  Asp Ile Met Asn Tyr  Ser Val Ser Ala Gly  Leu Val Val
    1730                1735                1740
```

```
Gly Ile  Phe Ile Gly Phe Gln  Lys Lys Ala Tyr Thr  Ser Pro Glu
    1745                1750                1755

Asn Leu  Pro Ala Leu Val Ala  Leu Leu Leu Leu Tyr  Gly Trp Ala
    1760                1765                1770

Val Ile  Pro Met Met Tyr Pro  Ala Ser Phe Leu Phe  Asp Val Pro
    1775                1780                1785

Ser Thr  Ala Tyr Val Ala Leu  Ser Cys Ala Asn Leu  Phe Ile Gly
    1790                1795                1800

Ile Asn  Ser Ser Ala Ile Thr  Phe Ile Leu Glu Leu  Phe Glu Asn
    1805                1810                1815

Asn Arg  Thr Leu Leu Arg Phe  Asn Ala Val Leu Arg  Lys Leu Leu
    1820                1825                1830

Ile Val  Phe Pro His Phe Cys  Leu Gly Arg Gly Leu  Ile Asp Leu
    1835                1840                1845

Ala Leu  Ser Gln Ala Val Thr  Asp Val Tyr Ala Arg  Phe Gly Glu
    1850                1855                1860

Glu His  Ser Ala Asn Pro Phe  His Trp Asp Leu Ile  Gly Lys Asn
    1865                1870                1875

Leu Phe  Ala Met Val Val Glu  Gly Val Val Tyr Phe  Leu Leu Thr
    1880                1885                1890

Leu Leu  Val Gln Arg His Phe  Phe Leu Ser Gln Trp  Ile Ala Glu
    1895                1900                1905

Pro Thr  Lys Glu Pro Ile Val  Asp Glu Asp Asp Asp  Val Ala Glu
    1910                1915                1920

Glu Arg  Gln Arg Ile Ile Thr  Gly Gly Asn Lys Thr  Asp Ile Leu
    1925                1930                1935

Arg Leu  His Glu Leu Thr Lys  Ile Tyr Pro Gly Thr  Ser Ser Pro
    1940                1945                1950
```

```
Ala Val  Asp Arg Leu Cys Val  Gly Val Arg Pro Gly  Glu Cys Phe
    1955                1960                1965

Gly Leu  Leu Gly Val Asn Gly  Ala Gly Lys Thr Thr  Thr Phe Lys
    1970                1975                1980

Met Leu  Thr Gly Asp Thr Thr  Val Thr Ser Gly Asp  Ala Thr Val
    1985                1990                1995

Ala Gly  Lys Ser Ile Leu Thr  Asn Ile Ser Glu Val  His Gln Asn
    2000                2005                2010

Met Gly  Tyr Cys Pro Gln Phe  Asp Ala Ile Asp Glu  Leu Leu Thr
    2015                2020                2025

Gly Arg  Glu His Leu Tyr Leu  Tyr Ala Arg Leu Arg  Gly Val Pro
    2030                2035                2040

Ala Glu  Glu Ile Glu Lys Val  Ala Asn Trp Ser Ile  Lys Ser Leu
    2045                2050                2055

Gly Leu  Thr Val Tyr Ala Asp  Cys Leu Ala Gly Thr  Tyr Ser Gly
    2060                2065                2070

Gly Asn  Lys Arg Lys Leu Ser  Thr Ala Ile Ala Leu  Ile Gly Cys
    2075                2080                2085

Pro Pro  Leu Val Leu Leu Asp  Glu Pro Thr Thr Gly  Met Asp Pro
    2090                2095                2100

Gln Ala  Arg Arg Met Leu Trp  Asn Val Ile Val Ser  Ile Ile Arg
    2105                2110                2115

Glu Gly  Arg Ala Val Val Leu  Thr Ser His Ser Met  Glu Glu Cys
    2120                2125                2130

Glu Ala  Leu Cys Thr Arg Leu  Ala Ile Met Val Lys  Gly Ala Phe
    2135                2140                2145

Arg Cys  Met Gly Thr Ile Gln  His Leu Lys Ser Lys  Phe Gly Asp
    2150                2155                2160

Gly Tyr  Ile Val Thr Met Lys  Ile Lys Ser Pro Lys  Asp Asp Leu
```

```
    2165                2170                2175

Leu Pro  Asp Leu Asn Pro Val  Glu Gln Phe Phe Gln  Gly Asn Phe
    2180                2185                2190

Pro Gly  Ser Val Gln Arg Glu  Arg His Tyr Asn Met  Leu Gln Phe
    2195                2200                2205

Gln Val  Ser Ser Ser Ser Leu  Ala Arg Ile Phe Gln  Leu Leu Leu
    2210                2215                2220

Ser His  Lys Asp Ser Leu Leu  Ile Glu Glu Tyr Ser  Val Thr Gln
    2225                2230                2235

Thr Thr  Leu Asp Gln Val Phe  Val Asn Phe Ala Lys  Gln Gln Thr
    2240                2245                2250

Glu Ser  His Asp Leu Pro Leu  His Pro Arg Ala Ala  Gly Ala Ser
    2255                2260                2265

Arg Gln  Ala Gln Asp
    2270
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<210> 7601
<211> 1065
<212> PRT
<213> Homo sapiens

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ATP-binding cassette, sub-family
A (ABC1),
member 4; "

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Met Asp Val Val Leu His His Val Pro Glu Ala Lys Leu Val Glu Cys

1 5 10 15

Ile Gly Gln Glu Leu Ile Phe Leu Leu Pro Asn Lys Asn Phe Lys His
20 25 30

Arg Ala Tyr Ala Ser Leu Phe Arg Glu Leu Glu Glu Thr Leu Ala Asp
35 40 45

Leu Gly Leu Ser Ser Phe Gly Ile Ser Asp Thr Pro Leu Glu Glu Ile
50 55 60

Phe Leu Lys Val Thr Glu Asp Ser Asp Ser Gly Pro Leu Phe Ala Gly
65 70 75 80

Gly Ala Gln Gln Lys Arg Glu Asn Val Asn Pro Arg His Pro Cys Leu
85 90 95

Gly Pro Arg Glu Lys Ala Gly Gln Thr Pro Gln Asp Ser Asn Val Cys
100 105 110

Ser Pro Gly Ala Pro Ala Ala His Pro Glu Gly Gln Pro Pro Pro Glu
115 120 125

Pro Glu Cys Pro Gly Pro Gln Leu Asn Thr Gly Thr Gln Leu Val Leu
130 135 140

Gln His Val Gln Ala Leu Leu Val Lys Arg Phe Gln His Thr Ile Arg
145 150 155 160

Ser His Lys Asp Phe Leu Ala Gln Ile Val Leu Pro Ala Thr Phe Val
165 170 175

Phe Leu Ala Leu Met Leu Ser Ile Val Ile Pro Pro Phe Gly Glu Tyr
180 185 190

Pro Ala Leu Thr Leu His Pro Trp Ile Tyr Gly Gln Gln Tyr Thr Phe
195 200 205

Phe Ser Met Asp Glu Pro Gly Ser Glu Gln Phe Thr Val Leu Ala Asp
210 215 220

Val Leu Leu Asn Lys Pro Gly Phe Gly Asn Arg Cys Leu Lys Glu Gly
225 230 235 240

```
Trp Leu Pro Glu Tyr Pro Cys Gly Asn Ser Thr Pro Trp Lys Thr Pro
                245                 250                 255

Ser Val Ser Pro Asn Ile Thr Gln Leu Phe Gln Lys Gln Lys Trp Thr
            260                 265                 270

Gln Val Asn Pro Ser Pro Ser Cys Arg Cys Ser Thr Arg Glu Lys Leu
        275                 280                 285

Thr Met Leu Pro Glu Cys Pro Glu Gly Ala Gly Gly Leu Pro Pro Pro
    290                 295                 300

Gln Arg Thr Gln Arg Ser Thr Glu Ile Leu Gln Asp Leu Thr Asp Arg
305                 310                 315                 320

Asn Ile Ser Asp Phe Leu Val Lys Thr Tyr Pro Ala Leu Ile Arg Ser
                325                 330                 335

Ser Leu Lys Ser Lys Phe Trp Val Asn Glu Gln Arg Tyr Gly Gly Ile
            340                 345                 350

Ser Ile Gly Gly Lys Leu Pro Val Val Pro Ile Thr Gly Glu Ala Leu
        355                 360                 365

Val Gly Phe Leu Ser Asp Leu Gly Arg Ile Met Asn Val Ser Gly Gly
    370                 375                 380

Pro Ile Thr Arg Glu Ala Ser Lys Glu Ile Pro Asp Phe Leu Lys His
385                 390                 395                 400

Leu Glu Thr Glu Asp Asn Ile Lys Val Trp Phe Asn Asn Lys Gly Trp
                405                 410                 415

His Ala Leu Val Ser Phe Leu Asn Val Ala His Asn Ala Ile Leu Arg
            420                 425                 430

Ala Ser Leu Pro Lys Asp Arg Ser Pro Glu Glu Tyr Gly Ile Thr Val
        435                 440                 445

Ile Ser Gln Pro Leu Asn Leu Thr Lys Glu Gln Leu Ser Glu Ile Thr
    450                 455                 460
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Val Leu Thr Thr Ser Val Asp Ala Val Val Ala Ile Cys Val Ile Phe
465                 470                 475                 480

Ser Met Ser Phe Val Pro Ala Ser Phe Val Leu Tyr Leu Ile Gln Glu
                485                 490                 495

Arg Val Asn Lys Ser Lys His Leu Gln Phe Ile Ser Gly Val Ser Pro
            500                 505                 510

Thr Thr Tyr Trp Val Thr Asn Phe Leu Trp Asp Ile Met Asn Tyr Ser
        515                 520                 525

Val Ser Ala Gly Leu Val Val Gly Ile Phe Ile Gly Phe Gln Lys Lys
    530                 535                 540

Ala Tyr Thr Ser Pro Glu Asn Leu Pro Ala Leu Val Ala Leu Leu Leu
545                 550                 555                 560

Leu Tyr Gly Trp Ala Val Ile Pro Met Met Tyr Pro Ala Ser Phe Leu
                565                 570                 575

Phe Asp Val Pro Ser Thr Ala Tyr Val Ala Leu Ser Cys Ala Asn Leu
            580                 585                 590

Phe Ile Gly Ile Asn Ser Ser Ala Ile Thr Phe Ile Leu Glu Leu Phe
        595                 600                 605

Glu Asn Asn Arg Thr Leu Leu Arg Phe Asn Ala Val Leu Arg Lys Leu
    610                 615                 620

Leu Ile Val Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile Asp Leu
625                 630                 635                 640

Ala Leu Ser Gln Ala Val Thr Asp Val Tyr Ala Arg Phe Gly Glu Glu
                645                 650                 655

His Ser Ala Asn Pro Phe His Trp Asp Leu Ile Gly Lys Asn Leu Phe
            660                 665                 670

Ala Met Val Val Glu Gly Val Val Tyr Phe Leu Leu Thr Leu Leu Val
        675                 680                 685
```

```
Gln Arg His Phe Phe Leu Ser Gln Trp Ile Ala Glu Pro Thr Lys Glu
    690                 695                 700

Pro Ile Val Asp Glu Asp Asp Asp Val Ala Glu Glu Arg Gln Arg Ile
705                 710                 715                 720

Ile Thr Gly Gly Asn Lys Thr Asp Ile Leu Arg Leu His Glu Leu Thr
                725                 730                 735

Lys Ile Tyr Pro Gly Thr Ser Ser Pro Ala Val Asp Arg Leu Cys Val
            740                 745                 750

Gly Val Arg Pro Gly Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala
        755                 760                 765

Gly Lys Thr Thr Thr Phe Lys Met Leu Thr Gly Asp Thr Thr Val Thr
    770                 775                 780

Ser Gly Asp Ala Thr Val Ala Gly Lys Ser Ile Leu Thr Asn Ile Ser
785                 790                 795                 800

Glu Val His Gln Asn Met Gly Tyr Cys Pro Gln Phe Asp Ala Ile Asp
                805                 810                 815

Glu Leu Leu Thr Gly Arg Glu His Leu Tyr Leu Tyr Ala Arg Leu Arg
            820                 825                 830

Gly Val Pro Ala Glu Glu Ile Glu Lys Val Ala Asn Trp Ser Ile Lys
        835                 840                 845

Ser Leu Gly Leu Thr Val Tyr Ala Asp Cys Leu Ala Gly Thr Tyr Ser
    850                 855                 860

Gly Gly Asn Lys Arg Lys Leu Ser Thr Ala Ile Ala Leu Ile Gly Cys
865                 870                 875                 880

Pro Pro Leu Val Leu Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Gln
                885                 890                 895

Ala Arg Arg Met Leu Trp Asn Val Ile Val Ser Ile Ile Arg Glu Gly
            900                 905                 910

Arg Ala Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu
```

915 920 925

Cys Thr Arg Leu Ala Ile Met Val Lys Gly Ala Phe Arg Cys Met Gly
930 935 940

Thr Ile Gln His Leu Lys Ser Lys Phe Gly Asp Gly Tyr Ile Val Thr
945 950 955 960

Met Lys Ile Lys Ser Pro Lys Asp Asp Leu Leu Pro Asp Leu Asn Pro
965 970 975

Val Glu Gln Phe Phe Gln Gly Asn Phe Pro Gly Ser Val Gln Arg Glu
980 985 990

Arg His Tyr Asn Met Leu Gln Phe Gln Val Ser Ser Ser Ser Leu
Ala
995 1000 1005

Arg Ile Phe Gln Leu Leu Leu Ser His Lys Asp Ser Leu Leu Ile
1010 1015 1020

Glu Glu Tyr Ser Val Thr Gln Thr Thr Leu Asp Gln Val Phe Val
1025 1030 1035

Asn Phe Ala Lys Gln Gln Thr Glu Ser His Asp Leu Pro Leu His
1040 1045 1050

Pro Arg Ala Ala Gly Ala Ser Arg Gln Ala Gln Asp
1055 1060 1065

<210> 7602
<211> 1642
<212> PRT
<213> Homo sapiens

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ATP-binding cassette, sub-family

A (ABC1),
member 5; "

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<400> 7602

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Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1               5                  10                  15

Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
            20                  25                  30

Val Gln Glu Ile Leu Phe Pro Leu Phe Phe Leu Phe Trp Leu Ile Leu
        35                  40                  45

Ile Ser Met Met His Pro Asn Lys Lys Tyr Glu Glu Val Pro Asn Ile
    50                  55                  60

Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
65                  70                  75                  80

Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
                85                  90                  95

Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
            100                 105                 110

Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val Gly
        115                 120                 125

Val Val Phe Lys Asp Ser Met Ser Tyr Glu Leu Arg Phe Phe Pro Asp
    130                 135                 140

Met Ile Pro Val Ser Ser Ile Tyr Met Asp Ser Arg Ala Gly Cys Ser
145                 150                 155                 160

Lys Ser Cys Glu Ala Ala Gln Tyr Trp Ser Ser Gly Phe Thr Val Leu
                165                 170                 175

Gln Ala Ser Ile Asp Ala Ala Ile Ile Gln Leu Lys Thr Asn Val Ser
```

```
            180                 185                 190

Leu Trp Lys Glu Leu Glu Ser Thr Lys Ala Val Ile Met Gly Glu Thr
        195                 200                 205

Ala Val Val Glu Ile Asp Thr Phe Pro Arg Gly Val Ile Leu Ile Tyr
    210                 215                 220

Leu Val Ile Ala Phe Ser Pro Phe Gly Tyr Phe Leu Ala Ile His Ile
225                 230                 235                 240

Val Ala Glu Lys Glu Lys Lys Ile Lys Glu Phe Leu Lys Ile Met Gly
                245                 250                 255

Leu His Asp Thr Ala Phe Trp Leu Ser Trp Val Leu Leu Tyr Thr Ser
            260                 265                 270

Leu Ile Phe Leu Met Ser Leu Leu Met Ala Val Ile Ala Thr Ala Ser
        275                 280                 285

Leu Leu Phe Pro Gln Ser Ser Ser Ile Val Ile Phe Leu Leu Phe Phe
    290                 295                 300

Leu Tyr Gly Leu Ser Ser Val Phe Phe Ala Leu Met Leu Thr Pro Leu
305                 310                 315                 320

Phe Lys Lys Ser Lys His Val Gly Ile Val Glu Phe Phe Val Thr Val
                325                 330                 335

Ala Phe Gly Phe Ile Gly Leu Met Ile Ile Leu Ile Glu Ser Phe Pro
            340                 345                 350

Lys Ser Leu Val Trp Leu Phe Ser Pro Phe Cys His Cys Thr Phe Val
        355                 360                 365

Ile Gly Ile Ala Gln Val Met His Leu Glu Asp Phe Asn Glu Gly Ala
    370                 375                 380

Ser Phe Ser Asn Leu Thr Ala Gly Pro Tyr Pro Leu Ile Ile Thr Ile
385                 390                 395                 400

Ile Met Leu Thr Leu Asn Ser Ile Phe Tyr Val Leu Leu Ala Val Tyr
                405                 410                 415
```

```
Leu Asp Gln Val Ile Pro Gly Glu Phe Gly Leu Arg Arg Ser Ser Leu
            420                 425                 430

Tyr Phe Leu Lys Pro Ser Tyr Trp Ser Lys Ser Lys Arg Asn Tyr Glu
        435                 440                 445

Glu Leu Ser Glu Gly Asn Val Asn Gly Asn Ile Ser Phe Ser Glu Ile
    450                 455                 460

Ile Glu Pro Val Ser Ser Glu Phe Val Gly Lys Glu Ala Ile Arg Ile
465                 470                 475                 480

Ser Gly Ile Gln Lys Thr Tyr Arg Lys Lys Gly Glu Asn Val Glu Ala
                485                 490                 495

Leu Arg Asn Leu Ser Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Leu
            500                 505                 510

Leu Gly His Ser Gly Thr Gly Lys Ser Thr Leu Met Asn Ile Leu Cys
        515                 520                 525

Gly Leu Cys Pro Pro Ser Asp Gly Phe Ala Ser Ile Tyr Gly His Arg
    530                 535                 540

Val Ser Glu Ile Asp Glu Met Phe Glu Ala Arg Lys Met Ile Gly Ile
545                 550                 555                 560

Cys Pro Gln Leu Asp Ile His Phe Asp Val Leu Thr Val Glu Glu Asn
                565                 570                 575

Leu Ser Ile Leu Ala Ser Ile Lys Gly Ile Pro Ala Asn Asn Ile Ile
            580                 585                 590

Gln Glu Val Gln Lys Val Leu Leu Asp Leu Asp Met Gln Thr Ile Lys
        595                 600                 605

Asp Asn Gln Ala Lys Lys Leu Ser Gly Gly Gln Lys Arg Lys Leu Ser
    610                 615                 620

Leu Gly Ile Ala Val Leu Gly Asn Pro Lys Ile Leu Leu Leu Asp Glu
625                 630                 635                 640
```

```
Pro Thr Ala Gly Met Asp Pro Cys Ser Arg His Ile Val Trp Asn Leu
                645                 650                 655

Leu Lys Tyr Arg Lys Ala Asn Arg Val Thr Val Phe Ser Thr His Phe
            660                 665                 670

Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Ala Val Ile Ser Gln
        675                 680                 685

Gly Met Leu Lys Cys Val Gly Ser Ser Met Phe Leu Lys Ser Lys Trp
    690                 695                 700

Gly Ile Gly Tyr Arg Leu Ser Met Tyr Ile Asp Lys Tyr Cys Ala Thr
705                 710                 715                 720

Glu Ser Leu Ser Ser Leu Val Lys Gln His Ile Pro Gly Ala Thr Leu
                725                 730                 735

Leu Gln Gln Asn Asp Gln Gln Leu Val Tyr Ser Leu Pro Phe Lys Asp
            740                 745                 750

Met Asp Lys Phe Ser Gly Leu Phe Ser Ala Leu Asp Ser His Ser Asn
        755                 760                 765

Leu Gly Val Ile Ser Tyr Gly Val Ser Met Thr Thr Leu Glu Asp Val
    770                 775                 780

Phe Leu Lys Leu Glu Val Glu Ala Glu Ile Asp Gln Ala Asp Tyr Ser
785                 790                 795                 800

Val Phe Thr Gln Gln Pro Leu Glu Glu Glu Met Asp Ser Lys Ser Phe
                805                 810                 815

Asp Glu Met Glu Gln Ser Leu Leu Ile Leu Ser Glu Thr Lys Ala Ala
            820                 825                 830

Leu Val Ser Thr Met Ser Leu Trp Lys Gln Gln Met Tyr Thr Ile Ala
        835                 840                 845

Lys Phe His Phe Phe Thr Leu Lys Arg Glu Ser Lys Ser Val Arg Ser
    850                 855                 860
```

```
Val Leu Leu Leu Leu Leu Ile Phe Phe Thr Val Gln Ile Phe Met Phe
865                 870                 875                 880

Leu Val His His Ser Phe Lys Asn Ala Val Val Pro Ile Lys Leu Val
                885                 890                 895

Pro Asp Leu Tyr Phe Leu Lys Pro Gly Asp Lys Pro His Lys Tyr Lys
            900                 905                 910

Thr Ser Leu Leu Leu Gln Asn Ser Ala Asp Ser Asp Ile Ser Asp Leu
        915                 920                 925

Ile Ser Phe Phe Thr Ser Gln Asn Ile Met Val Thr Met Ile Asn Asp
    930                 935                 940

Ser Asp Tyr Val Ser Val Ala Pro His Ser Ala Ala Leu Asn Val Met
945                 950                 955                 960

His Ser Glu Lys Asp Tyr Val Phe Ala Ala Val Phe Asn Ser Thr Met
                965                 970                 975

Val Tyr Ser Leu Pro Ile Leu Val Asn Ile Ile Ser Asn Tyr Tyr Leu
            980                 985                 990

Tyr His Leu Asn Val Thr Glu Thr  Ile Gln Ile Trp Ser  Thr Pro
Phe
        995                 1000                1005

Phe Gln  Glu Ile Thr Asp Ile  Val Phe Lys Ile Glu  Leu Tyr Phe
    1010                1015                1020

Gln Ala  Ala Leu Leu Gly Ile  Ile Val Thr Ala Met  Pro Pro Tyr
    1025                1030                1035

Phe Ala  Met Glu Asn Ala Glu  Asn His Lys Ile Lys  Ala Tyr Thr
    1040                1045                1050

Gln Leu  Lys Leu Ser Gly Leu  Leu Pro Ser Ala Tyr  Trp Ile Gly
    1055                1060                1065

Gln Ala  Val Val Asp Ile Pro  Leu Phe Phe Ile Ile  Leu Ile Leu
    1070                1075                1080
```

```
Met Leu  Gly Ser Leu Leu Ala  Phe His Tyr Gly Leu  Tyr Phe Tyr
    1085                1090                1095

Thr Val  Lys Phe Leu Ala Val  Val Phe Cys Leu Ile  Gly Tyr Val
    1100                1105                1110

Pro Ser  Val Ile Leu Phe Thr  Tyr Ile Ala Ser Phe  Thr Phe Lys
    1115                1120                1125

Lys Ile  Leu Asn Thr Lys Glu  Phe Trp Ser Phe Ile  Tyr Ser Val
    1130                1135                1140

Ala Ala  Leu Ala Cys Ile Ala  Ile Thr Glu Ile Thr  Phe Phe Met
    1145                1150                1155

Gly Tyr  Thr Ile Ala Thr Ile  Leu His Tyr Ala Phe  Cys Ile Ile
    1160                1165                1170

Ile Pro  Ile Tyr Pro Leu Leu  Gly Cys Leu Ile Ser  Phe Ile Lys
    1175                1180                1185

Ile Ser  Trp Lys Asn Val Arg  Lys Asn Val Asp Thr  Tyr Asn Pro
    1190                1195                1200

Trp Asp  Arg Leu Ser Val Ala  Val Ile Ser Pro Tyr  Leu Gln Cys
    1205                1210                1215

Val Leu  Trp Ile Phe Leu Leu  Gln Tyr Tyr Glu Lys  Lys Tyr Gly
    1220                1225                1230

Gly Arg  Ser Ile Arg Lys Asp  Pro Phe Phe Arg Asn  Leu Ser Thr
    1235                1240                1245

Lys Ser  Lys Asn Arg Lys Leu  Pro Glu Pro Pro Asp  Asn Glu Asp
    1250                1255                1260

Glu Asp  Glu Asp Val Lys Ala  Glu Arg Leu Lys Val  Lys Glu Leu
    1265                1270                1275

Met Gly  Cys Gln Cys Cys Glu  Glu Lys Pro Ser Ile  Met Val Ser
    1280                1285                1290

Asn Leu  His Lys Glu Tyr Asp  Asp Lys Lys Asp Phe  Leu Leu Ser
```

```
    1295                1300                1305

Arg Lys  Val Lys Lys Val Ala  Thr Lys Tyr Ile Ser  Phe Cys Val
    1310                1315                1320

Lys Lys  Gly Glu Ile Leu Gly  Leu Leu Gly Pro Asn  Gly Ala Gly
    1325                1330                1335

Lys Ser  Thr Ile Ile Asn Ile  Leu Val Gly Asp Ile  Glu Pro Thr
    1340                1345                1350

Ser Gly  Gln Val Phe Leu Gly  Asp Tyr Ser Ser Glu  Thr Ser Glu
    1355                1360                1365

Asp Asp  Asp Ser Leu Lys Cys  Met Gly Tyr Cys Pro  Gln Ile Asn
    1370                1375                1380

Pro Leu  Trp Pro Asp Thr Thr  Leu Gln Glu His Phe  Glu Ile Tyr
    1385                1390                1395

Gly Ala  Val Lys Gly Met Ser  Ala Ser Asp Met Lys  Glu Val Ile
    1400                1405                1410

Ser Arg  Ile Thr His Ala Leu  Asp Leu Lys Glu His  Leu Gln Lys
    1415                1420                1425

Thr Val  Lys Lys Leu Pro Ala  Gly Ile Lys Arg Lys  Leu Cys Phe
    1430                1435                1440

Ala Leu  Ser Met Leu Gly Asn  Pro Gln Ile Thr Leu  Leu Asp Glu
    1445                1450                1455

Pro Ser  Thr Gly Met Asp Pro  Lys Ala Lys Gln His  Met Trp Arg
    1460                1465                1470

Ala Ile  Arg Thr Ala Phe Lys  Asn Arg Lys Arg Ala  Ala Ile Leu
    1475                1480                1485

Thr Thr  His Tyr Met Glu Glu  Ala Glu Ala Val Cys  Asp Arg Val
    1490                1495                1500

Ala Ile  Met Val Ser Gly Gln  Leu Arg Cys Ile Gly  Thr Val Gln
    1505                1510                1515
```

```
His Leu  Lys Ser Lys Phe Gly  Lys Gly Tyr Phe Leu  Glu Ile Lys
    1520                1525                1530

Leu Lys  Asp Trp Ile Glu Asn  Leu Glu Val Asp Arg  Leu Gln Arg
    1535                1540                1545

Glu Ile  Gln Tyr Ile Phe Pro  Asn Ala Ser Arg Gln  Glu Ser Phe
    1550                1555                1560

Ser Ser  Ile Leu Ala Tyr Lys  Ile Pro Lys Glu Asp  Val Gln Ser
    1565                1570                1575

Leu Ser  Gln Ser Phe Phe Lys  Leu Glu Glu Ala Lys  His Ala Phe
    1580                1585                1590

Ala Ile  Glu Glu Tyr Ser Phe  Ser Gln Ala Thr Leu  Glu Gln Val
    1595                1600                1605

Phe Val  Glu Leu Thr Lys Glu  Gln Glu Glu Glu Asp  Asn Ser Cys
    1610                1615                1620

Gly Thr  Leu Asn Ser Thr Leu  Trp Trp Glu Arg Thr  Gln Glu Asp
    1625                1630                1635

Arg Val  Val Phe
    1640
```

<210> 7603
<211> 573
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465351"

<400> 7603
Met Pro Pro Tyr Phe Ala Met Glu Asn Ala Glu Asn His Lys Ile Lys
1   5   10   15

Ala Tyr Thr Gln Leu Lys Leu Ser Gly Leu Leu Pro Ser Ala Tyr Trp
            20   25   30

Ile Gly Gln Ala Val Val Asp Ile Pro Leu Phe Phe Ile Ile Leu Ile
        35   40   45

Leu Met Leu Gly Ser Leu Leu Ala Phe His Tyr Gly Leu Tyr Phe Tyr
    50   55   60

Thr Val Lys Phe Leu Ala Val Val Phe Cys Leu Ile Gly Tyr Val Pro
65   70   75   80

Ser Val Ile Leu Phe Thr Tyr Ile Ala Ser Phe Thr Phe Lys Lys Ile
                85   90   95

Leu Asn Thr Lys Glu Phe Trp Ser Phe Ile Tyr Ser Val Ala Ala Leu
            100   105   110

Ala Cys Ile Ala Ile Thr Glu Ile Thr Phe Phe Met Gly Tyr Thr Ile
        115   120   125

Ala Thr Ile Leu His Tyr Ala Phe Cys Ile Ile Ile Pro Ile Tyr Pro
    130   135   140

Leu Leu Gly Cys Leu Ile Ser Phe Ile Lys Ile Ser Trp Lys Asn Val
145   150   155   160

Arg Lys Asn Val Asp Thr Tyr Asn Pro Trp Asp Arg Leu Ser Val Ala
                165   170   175

Val Ile Ser Pro Tyr Leu Gln Cys Val Leu Trp Ile Phe Leu Leu Gln
            180   185   190

Tyr Tyr Glu Lys Lys Tyr Gly Gly Arg Ser Ile Arg Lys Asp Pro Phe
        195   200   205

```
Phe Arg Asn Leu Ser Thr Lys Ser Lys Asn Arg Lys Leu Pro Glu Pro
    210                 215                 220

Pro Asp Asn Glu Asp Glu Asp Glu Asp Val Lys Ala Glu Arg Leu Lys
225                 230                 235                 240

Val Lys Glu Leu Met Gly Cys Gln Cys Cys Glu Glu Lys Pro Ser Ile
                245                 250                 255

Met Val Ser Asn Leu His Lys Glu Tyr Asp Asp Lys Lys Asp Phe Leu
            260                 265                 270

Leu Ser Arg Lys Val Lys Lys Val Ala Thr Lys Tyr Ile Ser Phe Cys
        275                 280                 285

Val Lys Lys Gly Glu Ile Leu Gly Leu Leu Gly Pro Asn Gly Ala Gly
    290                 295                 300

Lys Ser Thr Ile Ile Asn Ile Leu Val Gly Asp Ile Glu Pro Thr Ser
305                 310                 315                 320

Gly Gln Val Phe Leu Gly Asp Tyr Ser Ser Glu Thr Ser Glu Asp Asp
                325                 330                 335

Asp Ser Leu Lys Cys Met Gly Tyr Cys Pro Gln Ile Asn Pro Leu Trp
            340                 345                 350

Pro Asp Thr Thr Leu Gln Glu His Phe Glu Ile Tyr Gly Ala Val Lys
        355                 360                 365

Gly Met Ser Ala Ser Asp Met Lys Glu Val Ile Ser Arg Ile Thr His
    370                 375                 380

Ala Leu Asp Leu Lys Glu His Leu Gln Lys Thr Val Lys Lys Leu Pro
385                 390                 395                 400

Ala Gly Ile Lys Arg Lys Leu Cys Phe Ala Leu Ser Met Leu Gly Asn
                405                 410                 415

Pro Gln Ile Thr Leu Leu Asp Glu Pro Ser Thr Gly Met Asp Pro Lys
            420                 425                 430
```

```
Ala Lys Gln His Met Trp Arg Ala Ile Arg Thr Ala Phe Lys Asn Arg
        435                 440                 445

Lys Arg Ala Ala Ile Leu Thr Thr His Tyr Met Glu Glu Ala Glu Ala
    450                 455                 460

Val Cys Asp Arg Val Ala Ile Met Val Ser Gly Gln Leu Arg Cys Ile
465                 470                 475                 480

Gly Thr Val Gln His Leu Lys Ser Lys Phe Gly Lys Gly Tyr Phe Leu
                485                 490                 495

Glu Ile Lys Leu Lys Asp Trp Ile Glu Asn Leu Glu Val Asp Arg Leu
            500                 505                 510

Gln Arg Glu Ile Gln Tyr Ile Phe Pro Asn Ala Ser Arg Gln Glu Ser
        515                 520                 525

Phe Ser Ser Ile Leu Ala Tyr Lys Ile Pro Lys Glu Asp Val Gln Ser
    530                 535                 540

Leu Ser Gln Ser Phe Phe Lys Leu Glu Glu Ala Lys His Ala Phe Ala
545                 550                 555                 560

Ile Glu Glu Tyr Ser Phe Ser Gln Ala Thr Leu Glu Gln
                565                 570
```

<210> 7604
<211> 63
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 5; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000465766"

<400> 7604
Met Phe Leu Lys Ser Lys Trp Gly Ile Gly Tyr Arg Leu Ser Met Tyr
1   5   10   15

Ile Asp Lys Tyr Cys Ala Thr Glu Ser Leu Ser Ser Leu Val Lys Gln
            20   25   30

His Ile Pro Gly Ala Thr Leu Leu Gln Gln Asn Asp Gln Gln Leu Val
        35   40   45

Tyr Ser Leu Pro Phe Lys Asp Met Asp Lys Phe Ser Gly Ile Ala
    50   55   60

<210> 7605
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466662"

<400> 7605
Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1   5   10   15

Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
            20   25   30

Val Gln Glu Ile Leu Phe Pro Leu Phe Phe Leu Phe Trp Leu Ile Leu
        35   40   45

```
Ile Ser Met Met His Pro Asn Lys Lys Tyr Glu Glu Val Pro Asn Ile
    50                  55                  60

Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
65                  70                  75                  80

Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
                85                  90                  95

Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
            100                 105                 110

Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val
        115                 120                 125


<210> 7606
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466931"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7606
Xaa Glu Leu Arg Phe Phe Pro Asp Met Ile Pro Val Ser Ser Ile Tyr
1               5                   10                  15

Met Asp Ser Arg Ala Gly Cys Ser Lys Ser Cys Glu Ala Ala Gln Tyr
            20                  25                  30
```

```
Trp Ser Ser Gly Phe Thr Val Leu Gln Ala Ser Ile Asp Ala Ala Ile
        35                  40                  45

Ile Gln Leu Lys Thr Asn Val Ser Leu Trp Lys Glu Leu Glu Ser Thr
    50                  55                  60

Lys Ala Val Ile Met Gly Glu Thr Ala Val Val Glu Ile Asp Thr Phe
65                  70                  75                  80

Pro Arg Gly Val Ile Leu Ile Tyr Leu Val Ile Ala Phe Ser Pro Phe
                85                  90                  95

Gly Tyr Phe Leu Ala Ile His Ile Val Ala Glu Lys Glu Lys Lys Ile
            100                 105                 110

Lys Glu Phe Leu Lys Ile Met Gly Leu His Asp Thr Ala Phe Trp Leu
        115                 120                 125

Ser Trp Val Leu Leu Tyr Thr Ser Leu Ile Phe Leu Met Ser Leu Leu
    130                 135                 140

Met Ala Val Ile Ala Thr Ala Ser Leu Leu Phe Pro Gln Ser Ser Ser
145                 150                 155                 160

Ile Val Ile Phe Leu Leu Phe Phe Leu Tyr Gly Leu Ser Ser Val Ser
                165                 170                 175

Ile Leu Thr Cys Asp Arg Asn Lys Glu Leu Ser Lys Cys Leu Ile Thr
            180                 185                 190
```

<210> 7607
<211> 431
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source

<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467251"

<400> 7607

```
Val Glu Phe Phe Val Thr Val Ala Phe Gly Phe Ile Gly Leu Met Ile
1               5                  10                  15

Ile Leu Ile Glu Ser Phe Pro Lys Ser Leu Val Trp Leu Phe Ser Pro
            20                  25                  30

Phe Cys His Cys Thr Phe Val Ile Gly Ile Ala Gln Val Met His Leu
        35                  40                  45

Glu Asp Phe Asn Glu Gly Ala Ser Phe Ser Asn Leu Thr Ala Gly Pro
    50                  55                  60

Tyr Pro Leu Ile Ile Thr Ile Ile Met Leu Thr Leu Asn Ser Ile Phe
65                  70                  75                  80

Tyr Val Leu Leu Ala Val Tyr Leu Asp Gln Val Ile Pro Gly Glu Phe
                85                  90                  95

Gly Leu Arg Arg Ser Ser Leu Tyr Phe Leu Lys Pro Ser Tyr Trp Ser
            100                 105                 110

Lys Ser Lys Arg Asn Tyr Glu Glu Leu Ser Glu Gly Asn Val Asn Gly
        115                 120                 125

Asn Ile Ser Phe Ser Glu Ile Ile Glu Pro Val Ser Ser Glu Phe Val
    130                 135                 140

Gly Lys Glu Ala Ile Arg Ile Ser Gly Ile Gln Lys Thr Tyr Arg Lys
145                 150                 155                 160

Lys Gly Glu Asn Val Glu Ala Leu Arg Asn Leu Ser Phe Asp Ile Tyr
                165                 170                 175

Glu Gly Gln Ile Thr Ala Leu Leu Gly His Ser Gly Thr Gly Lys Ser
            180                 185                 190
```

```
Thr Leu Met Asn Ile Leu Cys Gly Leu Cys Pro Pro Ser Asp Gly Phe
        195                 200                 205

Ala Ser Ile Tyr Gly His Arg Val Ser Glu Ile Asp Glu Met Phe Glu
    210                 215                 220

Ala Arg Lys Met Ile Gly Ile Cys Pro Gln Leu Asp Ile His Phe Asp
225                 230                 235                 240

Val Leu Thr Val Glu Glu Asn Leu Ser Ile Leu Ala Ser Ile Lys Gly
                245                 250                 255

Ile Pro Ala Asn Asn Ile Ile Gln Glu Val Gln Lys Val Leu Leu Asp
            260                 265                 270

Leu Asp Met Gln Thr Ile Lys Asp Asn Gln Ala Lys Lys Leu Ser Gly
        275                 280                 285

Gly Gln Lys Arg Lys Leu Ser Leu Gly Ile Ala Val Leu Gly Asn Pro
    290                 295                 300

Lys Ile Leu Leu Leu Asp Glu Pro Thr Ala Gly Met Asp Pro Cys Ser
305                 310                 315                 320

Arg His Ile Val Trp Asn Leu Leu Lys Tyr Arg Lys Ala Asn Arg Val
                325                 330                 335

Thr Val Phe Ser Thr His Phe Met Asp Glu Ala Asp Ile Leu Ala Asp
            340                 345                 350

Arg Lys Ala Val Ile Ser Gln Gly Met Leu Lys Cys Val Gly Ser Ser
        355                 360                 365

Met Phe Leu Lys Ser Lys Trp Gly Ile Gly Tyr Arg Leu Ser Met Tyr
    370                 375                 380

Ile Asp Lys Tyr Cys Ala Thr Glu Ser Leu Ser Ser Leu Val Lys Gln
385                 390                 395                 400

His Ile Pro Gly Ala Thr Leu Leu Gln Gln Asn Asp Gln Gln Leu Val
                405                 410                 415
```

```
Tyr Ser Leu Pro Phe Lys Asp Met Asp Lys Phe Ser Gly Ile Ala
            420                 425                 430


<210> 7608
<211> 917
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467448"

<400> 7608
Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1               5                  10                  15


Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
            20                  25                  30


Val Gln Glu Ile Leu Phe Pro Leu Phe Phe Leu Phe Trp Leu Ile Leu
        35                  40                  45


Ile Ser Met Met His Pro Asn Lys Lys Tyr Glu Glu Val Pro Asn Ile
    50                  55                  60


Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
65                  70                  75                  80


Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
                85                  90                  95


Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
            100                 105                 110
```

```
Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val Gly
        115                 120                 125

Val Val Phe Lys Asp Ser Met Ser Tyr Glu Leu Arg Phe Phe Pro Asp
    130                 135                 140

Met Ile Pro Val Ser Ser Ile Tyr Met Asp Ser Arg Ala Gly Cys Ser
145                 150                 155                 160

Lys Ser Cys Glu Ala Ala Gln Tyr Trp Ser Ser Gly Phe Thr Val Leu
                165                 170                 175

Gln Ala Ser Ile Asp Ala Ala Ile Ile Gln Leu Lys Thr Asn Val Ser
            180                 185                 190

Leu Trp Lys Glu Leu Glu Ser Thr Lys Ala Val Ile Met Gly Glu Thr
        195                 200                 205

Ala Val Val Glu Ile Asp Thr Phe Pro Arg Gly Val Ile Leu Ile Tyr
    210                 215                 220

Leu Val Ile Ala Phe Ser Pro Phe Gly Tyr Phe Leu Ala Ile His Ile
225                 230                 235                 240

Val Ala Glu Lys Glu Lys Lys Ile Lys Glu Phe Leu Lys Ile Met Gly
                245                 250                 255

Leu His Asp Thr Ala Phe Trp Leu Ser Trp Val Leu Leu Tyr Thr Ser
            260                 265                 270

Leu Ile Phe Leu Met Ser Leu Leu Met Ala Val Ile Ala Thr Ala Ser
        275                 280                 285

Leu Leu Phe Pro Gln Ser Ser Ser Ile Val Ile Phe Leu Leu Phe Phe
    290                 295                 300

Leu Tyr Gly Leu Ser Ser Val Phe Phe Ala Leu Met Leu Thr Pro Leu
305                 310                 315                 320

Phe Lys Lys Ser Lys His Val Gly Ile Val Glu Phe Phe Val Thr Val
                325                 330                 335

Ala Phe Gly Phe Ile Gly Leu Met Ile Ile Leu Ile Glu Ser Phe Pro
```

```
            340                 345                 350

Lys Ser Leu Val Trp Leu Phe Ser Pro Phe Cys His Cys Thr Phe Val
        355                 360                 365

Ile Gly Ile Ala Gln Val Met His Leu Glu Asp Phe Asn Glu Gly Ala
    370                 375                 380

Ser Phe Ser Asn Leu Thr Ala Gly Pro Tyr Pro Leu Ile Ile Thr Ile
385                 390                 395                 400

Ile Met Leu Thr Leu Asn Ser Ile Phe Tyr Val Leu Leu Ala Val Tyr
                405                 410                 415

Leu Asp Gln Val Ile Pro Gly Glu Phe Gly Leu Arg Arg Ser Ser Leu
            420                 425                 430

Tyr Phe Leu Lys Pro Ser Tyr Trp Ser Lys Ser Lys Arg Asn Tyr Glu
        435                 440                 445

Glu Leu Ser Glu Gly Asn Val Asn Gly Asn Ile Ser Phe Ser Glu Ile
    450                 455                 460

Ile Glu Pro Val Ser Ser Glu Phe Val Gly Lys Glu Ala Ile Arg Ile
465                 470                 475                 480

Ser Gly Ile Gln Lys Thr Tyr Arg Lys Lys Gly Glu Asn Val Glu Ala
                485                 490                 495

Leu Arg Asn Leu Ser Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Leu
            500                 505                 510

Leu Gly His Ser Gly Thr Gly Lys Ser Thr Leu Met Asn Ile Leu Cys
        515                 520                 525

Gly Leu Cys Pro Pro Ser Asp Gly Phe Ala Ser Ile Tyr Gly His Arg
    530                 535                 540

Val Ser Glu Ile Asp Glu Met Phe Glu Ala Arg Lys Met Ile Gly Ile
545                 550                 555                 560

Cys Pro Gln Leu Asp Ile His Phe Asp Val Leu Thr Val Glu Glu Asn
                565                 570                 575
```

```
Leu Ser Ile Leu Ala Ser Ile Lys Gly Ile Pro Ala Asn Asn Ile Ile
            580                 585                 590

Gln Glu Val Gln Lys Val Leu Leu Asp Leu Asp Met Gln Thr Ile Lys
        595                 600                 605

Asp Asn Gln Ala Lys Lys Leu Ser Gly Gly Gln Lys Arg Lys Leu Ser
    610                 615                 620

Leu Gly Ile Ala Val Leu Gly Asn Pro Lys Ile Leu Leu Leu Asp Glu
625                 630                 635                 640

Pro Thr Ala Gly Met Asp Pro Cys Ser Arg His Ile Val Trp Asn Leu
                645                 650                 655

Leu Lys Tyr Arg Lys Ala Asn Arg Val Thr Val Phe Ser Thr His Phe
            660                 665                 670

Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Ala Val Ile Ser Gln
        675                 680                 685

Gly Met Leu Lys Cys Val Gly Ser Ser Met Phe Leu Lys Ser Lys Trp
    690                 695                 700

Gly Ile Gly Tyr Arg Leu Ser Met Tyr Ile Asp Lys Tyr Cys Ala Thr
705                 710                 715                 720

Glu Ser Leu Ser Ser Leu Val Lys Gln His Ile Pro Gly Ala Thr Leu
                725                 730                 735

Leu Gln Gln Asn Asp Gln Gln Leu Val Tyr Ser Leu Pro Phe Lys Asp
            740                 745                 750

Met Asp Lys Phe Ser Gly Leu Phe Ser Ala Leu Asp Ser His Ser Asn
        755                 760                 765

Leu Gly Val Ile Ser Tyr Gly Val Ser Met Thr Thr Leu Glu Asp Val
    770                 775                 780

Phe Leu Lys Leu Glu Val Glu Ala Glu Ile Asp Gln Ala Asp Tyr Ser
785                 790                 795                 800
```

```
Val Phe Thr Gln Gln Pro Leu Glu Glu Glu Met Asp Ser Lys Ser Phe
                805                 810                 815

Asp Glu Met Glu Gln Ser Leu Leu Ile Leu Ser Glu Thr Lys Ala Ala
            820                 825                 830

Leu Val Ser Thr Met Ser Leu Trp Lys Gln Gln Met Tyr Thr Ile Ala
        835                 840                 845

Lys Phe His Phe Phe Thr Leu Lys Arg Glu Ser Lys Ser Val Arg Ser
    850                 855                 860

Val Leu Leu Leu Leu Leu Ile Phe Phe Thr Val Gln Ile Phe Met Phe
865                 870                 875                 880

Leu Val His His Ser Phe Lys Asn Ala Val Val Pro Ile Lys Leu Val
                885                 890                 895

Pro Asp Leu Tyr Phe Leu Lys Pro Gly Asp Lys Pro His Lys Tyr Lys
            900                 905                 910

Thr Ser Leu Leu Leu
        915


<210> 7609
<211> 250
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467524"
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<400> 7609
Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1 5 10 15

Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
20 25 30

Val Gln Glu Ile Leu Phe Pro Leu Phe Phe Leu Phe Trp Leu Ile Leu
35 40 45

Ile Ser Met Met His Pro Asn Lys Lys Tyr Glu Glu Val Pro Asn Ile
50 55 60

Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
65 70 75 80

Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
85 90 95

Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
100 105 110

Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val Gly
115 120 125

Val Val Phe Lys Asp Ser Met Ser Tyr Glu Leu Arg Phe Phe Pro Asp
130 135 140

Met Ile Pro Val Ser Ser Ile Tyr Met Asp Ser Arg Ala Gly Cys Ser
145 150 155 160

Lys Ser Cys Glu Ala Ala Gln Tyr Trp Ser Ser Gly Phe Thr Val Leu
165 170 175

Gln Ala Ser Ile Asp Ala Ala Ile Ile Gln Leu Lys Thr Asn Val Ser
180 185 190

Leu Trp Lys Glu Leu Glu Ser Thr Lys Ala Val Ile Met Gly Glu Thr
195 200 205

Ala Val Val Glu Ile Asp Thr Phe Pro Arg Gly Val Ile Leu Ile Tyr
210 215 220

```
Leu Val Ile Ala Phe Ser Pro Phe Gly Tyr Phe Leu Ala Ile His Ile
225                 230                 235                 240


Val Ala Glu Lys Glu Lys Lys Ile Lys Glu
                245                 250


<210> 7610
<211> 38
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467672"

<400> 7610
Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1               5                   10                  15


Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
            20                  25                  30


Val Gln Glu Ile Leu Phe
        35


<210> 7611
<211> 250
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "
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<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467815"

<400> 7611
Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1 5 10 15

Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
20 25 30

Val Gln Glu Ile Leu Phe Pro Leu Phe Phe Leu Phe Trp Leu Ile Leu
35 40 45

Ile Ser Met Met His Pro Asn Lys Lys Tyr Glu Glu Val Pro Asn Ile
50 55 60

Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
65 70 75 80

Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
85 90 95

Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
100 105 110

Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val Gly
115 120 125

Val Val Phe Lys Asp Ser Met Ser Tyr Glu Leu Arg Phe Phe Pro Asp
130 135 140

Met Ile Pro Val Ser Ser Ile Tyr Met Asp Ser Arg Ala Gly Cys Ser
145 150 155 160

Lys Ser Cys Glu Ala Ala Gln Tyr Trp Ser Ser Gly Phe Thr Val Leu
165 170 175

```
Gln Ala Ser Ile Asp Ala Ala Ile Ile Gln Leu Lys Thr Asn Val Ser
            180                 185                 190

Leu Trp Lys Glu Leu Glu Ser Thr Lys Ala Val Ile Met Gly Glu Thr
        195                 200                 205

Ala Val Val Glu Ile Asp Thr Phe Pro Arg Gly Val Ile Leu Ile Tyr
    210                 215                 220

Leu Val Ile Ala Phe Ser Pro Phe Gly Tyr Phe Leu Ala Ile His Ile
225                 230                 235                 240

Val Ala Glu Lys Glu Lys Lys Ile Lys Glu
                245                 250


<210> 7612
<211> 1642
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1605; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WWZ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467882"

<400> 7612
Met Ser Thr Ala Ile Arg Glu Val Gly Val Trp Arg Gln Thr Arg Thr
1               5                   10                  15

Leu Leu Leu Lys Asn Tyr Leu Ile Lys Cys Arg Thr Lys Lys Ser Ser
            20                  25                  30
```

```
Val Gln Glu Ile Leu Phe Pro Leu Phe Phe Leu Phe Trp Leu Ile Leu
        35                  40                  45

Ile Ser Met Met His Pro Asn Lys Lys Tyr Glu Glu Val Pro Asn Ile
    50                  55                  60

Glu Leu Asn Pro Met Asp Lys Phe Thr Leu Ser Asn Leu Ile Leu Gly
65                  70                  75                  80

Tyr Thr Pro Val Thr Asn Ile Thr Ser Ser Ile Met Gln Lys Val Ser
                85                  90                  95

Thr Asp His Leu Pro Asp Val Ile Ile Thr Glu Glu Tyr Thr Asn Glu
            100                 105                 110

Lys Glu Met Leu Thr Ser Ser Leu Ser Lys Pro Ser Asn Phe Val Gly
        115                 120                 125

Val Val Phe Lys Asp Ser Met Ser Tyr Glu Leu Arg Phe Phe Pro Asp
    130                 135                 140

Met Ile Pro Val Ser Ser Ile Tyr Met Asp Ser Arg Ala Gly Cys Ser
145                 150                 155                 160

Lys Ser Cys Glu Ala Ala Gln Tyr Trp Ser Ser Gly Phe Thr Val Leu
                165                 170                 175

Gln Ala Ser Ile Asp Ala Ala Ile Ile Gln Leu Lys Thr Asn Val Ser
            180                 185                 190

Leu Trp Lys Glu Leu Glu Ser Thr Lys Ala Val Ile Met Gly Glu Thr
        195                 200                 205

Ala Val Val Glu Ile Asp Thr Phe Pro Arg Gly Val Ile Leu Ile Tyr
    210                 215                 220

Leu Val Ile Ala Phe Ser Pro Phe Gly Tyr Phe Leu Ala Ile His Ile
225                 230                 235                 240

Val Ala Glu Lys Glu Lys Lys Ile Lys Glu Phe Leu Lys Ile Met Gly
                245                 250                 255

Leu His Asp Thr Ala Phe Trp Leu Ser Trp Val Leu Leu Tyr Thr Ser
```

```
            260                 265                 270

Leu Ile Phe Leu Met Ser Leu Leu Met Ala Val Ile Ala Thr Ala Ser
        275                 280                 285

Leu Leu Phe Pro Gln Ser Ser Ser Ile Val Ile Phe Leu Leu Phe Phe
    290                 295                 300

Leu Tyr Gly Leu Ser Ser Val Phe Phe Ala Leu Met Leu Thr Pro Leu
305                 310                 315                 320

Phe Lys Lys Ser Lys His Val Gly Ile Val Glu Phe Phe Val Thr Val
                325                 330                 335

Ala Phe Gly Phe Ile Gly Leu Met Ile Ile Leu Ile Glu Ser Phe Pro
            340                 345                 350

Lys Ser Leu Val Trp Leu Phe Ser Pro Phe Cys His Cys Thr Phe Val
        355                 360                 365

Ile Gly Ile Ala Gln Val Met His Leu Glu Asp Phe Asn Glu Gly Ala
    370                 375                 380

Ser Phe Ser Asn Leu Thr Ala Gly Pro Tyr Pro Leu Ile Ile Thr Ile
385                 390                 395                 400

Ile Met Leu Thr Leu Asn Ser Ile Phe Tyr Val Leu Leu Ala Val Tyr
                405                 410                 415

Leu Asp Gln Val Ile Pro Gly Glu Phe Gly Leu Arg Arg Ser Ser Leu
            420                 425                 430

Tyr Phe Leu Lys Pro Ser Tyr Trp Ser Lys Ser Lys Arg Asn Tyr Glu
        435                 440                 445

Glu Leu Ser Glu Gly Asn Val Asn Gly Asn Ile Ser Phe Ser Glu Ile
    450                 455                 460

Ile Glu Pro Val Ser Ser Glu Phe Val Gly Lys Glu Ala Ile Arg Ile
465                 470                 475                 480

Ser Gly Ile Gln Lys Thr Tyr Arg Lys Lys Gly Glu Asn Val Glu Ala
                485                 490                 495
```

```
Leu Arg Asn Leu Ser Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Leu
            500                 505                 510

Leu Gly His Ser Gly Thr Gly Lys Ser Thr Leu Met Asn Ile Leu Cys
        515                 520                 525

Gly Leu Cys Pro Pro Ser Asp Gly Phe Ala Ser Ile Tyr Gly His Arg
    530                 535                 540

Val Ser Glu Ile Asp Glu Met Phe Glu Ala Arg Lys Met Ile Gly Ile
545                 550                 555                 560

Cys Pro Gln Leu Asp Ile His Phe Asp Val Leu Thr Val Glu Glu Asn
                565                 570                 575

Leu Ser Ile Leu Ala Ser Ile Lys Gly Ile Pro Ala Asn Asn Ile Ile
            580                 585                 590

Gln Glu Val Gln Lys Val Leu Leu Asp Leu Asp Met Gln Thr Ile Lys
        595                 600                 605

Asp Asn Gln Ala Lys Lys Leu Ser Gly Gly Gln Lys Arg Lys Leu Ser
    610                 615                 620

Leu Gly Ile Ala Val Leu Gly Asn Pro Lys Ile Leu Leu Leu Asp Glu
625                 630                 635                 640

Pro Thr Ala Gly Met Asp Pro Cys Ser Arg His Ile Val Trp Asn Leu
                645                 650                 655

Leu Lys Tyr Arg Lys Ala Asn Arg Val Thr Val Phe Ser Thr His Phe
            660                 665                 670

Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Ala Val Ile Ser Gln
        675                 680                 685

Gly Met Leu Lys Cys Val Gly Ser Ser Met Phe Leu Lys Ser Lys Trp
    690                 695                 700

Gly Ile Gly Tyr Arg Leu Ser Met Tyr Ile Asp Lys Tyr Cys Ala Thr
705                 710                 715                 720
```

```
Glu Ser Leu Ser Ser Leu Val Lys Gln His Ile Pro Gly Ala Thr Leu
                725                 730                 735

Leu Gln Gln Asn Asp Gln Gln Leu Val Tyr Ser Leu Pro Phe Lys Asp
            740                 745                 750

Met Asp Lys Phe Ser Gly Leu Phe Ser Ala Leu Asp Ser His Ser Asn
        755                 760                 765

Leu Gly Val Ile Ser Tyr Gly Val Ser Met Thr Thr Leu Glu Asp Val
    770                 775                 780

Phe Leu Lys Leu Glu Val Glu Ala Glu Ile Asp Gln Ala Asp Tyr Ser
785                 790                 795                 800

Val Phe Thr Gln Gln Pro Leu Glu Glu Glu Met Asp Ser Lys Ser Phe
                805                 810                 815

Asp Glu Met Glu Gln Ser Leu Leu Ile Leu Ser Glu Thr Lys Ala Ala
            820                 825                 830

Leu Val Ser Thr Met Ser Leu Trp Lys Gln Gln Met Tyr Thr Ile Ala
        835                 840                 845

Lys Phe His Phe Phe Thr Leu Lys Arg Glu Ser Lys Ser Val Arg Ser
    850                 855                 860

Val Leu Leu Leu Leu Leu Ile Phe Phe Thr Val Gln Ile Phe Met Phe
865                 870                 875                 880

Leu Val His His Ser Phe Lys Asn Ala Val Val Pro Ile Lys Leu Val
                885                 890                 895

Pro Asp Leu Tyr Phe Leu Lys Pro Gly Asp Lys Pro His Lys Tyr Lys
            900                 905                 910

Thr Ser Leu Leu Leu Gln Asn Ser Ala Asp Ser Asp Ile Ser Asp Leu
        915                 920                 925

Ile Ser Phe Phe Thr Ser Gln Asn Ile Met Val Thr Met Ile Asn Asp
    930                 935                 940
```

```
Ser Asp Tyr Val Ser Val Ala Pro His Ser Ala Ala Leu Asn Val Met
945                 950                 955                 960

His Ser Glu Lys Asp Tyr Val Phe Ala Ala Val Phe Asn Ser Thr Met
                965                 970                 975

Val Tyr Ser Leu Pro Ile Leu Val Asn Ile Ile Ser Asn Tyr Tyr Leu
            980                 985                 990

Tyr His Leu Asn Val Thr Glu Thr  Ile Gln Ile Trp Ser  Thr Pro
Phe
        995                 1000                1005

Phe Gln  Glu Ile Thr Asp Ile  Val Phe Lys Ile Glu  Leu Tyr Phe
    1010                1015                1020

Gln Ala  Ala Leu Leu Gly Ile  Ile Val Thr Ala Met  Pro Pro Tyr
    1025                1030                1035

Phe Ala  Met Glu Asn Ala Glu  Asn His Lys Ile Lys  Ala Tyr Thr
    1040                1045                1050

Gln Leu  Lys Leu Ser Gly Leu  Leu Pro Ser Ala Tyr  Trp Ile Gly
    1055                1060                1065

Gln Ala  Val Val Asp Ile Pro  Leu Phe Phe Ile Ile  Leu Ile Leu
    1070                1075                1080

Met Leu  Gly Ser Leu Leu Ala  Phe His Tyr Gly Leu  Tyr Phe Tyr
    1085                1090                1095

Thr Val  Lys Phe Leu Ala Val  Val Phe Cys Leu Ile  Gly Tyr Val
    1100                1105                1110

Pro Ser  Val Ile Leu Phe Thr  Tyr Ile Ala Ser Phe  Thr Phe Lys
    1115                1120                1125

Lys Ile  Leu Asn Thr Lys Glu  Phe Trp Ser Phe Ile  Tyr Ser Val
    1130                1135                1140

Ala Ala  Leu Ala Cys Ile Ala  Ile Thr Glu Ile Thr  Phe Phe Met
    1145                1150                1155
```

```
Gly Tyr  Thr Ile Ala Thr Ile  Leu His Tyr Ala Phe  Cys Ile Ile
    1160                1165                1170

Ile Pro  Ile Tyr Pro Leu Leu  Gly Cys Leu Ile Ser  Phe Ile Lys
    1175                1180                1185

Ile Ser  Trp Lys Asn Val Arg  Lys Asn Val Asp Thr  Tyr Asn Pro
    1190                1195                1200

Trp Asp  Arg Leu Ser Val Ala  Val Ile Ser Pro Tyr  Leu Gln Cys
    1205                1210                1215

Val Leu  Trp Ile Phe Leu Leu  Gln Tyr Tyr Glu Lys  Lys Tyr Gly
    1220                1225                1230

Gly Arg  Ser Ile Arg Lys Asp  Pro Phe Phe Arg Asn  Leu Ser Thr
    1235                1240                1245

Lys Ser  Lys Asn Arg Lys Leu  Pro Glu Pro Pro Asp  Asn Glu Asp
    1250                1255                1260

Glu Asp  Glu Asp Val Lys Ala  Glu Arg Leu Lys Val  Lys Glu Leu
    1265                1270                1275

Met Gly  Cys Gln Cys Cys Glu  Glu Lys Pro Ser Ile  Met Val Ser
    1280                1285                1290

Asn Leu  His Lys Glu Tyr Asp  Asp Lys Lys Asp Phe  Leu Leu Ser
    1295                1300                1305

Arg Lys  Val Lys Lys Val Ala  Thr Lys Tyr Ile Ser  Phe Cys Val
    1310                1315                1320

Lys Lys  Gly Glu Ile Leu Gly  Leu Leu Gly Pro Asn  Gly Ala Gly
    1325                1330                1335

Lys Ser  Thr Ile Ile Asn Ile  Leu Val Gly Asp Ile  Glu Pro Thr
    1340                1345                1350

Ser Gly  Gln Val Phe Leu Gly  Asp Tyr Ser Ser Glu  Thr Ser Glu
    1355                1360                1365

Asp Asp  Asp Ser Leu Lys Cys  Met Gly Tyr Cys Pro  Gln Ile Asn
```

```
    1370                1375                1380

Pro Leu  Trp Pro Asp Thr Thr  Leu Gln Glu His Phe  Glu Ile Tyr
    1385                1390                1395

Gly Ala  Val Lys Gly Met Ser  Ala Ser Asp Met Lys  Glu Val Ile
    1400                1405                1410

Ser Arg  Ile Thr His Ala Leu  Asp Leu Lys Glu His  Leu Gln Lys
    1415                1420                1425

Thr Val  Lys Lys Leu Pro Ala  Gly Ile Lys Arg Lys  Leu Cys Phe
    1430                1435                1440

Ala Leu  Ser Met Leu Gly Asn  Pro Gln Ile Thr Leu  Leu Asp Glu
    1445                1450                1455

Pro Ser  Thr Gly Met Asp Pro  Lys Ala Lys Gln His  Met Trp Arg
    1460                1465                1470

Ala Ile  Arg Thr Ala Phe Lys  Asn Arg Lys Arg Ala  Ala Ile Leu
    1475                1480                1485

Thr Thr  His Tyr Met Glu Glu  Ala Glu Ala Val Cys  Asp Arg Val
    1490                1495                1500

Ala Ile  Met Val Ser Gly Gln  Leu Arg Cys Ile Gly  Thr Val Gln
    1505                1510                1515

His Leu  Lys Ser Lys Phe Gly  Lys Gly Tyr Phe Leu  Glu Ile Lys
    1520                1525                1530

Leu Lys  Asp Trp Ile Glu Asn  Leu Glu Val Asp Arg  Leu Gln Arg
    1535                1540                1545

Glu Ile  Gln Tyr Ile Phe Pro  Asn Ala Ser Arg Gln  Glu Ser Phe
    1550                1555                1560

Ser Ser  Ile Leu Ala Tyr Lys  Ile Pro Lys Glu Asp  Val Gln Ser
    1565                1570                1575

Leu Ser  Gln Ser Phe Phe Lys  Leu Glu Glu Ala Lys  His Ala Phe
    1580                1585                1590
```

```
Ala Ile  Glu Glu Tyr Ser Phe  Ser Gln Ala Thr Leu  Glu Gln Val
    1595                1600                1605


Phe Val  Glu Leu Thr Lys Glu  Gln Glu Glu Glu Asp  Asn Ser Cys
    1610                1615                1620


Gly Thr  Leu Asn Ser Thr Leu  Trp Trp Glu Arg Thr  Gln Glu Asp
    1625                1630                1635


Arg Val  Val Phe
    1640


<210> 7613
<211> 1617
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1606; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA6; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 6; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N139; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284425"

<400> 7613
Met Asn Met Lys Gln Lys Ser Val Tyr Gln Gln Thr Lys Ala Leu Leu
1               5                  10                  15


Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Leu
            20                  25                  30


Glu Trp Gly Leu Ser Ile Leu Leu Gly Leu Cys Ile Ala Leu Phe Ser
        35                  40                  45
```

```
Ser Ser Met Arg Asn Val Gln Phe Pro Gly Met Ala Pro Gln Asn Leu
    50                  55                  60

Gly Arg Val Asp Lys Phe Asn Ser Ser Ser Leu Met Val Val Tyr Thr
65                  70                  75                  80

Pro Ile Ser Asn Leu Thr Gln Gln Ile Met Asn Lys Thr Ala Leu Ala
                85                  90                  95

Pro Leu Leu Lys Gly Thr Ser Val Ile Gly Ala Pro Asn Lys Thr His
            100                 105                 110

Met Asp Glu Ile Leu Leu Glu Asn Leu Pro Tyr Ala Met Gly Ile Ile
        115                 120                 125

Phe Asn Glu Thr Phe Ser Tyr Lys Leu Ile Phe Phe Gln Gly Tyr Asn
    130                 135                 140

Ser Pro Leu Trp Lys Glu Asp Phe Ser Ala His Cys Trp Asp Gly Tyr
145                 150                 155                 160

Gly Glu Phe Ser Cys Thr Leu Thr Lys Tyr Trp Asn Arg Gly Phe Val
                165                 170                 175

Ala Leu Gln Thr Ala Ile Asn Thr Ala Ile Ile Glu Ile Thr Thr Asn
            180                 185                 190

His Pro Val Met Glu Glu Leu Met Ser Val Thr Ala Ile Thr Met Lys
        195                 200                 205

Thr Leu Pro Phe Ile Thr Lys Asn Leu Leu His Asn Glu Met Phe Ile
    210                 215                 220

Leu Phe Phe Leu Leu His Phe Ser Pro Leu Val Tyr Phe Ile Ser Leu
225                 230                 235                 240

Asn Val Thr Lys Glu Arg Lys Lys Ser Lys Asn Leu Met Lys Met Met
                245                 250                 255

Gly Leu Gln Asp Ser Ala Phe Trp Leu Ser Trp Gly Leu Ile Tyr Ala
            260                 265                 270
```

```
Gly Phe Ile Phe Ile Ile Ser Ile Phe Val Thr Ile Ile Ile Thr Phe
        275                 280                 285

Thr Gln Ile Ile Val Met Thr Gly Phe Met Val Ile Phe Ile Leu Phe
    290                 295                 300

Phe Leu Tyr Gly Leu Ser Leu Val Ala Leu Val Phe Leu Met Ser Val
305                 310                 315                 320

Leu Leu Lys Lys Ala Val Leu Thr Asn Leu Val Val Phe Leu Leu Thr
                325                 330                 335

Leu Phe Trp Gly Cys Leu Gly Phe Thr Val Phe Tyr Glu Gln Leu Pro
            340                 345                 350

Ser Ser Leu Glu Trp Ile Leu Asn Ile Cys Ser Pro Phe Ala Phe Thr
        355                 360                 365

Thr Gly Met Ile Gln Ile Ile Lys Leu Asp Tyr Asn Leu Asn Gly Val
    370                 375                 380

Ile Phe Pro Asp Pro Ser Gly Asp Ser Tyr Thr Met Ile Ala Thr Phe
385                 390                 395                 400

Ser Met Leu Leu Leu Asp Gly Leu Ile Tyr Leu Leu Leu Ala Leu Tyr
                405                 410                 415

Phe Asp Lys Ile Leu Pro Tyr Gly Asp Glu Arg His Tyr Ser Pro Leu
            420                 425                 430

Phe Phe Leu Asn Ser Ser Ser Cys Phe Gln His Gln Arg Thr Asn Ala
        435                 440                 445

Lys Val Ile Glu Lys Glu Ile Asp Ala Glu His Pro Ser Asp Asp Tyr
    450                 455                 460

Phe Glu Pro Val Ala Pro Glu Phe Gln Gly Lys Glu Ala Ile Arg Ile
465                 470                 475                 480

Arg Asn Val Lys Lys Glu Tyr Lys Gly Lys Ser Gly Lys Val Glu Ala
                485                 490                 495
```

```
Leu Lys Gly Leu Leu Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Ile
            500                 505                 510

Leu Gly His Ser Gly Ala Gly Lys Ser Ser Leu Leu Asn Ile Leu Asn
        515                 520                 525

Gly Leu Ser Val Pro Thr Glu Gly Ser Val Thr Ile Tyr Asn Lys Asn
    530                 535                 540

Leu Ser Glu Met Gln Asp Leu Glu Glu Ile Arg Lys Ile Thr Gly Val
545                 550                 555                 560

Cys Pro Gln Phe Asn Val Gln Phe Asp Ile Leu Thr Val Lys Glu Asn
                565                 570                 575

Leu Ser Leu Phe Ala Lys Ile Lys Gly Ile His Leu Lys Glu Val Glu
            580                 585                 590

Gln Glu Val Gln Arg Ile Leu Leu Glu Leu Asp Met Gln Asn Ile Gln
        595                 600                 605

Asp Asn Leu Ala Lys His Leu Ser Glu Gly Gln Lys Arg Lys Leu Thr
    610                 615                 620

Phe Gly Ile Thr Ile Leu Gly Asp Pro Gln Ile Leu Leu Leu Asp Glu
625                 630                 635                 640

Pro Thr Thr Gly Leu Asp Pro Phe Ser Arg Asp Gln Val Trp Ser Leu
                645                 650                 655

Leu Arg Glu Arg Arg Ala Asp His Val Ile Leu Phe Ser Thr Gln Ser
            660                 665                 670

Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Ile Met Ser Asn
        675                 680                 685

Gly Arg Leu Lys Cys Ala Gly Ser Ser Met Phe Leu Lys Arg Arg Trp
    690                 695                 700

Gly Leu Gly Tyr His Leu Ser Leu His Arg Asn Glu Ile Cys Asn Pro
705                 710                 715                 720

Glu Gln Ile Thr Ser Phe Ile Thr His His Ile Pro Asp Ala Lys Leu
```

```
                725                 730                 735

Lys Thr Glu Asn Lys Glu Lys Leu Val Tyr Thr Leu Pro Leu Glu Arg
            740                 745                 750

Thr Asn Thr Phe Pro Asp Leu Phe Ser Asp Leu Asp Lys Cys Ser Asp
        755                 760                 765

Gln Gly Val Thr Gly Tyr Asp Ile Ser Met Ser Thr Leu Asn Glu Val
    770                 775                 780

Phe Met Lys Leu Glu Gly Gln Ser Thr Ile Glu Gln Asp Phe Glu Gln
785                 790                 795                 800

Val Glu Met Ile Arg Asp Ser Glu Ser Leu Asn Glu Met Glu Leu Ala
                805                 810                 815

His Ser Ser Phe Ser Glu Met Gln Thr Ala Val Ser Asp Met Gly Leu
            820                 825                 830

Trp Arg Met Gln Val Phe Ala Met Ala Arg Leu Arg Phe Leu Lys Leu
        835                 840                 845

Lys Arg Gln Thr Lys Val Leu Leu Thr Leu Leu Leu Val Phe Gly Ile
    850                 855                 860

Ala Ile Phe Pro Leu Ile Val Glu Asn Ile Met Tyr Ala Met Leu Asn
865                 870                 875                 880

Glu Lys Ile Asp Trp Glu Phe Lys Asn Glu Leu Tyr Phe Leu Ser Pro
                885                 890                 895

Gly Gln Leu Pro Gln Glu Pro Arg Thr Ser Leu Leu Ile Ile Asn Asn
            900                 905                 910

Thr Glu Ser Asn Ile Glu Asp Phe Ile Lys Ser Leu Lys His Gln Asn
        915                 920                 925

Ile Leu Leu Glu Val Asp Asp Phe Glu Asn Arg Asn Gly Thr Asp Gly
    930                 935                 940

Leu Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Lys Gln Lys Asp Tyr
945                 950                 955                 960
```

Arg Phe Ser Val Val Cys Asn Thr Lys Arg Leu His Cys Phe Pro Ile
965 970 975

Leu Met Asn Ile Ile Ser Asn Gly Leu Leu Gln Met Phe Asn His Thr
980 985 990

Gln His Ile Arg Ile Glu Ser Ser Pro Phe Pro Leu Ser His Ile Gly
995 1000 1005

Leu Trp Thr Gly Leu Pro Asp Gly Ser Phe Phe Leu Phe Leu Val
1010 1015 1020

Leu Cys Ser Ile Ser Pro Tyr Ile Thr Met Gly Ser Ile Ser Asp
1025 1030 1035

Tyr Lys Lys Asn Ala Lys Ser Gln Leu Trp Ile Ser Gly Leu Tyr
1040 1045 1050

Thr Ser Ala Tyr Trp Cys Gly Gln Ala Leu Val Asp Val Ser Phe
1055 1060 1065

Phe Ile Leu Ile Leu Leu Leu Met Tyr Leu Ile Phe Tyr Ile Glu
1070 1075 1080

Asn Met Gln Tyr Leu Leu Ile Thr Ser Gln Ile Val Phe Ala Leu
1085 1090 1095

Val Ile Val Thr Pro Gly Tyr Ala Ala Ser Leu Val Phe Phe Ile
1100 1105 1110

Tyr Met Ile Ser Phe Ile Phe Arg Lys Arg Arg Lys Asn Ser Gly
1115 1120 1125

Leu Trp Ser Phe Tyr Phe Phe Phe Ala Ser Thr Ile Met Phe Ser
1130 1135 1140

Ile Thr Leu Ile Asn His Phe Asp Leu Ser Ile Leu Ile Thr Thr
1145 1150 1155

Met Val Leu Val Pro Ser Tyr Thr Leu Leu Gly Phe Lys Thr Phe
1160 1165 1170

```
Leu Glu  Val Arg Asp Gln Glu  His Tyr Arg Glu Phe  Pro Glu Ala
    1175                1180                1185

Asn Phe  Glu Leu Ser Ala Thr  Asp Phe Leu Val Cys  Phe Ile Pro
    1190                1195                1200

Tyr Phe  Gln Thr Leu Leu Phe  Val Phe Val Leu Arg  Cys Met Glu
    1205                1210                1215

Leu Lys  Cys Gly Lys Lys Arg  Met Arg Lys Asp Pro  Val Phe Arg
    1220                1225                1230

Ile Ser  Pro Gln Ser Arg Asp  Ala Lys Pro Asn Pro  Glu Glu Pro
    1235                1240                1245

Ile Asp  Glu Asp Glu Asp Ile  Gln Thr Glu Arg Ile  Arg Thr Ala
    1250                1255                1260

Thr Ala  Leu Thr Thr Ser Ile  Leu Asp Glu Lys Pro  Val Ile Ile
    1265                1270                1275

Ala Ser  Cys Leu His Lys Glu  Tyr Ala Gly Gln Lys  Lys Ser Cys
    1280                1285                1290

Phe Ser  Lys Arg Lys Lys Lys  Ile Ala Ala Arg Asn  Ile Ser Phe
    1295                1300                1305

Cys Val  Gln Glu Gly Glu Ile  Leu Gly Leu Leu Gly  Pro Asn Gly
    1310                1315                1320

Ala Gly  Lys Ser Ser Ser Ile  Arg Met Ile Ser Gly  Ile Thr Lys
    1325                1330                1335

Pro Thr  Ala Gly Glu Val Glu  Leu Lys Gly Cys Ser  Ser Val Leu
    1340                1345                1350

Gly His  Leu Gly Tyr Cys Pro  Gln Glu Asn Val Leu  Trp Pro Met
    1355                1360                1365

Leu Thr  Leu Arg Glu His Leu  Glu Val Tyr Ala Ala  Val Lys Gly
    1370                1375                1380
```

```
Leu Arg  Lys Ala Asp Ala Arg  Leu Ala Ile Ala Arg  Leu Val Ser
    1385                1390                1395

Ala Phe  Lys Leu His Glu Gln  Leu Asn Val Pro Val  Gln Lys Leu
    1400                1405                1410

Thr Ala  Gly Ile Thr Arg Lys  Leu Cys Phe Val Leu  Ser Leu Leu
    1415                1420                1425

Gly Asn  Ser Pro Val Leu Leu  Leu Asp Glu Pro Ser  Thr Gly Ile
    1430                1435                1440

Asp Pro  Thr Gly Gln Gln Gln  Met Trp Gln Ala Ile  Gln Ala Val
    1445                1450                1455

Val Lys  Asn Thr Glu Arg Gly  Val Leu Leu Thr Thr  His Asn Leu
    1460                1465                1470

Ala Glu  Ala Glu Ala Leu Cys  Asp Arg Val Ala Ile  Met Val Ser
    1475                1480                1485

Gly Arg  Leu Arg Cys Ile Gly  Ser Ile Gln His Leu  Lys Asn Lys
    1490                1495                1500

Leu Gly  Lys Asp Tyr Ile Leu  Glu Leu Lys Val Lys  Glu Thr Ser
    1505                1510                1515

Gln Val  Thr Leu Val His Thr  Glu Ile Leu Lys Leu  Phe Pro Gln
    1520                1525                1530

Ala Ala  Gly Gln Glu Arg Tyr  Ser Ser Leu Leu Thr  Tyr Lys Leu
    1535                1540                1545

Pro Val  Ala Asp Val Tyr Pro  Leu Ser Gln Thr Phe  His Lys Leu
    1550                1555                1560

Glu Ala  Val Lys His Asn Phe  Asn Leu Glu Glu Tyr  Ser Leu Ser
    1565                1570                1575

Gln Cys  Thr Leu Glu Lys Val  Phe Leu Glu Leu Ser  Lys Glu Gln
    1580                1585                1590
```

```
Glu Val  Gly Asn Phe Asp Glu  Glu Ile Asp Thr Thr  Met Arg Trp
    1595                 1600                 1605


Lys Leu  Leu Pro His Ser Asp  Glu Pro
    1610                 1615


<210> 7614
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ABCA6; "

<220>
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<223> /note="Gene Name:
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      A (ABC1),
      member 6; "

<220>
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<220>
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<400> 7614
Met Asn Met Lys Gln Lys Ser Val Tyr Gln Gln Thr Lys Ala Leu Leu
1               5                   10                  15


Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Leu
            20                  25                  30


Glu Trp Gly Leu Ser Ile Leu Leu Gly Leu Cys Ile Ala Leu Phe Ser
        35                  40                  45


Ser Ser Met Arg Asn Val Gln Phe Pro Gly Met Ala Pro Gln Asn Leu
    50                  55                  60


Gly Arg Val Asp Lys Phe Asn Ser Ser Ser Leu Met Val Val Tyr Thr
65                  70                  75                  80
```

```
Pro Ile Ser Asn Leu Thr Gln Gln Ile Met Asn Lys Thr Ala Leu Ala
                85                  90                  95

Pro Leu Leu Lys Gly Thr Ser Val Ile Gly Ala Pro Asn Lys Thr His
            100                 105                 110

Met Asp Glu Ile Leu Leu Glu Asn Leu Pro Tyr Ala Met Gly Ile Ile
        115                 120                 125

Phe Asn Glu Thr Phe Ser Tyr Lys Leu Ile Phe Phe Gln Gly Tyr Asn
    130                 135                 140

Ser Pro Leu Trp Lys Glu Asp Phe Ser Gly Asp Phe Pro Tyr Gln Ile
145                 150                 155                 160

Ser Leu Trp Asn Phe Ser Cys Phe Gln His Lys Glu Gln Arg Arg Leu
                165                 170                 175

Gly Asn Arg Asp Ala Phe Asn Asp Thr
            180                 185


<210> 7615
<211> 2146
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      ATP-binding cassette, sub-family
      A (ABC1),
      member 7; "

<220>
<221> source
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<220>
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<400> 7615
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Met Ala Phe Trp Thr Gln Leu Met Leu Leu Leu Trp Lys Asn Phe Met
1               5                  10                  15

Tyr Arg Arg Arg Gln Pro Val Gln Leu Leu Val Glu Leu Leu Trp Pro
            20                  25                  30

Leu Phe Leu Phe Phe Ile Leu Val Ala Val Arg His Ser His Pro Pro
        35                  40                  45

Leu Glu His His Glu Cys His Phe Pro Asn Lys Pro Leu Pro Ser Ala
    50                  55                  60

Gly Thr Val Pro Trp Leu Gln Gly Leu Ile Cys Asn Val Asn Asn Thr
65                  70                  75                  80

Cys Phe Pro Gln Leu Thr Pro Gly Glu Glu Pro Gly Arg Leu Ser Asn
                85                  90                  95

Phe Asn Asp Ser Leu Val Ser Arg Leu Leu Ala Asp Ala Arg Thr Val
            100                 105                 110

Leu Gly Gly Ala Ser Ala His Arg Thr Leu Ala Gly Leu Gly Lys Leu
        115                 120                 125

Ile Ala Thr Leu Arg Ala Ala Arg Ser Thr Ala Gln Pro Gln Pro Thr
    130                 135                 140

Lys Gln Ser Pro Leu Glu Pro Pro Met Leu Asp Val Ala Glu Leu Leu
145                 150                 155                 160

Thr Ser Leu Leu Arg Thr Glu Ser Leu Gly Leu Ala Leu Gly Gln Ala
                165                 170                 175

Gln Glu Pro Leu His Ser Leu Leu Glu Ala Ala Glu Asp Leu Ala Gln
            180                 185                 190

Glu Leu Leu Ala Leu Arg Ser Leu Val Glu Leu Arg Ala Leu Leu Gln
        195                 200                 205

Arg Pro Arg Gly Thr Ser Gly Pro Leu Glu Leu Leu Ser Glu Ala Leu
    210                 215                 220

Cys Ser Val Arg Gly Pro Ser Ser Thr Val Gly Pro Ser Leu Asn Trp
```

225 230 235 240

Tyr Glu Ala Ser Asp Leu Met Glu Leu Val Gly Gln Glu Pro Glu Ser
245 250 255

Ala Leu Pro Asp Ser Ser Leu Ser Pro Ala Cys Ser Glu Leu Ile Gly
260 265 270

Ala Leu Asp Ser His Pro Leu Ser Arg Leu Leu Trp Arg Arg Leu Lys
275 280 285

Pro Leu Ile Leu Gly Lys Leu Leu Phe Ala Pro Asp Thr Pro Phe Thr
290 295 300

Arg Lys Leu Met Ala Gln Val Asn Arg Thr Phe Glu Glu Leu Thr Leu
305 310 315 320

Leu Arg Asp Val Arg Glu Val Trp Glu Met Leu Gly Pro Arg Ile Phe
325 330 335

Thr Phe Met Asn Asp Ser Ser Asn Val Ala Met Leu Gln Arg Leu Leu
340 345 350

Gln Met Gln Asp Glu Gly Arg Arg Gln Pro Arg Pro Gly Gly Arg Asp
355 360 365

His Met Glu Ala Leu Arg Ser Phe Leu Asp Pro Gly Ser Gly Gly Tyr
370 375 380

Ser Trp Gln Asp Ala His Ala Asp Val Gly His Leu Val Gly Thr Leu
385 390 395 400

Gly Arg Val Thr Glu Cys Leu Ser Leu Asp Lys Leu Glu Ala Ala Pro
405 410 415

Ser Glu Ala Ala Leu Val Ser Arg Ala Leu Gln Leu Leu Ala Glu His
420 425 430

Arg Phe Trp Ala Gly Val Val Phe Leu Gly Pro Glu Asp Ser Ser Asp
435 440 445

Pro Thr Glu His Pro Thr Pro Asp Leu Gly Pro Gly His Val Arg Ile
450 455 460

```
Lys Ile Arg Met Asp Ile Asp Val Val Thr Arg Thr Asn Lys Ile Arg
465                 470                 475                 480

Asp Arg Phe Trp Asp Pro Gly Pro Ala Ala Asp Pro Leu Thr Asp Leu
                485                 490                 495

Arg Tyr Val Trp Gly Gly Phe Val Tyr Leu Gln Asp Leu Val Glu Arg
            500                 505                 510

Ala Ala Val Arg Val Leu Ser Gly Ala Asn Pro Arg Ala Gly Leu Tyr
        515                 520                 525

Leu Gln Gln Met Pro Tyr Pro Cys Tyr Val Asp Asp Val Phe Leu Arg
    530                 535                 540

Val Leu Ser Arg Ser Leu Pro Leu Phe Leu Thr Leu Ala Trp Ile Tyr
545                 550                 555                 560

Ser Val Thr Leu Thr Val Lys Ala Val Val Arg Glu Lys Glu Thr Arg
                565                 570                 575

Leu Arg Asp Thr Met Arg Ala Met Gly Leu Ser Arg Ala Val Leu Trp
            580                 585                 590

Leu Gly Trp Phe Leu Ser Cys Leu Gly Pro Phe Leu Leu Ser Ala Ala
        595                 600                 605

Leu Leu Val Leu Val Leu Lys Leu Gly Asp Ile Leu Pro Tyr Ser His
    610                 615                 620

Pro Gly Val Val Phe Leu Phe Leu Ala Ala Phe Ala Val Ala Thr Val
625                 630                 635                 640

Thr Gln Ser Phe Leu Leu Ser Ala Phe Phe Ser Arg Ala Asn Leu Ala
                645                 650                 655

Ala Ala Cys Gly Gly Leu Ala Tyr Phe Ser Leu Tyr Leu Pro Tyr Val
            660                 665                 670

Leu Cys Val Ala Trp Arg Asp Arg Leu Pro Ala Gly Gly Arg Val Ala
        675                 680                 685
```

```
Ala Ser Leu Leu Ser Pro Val Ala Phe Gly Phe Gly Cys Glu Ser Leu
    690                 695                 700

Ala Leu Leu Glu Glu Gln Gly Glu Gly Ala Gln Trp His Asn Val Gly
705                 710                 715                 720

Thr Arg Pro Thr Ala Asp Val Phe Ser Leu Ala Gln Val Ser Gly Leu
                725                 730                 735

Leu Leu Leu Asp Ala Ala Leu Tyr Gly Leu Ala Thr Trp Tyr Leu Glu
            740                 745                 750

Ala Val Cys Pro Gly Gln Tyr Gly Ile Pro Glu Pro Trp Asn Phe Pro
        755                 760                 765

Phe Arg Arg Ser Tyr Trp Cys Gly Pro Arg Pro Pro Lys Ser Pro Ala
    770                 775                 780

Pro Cys Pro Thr Pro Leu Asp Pro Lys Val Leu Val Glu Glu Ala Pro
785                 790                 795                 800

Pro Gly Leu Ser Pro Gly Val Ser Val Arg Ser Leu Glu Lys Arg Phe
                805                 810                 815

Pro Gly Ser Pro Gln Pro Ala Leu Arg Gly Leu Ser Leu Asp Phe Tyr
            820                 825                 830

Gln Gly His Ile Thr Ala Phe Leu Gly His Asn Gly Ala Gly Lys Thr
        835                 840                 845

Thr Thr Leu Ser Ile Leu Ser Gly Leu Phe Pro Pro Ser Gly Gly Ser
    850                 855                 860

Ala Phe Ile Leu Gly His Asp Val Arg Ser Ser Met Ala Ala Ile Arg
865                 870                 875                 880

Pro His Leu Gly Val Cys Pro Gln Tyr Asn Val Leu Phe Asp Met Leu
                885                 890                 895

Thr Val Asp Glu His Val Trp Phe Tyr Gly Arg Leu Lys Gly Leu Ser
            900                 905                 910
```

```
Ala Ala Val Val Gly Pro Glu Gln Asp Arg Leu Leu Gln Asp Val Gly
        915                 920                 925

Leu Val Ser Lys Gln Ser Val Gln Thr Arg His Leu Ser Gly Gly Met
    930                 935                 940

Gln Arg Lys Leu Ser Val Ala Ile Ala Phe Val Gly Gly Ser Gln Val
945                 950                 955                 960

Val Ile Leu Asp Glu Pro Thr Ala Gly Val Asp Pro Ala Ser Arg Arg
                965                 970                 975

Gly Ile Trp Glu Leu Leu Leu Lys Tyr Arg Glu Gly Arg Thr Leu Ile
            980                 985                 990

Leu Ser Thr His His Leu Asp Glu  Ala Glu Leu Leu Gly  Asp Arg
Val
        995                 1000                1005

Ala Val  Val Ala Gly Gly Arg  Leu Cys Cys Cys Gly  Ser Pro Leu
    1010                1015                1020

Phe Leu  Arg Arg His Leu Gly  Ser Gly Tyr Tyr Leu  Thr Leu Val
    1025                1030                1035

Lys Ala  Arg Leu Pro Leu Thr  Thr Asn Glu Lys Ala  Asp Thr Asp
    1040                1045                1050

Met Glu  Gly Ser Val Asp Thr  Arg Gln Glu Lys Lys  Asn Gly Ser
    1055                1060                1065

Gln Gly  Ser Arg Val Gly Thr  Pro Gln Leu Leu Ala  Leu Val Gln
    1070                1075                1080

His Trp  Val Pro Gly Ala Arg  Leu Val Glu Glu Leu  Pro His Glu
    1085                1090                1095

Leu Val  Leu Val Leu Pro Tyr  Thr Gly Ala His Asp  Gly Ser Phe
    1100                1105                1110

Ala Thr  Leu Phe Arg Glu Leu  Asp Thr Arg Leu Ala  Glu Leu Arg
    1115                1120                1125
```

```
Leu Thr  Gly Tyr Gly Ile Ser  Asp Thr Ser Leu Glu  Glu Ile Phe
    1130                1135                1140

Leu Lys  Val Val Glu Glu Cys  Ala Ala Asp Thr Asp  Met Glu Asp
    1145                1150                1155

Gly Ser  Cys Gly Gln His Leu  Cys Thr Gly Ile Ala  Gly Leu Asp
    1160                1165                1170

Val Thr  Leu Arg Leu Lys Met  Pro Pro Gln Glu Thr  Ala Leu Glu
    1175                1180                1185

Asn Gly  Glu Pro Ala Gly Ser  Ala Pro Glu Thr Asp  Gln Gly Ser
    1190                1195                1200

Gly Pro  Asp Ala Val Gly Arg  Val Gln Gly Trp Ala  Leu Thr Arg
    1205                1210                1215

Gln Gln  Leu Gln Ala Leu Leu  Leu Lys Arg Phe Leu  Leu Ala Arg
    1220                1225                1230

Arg Ser  Arg Arg Gly Leu Phe  Ala Gln Ile Val Leu  Pro Ala Leu
    1235                1240                1245

Phe Val  Gly Leu Ala Leu Val  Phe Ser Leu Ile Val  Pro Pro Phe
    1250                1255                1260

Gly His  Tyr Pro Ala Leu Arg  Leu Ser Pro Thr Met  Tyr Gly Ala
    1265                1270                1275

Gln Val  Ser Phe Phe Ser Glu  Asp Ala Pro Gly Asp  Pro Gly Arg
    1280                1285                1290

Ala Arg  Leu Leu Glu Ala Leu  Leu Gln Glu Ala Gly  Leu Glu Glu
    1295                1300                1305

Pro Pro  Val Gln His Ser Ser  His Arg Phe Ser Ala  Pro Glu Val
    1310                1315                1320

Pro Ala  Glu Val Ala Lys Val  Leu Ala Ser Gly Asn  Trp Thr Pro
    1325                1330                1335

Glu Ser  Pro Ser Pro Ala Cys  Gln Cys Ser Arg Pro  Gly Ala Arg
```

```
    1340                1345                1350

Arg Leu  Leu Pro Asp Cys Pro  Ala Ala Ala Gly Gly  Pro Pro Pro
    1355                1360                1365

Pro Gln  Ala Val Thr Gly Ser  Gly Glu Val Val Gln  Asn Leu Thr
    1370                1375                1380

Gly Arg  Asn Leu Ser Asp Phe  Leu Val Lys Thr Tyr  Pro Arg Leu
    1385                1390                1395

Val Arg  Gln Gly Leu Lys Thr  Lys Lys Trp Val Asn  Glu Val Arg
    1400                1405                1410

Tyr Gly  Gly Phe Ser Leu Gly  Gly Arg Asp Pro Gly  Leu Pro Ser
    1415                1420                1425

Gly Gln  Glu Leu Gly Arg Ser  Val Glu Glu Leu Trp  Ala Leu Leu
    1430                1435                1440

Ser Pro  Leu Pro Gly Gly Ala  Leu Asp Arg Val Leu  Lys Asn Leu
    1445                1450                1455

Thr Ala  Trp Ala His Ser Leu  Asp Ala Gln Asp Ser  Leu Lys Ile
    1460                1465                1470

Trp Phe  Asn Asn Lys Gly Trp  His Ser Met Val Ala  Phe Val Asn
    1475                1480                1485

Arg Ala  Ser Asn Ala Ile Leu  Arg Ala His Leu Pro  Pro Gly Pro
    1490                1495                1500

Ala Arg  His Ala His Ser Ile  Thr Thr Leu Asn His  Pro Leu Asn
    1505                1510                1515

Leu Thr  Lys Glu Gln Leu Ser  Glu Gly Ala Leu Met  Ala Ser Ser
    1520                1525                1530

Val Asp  Val Leu Val Ser Ile  Cys Val Val Phe Ala  Met Ser Phe
    1535                1540                1545

Val Pro  Ala Ser Phe Thr Leu  Val Leu Ile Glu Glu  Arg Val Thr
    1550                1555                1560
```

```
Arg Ala  Lys His Leu Gln Leu  Met Gly Gly Leu Ser  Pro Thr Leu
    1565                1570                1575

Tyr Trp  Leu Gly Asn Phe Leu  Trp Asp Met Cys Asn  Tyr Leu Val
    1580                1585                1590

Pro Ala  Cys Ile Val Val Leu  Ile Phe Leu Ala Phe  Gln Gln Arg
    1595                1600                1605

Ala Tyr  Val Ala Pro Ala Asn  Leu Pro Ala Leu Leu  Leu Leu Leu
    1610                1615                1620

Leu Leu  Tyr Gly Trp Ser Ile  Thr Pro Leu Met Tyr  Pro Ala Ser
    1625                1630                1635

Phe Phe  Phe Ser Val Pro Ser  Thr Ala Tyr Val Val  Leu Thr Cys
    1640                1645                1650

Ile Asn  Leu Phe Ile Gly Ile  Asn Gly Ser Met Ala  Thr Phe Val
    1655                1660                1665

Leu Glu  Leu Phe Ser Asp Gln  Lys Leu Gln Glu Val  Ser Arg Ile
    1670                1675                1680

Leu Lys  Gln Val Phe Leu Ile  Phe Pro His Phe Cys  Leu Gly Arg
    1685                1690                1695

Gly Leu  Ile Asp Met Val Arg  Asn Gln Ala Met Ala  Asp Ala Phe
    1700                1705                1710

Glu Arg  Leu Gly Asp Arg Gln  Phe Gln Ser Pro Leu  Arg Trp Glu
    1715                1720                1725

Val Val  Gly Lys Asn Leu Leu  Ala Met Val Ile Gln  Gly Pro Leu
    1730                1735                1740

Phe Leu  Leu Phe Thr Leu Leu  Leu Gln His Arg Ser  Gln Leu Leu
    1745                1750                1755

Pro Gln  Pro Arg Val Arg Ser  Leu Pro Leu Leu Gly  Glu Glu Asp
    1760                1765                1770
```

```
Glu Asp  Val Ala Arg Glu Arg  Glu Arg Val Val Gln  Gly Ala Thr
    1775                 1780                 1785

Gln Gly  Asp Val Leu Val Leu  Arg Asn Leu Thr Lys  Val Tyr Arg
    1790                 1795                 1800

Gly Gln  Arg Met Pro Ala Val  Asp Arg Leu Cys Leu  Gly Ile Pro
    1805                 1810                 1815

Pro Gly  Glu Cys Phe Gly Leu  Leu Gly Val Asn Gly  Ala Gly Lys
    1820                 1825                 1830

Thr Ser  Thr Phe Arg Met Val  Thr Gly Asp Thr Leu  Ala Ser Arg
    1835                 1840                 1845

Gly Glu  Ala Val Leu Ala Gly  His Ser Val Ala Arg  Glu Pro Ser
    1850                 1855                 1860

Ala Ala  His Leu Ser Met Gly  Tyr Cys Pro Gln Ser  Asp Ala Ile
    1865                 1870                 1875

Phe Glu  Leu Leu Thr Gly Arg  Glu His Leu Glu Leu  Leu Ala Arg
    1880                 1885                 1890

Leu Arg  Gly Val Pro Glu Ala  Gln Val Ala Gln Thr  Ala Gly Ser
    1895                 1900                 1905

Gly Leu  Ala Arg Leu Gly Leu  Ser Trp Tyr Ala Asp  Arg Pro Ala
    1910                 1915                 1920

Gly Thr  Tyr Ser Gly Gly Asn  Lys Arg Lys Leu Ala  Thr Ala Leu
    1925                 1930                 1935

Ala Leu  Val Gly Asp Pro Ala  Val Val Phe Leu Asp  Glu Pro Thr
    1940                 1945                 1950

Thr Gly  Met Asp Pro Ser Ala  Arg Arg Phe Leu Trp  Asn Ser Leu
    1955                 1960                 1965

Leu Ala  Val Val Arg Glu Gly  Arg Ser Val Met Leu  Thr Ser His
    1970                 1975                 1980
```

```
Ser Met  Glu Glu Cys Glu Ala  Leu Cys Ser Arg Leu  Ala Ile Met
    1985                1990                1995

Val Asn  Gly Arg Phe Arg Cys  Leu Gly Ser Pro Gln  His Leu Lys
    2000                2005                2010

Gly Arg  Phe Ala Ala Gly His  Thr Leu Thr Leu Arg  Val Pro Ala
    2015                2020                2025

Ala Arg  Ser Gln Pro Ala Ala  Ala Phe Val Ala Ala  Glu Phe Pro
    2030                2035                2040

Gly Ala  Glu Leu Arg Glu Ala  His Gly Gly Arg Leu  Arg Phe Gln
    2045                2050                2055

Leu Pro  Pro Gly Gly Arg Cys  Ala Leu Ala Arg Val  Phe Gly Glu
    2060                2065                2070

Leu Ala  Val His Gly Ala Glu  His Gly Val Glu Asp  Phe Ser Val
    2075                2080                2085

Ser Gln  Thr Met Leu Glu Glu  Val Phe Leu Tyr Phe  Ser Lys Asp
    2090                2095                2100

Gln Gly  Lys Asp Glu Asp Thr  Glu Glu Gln Lys Glu  Ala Gly Val
    2105                2110                2115

Gly Val  Asp Pro Ala Pro Gly  Leu Gln His Pro Lys  Arg Val Ser
    2120                2125                2130

Gln Phe  Leu Asp Asp Pro Ser  Thr Ala Glu Thr Val  Leu
    2135                2140                2145


<210> 7616
<211> 2146
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "
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<220>
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ATP-binding cassette, sub-family
A (ABC1),
member 7; "

<220>
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<223> /note="Uniprot ID: Q8IZY2; "

<220>
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Met Ala Phe Trp Thr Gln Leu Met Leu Leu Leu Trp Lys Asn Phe Met
1   5   10   15

Tyr Arg Arg Arg Gln Pro Val Gln Leu Leu Val Glu Leu Leu Trp Pro
            20   25   30

Leu Phe Leu Phe Phe Ile Leu Val Ala Val Arg His Ser His Pro Pro
        35   40   45

Leu Glu His His Glu Cys His Phe Pro Asn Lys Pro Leu Pro Ser Ala
    50   55   60

Gly Thr Val Pro Trp Leu Gln Gly Leu Ile Cys Asn Val Asn Asn Thr
65   70   75   80

Cys Phe Pro Gln Leu Thr Pro Gly Glu Glu Pro Gly Arg Leu Ser Asn
                85   90   95

Phe Asn Asp Ser Leu Val Ser Arg Leu Leu Ala Asp Ala Arg Thr Val
            100   105   110

Leu Gly Gly Ala Ser Ala His Arg Thr Leu Ala Gly Leu Gly Lys Leu
        115   120   125

Ile Ala Thr Leu Arg Ala Ala Arg Ser Thr Ala Gln Pro Gln Pro Thr
    130   135   140

Lys Gln Ser Pro Leu Glu Pro Pro Met Leu Asp Val Ala Glu Leu Leu
145   150   155   160

Thr Ser Leu Leu Arg Thr Glu Ser Leu Gly Leu Ala Leu Gly Gln Ala

```
                165                 170                 175

Gln Glu Pro Leu His Ser Leu Leu Glu Ala Ala Glu Asp Leu Ala Gln
            180                 185                 190

Glu Leu Leu Ala Leu Arg Ser Leu Val Glu Leu Arg Ala Leu Leu Gln
        195                 200                 205

Arg Pro Arg Gly Thr Ser Gly Pro Leu Glu Leu Leu Ser Glu Ala Leu
    210                 215                 220

Cys Ser Val Arg Gly Pro Ser Ser Thr Val Gly Pro Ser Leu Asn Trp
225                 230                 235                 240

Tyr Glu Ala Ser Asp Leu Met Glu Leu Val Gly Gln Glu Pro Glu Ser
                245                 250                 255

Ala Leu Pro Asp Ser Ser Leu Ser Pro Ala Cys Ser Glu Leu Ile Gly
            260                 265                 270

Ala Leu Asp Ser His Pro Leu Ser Arg Leu Leu Trp Arg Arg Leu Lys
        275                 280                 285

Pro Leu Ile Leu Gly Lys Leu Leu Phe Ala Pro Asp Thr Pro Phe Thr
    290                 295                 300

Arg Lys Leu Met Ala Gln Val Asn Arg Thr Phe Glu Glu Leu Thr Leu
305                 310                 315                 320

Leu Arg Asp Val Arg Glu Val Trp Glu Met Leu Gly Pro Arg Ile Phe
                325                 330                 335

Thr Phe Met Asn Asp Ser Ser Asn Val Ala Met Leu Gln Arg Leu Leu
            340                 345                 350

Gln Met Gln Asp Glu Gly Arg Arg Gln Pro Arg Pro Gly Gly Arg Asp
        355                 360                 365

His Met Glu Ala Leu Arg Ser Phe Leu Asp Pro Gly Ser Gly Gly Tyr
    370                 375                 380

Ser Trp Gln Asp Ala His Ala Asp Val Gly His Leu Val Gly Thr Leu
385                 390                 395                 400
```

```
Gly Arg Val Thr Glu Cys Leu Ser Leu Asp Lys Leu Glu Ala Ala Pro
                405                 410                 415

Ser Glu Ala Ala Leu Val Ser Arg Ala Leu Gln Leu Leu Ala Glu His
            420                 425                 430

Arg Phe Trp Ala Gly Val Val Phe Leu Gly Pro Glu Asp Ser Ser Asp
        435                 440                 445

Pro Thr Glu His Pro Thr Pro Asp Leu Gly Pro Gly His Val Arg Ile
    450                 455                 460

Lys Ile Arg Met Asp Ile Asp Val Val Thr Arg Thr Asn Lys Ile Arg
465                 470                 475                 480

Asp Arg Phe Trp Asp Pro Gly Pro Ala Ala Asp Pro Leu Thr Asp Leu
                485                 490                 495

Arg Tyr Val Trp Gly Gly Phe Val Tyr Leu Gln Asp Leu Val Glu Arg
            500                 505                 510

Ala Ala Val Arg Val Leu Ser Gly Ala Asn Pro Arg Ala Gly Leu Tyr
        515                 520                 525

Leu Gln Gln Met Pro Tyr Pro Cys Tyr Val Asp Asp Val Phe Leu Arg
    530                 535                 540

Val Leu Ser Arg Ser Leu Pro Leu Phe Leu Thr Leu Ala Trp Ile Tyr
545                 550                 555                 560

Ser Val Thr Leu Thr Val Lys Ala Val Val Arg Glu Lys Glu Thr Arg
                565                 570                 575

Leu Arg Asp Thr Met Arg Ala Met Gly Leu Ser Arg Ala Val Leu Trp
            580                 585                 590

Leu Gly Trp Phe Leu Ser Cys Leu Gly Pro Phe Leu Leu Ser Ala Ala
        595                 600                 605

Leu Leu Val Leu Val Leu Lys Leu Gly Asp Ile Leu Pro Tyr Ser His
    610                 615                 620
```

```
Pro Gly Val Val Phe Leu Phe Leu Ala Ala Phe Ala Val Ala Thr Val
625                 630                 635                 640

Thr Gln Ser Phe Leu Leu Ser Ala Phe Phe Ser Arg Ala Asn Leu Ala
                645                 650                 655

Ala Ala Cys Gly Gly Leu Ala Tyr Phe Ser Leu Tyr Leu Pro Tyr Val
            660                 665                 670

Leu Cys Val Ala Trp Arg Asp Arg Leu Pro Ala Gly Gly Arg Val Ala
        675                 680                 685

Ala Ser Leu Leu Ser Pro Val Ala Phe Gly Phe Gly Cys Glu Ser Leu
    690                 695                 700

Ala Leu Leu Glu Glu Gln Gly Glu Gly Ala Gln Trp His Asn Val Gly
705                 710                 715                 720

Thr Arg Pro Thr Ala Asp Val Phe Ser Leu Ala Gln Val Ser Gly Leu
                725                 730                 735

Leu Leu Leu Asp Ala Ala Leu Tyr Gly Leu Ala Thr Trp Tyr Leu Glu
            740                 745                 750

Ala Val Cys Pro Gly Gln Tyr Gly Ile Pro Glu Pro Trp Asn Phe Pro
        755                 760                 765

Phe Arg Arg Ser Tyr Trp Cys Gly Pro Arg Pro Pro Lys Ser Pro Ala
    770                 775                 780

Pro Cys Pro Thr Pro Leu Asp Pro Lys Val Leu Val Glu Glu Ala Pro
785                 790                 795                 800

Pro Gly Leu Ser Pro Gly Val Ser Val Arg Ser Leu Glu Lys Arg Phe
                805                 810                 815

Pro Gly Ser Pro Gln Pro Ala Leu Arg Gly Leu Ser Leu Asp Phe Tyr
            820                 825                 830

Gln Gly His Ile Thr Ala Phe Leu Gly His Asn Gly Ala Gly Lys Thr
        835                 840                 845
```

```
Thr Thr Leu Ser Ile Leu Ser Gly Leu Phe Pro Pro Ser Gly Gly Ser
    850                 855                 860

Ala Phe Ile Leu Gly His Asp Val Arg Ser Ser Met Ala Ala Ile Arg
865                 870                 875                 880

Pro His Leu Gly Val Cys Pro Gln Tyr Asn Val Leu Phe Asp Met Leu
                885                 890                 895

Thr Val Asp Glu His Val Trp Phe Tyr Gly Arg Leu Lys Gly Leu Ser
            900                 905                 910

Ala Ala Val Val Gly Pro Glu Gln Asp Arg Leu Leu Gln Asp Val Gly
        915                 920                 925

Leu Val Ser Lys Gln Ser Val Gln Thr Arg His Leu Ser Gly Gly Met
    930                 935                 940

Gln Arg Lys Leu Ser Val Ala Ile Ala Phe Val Gly Gly Ser Gln Val
945                 950                 955                 960

Val Ile Leu Asp Glu Pro Thr Ala Gly Val Asp Pro Ala Ser Arg Arg
                965                 970                 975

Gly Ile Trp Glu Leu Leu Leu Lys Tyr Arg Glu Gly Arg Thr Leu Ile
            980                 985                 990

Leu Ser Thr His His Leu Asp Glu  Ala Glu Leu Leu Gly  Asp Arg
Val
        995                 1000                1005

Ala Val  Val Ala Gly Gly Arg  Leu Cys Cys Cys Gly  Ser Pro Leu
    1010                1015                1020

Phe Leu  Arg Arg His Leu Gly  Ser Gly Tyr Tyr Leu  Thr Leu Val
    1025                1030                1035

Lys Ala  Arg Leu Pro Leu Thr  Thr Asn Glu Lys Ala  Asp Thr Asp
    1040                1045                1050

Met Glu  Gly Ser Val Asp Thr  Arg Gln Glu Lys Lys  Asn Gly Ser
    1055                1060                1065
```

```
Gln Gly  Ser Arg Val Gly Thr  Pro Gln Leu Leu Ala  Leu Val Gln
    1070                 1075                 1080

His Trp  Val Pro Gly Ala Arg  Leu Val Glu Glu Leu  Pro His Glu
    1085                 1090                 1095

Leu Val  Leu Val Leu Pro Tyr  Thr Gly Ala His Asp  Gly Ser Phe
    1100                 1105                 1110

Ala Thr  Leu Phe Arg Glu Leu  Asp Thr Arg Leu Ala  Glu Leu Arg
    1115                 1120                 1125

Leu Thr  Gly Tyr Gly Ile Ser  Asp Thr Ser Leu Glu  Glu Ile Phe
    1130                 1135                 1140

Leu Lys  Val Val Glu Glu Cys  Ala Ala Asp Thr Asp  Met Glu Asp
    1145                 1150                 1155

Gly Ser  Cys Gly Gln His Leu  Cys Thr Gly Ile Ala  Gly Leu Asp
    1160                 1165                 1170

Val Thr  Leu Arg Leu Lys Met  Pro Pro Gln Glu Thr  Ala Leu Glu
    1175                 1180                 1185

Asn Gly  Glu Pro Ala Gly Ser  Ala Pro Glu Thr Asp  Gln Gly Ser
    1190                 1195                 1200

Gly Pro  Asp Ala Val Gly Arg  Val Gln Gly Trp Ala  Leu Thr Arg
    1205                 1210                 1215

Gln Gln  Leu Gln Ala Leu Leu  Leu Lys Arg Phe Leu  Leu Ala Arg
    1220                 1225                 1230

Arg Ser  Arg Arg Gly Leu Phe  Ala Gln Ile Val Leu  Pro Ala Leu
    1235                 1240                 1245

Phe Val  Gly Leu Ala Leu Val  Phe Ser Leu Ile Val  Pro Pro Phe
    1250                 1255                 1260

Gly His  Tyr Pro Ala Leu Arg  Leu Ser Pro Thr Met  Tyr Gly Ala
    1265                 1270                 1275

Gln Val  Ser Phe Phe Ser Glu  Asp Ala Pro Gly Asp  Pro Gly Arg
```

1280 1285 1290

Ala Arg Leu Leu Glu Ala Leu Leu Gln Glu Ala Gly Leu Glu Glu
1295 1300 1305

Pro Pro Val Gln His Ser Ser His Arg Phe Ser Ala Pro Glu Val
1310 1315 1320

Pro Ala Glu Val Ala Lys Val Leu Ala Ser Gly Asn Trp Thr Pro
1325 1330 1335

Glu Ser Pro Ser Pro Ala Cys Gln Cys Ser Arg Pro Gly Ala Arg
1340 1345 1350

Arg Leu Leu Pro Asp Cys Pro Ala Ala Ala Gly Gly Pro Pro Pro
1355 1360 1365

Pro Gln Ala Val Thr Gly Ser Gly Glu Val Val Gln Asn Leu Thr
1370 1375 1380

Gly Arg Asn Leu Ser Asp Phe Leu Val Lys Thr Tyr Pro Arg Leu
1385 1390 1395

Val Arg Gln Gly Leu Lys Thr Lys Lys Trp Val Asn Glu Val Arg
1400 1405 1410

Tyr Gly Gly Phe Ser Leu Gly Gly Arg Asp Pro Gly Leu Pro Ser
1415 1420 1425

Gly Gln Glu Leu Gly Arg Ser Val Glu Glu Leu Trp Ala Leu Leu
1430 1435 1440

Ser Pro Leu Pro Gly Gly Ala Leu Asp Arg Val Leu Lys Asn Leu
1445 1450 1455

Thr Ala Trp Ala His Ser Leu Asp Ala Gln Asp Ser Leu Lys Ile
1460 1465 1470

Trp Phe Asn Asn Lys Gly Trp His Ser Met Val Ala Phe Val Asn
1475 1480 1485

Arg Ala Ser Asn Ala Ile Leu Arg Ala His Leu Pro Pro Gly Pro
1490 1495 1500

```
Ala Arg  His Ala His Ser Ile  Thr Thr Leu Asn His  Pro Leu Asn
    1505                1510                1515

Leu Thr  Lys Glu Gln Leu Ser  Glu Gly Ala Leu Met  Ala Ser Ser
    1520                1525                1530

Val Asp  Val Leu Val Ser Ile  Cys Val Val Phe Ala  Met Ser Phe
    1535                1540                1545

Val Pro  Ala Ser Phe Thr Leu  Val Leu Ile Glu Glu  Arg Val Thr
    1550                1555                1560

Arg Ala  Lys His Leu Gln Leu  Met Gly Gly Leu Ser  Pro Thr Leu
    1565                1570                1575

Tyr Trp  Leu Gly Asn Phe Leu  Trp Asp Met Cys Asn  Tyr Leu Val
    1580                1585                1590

Pro Ala  Cys Ile Val Val Leu  Ile Phe Leu Ala Phe  Gln Gln Arg
    1595                1600                1605

Ala Tyr  Val Ala Pro Ala Asn  Leu Pro Ala Leu Leu  Leu Leu Leu
    1610                1615                1620

Leu Leu  Tyr Gly Trp Ser Ile  Thr Pro Leu Met Tyr  Pro Ala Ser
    1625                1630                1635

Phe Phe  Phe Ser Val Pro Ser  Thr Ala Tyr Val Val  Leu Thr Cys
    1640                1645                1650

Ile Asn  Leu Phe Ile Gly Ile  Asn Gly Ser Met Ala  Thr Phe Val
    1655                1660                1665

Leu Glu  Leu Phe Ser Asp Gln  Lys Leu Gln Glu Val  Ser Arg Ile
    1670                1675                1680

Leu Lys  Gln Val Phe Leu Ile  Phe Pro His Phe Cys  Leu Gly Arg
    1685                1690                1695

Gly Leu  Ile Asp Met Val Arg  Asn Gln Ala Met Ala  Asp Ala Phe
    1700                1705                1710
```

```
Glu Arg  Leu Gly Asp Arg Gln  Phe Gln Ser Pro Leu  Arg Trp Glu
    1715                1720                1725

Val Val  Gly Lys Asn Leu Leu  Ala Met Val Ile Gln  Gly Pro Leu
    1730                1735                1740

Phe Leu  Leu Phe Thr Leu Leu  Leu Gln His Arg Ser  Gln Leu Leu
    1745                1750                1755

Pro Gln  Pro Arg Val Arg Ser  Leu Pro Leu Leu Gly  Glu Glu Asp
    1760                1765                1770

Glu Asp  Val Ala Arg Glu Arg  Glu Arg Val Val Gln  Gly Ala Thr
    1775                1780                1785

Gln Gly  Asp Val Leu Val Leu  Arg Asn Leu Thr Lys  Val Tyr Arg
    1790                1795                1800

Gly Gln  Arg Met Pro Ala Val  Asp Arg Leu Cys Leu  Gly Ile Pro
    1805                1810                1815

Pro Gly  Glu Cys Phe Gly Leu  Leu Gly Val Asn Gly  Ala Gly Lys
    1820                1825                1830

Thr Ser  Thr Phe Arg Met Val  Thr Gly Asp Thr Leu  Ala Ser Arg
    1835                1840                1845

Gly Glu  Ala Val Leu Ala Gly  His Ser Val Ala Arg  Glu Pro Ser
    1850                1855                1860

Ala Ala  His Leu Ser Met Gly  Tyr Cys Pro Gln Ser  Asp Ala Ile
    1865                1870                1875

Phe Glu  Leu Leu Thr Gly Arg  Glu His Leu Glu Leu  Leu Ala Arg
    1880                1885                1890

Leu Arg  Gly Val Pro Glu Ala  Gln Val Ala Gln Thr  Ala Gly Ser
    1895                1900                1905

Gly Leu  Ala Arg Leu Gly Leu  Ser Trp Tyr Ala Asp  Arg Pro Ala
    1910                1915                1920
```

Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ala Thr Ala Leu
1925 1930 1935

Ala Leu Val Gly Asp Pro Ala Val Val Phe Leu Asp Glu Pro Thr
1940 1945 1950

Thr Gly Met Asp Pro Ser Ala Arg Arg Phe Leu Trp Asn Ser Leu
1955 1960 1965

Leu Ala Val Val Arg Glu Gly Arg Ser Val Met Leu Thr Ser His
1970 1975 1980

Ser Met Glu Glu Cys Glu Ala Leu Cys Ser Arg Leu Ala Ile Met
1985 1990 1995

Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Pro Gln His Leu Lys
2000 2005 2010

Gly Arg Phe Ala Ala Gly His Thr Leu Thr Leu Arg Val Pro Ala
2015 2020 2025

Ala Arg Ser Gln Pro Ala Ala Ala Phe Val Ala Ala Glu Phe Pro
2030 2035 2040

Gly Ala Glu Leu Arg Glu Ala His Gly Gly Arg Leu Arg Phe Gln
2045 2050 2055

Leu Pro Pro Gly Gly Arg Cys Ala Leu Ala Arg Val Phe Gly Glu
2060 2065 2070

Leu Ala Val His Gly Ala Glu His Gly Val Glu Asp Phe Ser Val
2075 2080 2085

Ser Gln Thr Met Leu Glu Glu Val Phe Leu Tyr Phe Ser Lys Asp
2090 2095 2100

Gln Gly Lys Asp Glu Asp Thr Glu Glu Gln Lys Glu Ala Gly Val
2105 2110 2115

Gly Val Asp Pro Ala Pro Gly Leu Gln His Pro Lys Arg Val Ser
2120 2125 2130

Gln Phe Leu Asp Asp Pro Ser Thr Ala Glu Thr Val Leu

2135 2140 2145

<210> 7617
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431473"

<400> 7617
Met Ala Phe Trp Thr Gln Leu Met Leu Leu Trp Lys Asn Phe Met
1 5 10 15

Tyr Arg Arg Arg Gln Pro Val Gln Leu Leu Val Glu Leu Leu Trp Pro
20 25 30

Leu Phe Leu Phe Phe Ile Leu Val Ala Val Arg His Ser His Pro Pro
35 40 45

Leu Glu His His Glu Cys His Phe Pro Asn Lys Pro Leu Pro Ser Ala
50 55 60

Gly Thr Val Pro Trp Leu Gln Gly Leu Ile Cys Asn Val Asn Asn Thr
65 70 75 80

Cys Phe Pro Gln Leu Thr Pro Gly Glu Glu Pro Gly Arg Leu Ser Asn
85 90 95

Phe Asn Asp Ser Leu Val Ser Arg Leu Leu Ala Asp Ala Arg Thr Val
100 105 110

Leu Gly Gly Ala Ser Ala His Arg Thr Leu Ala Gly Leu Gly Lys Leu

115 120 125

Ile Ala Thr Leu Arg Ala Ala Arg Ser Thr Ala Gln Pro Gln Pro Thr
130 135 140

Lys Gln Ser Pro Leu Glu Pro Pro Met Leu Asp Val Ala Glu Leu Leu
145 150 155 160

Thr Ser Leu Leu

<210> 7618
<211> 591
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432031"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7618
Xaa Ser Ile Cys Val Val Phe Ala Met Ser Phe Val Pro Ala Ser Phe
1 5 10 15

Thr Leu Val Leu Ile Glu Glu Arg Val Thr Arg Ala Lys His Leu Gln
20 25 30

Leu Met Gly Gly Leu Ser Pro Thr Leu Tyr Trp Leu Gly Asn Phe Leu
35 40 45

```
Trp Asp Met Cys Asn Tyr Leu Val Pro Ala Cys Ile Val Val Leu Ile
    50                  55                  60

Phe Leu Ala Phe Gln Gln Arg Ala Tyr Val Ala Pro Ala Asn Leu Pro
65                  70                  75                  80

Ala Leu Leu Leu Leu Leu Leu Leu Tyr Gly Thr Ala Tyr Val Val Leu
                85                  90                  95

Thr Cys Ile Asn Leu Phe Ile Gly Ile Asn Gly Ser Met Ala Thr Phe
            100                 105                 110

Val Leu Glu Leu Phe Ser Asp Gln Lys Leu Gln Glu Val Ser Arg Ile
        115                 120                 125

Leu Lys Gln Val Phe Leu Ile Phe Pro His Phe Cys Leu Gly Arg Gly
    130                 135                 140

Leu Ile Asp Met Val Arg Asn Gln Ala Met Ala Asp Ala Phe Glu Arg
145                 150                 155                 160

Leu Gly Asp Arg Gln Phe Gln Ser Pro Leu Arg Trp Glu Val Val Gly
                165                 170                 175

Lys Asn Leu Leu Ala Met Val Ile Gln Gly Pro Leu Phe Leu Leu Phe
            180                 185                 190

Thr Leu Leu Leu Gln His Arg Ser Gln Leu Leu Pro Gln Pro Arg Val
        195                 200                 205

Arg Ser Leu Pro Leu Leu Gly Glu Glu Asp Glu Asp Val Ala Arg Glu
    210                 215                 220

Arg Glu Arg Val Val Gln Gly Ala Thr Gln Gly Asp Val Leu Val Leu
225                 230                 235                 240

Arg Asn Leu Thr Lys Val Tyr Arg Gly Gln Arg Met Pro Ala Val Asp
                245                 250                 255

Arg Leu Cys Leu Gly Ile Pro Pro Gly Glu Cys Phe Gly Leu Leu Gly
            260                 265                 270
```

```
Val Asn Gly Ala Gly Lys Thr Ser Thr Phe Arg Met Val Thr Gly Asp
        275                 280                 285

Thr Leu Ala Ser Arg Gly Glu Ala Val Leu Ala Gly His Ser Val Ala
    290                 295                 300

Arg Glu Pro Ser Ala Ala His Leu Ser Met Gly Tyr Cys Pro Gln Ser
305                 310                 315                 320

Asp Ala Ile Phe Glu Leu Leu Thr Gly Arg Glu His Leu Glu Leu Leu
                325                 330                 335

Ala Arg Leu Arg Gly Val Pro Glu Ala Gln Val Ala Gln Thr Ala Gly
            340                 345                 350

Ser Gly Leu Ala Arg Leu Gly Leu Ser Trp Tyr Ala Asp Arg Pro Ala
        355                 360                 365

Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ala Thr Ala Leu Ala
    370                 375                 380

Leu Val Gly Asp Pro Ala Val Val Phe Leu Asp Glu Pro Thr Thr Gly
385                 390                 395                 400

Met Asp Pro Ser Ala Arg Arg Phe Leu Trp Asn Ser Leu Leu Ala Val
                405                 410                 415

Val Arg Glu Gly Arg Ser Val Met Leu Thr Ser His Ser Met Glu Glu
            420                 425                 430

Cys Glu Ala Leu Cys Ser Arg Leu Ala Ile Met Val Asn Gly Arg Phe
        435                 440                 445

Arg Cys Leu Gly Ser Pro Gln His Leu Lys Gly Arg Phe Ala Ala Gly
    450                 455                 460

His Thr Leu Thr Leu Arg Val Pro Ala Ala Arg Ser Gln Pro Ala Ala
465                 470                 475                 480

Ala Phe Val Ala Ala Glu Phe Pro Gly Ala Glu Leu Arg Glu Ala His
                485                 490                 495

Gly Gly Arg Leu Arg Phe Gln Leu Pro Pro Gly Gly Arg Cys Ala Leu
```

```
            500                 505                 510

Ala Arg Val Phe Gly Glu Leu Ala Val His Gly Ala Glu His Gly Val
        515                 520                 525

Glu Asp Phe Ser Val Ser Gln Thr Met Leu Glu Glu Val Phe Leu Tyr
    530                 535                 540

Phe Ser Lys Asp Gln Gly Lys Asp Glu Asp Thr Glu Glu Gln Lys Glu
545                 550                 555                 560

Ala Gly Val Gly Val Asp Pro Ala Pro Gly Leu Gln His Pro Lys Arg
                565                 570                 575

Val Ser Gln Phe Leu Asp Asp Pro Ser Thr Ala Glu Thr Val Leu
            580                 585                 590


<210> 7619
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433545"

<400> 7619
Met Ala Phe Trp Thr Gln Leu Met Leu Leu Leu Trp Lys Asn Phe Met
1               5                   10                  15

Tyr Arg Arg Arg Gln Pro Leu Leu Val Glu Leu Leu Trp Pro Leu Phe
            20                  25                  30

Leu Phe Phe Ile Leu Val Ala Val Arg His Ser His Pro Pro Leu Glu
```

```
        35                  40                  45

His His Glu Cys His Phe Pro Asn Lys Pro Leu Pro Ser Ala Gly Thr
    50                  55                  60

Val Pro Trp Leu Gln Gly Leu Ile Cys Asn Val Asn Asn Thr Cys Phe
65                  70                  75                  80

Pro Gln Leu Thr Pro Gly Glu Glu Pro Gly Arg Leu Ser Asn Phe Asn
                85                  90                  95

Asp Ser Leu Val Ser Arg Leu Leu Ala Asp Ala Arg Thr Val Leu Gly
            100                 105                 110

Gly Ala Ser Ala His Arg Thr Leu Ala Gly Leu Gly Lys Leu Ile Ala
        115                 120                 125

Thr Leu Arg Ala Ala Arg Ser Thr
    130                 135


<210> 7620
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437311"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid
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<400> 7620
Xaa Pro Gln Glu Thr Ala Leu Glu Asn Gly Glu Pro Ala Gly Ser Ala
1 5 10 15

Pro Glu Thr Asp Gln Gly Ser Gly Pro Asp Ala Val Gly Arg Val Gln
20 25 30

Gly Trp Ala Leu Thr Arg Gln Gln Leu Gln Ala Leu Leu Leu Lys Arg
35 40 45

Phe Leu Leu Ala Arg Arg Ser Arg Arg Gly Leu Phe Ala Gln
50 55 60

<210> 7621
<211> 2008
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IZY2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465322"

<400> 7621
Met Val Cys Leu Gly Thr Gly Gln Ser Ala Gly Pro Leu Val Ser Val
1 5 10 15

Gln Asn His Cys Pro Pro Cys Gly Leu Ser Pro Gln Glu Ser Leu Gly
20 25 30

Leu Ala Leu Gly Gln Ala Gln Glu Pro Leu His Ser Leu Leu Glu Ala
35 40 45

```
Ala Glu Asp Leu Ala Gln Glu Leu Leu Ala Leu Arg Ser Leu Val Glu
    50                  55                  60

Leu Arg Ala Leu Leu Gln Arg Pro Arg Gly Thr Ser Gly Pro Leu Glu
65                  70                  75                  80

Leu Leu Ser Glu Ala Leu Cys Ser Val Arg Gly Pro Ser Ser Thr Val
                85                  90                  95

Gly Pro Ser Leu Asn Trp Tyr Glu Ala Ser Asp Leu Met Glu Leu Val
            100                 105                 110

Gly Gln Glu Pro Glu Ser Ala Leu Pro Asp Ser Ser Leu Ser Pro Ala
        115                 120                 125

Cys Ser Glu Leu Ile Gly Ala Leu Asp Ser His Pro Leu Ser Arg Leu
    130                 135                 140

Leu Trp Arg Arg Leu Lys Pro Leu Ile Leu Gly Lys Leu Leu Phe Ala
145                 150                 155                 160

Pro Asp Thr Pro Phe Thr Arg Lys Leu Met Ala Gln Val Asn Arg Thr
                165                 170                 175

Phe Glu Glu Leu Thr Leu Leu Arg Asp Val Arg Glu Val Trp Glu Met
            180                 185                 190

Leu Gly Pro Arg Ile Phe Thr Phe Met Asn Asp Ser Ser Asn Val Ala
        195                 200                 205

Met Leu Gln Arg Leu Leu Gln Met Gln Asp Glu Gly Arg Arg Gln Pro
    210                 215                 220

Arg Pro Gly Gly Arg Asp His Met Glu Ala Leu Arg Ser Phe Leu Asp
225                 230                 235                 240

Pro Gly Ser Gly Gly Tyr Ser Trp Gln Asp Ala His Ala Asp Val Gly
                245                 250                 255

His Leu Val Gly Thr Leu Gly Arg Val Thr Glu Cys Leu Ser Leu Asp
            260                 265                 270
```

```
Lys Leu Glu Ala Ala Pro Ser Glu Ala Ala Leu Val Ser Arg Ala Leu
        275                 280                 285

Gln Leu Leu Ala Glu His Arg Phe Trp Ala Gly Val Val Phe Leu Gly
    290                 295                 300

Pro Glu Asp Ser Ser Asp Pro Thr Glu His Pro Thr Pro Asp Leu Gly
305                 310                 315                 320

Pro Gly His Val Arg Ile Lys Ile Arg Met Asp Ile Asp Val Val Thr
                325                 330                 335

Arg Thr Asn Lys Ile Arg Asp Arg Phe Trp Asp Pro Gly Pro Ala Ala
            340                 345                 350

Asp Pro Leu Thr Asp Leu Arg Tyr Val Trp Gly Gly Phe Val Tyr Leu
        355                 360                 365

Gln Asp Leu Val Glu Arg Ala Ala Val Arg Val Leu Ser Gly Ala Asn
    370                 375                 380

Pro Arg Ala Gly Leu Tyr Leu Gln Gln Met Pro Tyr Pro Cys Tyr Val
385                 390                 395                 400

Asp Asp Val Phe Leu Arg Val Leu Ser Arg Ser Leu Pro Leu Phe Leu
                405                 410                 415

Thr Leu Ala Trp Ile Tyr Ser Val Thr Leu Thr Val Lys Ala Val Val
            420                 425                 430

Arg Glu Lys Glu Thr Arg Leu Arg Asp Thr Met Arg Ala Met Gly Leu
        435                 440                 445

Ser Arg Ala Val Leu Trp Leu Gly Trp Phe Leu Ser Cys Leu Gly Pro
    450                 455                 460

Phe Leu Leu Ser Ala Ala Leu Leu Val Leu Val Leu Lys Leu Gly Asp
465                 470                 475                 480

Ile Leu Pro Tyr Ser His Pro Gly Val Val Phe Leu Phe Leu Ala Ala
                485                 490                 495

Phe Ala Val Ala Thr Val Thr Gln Ser Phe Leu Leu Ser Ala Phe Phe
```

```
            500                 505                 510

Ser Arg Ala Asn Leu Ala Ala Ala Cys Gly Gly Leu Ala Tyr Phe Ser
        515                 520                 525

Leu Tyr Leu Pro Tyr Val Leu Cys Val Ala Trp Arg Asp Arg Leu Pro
    530                 535                 540

Ala Gly Gly Arg Val Ala Ala Ser Leu Leu Ser Pro Val Ala Phe Gly
545                 550                 555                 560

Phe Gly Cys Glu Ser Leu Ala Leu Leu Glu Glu Gln Gly Glu Gly Ala
                565                 570                 575

Gln Trp His Asn Val Gly Thr Arg Pro Thr Ala Asp Val Phe Ser Leu
            580                 585                 590

Ala Gln Val Ser Gly Leu Leu Leu Leu Asp Ala Ala Leu Tyr Gly Leu
        595                 600                 605

Ala Thr Trp Tyr Leu Glu Ala Val Cys Pro Gly Gln Tyr Gly Ile Pro
    610                 615                 620

Glu Pro Trp Asn Phe Pro Phe Arg Arg Ser Tyr Trp Cys Gly Pro Arg
625                 630                 635                 640

Pro Pro Lys Ser Pro Ala Pro Cys Pro Thr Pro Leu Asp Pro Lys Val
                645                 650                 655

Leu Val Glu Glu Ala Pro Pro Gly Leu Ser Pro Gly Val Ser Val Arg
            660                 665                 670

Ser Leu Glu Lys Arg Phe Pro Gly Ser Pro Gln Pro Ala Leu Arg Gly
        675                 680                 685

Leu Ser Leu Asp Phe Tyr Gln Gly His Ile Thr Ala Phe Leu Gly His
    690                 695                 700

Asn Gly Ala Gly Lys Thr Thr Thr Leu Ser Ile Leu Ser Gly Leu Phe
705                 710                 715                 720

Pro Pro Ser Gly Gly Ser Ala Phe Ile Leu Gly His Asp Val Arg Ser
                725                 730                 735
```

```
Ser Met Ala Ala Ile Arg Pro His Leu Gly Val Cys Pro Gln Tyr Asn
            740                 745                 750

Val Leu Phe Asp Met Leu Thr Val Asp Glu His Val Trp Phe Tyr Gly
        755                 760                 765

Arg Leu Lys Gly Leu Ser Ala Ala Val Val Gly Pro Glu Gln Asp Arg
    770                 775                 780

Leu Leu Gln Asp Val Gly Leu Val Ser Lys Gln Ser Val Gln Thr Arg
785                 790                 795                 800

His Leu Ser Gly Gly Met Gln Arg Lys Leu Ser Val Ala Ile Ala Phe
                805                 810                 815

Val Gly Gly Ser Gln Val Val Ile Leu Asp Glu Pro Thr Ala Gly Val
            820                 825                 830

Asp Pro Ala Ser Arg Arg Gly Ile Trp Glu Leu Leu Leu Lys Tyr Arg
        835                 840                 845

Glu Gly Arg Thr Leu Ile Leu Ser Thr His His Leu Asp Glu Ala Glu
    850                 855                 860

Leu Leu Gly Asp Arg Val Ala Val Val Ala Gly Gly Arg Leu Cys Cys
865                 870                 875                 880

Cys Gly Ser Pro Leu Phe Leu Arg Arg His Leu Gly Ser Gly Tyr Tyr
                885                 890                 895

Leu Thr Leu Val Lys Ala Arg Leu Pro Leu Thr Thr Asn Glu Lys Ala
            900                 905                 910

Asp Thr Asp Met Glu Gly Ser Val Asp Thr Arg Gln Glu Lys Lys Asn
        915                 920                 925

Gly Ser Gln Gly Ser Arg Val Gly Thr Pro Gln Leu Leu Ala Leu Val
    930                 935                 940

Gln His Trp Val Pro Gly Ala Arg Leu Val Glu Glu Leu Pro His Glu
945                 950                 955                 960
```

```
Leu Val Leu Val Leu Pro Tyr Thr Gly Ala His Asp Gly Ser Phe Ala
               965                 970                 975

Thr Leu Phe Arg Glu Leu Asp Thr Arg Leu Ala Glu Leu Arg Leu Thr
           980                 985                 990

Gly Tyr Gly Ile Ser Asp Thr Ser  Leu Glu Glu Ile Phe  Leu Lys
Val
        995                1000                1005

Val Glu  Glu Cys Ala Ala Asp  Thr Asp Met Glu Asp  Gly Ser Cys
    1010                1015                1020

Gly Gln  His Leu Cys Thr Gly  Ile Ala Gly Leu Asp  Val Thr Leu
    1025                1030                1035

Arg Leu  Lys Met Pro Pro Gln  Glu Thr Ala Leu Glu  Asn Gly Glu
    1040                1045                1050

Pro Ala  Gly Ser Ala Pro Glu  Thr Asp Gln Gly Ser  Gly Pro Asp
    1055                1060                1065

Ala Val  Gly Arg Val Gln Gly  Trp Ala Leu Thr Arg  Gln Gln Leu
    1070                1075                1080

Gln Ala  Leu Leu Leu Lys Arg  Phe Leu Leu Ala Arg  Arg Ser Arg
    1085                1090                1095

Arg Gly  Leu Phe Ala Gln Ile  Val Leu Pro Ala Leu  Phe Val Gly
    1100                1105                1110

Leu Ala  Leu Val Phe Ser Leu  Ile Val Pro Pro Phe  Gly His Tyr
    1115                1120                1125

Pro Ala  Leu Arg Leu Ser Pro  Thr Met Tyr Gly Ala  Gln Val Ser
    1130                1135                1140

Phe Phe  Ser Glu Asp Ala Pro  Gly Asp Pro Gly Arg  Ala Arg Leu
    1145                1150                1155

Leu Glu  Ala Leu Leu Gln Glu  Ala Gly Leu Glu Glu  Pro Pro Val
    1160                1165                1170
```

```
Gln His  Ser Ser His Arg Phe  Ser Ala Pro Glu Val  Pro Ala Glu
    1175                1180                1185

Val Ala  Lys Val Leu Ala Ser  Gly Asn Trp Thr Pro  Glu Ser Pro
    1190                1195                1200

Ser Pro  Ala Cys Gln Cys Ser  Arg Pro Gly Ala Arg  Arg Leu Leu
    1205                1210                1215

Pro Asp  Cys Pro Ala Ala Ala  Gly Gly Pro Pro Pro  Pro Gln Ala
    1220                1225                1230

Val Thr  Gly Ser Gly Glu Val  Val Gln Asn Leu Thr  Gly Arg Asn
    1235                1240                1245

Leu Ser  Asp Phe Leu Val Lys  Thr Tyr Pro Arg Leu  Val Arg Gln
    1250                1255                1260

Gly Leu  Lys Thr Lys Lys Trp  Val Asn Glu Val Arg  Tyr Gly Gly
    1265                1270                1275

Phe Ser  Leu Gly Gly Arg Asp  Pro Gly Leu Pro Ser  Gly Gln Glu
    1280                1285                1290

Leu Gly  Arg Ser Val Glu Glu  Leu Trp Ala Leu Leu  Ser Pro Leu
    1295                1300                1305

Pro Gly  Gly Ala Leu Asp Arg  Val Leu Lys Asn Leu  Thr Ala Trp
    1310                1315                1320

Ala His  Ser Leu Asp Ala Gln  Asp Ser Leu Lys Ile  Trp Phe Asn
    1325                1330                1335

Asn Lys  Gly Trp His Ser Met  Val Ala Phe Val Asn  Arg Ala Ser
    1340                1345                1350

Asn Ala  Ile Leu Arg Ala His  Leu Pro Pro Gly Pro  Ala Arg His
    1355                1360                1365

Ala His  Ser Ile Thr Thr Leu  Asn His Pro Leu Asn  Leu Thr Lys
    1370                1375                1380
```

Glu Gln Leu Ser Glu Gly Ala Leu Met Ala Ser Ser Val Asp Val
1385 1390 1395

Leu Val Ser Ile Cys Val Val Phe Ala Met Ser Phe Val Pro Ala
1400 1405 1410

Ser Phe Thr Leu Val Leu Ile Glu Glu Arg Val Thr Arg Ala Lys
1415 1420 1425

His Leu Gln Leu Met Gly Gly Leu Ser Pro Thr Leu Tyr Trp Leu
1430 1435 1440

Gly Asn Phe Leu Trp Asp Met Cys Asn Tyr Leu Val Pro Ala Cys
1445 1450 1455

Ile Val Val Leu Ile Phe Leu Ala Phe Gln Gln Arg Ala Tyr Val
1460 1465 1470

Ala Pro Ala Asn Leu Pro Ala Leu Leu Leu Leu Leu Leu Leu Tyr
1475 1480 1485

Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala Ser Phe Phe Phe
1490 1495 1500

Ser Val Pro Ser Thr Ala Tyr Val Val Leu Thr Cys Ile Asn Leu
1505 1510 1515

Phe Ile Gly Ile Asn Gly Ser Met Ala Thr Phe Val Leu Glu Leu
1520 1525 1530

Phe Ser Asp Gln Lys Leu Gln Glu Val Ser Arg Ile Leu Lys Gln
1535 1540 1545

Val Phe Leu Ile Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile
1550 1555 1560

Asp Met Val Arg Asn Gln Ala Met Ala Asp Ala Phe Glu Arg Leu
1565 1570 1575

Gly Asp Arg Gln Phe Gln Ser Pro Leu Arg Trp Glu Val Val Gly
1580 1585 1590

Lys Asn Leu Leu Ala Met Val Ile Gln Gly Pro Leu Phe Leu Leu

1595 1600 1605

Phe Thr Leu Leu Leu Gln His Arg Ser Gln Leu Leu Pro Gln Pro
1610 1615 1620

Arg Val Arg Ser Leu Pro Leu Leu Gly Glu Glu Asp Glu Asp Val
1625 1630 1635

Ala Arg Glu Arg Glu Arg Val Val Gln Gly Ala Thr Gln Gly Asp
1640 1645 1650

Val Leu Val Leu Arg Asn Leu Thr Lys Val Tyr Arg Gly Gln Arg
1655 1660 1665

Met Pro Ala Val Asp Arg Leu Cys Leu Gly Ile Pro Pro Gly Glu
1670 1675 1680

Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Ser Thr
1685 1690 1695

Phe Arg Met Val Thr Gly Asp Thr Leu Ala Ser Arg Gly Glu Ala
1700 1705 1710

Val Leu Ala Gly His Ser Val Ala Arg Glu Pro Ser Ala Ala His
1715 1720 1725

Leu Ser Met Gly Tyr Cys Pro Gln Ser Asp Ala Ile Phe Glu Leu
1730 1735 1740

Leu Thr Gly Arg Glu His Leu Glu Leu Leu Ala Arg Leu Arg Gly
1745 1750 1755

Val Pro Glu Ala Gln Val Ala Gln Thr Ala Gly Ser Gly Leu Ala
1760 1765 1770

Arg Leu Gly Leu Ser Trp Tyr Ala Asp Arg Pro Ala Gly Thr Tyr
1775 1780 1785

Ser Gly Gly Asn Lys Arg Lys Leu Ala Thr Ala Leu Ala Leu Val
1790 1795 1800

Gly Asp Pro Ala Val Val Phe Leu Asp Glu Pro Thr Thr Gly Met
1805 1810 1815

```
Asp Pro  Ser Ala Arg Arg Phe  Leu Trp Asn Ser Leu  Leu Ala Val
    1820                 1825                 1830

Val Arg  Glu Gly Arg Ser Val  Met Leu Thr Ser His  Ser Met Glu
    1835                 1840                 1845

Glu Cys  Glu Ala Leu Cys Ser  Arg Leu Ala Ile Met  Val Asn Gly
    1850                 1855                 1860

Arg Phe  Arg Cys Leu Gly Ser  Pro Gln His Leu Lys  Gly Arg Phe
    1865                 1870                 1875

Ala Ala  Gly His Thr Leu Thr  Leu Arg Val Pro Ala  Ala Arg Ser
    1880                 1885                 1890

Gln Pro  Ala Ala Ala Phe Val  Ala Ala Glu Phe Pro  Gly Ala Glu
    1895                 1900                 1905

Leu Arg  Glu Ala His Gly Gly  Arg Leu Arg Phe Gln  Leu Pro Pro
    1910                 1915                 1920

Gly Gly  Arg Cys Ala Leu Ala  Arg Val Phe Gly Glu  Leu Ala Val
    1925                 1930                 1935

His Gly  Ala Glu His Gly Val  Glu Asp Phe Ser Val  Ser Gln Thr
    1940                 1945                 1950

Met Leu  Glu Glu Val Phe Leu  Tyr Phe Ser Lys Asp  Gln Gly Lys
    1955                 1960                 1965

Asp Glu  Asp Thr Glu Glu Gln  Lys Glu Ala Gly Val  Gly Val Asp
    1970                 1975                 1980

Pro Ala  Pro Gly Leu Gln His  Pro Lys Arg Val Ser  Gln Phe Leu
    1985                 1990                 1995

Asp Asp  Pro Ser Thr Ala Glu  Thr Val Leu
    2000                 2005
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<210> 7622
<211> 36
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1607; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478857"

<400> 7622
Met Ala Phe Trp Thr Gln Leu Met Leu Leu Leu Trp Lys Asn Phe Met
1 5 10 15

Tyr Arg Arg Arg Gln Pro Val Gln Leu Leu Val Glu Leu Leu Trp Pro
20 25 30

Leu Phe Leu Phe
35

<210> 7623
<211> 96
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1607; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480811"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7623
Xaa Leu Val Ser Ile Cys Val Val Phe Ala Met Ser Phe Val Pro Ala
1   5   10   15

Ser Phe Thr Leu Val Leu Ile Glu Glu Arg Val Thr Arg Ala Lys His
            20   25   30

Leu Gln Leu Met Gly Gly Leu Ser Pro Thr Leu Tyr Trp Leu Gly Asn
        35   40   45

Phe Leu Trp Asp Met Cys Asn Tyr Leu Val Pro Ala Cys Ile Val Val
    50   55   60

Leu Ile Phe Leu Ala Phe Gln Gln Arg Ala Tyr Val Ala Pro Ala Asn
65   70   75   80

Leu Pro Ala Leu Leu Leu Leu Leu Leu Leu Tyr Gly Ser Cys Arg Arg
                85   90   95

<210> 7624
<211> 280
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA7; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482948"

<400> 7624

```
Arg Glu Pro Ser Ala Ala His Leu Ser Met Gly Tyr Cys Pro Gln Ser
1               5                  10                  15

Asp Ala Ile Phe Glu Leu Leu Thr Gly Arg Glu His Leu Glu Leu Leu
            20                  25                  30

Ala Arg Leu Arg Gly Val Pro Glu Ala Gln Val Ala Gln Thr Ala Gly
        35                  40                  45

Ser Gly Leu Ala Arg Leu Gly Leu Ser Trp Tyr Ala Asp Arg Pro Ala
    50                  55                  60

Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ala Thr Ala Leu Ala
65                  70                  75                  80

Leu Val Gly Asp Pro Ala Val Val Phe Leu Asp Glu Pro Thr Thr Gly
                85                  90                  95

Met Asp Pro Ser Ala Arg Arg Phe Leu Trp Asn Ser Leu Leu Ala Val
            100                 105                 110

Val Arg Glu Gly Arg Ser Val Met Leu Thr Ser His Ser Met Glu Glu
        115                 120                 125

Cys Glu Ala Leu Cys Ser Arg Leu Ala Ile Met Val Asn Gly Arg Phe
    130                 135                 140

Arg Cys Leu Gly Ser Pro Gln His Leu Lys Gly Arg Phe Ala Ala Gly
145                 150                 155                 160

His Thr Leu Thr Leu Arg Val Pro Ala Ala Arg Ser Gln Pro Ala Ala
                165                 170                 175

Ala Phe Val Ala Ala Glu Phe Pro Gly Ala Glu Leu Arg Glu Ala His
            180                 185                 190

Gly Gly Arg Leu Arg Phe Gln Leu Pro Pro Gly Gly Arg Cys Ala Leu
        195                 200                 205

Ala Arg Val Phe Gly Glu Leu Ala Val His Gly Ala Glu His Gly Val
    210                 215                 220

Glu Asp Phe Ser Val Ser Gln Thr Met Leu Glu Glu Asp Gln Gly Lys
```

225 230 235 240

Asp Glu Asp Thr Glu Glu Gln Lys Glu Ala Gly Val Gly Val Asp Pro
245 250 255

Ala Pro Gly Leu Gln His Pro Lys Arg Val Ser Gln Phe Leu Asp Asp
260 265 270

Pro Ser Thr Ala Glu Thr Val Leu
275 280

<210> 7625
<211> 1581
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1608; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: O94911; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000269080"

<400> 7625
Met Arg Lys Arg Lys Ile Ser Val Cys Gln Gln Thr Trp Ala Leu Leu
1 5 10 15

Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Met
20 25 30

Glu Trp Leu Asn Ser Leu Leu Leu Leu Leu Cys Leu Tyr Ile Tyr Pro
35 40 45

His Ser His Gln Val Asn Asp Phe Ser Ser Leu Leu Thr Met Asp Leu

```
    50                  55                  60

Gly Arg Val Asp Thr Phe Asn Glu Ser Arg Phe Ser Val Val Tyr Thr
65                  70                  75                  80

Pro Val Thr Asn Thr Thr Gln Gln Ile Met Asn Lys Val Ala Ser Thr
                85                  90                  95

Pro Phe Leu Ala Gly Lys Glu Val Leu Gly Leu Pro Asp Glu Glu Ser
            100                 105                 110

Ile Lys Glu Phe Thr Ala Asn Tyr Pro Glu Glu Ile Val Arg Val Thr
        115                 120                 125

Phe Thr Asn Thr Tyr Ser Tyr His Leu Lys Phe Leu Leu Gly His Gly
    130                 135                 140

Met Pro Ala Lys Lys Glu His Lys Asp His Thr Ala His Cys Tyr Glu
145                 150                 155                 160

Thr Asn Glu Asp Val Tyr Cys Glu Val Ser Val Phe Trp Lys Glu Gly
                165                 170                 175

Phe Val Ala Leu Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile Thr
            180                 185                 190

Thr Asn His Ser Val Met Glu Glu Leu Met Ser Val Thr Gly Lys Asn
        195                 200                 205

Met Lys Met His Ser Phe Ile Gly Gln Ser Gly Val Ile Thr Asp Leu
    210                 215                 220

Tyr Leu Phe Ser Cys Ile Ile Ser Phe Ser Ser Phe Ile Tyr Tyr Ala
225                 230                 235                 240

Ser Val Asn Val Thr Arg Glu Arg Lys Arg Met Lys Ala Leu Met Thr
                245                 250                 255

Met Met Gly Leu Arg Asp Ser Ala Phe Trp Leu Ser Trp Gly Leu Leu
            260                 265                 270

Tyr Ala Gly Phe Ile Phe Ile Met Ala Leu Phe Leu Ala Leu Val Ile
        275                 280                 285
```

```
Arg Ser Thr Gln Phe Ile Ile Leu Ser Gly Phe Met Val Val Phe Ser
    290                 295                 300

Leu Phe Leu Leu Tyr Gly Leu Ser Leu Val Ala Leu Ala Phe Leu Met
305                 310                 315                 320

Ser Ile Leu Val Lys Lys Ser Phe Leu Thr Gly Leu Val Val Phe Leu
                325                 330                 335

Leu Thr Val Phe Trp Gly Cys Leu Gly Phe Thr Ser Leu Tyr Arg His
            340                 345                 350

Leu Pro Ala Ser Leu Glu Trp Ile Leu Ser Leu Leu Ser Pro Phe Ala
        355                 360                 365

Phe Met Leu Gly Met Ala Gln Leu Leu His Leu Asp Tyr Asp Leu Asn
    370                 375                 380

Ser Asn Ala Phe Pro His Pro Ser Asp Gly Ser Asn Leu Ile Val Ala
385                 390                 395                 400

Thr Asn Phe Met Leu Ala Phe Asp Thr Cys Leu Tyr Leu Ala Leu Ala
                405                 410                 415

Ile Tyr Phe Glu Lys Ile Leu Pro Asn Glu Tyr Gly His Arg Arg Pro
            420                 425                 430

Pro Leu Phe Phe Leu Lys Ser Ser Phe Trp Ser Gln Thr Gln Lys Thr
        435                 440                 445

Asp His Val Ala Leu Glu Asp Glu Met Asp Ala Asp Pro Ser Phe His
    450                 455                 460

Asp Ser Phe Glu Gln Ala Pro Pro Glu Phe Gln Gly Lys Glu Ala Ile
465                 470                 475                 480

Arg Ile Arg Asn Val Thr Lys Glu Tyr Lys Gly Lys Pro Asp Lys Ile
                485                 490                 495

Glu Ala Leu Lys Asp Leu Val Phe Asp Ile Tyr Glu Gly Gln Ile Thr
            500                 505                 510
```

```
Ala Ile Leu Gly His Ser Gly Ala Gly Lys Ser Thr Leu Leu Asn Ile
        515                 520                 525

Leu Ser Gly Leu Ser Val Pro Thr Lys Gly Ser Val Thr Ile Tyr Asn
    530                 535                 540

Asn Lys Leu Ser Glu Met Ala Asp Leu Glu Asn Leu Ser Lys Leu Thr
545                 550                 555                 560

Gly Val Cys Pro Gln Ser Asn Val Gln Phe Asp Phe Leu Thr Val Arg
                565                 570                 575

Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro Gln Glu
            580                 585                 590

Val Asp Lys Glu Ile Phe Leu Leu Asp Glu Pro Thr Ala Gly Leu Asp
        595                 600                 605

Pro Phe Ser Arg His Gln Val Trp Asn Leu Leu Lys Glu Arg Lys Thr
    610                 615                 620

Asp Arg Val Ile Leu Phe Ser Thr Gln Phe Met Asp Glu Ala Asp Ile
625                 630                 635                 640

Leu Ala Asp Arg Lys Val Phe Leu Ser Gln Gly Lys Leu Lys Cys Ala
                645                 650                 655

Gly Ser Ser Leu Phe Leu Lys Lys Lys Trp Gly Ile Gly Tyr His Leu
            660                 665                 670

Ser Leu Gln Leu Asn Glu Ile Cys Val Glu Glu Asn Ile Thr Ser Leu
        675                 680                 685

Val Lys Gln His Ile Pro Asp Ala Lys Leu Ser Ala Lys Ser Glu Gly
    690                 695                 700

Lys Leu Ile Tyr Thr Leu Pro Leu Glu Arg Thr Asn Lys Phe Pro Glu
705                 710                 715                 720

Leu Tyr Lys Asp Leu Asp Ser Tyr Pro Asp Leu Gly Ile Glu Asn Tyr
                725                 730                 735
```

```
Gly Val Ser Met Thr Thr Leu Asn Glu Val Phe Leu Lys Leu Glu Gly
            740                 745                 750

Lys Ser Thr Ile Asn Glu Ser Asp Ile Ala Ile Leu Gly Glu Val Gln
        755                 760                 765

Ala Glu Lys Ala Asp Asp Thr Glu Arg Leu Val Glu Met Glu Gln Val
    770                 775                 780

Leu Ser Ser Leu Asn Lys Met Arg Lys Thr Ile Gly Gly Val Ala Leu
785                 790                 795                 800

Trp Arg Gln Gln Ile Cys Ala Ile Ala Arg Val Arg Leu Leu Lys Leu
                805                 810                 815

Lys His Glu Arg Lys Ala Leu Leu Ala Leu Leu Leu Ile Leu Met Ala
            820                 825                 830

Gly Phe Cys Pro Leu Leu Val Glu Tyr Thr Met Val Lys Ile Tyr Gln
        835                 840                 845

Asn Ser Tyr Thr Trp Glu Leu Ser Pro His Leu Tyr Phe Leu Ala Pro
    850                 855                 860

Gly Gln Gln Pro His Asp Pro Leu Thr Gln Leu Leu Ile Ile Asn Lys
865                 870                 875                 880

Thr Gly Ala Ser Ile Asp Asp Phe Ile Gln Ser Val Glu His Gln Asn
                885                 890                 895

Ile Ala Leu Glu Val Asp Ala Phe Gly Thr Arg Asn Gly Thr Asp Asp
            900                 905                 910

Pro Ser Tyr Asn Gly Ala Ile Thr Val Cys Cys Asn Glu Lys Asn Tyr
        915                 920                 925

Ser Phe Ser Leu Ala Cys Asn Ala Lys Arg Leu Asn Cys Phe Pro Val
    930                 935                 940

Leu Met Asp Ile Val Ser Asn Gly Leu Leu Gly Met Val Lys Pro Ser
945                 950                 955                 960

Val His Ile Arg Thr Glu Arg Ser Thr Phe Leu Glu Asn Gly Gln Asp
```

965 970 975

Asn Pro Ile Gly Phe Leu Ala Tyr Ile Met Phe Trp Leu Val Leu Thr
980 985 990

Ser Ser Cys Pro Pro Tyr Ile Ala Met Ser Ser Ile Asp Asp Tyr
Lys
995 1000 1005

Asn Arg Ala Arg Ser Gln Leu Arg Ile Ser Gly Leu Ser Pro Ser
1010 1015 1020

Ala Tyr Trp Phe Gly Gln Ala Leu Val Asp Val Ser Leu Tyr Phe
1025 1030 1035

Leu Val Phe Val Phe Ile Tyr Leu Met Ser Tyr Ile Ser Asn Phe
1040 1045 1050

Glu Asp Met Leu Leu Thr Ile Ile His Ile Ile Gln Ile Pro Cys
1055 1060 1065

Ala Val Gly Tyr Ser Phe Ser Leu Ile Phe Met Thr Tyr Val Ile
1070 1075 1080

Ser Phe Ile Phe Arg Lys Gly Arg Lys Asn Ser Gly Ile Trp Ser
1085 1090 1095

Phe Cys Phe Tyr Val Val Thr Val Phe Ser Val Ala Gly Phe Ala
1100 1105 1110

Phe Ser Ile Phe Glu Ser Asp Ile Pro Phe Ile Phe Thr Phe Leu
1115 1120 1125

Ile Pro Pro Ala Thr Met Ile Gly Cys Leu Phe Leu Ser Ser His
1130 1135 1140

Leu Leu Phe Ser Ser Leu Phe Ser Glu Glu Arg Met Asp Val Gln
1145 1150 1155

Pro Phe Leu Val Phe Leu Ile Pro Phe Leu His Phe Ile Ile Phe
1160 1165 1170

Leu Phe Thr Leu Arg Cys Leu Glu Trp Lys Phe Gly Lys Lys Ser

```
    1175                1180                1185

Met Arg  Lys Asp Pro Phe Phe  Arg Ile Ser Pro Arg  Ser Ser Asp
    1190                1195                1200

Val Cys  Gln Asn Pro Glu Glu  Pro Glu Gly Glu Asp  Glu Asp Val
    1205                1210                1215

Gln Met  Glu Arg Val Arg Thr  Ala Asn Ala Leu Asn  Ser Thr Asn
    1220                1225                1230

Phe Asp  Glu Lys Pro Val Ile  Ile Ala Ser Cys Leu  Arg Lys Glu
    1235                1240                1245

Tyr Ala  Gly Lys Arg Lys Gly  Cys Phe Ser Lys Arg  Lys Asn Lys
    1250                1255                1260

Ile Ala  Thr Arg Asn Val Ser  Phe Cys Val Arg Lys  Gly Glu Val
    1265                1270                1275

Leu Gly  Leu Leu Gly His Asn  Gly Ala Gly Lys Ser  Thr Ser Ile
    1280                1285                1290

Lys Val  Ile Thr Gly Asp Thr  Lys Pro Thr Ala Gly  Gln Val Leu
    1295                1300                1305

Leu Lys  Gly Ser Gly Gly Gly  Asp Ala Leu Glu Phe  Leu Gly Tyr
    1310                1315                1320

Cys Pro  Gln Glu Asn Ala Leu  Trp Pro Asn Leu Thr  Val Arg Gln
    1325                1330                1335

His Leu  Glu Val Tyr Ala Ala  Val Lys Gly Leu Arg  Lys Gly Asp
    1340                1345                1350

Ala Glu  Val Ala Ile Thr Arg  Leu Val Asp Ala Leu  Lys Leu Gln
    1355                1360                1365

Asp Gln  Leu Lys Ser Pro Val  Lys Thr Leu Ser Glu  Gly Ile Lys
    1370                1375                1380

Arg Lys  Leu Cys Phe Val Leu  Ser Ile Leu Gly Asn  Pro Ser Val
    1385                1390                1395
```

```
Val Leu  Leu Asp Glu Pro Ser  Thr Gly Met Asp Pro  Glu Gly Gln
    1400                1405                1410

Gln Gln  Met Trp Gln Ala Ile  Arg Ala Thr Phe Arg  Asn Thr Glu
    1415                1420                1425

Arg Gly  Ala Leu Leu Thr Thr  His Tyr Met Ala Glu  Ala Glu Ala
    1430                1435                1440

Val Cys  Asp Arg Val Ala Ile  Met Val Ser Gly Arg  Leu Arg Cys
    1445                1450                1455

Ile Gly  Ser Ile Gln His Leu  Lys Ser Lys Phe Gly  Lys Asp Tyr
    1460                1465                1470

Leu Leu  Glu Met Lys Val Lys  Asn Leu Ala Gln Val  Glu Pro Leu
    1475                1480                1485

His Ala  Glu Ile Leu Arg Leu  Phe Pro Gln Ala Ala  Arg Gln Glu
    1490                1495                1500

Arg Tyr  Ser Ser Leu Met Val  Tyr Lys Leu Pro Val  Glu Asp Val
    1505                1510                1515

Gln Pro  Leu Ala Gln Ala Phe  Phe Lys Leu Glu Lys  Val Lys Gln
    1520                1525                1530

Ser Phe  Asp Leu Glu Glu Tyr  Ser Leu Ser Gln Ser  Thr Leu Glu
    1535                1540                1545

Gln Val  Phe Leu Glu Leu Ser  Lys Glu Gln Glu Leu  Gly Asp Phe
    1550                1555                1560

Glu Glu  Asp Phe Asp Pro Ser  Val Lys Trp Lys Leu  Leu Pro Gln
    1565                1570                1575

Glu Glu  Pro
    1580
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<210> 7626
<211> 1616
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1608; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402814"

<400> 7626

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Met Arg Lys Arg Lys Ile Ser Val Cys Gln Gln Thr Trp Ala Leu Leu
1               5                  10                  15

Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Met
            20                  25                  30

Glu Trp Leu Asn Ser Leu Leu Leu Leu Leu Cys Leu Tyr Ile Tyr Pro
        35                  40                  45

His Ser His Gln Val Asn Asp Phe Ser Ser Leu Leu Thr Met Asp Leu
    50                  55                  60

Gly Arg Val Asp Thr Phe Asn Glu Ser Arg Phe Ser Val Val Tyr Thr
65                  70                  75                  80

Pro Val Thr Asn Thr Thr Gln Gln Ile Met Asn Lys Val Ala Ser Thr
                85                  90                  95

Pro Phe Leu Ala Gly Lys Glu Val Leu Gly Leu Pro Asp Glu Glu Ser
            100                 105                 110

Ile Lys Glu Phe Thr Ala Asn Tyr Pro Glu Glu Ile Val Arg Val Thr
        115                 120                 125

Phe Thr Asn Thr Tyr Ser Tyr His Leu Lys Phe Leu Leu Gly His Gly
    130                 135                 140
```

```
Met Pro Ala Lys Lys Glu His Lys Asp His Thr Ala His Cys Tyr Glu
145                 150                 155                 160

Thr Asn Glu Asp Val Tyr Cys Glu Val Ser Val Phe Trp Lys Glu Gly
                165                 170                 175

Phe Val Ala Leu Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile Thr
            180                 185                 190

Thr Asn His Ser Val Met Glu Glu Leu Met Ser Val Thr Gly Lys Asn
        195                 200                 205

Met Lys Met His Ser Phe Ile Gly Gln Ser Gly Val Ile Thr Asp Leu
    210                 215                 220

Tyr Leu Phe Ser Cys Ile Ile Ser Phe Ser Ser Phe Ile Tyr Tyr Ala
225                 230                 235                 240

Ser Val Asn Val Thr Arg Glu Arg Lys Arg Met Lys Ala Leu Met Thr
                245                 250                 255

Met Met Gly Leu Arg Asp Ser Ala Phe Trp Leu Ser Trp Gly Leu Leu
            260                 265                 270

Tyr Ala Gly Phe Ile Phe Ile Met Ala Leu Phe Leu Ala Leu Val Ile
        275                 280                 285

Arg Ser Thr Gln Phe Ile Ile Leu Ser Gly Phe Met Val Val Phe Ser
    290                 295                 300

Leu Phe Leu Leu Tyr Gly Leu Ser Leu Val Ala Leu Ala Phe Leu Met
305                 310                 315                 320

Ser Ile Leu Val Lys Lys Ser Phe Leu Thr Gly Leu Val Val Phe Leu
                325                 330                 335

Leu Thr Val Phe Trp Gly Cys Leu Gly Phe Thr Ser Leu Tyr Arg His
            340                 345                 350

Leu Pro Ala Ser Leu Glu Trp Ile Leu Ser Leu Leu Ser Pro Phe Ala
        355                 360                 365
```

```
Phe Met Leu Gly Met Ala Gln Leu Leu His Leu Asp Tyr Asp Leu Asn
    370                 375                 380

Ser Asn Ala Phe Pro His Pro Ser Asp Gly Ser Asn Leu Ile Val Ala
385                 390                 395                 400

Thr Asn Phe Met Leu Ala Phe Asp Thr Cys Leu Tyr Leu Ala Leu Ala
                405                 410                 415

Ile Tyr Phe Glu Lys Ile Leu Pro Asn Glu Tyr Gly His Arg Arg Pro
            420                 425                 430

Pro Leu Phe Phe Leu Lys Ser Ser Phe Trp Ser Gln Thr Gln Lys Thr
        435                 440                 445

Asp His Val Ala Leu Glu Asp Glu Met Asp Ala Asp Pro Ser Phe His
    450                 455                 460

Asp Ser Phe Glu Gln Ala Pro Pro Glu Phe Gln Gly Lys Glu Ala Ile
465                 470                 475                 480

Arg Ile Arg Asn Val Thr Lys Glu Tyr Lys Gly Lys Pro Asp Lys Ile
                485                 490                 495

Glu Ala Leu Lys Asp Leu Val Phe Asp Ile Tyr Glu Gly Gln Ile Thr
            500                 505                 510

Ala Ile Leu Gly His Ser Gly Ala Gly Lys Ser Thr Leu Leu Asn Ile
        515                 520                 525

Leu Ser Gly Leu Ser Val Pro Thr Lys Gly Ser Val Thr Ile Tyr Asn
    530                 535                 540

Asn Lys Leu Ser Glu Met Ala Asp Leu Glu Asn Leu Ser Lys Leu Thr
545                 550                 555                 560

Gly Val Cys Pro Gln Ser Asn Val Gln Phe Asp Phe Leu Thr Val Arg
                565                 570                 575

Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro Gln Glu
            580                 585                 590

Val Asp Lys Glu Ile Gln Arg Val Leu Leu Glu Leu Glu Met Lys Asn
```

595 600 605

Ile Gln Asp Val Leu Ala Gln Asn Leu Ser Gly Gly Gln Lys Arg Lys
610 615 620

Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Ile Phe Leu Leu
625 630 635 640

Asp Glu Pro Thr Ala Gly Leu Asp Pro Phe Ser Arg His Gln Val Trp
645 650 655

Asn Leu Leu Lys Glu Arg Lys Thr Asp Arg Val Ile Leu Phe Ser Thr
660 665 670

Gln Phe Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe Leu
675 680 685

Ser Gln Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys Lys
690 695 700

Lys Trp Gly Ile Gly Tyr His Leu Ser Leu Gln Leu Asn Glu Ile Cys
705 710 715 720

Val Glu Glu Asn Ile Thr Ser Leu Val Lys Gln His Ile Pro Asp Ala
725 730 735

Lys Leu Ser Ala Lys Ser Glu Gly Lys Leu Ile Tyr Thr Leu Pro Leu
740 745 750

Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Lys Asp Leu Asp Ser Tyr
755 760 765

Pro Asp Leu Gly Ile Glu Asn Tyr Gly Val Ser Met Thr Thr Leu Asn
770 775 780

Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asn Glu Ser Asp
785 790 795 800

Ile Ala Ile Leu Gly Glu Val Gln Ala Glu Lys Ala Asp Asp Thr Glu
805 810 815

Arg Leu Val Glu Met Glu Gln Val Leu Ser Ser Leu Asn Lys Met Arg
820 825 830

```
Lys Thr Ile Gly Gly Val Ala Leu Trp Arg Gln Gln Ile Cys Ala Ile
        835                 840                 845

Ala Arg Val Arg Leu Leu Lys Leu Lys His Glu Arg Lys Ala Leu Leu
    850                 855                 860

Ala Leu Leu Leu Ile Leu Met Ala Gly Phe Cys Pro Leu Leu Val Glu
865                 870                 875                 880

Tyr Thr Met Val Lys Ile Tyr Gln Asn Ser Tyr Thr Trp Glu Leu Ser
                885                 890                 895

Pro His Leu Tyr Phe Leu Ala Pro Gly Gln Gln Pro His Asp Pro Leu
            900                 905                 910

Thr Gln Leu Leu Ile Ile Asn Lys Thr Gly Ala Ser Ile Asp Asp Phe
        915                 920                 925

Ile Gln Ser Val Glu His Gln Asn Ile Ala Leu Glu Val Asp Ala Phe
    930                 935                 940

Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile Thr
945                 950                 955                 960

Val Cys Cys Asn Glu Lys Asn Tyr Ser Phe Ser Leu Ala Cys Asn Ala
                965                 970                 975

Lys Arg Leu Asn Cys Phe Pro Val Leu Met Asp Ile Val Ser Asn Gly
            980                 985                 990

Leu Leu Gly Met Val Lys Pro Ser  Val His Ile Arg Thr  Glu Arg
Ser
        995                 1000                1005

Thr Phe  Leu Glu Asn Gly Gln  Asp Asn Pro Ile Gly  Phe Leu Ala
    1010                1015                1020

Tyr Ile  Met Phe Trp Leu Val  Leu Thr Ser Ser Cys  Pro Pro Tyr
    1025                1030                1035

Ile Ala  Met Ser Ser Ile Asp  Asp Tyr Lys Asn Arg  Ala Arg Ser
    1040                1045                1050
```

```
Gln Leu  Arg Ile Ser Gly Leu  Ser Pro Ser Ala Tyr  Trp Phe Gly
    1055                1060                1065

Gln Ala  Leu Val Asp Val Ser  Leu Tyr Phe Leu Val  Phe Val Phe
    1070                1075                1080

Ile Tyr  Leu Met Ser Tyr Ile  Ser Asn Phe Glu Asp  Met Leu Leu
    1085                1090                1095

Thr Ile  Ile His Ile Ile Gln  Ile Pro Cys Ala Val  Gly Tyr Ser
    1100                1105                1110

Phe Ser  Leu Ile Phe Met Thr  Tyr Val Ile Ser Phe  Ile Phe Arg
    1115                1120                1125

Lys Gly  Arg Lys Asn Ser Gly  Ile Trp Ser Phe Cys  Phe Tyr Val
    1130                1135                1140

Val Thr  Val Phe Ser Val Ala  Gly Phe Ala Phe Ser  Ile Phe Glu
    1145                1150                1155

Ser Asp  Ile Pro Phe Ile Phe  Thr Phe Leu Ile Pro  Pro Ala Thr
    1160                1165                1170

Met Ile  Gly Cys Leu Phe Leu  Ser Ser His Leu Leu  Phe Ser Ser
    1175                1180                1185

Leu Phe  Ser Glu Glu Arg Met  Asp Val Gln Pro Phe  Leu Val Phe
    1190                1195                1200

Leu Ile  Pro Phe Leu His Phe  Ile Ile Phe Leu Phe  Thr Leu Arg
    1205                1210                1215

Cys Leu  Glu Trp Lys Phe Gly  Lys Lys Ser Met Arg  Lys Asp Pro
    1220                1225                1230

Phe Phe  Ser Ser Asp Val Cys  Gln Asn Pro Glu Glu  Pro Glu Gly
    1235                1240                1245

Glu Asp  Glu Asp Val Gln Met  Glu Arg Val Arg Thr  Ala Asn Ala
    1250                1255                1260
```

```
Leu Asn  Ser Thr Asn Phe Asp  Glu Lys Pro Val Ile  Ile Ala Ser
    1265                1270                1275

Cys Leu  Arg Lys Glu Tyr Ala  Gly Lys Arg Lys Gly  Cys Phe Ser
    1280                1285                1290

Lys Arg  Lys Asn Lys Ile Ala  Thr Arg Asn Val Ser  Phe Cys Val
    1295                1300                1305

Arg Lys  Gly Glu Val Leu Gly  Leu Leu Gly His Asn  Gly Ala Gly
    1310                1315                1320

Lys Ser  Thr Ser Ile Lys Val  Ile Thr Gly Asp Thr  Lys Pro Thr
    1325                1330                1335

Ala Gly  Gln Val Leu Leu Lys  Gly Ser Gly Gly Gly  Asp Ala Leu
    1340                1345                1350

Glu Phe  Leu Gly Tyr Cys Pro  Gln Glu Asn Ala Leu  Trp Pro Asn
    1355                1360                1365

Leu Thr  Val Arg Gln His Leu  Glu Val Tyr Ala Ala  Val Lys Gly
    1370                1375                1380

Leu Arg  Lys Gly Asp Ala Glu  Val Ala Ile Thr Arg  Leu Val Asp
    1385                1390                1395

Ala Leu  Lys Leu Gln Asp Gln  Leu Lys Ser Pro Val  Lys Thr Leu
    1400                1405                1410

Ser Glu  Gly Ile Lys Arg Lys  Leu Cys Phe Val Leu  Ser Ile Leu
    1415                1420                1425

Gly Asn  Pro Ser Val Val Leu  Leu Asp Glu Pro Ser  Thr Gly Met
    1430                1435                1440

Asp Pro  Glu Gly Gln Gln Gln  Met Trp Gln Ala Ile  Arg Ala Thr
    1445                1450                1455

Phe Arg  Asn Thr Glu Arg Gly  Ala Leu Leu Thr Thr  His Tyr Met
    1460                1465                1470
```

```
Ala Glu  Ala Glu Ala Val Cys  Asp Arg Val Ala Ile  Met Val Ser
    1475                1480                1485

Gly Arg  Leu Arg Cys Ile Gly  Ser Ile Gln His Leu  Lys Ser Lys
    1490                1495                1500

Phe Gly  Lys Asp Tyr Leu Leu  Glu Met Lys Val Lys  Asn Leu Ala
    1505                1510                1515

Gln Val  Glu Pro Leu His Ala  Glu Ile Leu Arg Leu  Phe Pro Gln
    1520                1525                1530

Ala Ala  Arg Gln Glu Arg Tyr  Ser Ser Leu Met Val  Tyr Lys Leu
    1535                1540                1545

Pro Val  Glu Asp Val Gln Pro  Leu Ala Gln Ala Phe  Phe Lys Leu
    1550                1555                1560

Glu Lys  Val Lys Gln Ser Phe  Asp Leu Glu Glu Tyr  Ser Leu Ser
    1565                1570                1575

Gln Ser  Thr Leu Glu Gln Val  Phe Leu Glu Leu Ser  Lys Glu Gln
    1580                1585                1590

Glu Leu  Gly Asp Phe Glu Glu  Asp Phe Asp Pro Ser  Val Lys Trp
    1595                1600                1605

Lys Leu  Leu Pro Gln Glu Glu  Pro
    1610                1615


<210> 7627
<211> 115
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1608; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA8; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
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A (ABC1),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466126"

<400> 7627
Met Arg Lys Arg Lys Ile Ser Val Cys Gln Gln Thr Trp Ala Leu Leu
1 5 10 15

Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Met
20 25 30

Glu Trp Leu Asn Ser Leu Leu Leu Leu Leu Cys Leu Tyr Ile Tyr Pro
35 40 45

His Ser His Gln Val Asn Asp Phe Ser Ser Leu Leu Thr Met Asp Leu
50 55 60

Gly Arg Val Asp Thr Phe Asn Glu Ser Arg Phe Ser Val Val Tyr Thr
65 70 75 80

Pro Val Thr Asn Thr Thr Gln Gln Ile Met Asn Lys Val Ala Ser Thr
85 90 95

Pro Phe Leu Ala Gly Lys Glu Val Leu Gly Leu Pro Asp Glu Glu Ser
100 105 110

Ile Lys Glu
115

<210> 7628
<211> 702
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1608; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family

A (ABC1),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467186"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7628

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Xaa Pro Ala Ser Leu Glu Trp Ile Leu Ser Leu Leu Ser Pro Phe Ala
1               5                  10                  15

Phe Met Leu Gly Met Ala Gln Leu Leu His Leu Asp Tyr Asp Leu Asn
            20                  25                  30

Ser Asn Ala Phe Pro His Pro Ser Asp Gly Ser Asn Leu Ile Val Ala
        35                  40                  45

Thr Asn Phe Met Leu Ala Phe Asp Thr Cys Leu Tyr Leu Ala Leu Ala
    50                  55                  60

Ile Tyr Phe Glu Lys Ile Leu Pro Asn Glu Tyr Gly His Arg Arg Pro
65                  70                  75                  80

Pro Leu Phe Phe Leu Lys Ser Ser Phe Trp Ser Gln Thr Gln Lys Thr
                85                  90                  95

Asp His Val Ala Leu Glu Asp Glu Met Asp Ala Asp Pro Ser Phe His
            100                 105                 110

Asp Ser Phe Glu Gln Ala Pro Pro Glu Phe Gln Gly Lys Glu Ala Ile
        115                 120                 125

Arg Ile Arg Asn Val Thr Lys Glu Tyr Lys Gly Lys Pro Asp Lys Ile
    130                 135                 140

Glu Ala Leu Lys Asp Leu Val Phe Asp Ile Tyr Glu Gly Gln Ile Thr
145                 150                 155                 160

Ala Ile Leu Gly His Ser Gly Ala Gly Lys Ser Thr Leu Leu Asn Ile
                165                 170                 175
```

```
Leu Ser Gly Leu Ser Val Pro Thr Lys Gly Ser Val Thr Ile Tyr Asn
            180                 185                 190

Asn Lys Leu Ser Glu Met Ala Asp Leu Glu Asn Leu Ser Lys Leu Thr
        195                 200                 205

Gly Val Cys Pro Gln Ser Asn Val Gln Phe Asp Phe Leu Thr Val Arg
    210                 215                 220

Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro Gln Glu
225                 230                 235                 240

Val Asp Lys Glu Ile Gln Arg Val Leu Leu Glu Leu Glu Met Lys Asn
                245                 250                 255

Ile Gln Asp Val Leu Ala Gln Asn Leu Ser Gly Gly Gln Lys Arg Lys
            260                 265                 270

Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Ile Phe Leu Leu
        275                 280                 285

Asp Glu Pro Thr Ala Gly Leu Asp Pro Phe Ser Arg His Gln Val Trp
    290                 295                 300

Asn Leu Leu Lys Glu Arg Lys Thr Asp Arg Val Ile Leu Phe Ser Thr
305                 310                 315                 320

Gln Phe Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe Leu
                325                 330                 335

Ser Gln Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys Lys
            340                 345                 350

Lys Trp Gly Ile Gly Tyr His Leu Ser Leu Gln Leu Asn Glu Ile Cys
        355                 360                 365

Val Glu Glu Asn Ile Thr Ser Leu Val Lys Gln His Ile Pro Asp Ala
    370                 375                 380

Lys Leu Ser Ala Lys Ser Glu Gly Lys Leu Ile Tyr Thr Leu Pro Leu
385                 390                 395                 400
```

```
Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Lys Asp Leu Asp Ser Tyr
                405                 410                 415

Pro Asp Leu Gly Ile Glu Asn Tyr Gly Val Ser Met Thr Thr Leu Asn
            420                 425                 430

Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asn Glu Ser Asp
        435                 440                 445

Ile Ala Ile Leu Gly Glu Val Gln Ala Glu Lys Ala Asp Asp Thr Glu
    450                 455                 460

Arg Leu Val Glu Met Glu Gln Val Leu Ser Ser Leu Asn Lys Met Arg
465                 470                 475                 480

Lys Thr Ile Gly Gly Val Ala Leu Trp Arg Gln Gln Ile Cys Ala Ile
                485                 490                 495

Ala Arg Val Arg Leu Leu Lys Leu Lys His Glu Arg Lys Ala Leu Leu
            500                 505                 510

Ala Leu Leu Leu Ile Leu Met Ala Gly Phe Cys Pro Leu Leu Val Glu
        515                 520                 525

Tyr Thr Met Val Lys Ile Tyr Gln Asn Ser Tyr Thr Trp Glu Leu Ser
    530                 535                 540

Pro His Leu Tyr Phe Leu Ala Pro Gly Gln Gln Pro His Asp Pro Leu
545                 550                 555                 560

Thr Gln Leu Leu Ile Ile Asn Lys Thr Gly Ala Ser Ile Asp Asp Phe
                565                 570                 575

Ile Gln Ser Val Glu His Gln Asn Ile Ala Leu Glu Val Asp Ala Phe
            580                 585                 590

Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile Thr
        595                 600                 605

Val Cys Cys Asn Glu Lys Asn Tyr Ser Phe Ser Leu Ala Cys Asn Ala
    610                 615                 620

Lys Arg Leu Asn Cys Phe Pro Val Leu Met Asp Ile Val Ser Asn Gly
```

625 630 635 640

Leu Leu Gly Met Val Lys Pro Ser Val His Ile Arg Thr Glu Arg Ser
645 650 655

Thr Phe Leu Glu Val Asn Ile Tyr Asn Leu Thr Ile Pro Asp Ser Pro
660 665 670

Leu Ser Gly Ile Ser Gln Ile Thr Leu Leu Ser Ala Gly Ile Leu Phe
675 680 685

Leu Leu Ser Lys Pro Leu His Asn Lys Leu Thr Phe Gly Leu
690 695 700

<210> 7629
<211> 1621
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1608; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA8; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: O94911; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467271"

<400> 7629
Met Arg Lys Arg Lys Ile Ser Val Cys Gln Gln Thr Trp Ala Leu Leu
1 5 10 15

Cys Lys Asn Phe Leu Lys Lys Trp Arg Met Lys Arg Glu Ser Leu Met
20 25 30

Glu Trp Leu Asn Ser Leu Leu Leu Leu Leu Cys Leu Tyr Ile Tyr Pro

```
        35                  40                  45

His Ser His Gln Val Asn Asp Phe Ser Ser Leu Leu Thr Met Asp Leu
    50                  55                  60

Gly Arg Val Asp Thr Phe Asn Glu Ser Arg Phe Ser Val Val Tyr Thr
65                  70                  75                  80

Pro Val Thr Asn Thr Thr Gln Gln Ile Met Asn Lys Val Ala Ser Thr
                85                  90                  95

Pro Phe Leu Ala Gly Lys Glu Val Leu Gly Leu Pro Asp Glu Glu Ser
            100                 105                 110

Ile Lys Glu Phe Thr Ala Asn Tyr Pro Glu Glu Ile Val Arg Val Thr
        115                 120                 125

Phe Thr Asn Thr Tyr Ser Tyr His Leu Lys Phe Leu Leu Gly His Gly
    130                 135                 140

Met Pro Ala Lys Lys Glu His Lys Asp His Thr Ala His Cys Tyr Glu
145                 150                 155                 160

Thr Asn Glu Asp Val Tyr Cys Glu Val Ser Val Phe Trp Lys Glu Gly
                165                 170                 175

Phe Val Ala Leu Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile Thr
            180                 185                 190

Thr Asn His Ser Val Met Glu Glu Leu Met Ser Val Thr Gly Lys Asn
        195                 200                 205

Met Lys Met His Ser Phe Ile Gly Gln Ser Gly Val Ile Thr Asp Leu
    210                 215                 220

Tyr Leu Phe Ser Cys Ile Ile Ser Phe Ser Ser Phe Ile Tyr Tyr Ala
225                 230                 235                 240

Ser Val Asn Val Thr Arg Glu Arg Lys Arg Met Lys Ala Leu Met Thr
                245                 250                 255

Met Met Gly Leu Arg Asp Ser Ala Phe Trp Leu Ser Trp Gly Leu Leu
            260                 265                 270
```

```
Tyr Ala Gly Phe Ile Phe Ile Met Ala Leu Phe Leu Ala Leu Val Ile
        275                 280                 285

Arg Ser Thr Gln Phe Ile Ile Leu Ser Gly Phe Met Val Val Phe Ser
    290                 295                 300

Leu Phe Leu Leu Tyr Gly Leu Ser Leu Val Ala Leu Ala Phe Leu Met
305                 310                 315                 320

Ser Ile Leu Val Lys Lys Ser Phe Leu Thr Gly Leu Val Val Phe Leu
                325                 330                 335

Leu Thr Val Phe Trp Gly Cys Leu Gly Phe Thr Ser Leu Tyr Arg His
            340                 345                 350

Leu Pro Ala Ser Leu Glu Trp Ile Leu Ser Leu Leu Ser Pro Phe Ala
        355                 360                 365

Phe Met Leu Gly Met Ala Gln Leu Leu His Leu Asp Tyr Asp Leu Asn
    370                 375                 380

Ser Asn Ala Phe Pro His Pro Ser Asp Gly Ser Asn Leu Ile Val Ala
385                 390                 395                 400

Thr Asn Phe Met Leu Ala Phe Asp Thr Cys Leu Tyr Leu Ala Leu Ala
                405                 410                 415

Ile Tyr Phe Glu Lys Ile Leu Pro Asn Glu Tyr Gly His Arg Arg Pro
            420                 425                 430

Pro Leu Phe Phe Leu Lys Ser Ser Phe Trp Ser Gln Thr Gln Lys Thr
        435                 440                 445

Asp His Val Ala Leu Glu Asp Glu Met Asp Ala Asp Pro Ser Phe His
    450                 455                 460

Asp Ser Phe Glu Gln Ala Pro Pro Glu Phe Gln Gly Lys Glu Ala Ile
465                 470                 475                 480

Arg Ile Arg Asn Val Thr Lys Glu Tyr Lys Gly Lys Pro Asp Lys Ile
                485                 490                 495
```

```
Glu Ala Leu Lys Asp Leu Val Phe Asp Ile Tyr Glu Gly Gln Ile Thr
            500                 505                 510

Ala Ile Leu Gly His Ser Gly Ala Gly Lys Ser Thr Leu Leu Asn Ile
        515                 520                 525

Leu Ser Gly Leu Ser Val Pro Thr Lys Gly Ser Val Thr Ile Tyr Asn
    530                 535                 540

Asn Lys Leu Ser Glu Met Ala Asp Leu Glu Asn Leu Ser Lys Leu Thr
545                 550                 555                 560

Gly Val Cys Pro Gln Ser Asn Val Gln Phe Asp Phe Leu Thr Val Arg
                565                 570                 575

Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro Gln Glu
            580                 585                 590

Val Asp Lys Glu Ile Gln Arg Val Leu Leu Glu Leu Glu Met Lys Asn
        595                 600                 605

Ile Gln Asp Val Leu Ala Gln Asn Leu Ser Gly Gly Gln Lys Arg Lys
    610                 615                 620

Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Ile Phe Leu Leu
625                 630                 635                 640

Asp Glu Pro Thr Ala Gly Leu Asp Pro Phe Ser Arg His Gln Val Trp
                645                 650                 655

Asn Leu Leu Lys Glu Arg Lys Thr Asp Arg Val Ile Leu Phe Ser Thr
            660                 665                 670

Gln Phe Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe Leu
        675                 680                 685

Ser Gln Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys Lys
    690                 695                 700

Lys Trp Gly Ile Gly Tyr His Leu Ser Leu Gln Leu Asn Glu Ile Cys
705                 710                 715                 720
```

```
Val Glu Glu Asn Ile Thr Ser Leu Val Lys Gln His Ile Pro Asp Ala
                725                 730                 735

Lys Leu Ser Ala Lys Ser Glu Gly Lys Leu Ile Tyr Thr Leu Pro Leu
            740                 745                 750

Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Lys Asp Leu Asp Ser Tyr
        755                 760                 765

Pro Asp Leu Gly Ile Glu Asn Tyr Gly Val Ser Met Thr Thr Leu Asn
    770                 775                 780

Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asn Glu Ser Asp
785                 790                 795                 800

Ile Ala Ile Leu Gly Glu Val Gln Ala Glu Lys Ala Asp Asp Thr Glu
                805                 810                 815

Arg Leu Val Glu Met Glu Gln Val Leu Ser Ser Leu Asn Lys Met Arg
            820                 825                 830

Lys Thr Ile Gly Gly Val Ala Leu Trp Arg Gln Gln Ile Cys Ala Ile
        835                 840                 845

Ala Arg Val Arg Leu Leu Lys Leu Lys His Glu Arg Lys Ala Leu Leu
    850                 855                 860

Ala Leu Leu Leu Ile Leu Met Ala Gly Phe Cys Pro Leu Leu Val Glu
865                 870                 875                 880

Tyr Thr Met Val Lys Ile Tyr Gln Asn Ser Tyr Thr Trp Glu Leu Ser
                885                 890                 895

Pro His Leu Tyr Phe Leu Ala Pro Gly Gln Gln Pro His Asp Pro Leu
            900                 905                 910

Thr Gln Leu Leu Ile Ile Asn Lys Thr Gly Ala Ser Ile Asp Asp Phe
        915                 920                 925

Ile Gln Ser Val Glu His Gln Asn Ile Ala Leu Glu Val Asp Ala Phe
    930                 935                 940

Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile Thr
```

945 950 955 960

Val Cys Cys Asn Glu Lys Asn Tyr Ser Phe Ser Leu Ala Cys Asn Ala
965 970 975

Lys Arg Leu Asn Cys Phe Pro Val Leu Met Asp Ile Val Ser Asn Gly
980 985 990

Leu Leu Gly Met Val Lys Pro Ser Val His Ile Arg Thr Glu Arg
Ser
995 1000 1005

Thr Phe Leu Glu Asn Gly Gln Asp Asn Pro Ile Gly Phe Leu Ala
1010 1015 1020

Tyr Ile Met Phe Trp Leu Val Leu Thr Ser Ser Cys Pro Pro Tyr
1025 1030 1035

Ile Ala Met Ser Ser Ile Asp Asp Tyr Lys Asn Arg Ala Arg Ser
1040 1045 1050

Gln Leu Arg Ile Ser Gly Leu Ser Pro Ser Ala Tyr Trp Phe Gly
1055 1060 1065

Gln Ala Leu Val Asp Val Ser Leu Tyr Phe Leu Val Phe Val Phe
1070 1075 1080

Ile Tyr Leu Met Ser Tyr Ile Ser Asn Phe Glu Asp Met Leu Leu
1085 1090 1095

Thr Ile Ile His Ile Ile Gln Ile Pro Cys Ala Val Gly Tyr Ser
1100 1105 1110

Phe Ser Leu Ile Phe Met Thr Tyr Val Ile Ser Phe Ile Phe Arg
1115 1120 1125

Lys Gly Arg Lys Asn Ser Gly Ile Trp Ser Phe Cys Phe Tyr Val
1130 1135 1140

Val Thr Val Phe Ser Val Ala Gly Phe Ala Phe Ser Ile Phe Glu
1145 1150 1155

Ser Asp Ile Pro Phe Ile Phe Thr Phe Leu Ile Pro Pro Ala Thr

1160 1165 1170

Met Ile Gly Cys Leu Phe Leu Ser Ser His Leu Leu Phe Ser Ser
1175 1180 1185

Leu Phe Ser Glu Glu Arg Met Asp Val Gln Pro Phe Leu Val Phe
1190 1195 1200

Leu Ile Pro Phe Leu His Phe Ile Ile Phe Leu Phe Thr Leu Arg
1205 1210 1215

Cys Leu Glu Trp Lys Phe Gly Lys Lys Ser Met Arg Lys Asp Pro
1220 1225 1230

Phe Phe Arg Ile Ser Pro Arg Ser Ser Asp Val Cys Gln Asn Pro
1235 1240 1245

Glu Glu Pro Glu Gly Glu Asp Glu Asp Val Gln Met Glu Arg Val
1250 1255 1260

Arg Thr Ala Asn Ala Leu Asn Ser Thr Asn Phe Asp Glu Lys Pro
1265 1270 1275

Val Ile Ile Ala Ser Cys Leu Arg Lys Glu Tyr Ala Gly Lys Arg
1280 1285 1290

Lys Gly Cys Phe Ser Lys Arg Lys Asn Lys Ile Ala Thr Arg Asn
1295 1300 1305

Val Ser Phe Cys Val Arg Lys Gly Glu Val Leu Gly Leu Leu Gly
1310 1315 1320

His Asn Gly Ala Gly Lys Ser Thr Ser Ile Lys Val Ile Thr Gly
1325 1330 1335

Asp Thr Lys Pro Thr Ala Gly Gln Val Leu Leu Lys Gly Ser Gly
1340 1345 1350

Gly Gly Asp Ala Leu Glu Phe Leu Gly Tyr Cys Pro Gln Glu Asn
1355 1360 1365

Ala Leu Trp Pro Asn Leu Thr Val Arg Gln His Leu Glu Val Tyr
1370 1375 1380

```
Ala Ala  Val Lys Gly Leu Arg  Lys Gly Asp Ala Glu  Val Ala Ile
    1385                 1390                 1395

Thr Arg  Leu Val Asp Ala Leu  Lys Leu Gln Asp Gln  Leu Lys Ser
    1400                 1405                 1410

Pro Val  Lys Thr Leu Ser Glu  Gly Ile Lys Arg Lys  Leu Cys Phe
    1415                 1420                 1425

Val Leu  Ser Ile Leu Gly Asn  Pro Ser Val Val Leu  Leu Asp Glu
    1430                 1435                 1440

Pro Ser  Thr Gly Met Asp Pro  Glu Gly Gln Gln Gln  Met Trp Gln
    1445                 1450                 1455

Ala Ile  Arg Ala Thr Phe Arg  Asn Thr Glu Arg Gly  Ala Leu Leu
    1460                 1465                 1470

Thr Thr  His Tyr Met Ala Glu  Ala Glu Ala Val Cys  Asp Arg Val
    1475                 1480                 1485

Ala Ile  Met Val Ser Gly Arg  Leu Arg Cys Ile Gly  Ser Ile Gln
    1490                 1495                 1500

His Leu  Lys Ser Lys Phe Gly  Lys Asp Tyr Leu Leu  Glu Met Lys
    1505                 1510                 1515

Val Lys  Asn Leu Ala Gln Val  Glu Pro Leu His Ala  Glu Ile Leu
    1520                 1525                 1530

Arg Leu  Phe Pro Gln Ala Ala  Arg Gln Glu Arg Tyr  Ser Ser Leu
    1535                 1540                 1545

Met Val  Tyr Lys Leu Pro Val  Glu Asp Val Gln Pro  Leu Ala Gln
    1550                 1555                 1560

Ala Phe  Phe Lys Leu Glu Lys  Val Lys Gln Ser Phe  Asp Leu Glu
    1565                 1570                 1575

Glu Tyr  Ser Leu Ser Gln Ser  Thr Leu Glu Gln Val  Phe Leu Glu
    1580                 1585                 1590
```

Leu Ser Lys Glu Gln Glu Leu Gly Asp Phe Glu Glu Asp Phe Asp
1595 1600 1605

Pro Ser Val Lys Trp Lys Leu Leu Pro Gln Glu Glu Pro
1610 1615 1620

<210> 7630
<211> 156
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1608; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481467"

<400> 7630
Met Leu Gly Met Ala Gln Leu Leu His Leu Asp Tyr Asp Leu Asn Ser
1 5 10 15

Asn Ala Phe Pro His Pro Ser Asp Gly Ser Asn Leu Ile Val Ala Thr
20 25 30

Asn Phe Met Leu Ala Phe Asp Thr Cys Leu Tyr Leu Ala Leu Ala Ile
35 40 45

Tyr Phe Glu Lys Ile Leu Pro Asn Glu Tyr Gly His Arg Arg Pro Pro
50 55 60

Leu Phe Phe Leu Lys Ser Ser Phe Trp Ser Gln Thr Gln Lys Thr Asp
65 70 75 80

His Val Ala Leu Glu Asp Glu Met Asp Ala Asp Pro Ser Phe His Asp
85 90 95

```
Ser Phe Glu Gln Ala Pro Pro Glu Phe Gln Gly Lys Glu Ala Ile Arg
            100                 105                 110

Ile Arg Asn Val Thr Lys Glu Tyr Lys Gly Lys Pro Asp Lys Ile Glu
        115                 120                 125

Ala Leu Lys Asp Leu Val Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala
    130                 135                 140

Ile Leu Val Thr Val Glu Leu Glu Ser Gln His Cys
145                 150                 155


<210> 7631
<211> 1624
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1609; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      A (ABC1),
      member 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IUA7; "

<220>
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<223> /note="ENSP ID: ENSP00000342216"

<400> 7631
Met Ser Lys Arg Arg Met Ser Val Gly Gln Gln Thr Trp Ala Leu Leu
1               5                   10                  15

Cys Lys Asn Cys Leu Lys Lys Trp Arg Met Lys Arg Gln Thr Leu Leu
            20                  25                  30

Glu Trp Leu Phe Ser Phe Leu Leu Val Leu Phe Leu Tyr Leu Phe Phe
        35                  40                  45
```

```
Ser Asn Leu His Gln Val His Asp Thr Pro Gln Met Ser Ser Met Asp
    50                  55                  60

Leu Gly Arg Val Asp Ser Phe Asn Asp Thr Asn Tyr Val Ile Ala Phe
65                  70                  75                  80

Ala Pro Glu Ser Lys Thr Thr Gln Glu Ile Met Asn Lys Val Ala Ser
                85                  90                  95

Ala Pro Phe Leu Lys Gly Arg Thr Ile Met Gly Trp Pro Asp Glu Lys
            100                 105                 110

Ser Met Asp Glu Leu Asp Leu Asn Tyr Ser Ile Asp Ala Val Arg Val
        115                 120                 125

Ile Phe Thr Asp Thr Phe Ser Tyr His Leu Lys Phe Ser Trp Gly His
    130                 135                 140

Arg Ile Pro Met Met Lys Glu His Arg Asp His Ser Ala His Cys Gln
145                 150                 155                 160

Ala Val Asn Glu Lys Met Lys Cys Glu Gly Ser Glu Phe Trp Glu Lys
                165                 170                 175

Gly Phe Val Ala Phe Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile
            180                 185                 190

Ala Thr Asn His Ser Val Met Glu Gln Leu Met Ser Val Thr Gly Val
        195                 200                 205

His Met Lys Ile Leu Pro Phe Val Ala Gln Gly Gly Val Ala Thr Asp
    210                 215                 220

Phe Phe Ile Phe Phe Cys Ile Ile Ser Phe Ser Thr Phe Ile Tyr Tyr
225                 230                 235                 240

Val Ser Val Asn Val Thr Gln Glu Arg Gln Tyr Ile Thr Ser Leu Met
                245                 250                 255

Thr Met Met Gly Leu Arg Glu Ser Ala Phe Trp Leu Ser Trp Gly Leu
            260                 265                 270
```

```
Met Tyr Ala Gly Phe Ile Leu Ile Met Ala Thr Leu Met Ala Leu Ile
        275                 280                 285

Val Lys Ser Ala Gln Ile Val Val Leu Thr Gly Phe Val Met Val Phe
    290                 295                 300

Thr Leu Phe Leu Leu Tyr Gly Leu Ser Leu Ile Thr Leu Ala Phe Leu
305                 310                 315                 320

Met Ser Val Leu Ile Lys Lys Pro Phe Leu Thr Gly Leu Val Val Phe
                325                 330                 335

Leu Leu Ile Val Phe Trp Gly Ile Leu Gly Phe Pro Ala Leu Tyr Thr
            340                 345                 350

Arg Leu Pro Ala Phe Leu Glu Trp Thr Leu Cys Leu Leu Ser Pro Phe
        355                 360                 365

Ala Phe Thr Val Gly Met Ala Gln Leu Ile His Leu Asp Tyr Asp Val
    370                 375                 380

Asn Ser Asn Ala His Leu Asp Ser Ser Gln Asn Pro Tyr Leu Ile Ile
385                 390                 395                 400

Ala Thr Leu Phe Met Leu Val Phe Asp Thr Leu Leu Tyr Leu Val Leu
                405                 410                 415

Thr Leu Tyr Phe Asp Lys Ile Leu Pro Ala Glu Tyr Gly His Arg Cys
            420                 425                 430

Ser Pro Leu Phe Phe Leu Lys Ser Cys Phe Trp Phe Gln His Gly Arg
        435                 440                 445

Ala Asn His Val Val Leu Glu Asn Glu Thr Asp Ser Asp Pro Thr Pro
    450                 455                 460

Asn Asp Cys Phe Glu Pro Val Ser Pro Glu Phe Cys Gly Lys Glu Ala
465                 470                 475                 480

Ile Arg Ile Lys Asn Leu Lys Lys Glu Tyr Ala Gly Lys Cys Glu Arg
                485                 490                 495

Val Glu Ala Leu Lys Gly Val Val Phe Asp Ile Tyr Glu Gly Gln Ile
```

```
            500                 505                 510

Thr Ala Leu Leu Gly His Ser Gly Ala Gly Lys Thr Thr Leu Leu Asn
        515                 520                 525

Ile Leu Ser Gly Leu Ser Val Pro Thr Ser Gly Ser Val Thr Val Tyr
    530                 535                 540

Asn His Thr Leu Ser Arg Met Ala Asp Ile Glu Asn Ile Ser Lys Phe
545                 550                 555                 560

Thr Gly Phe Cys Pro Gln Ser Asn Val Gln Phe Gly Phe Leu Thr Val
                565                 570                 575

Lys Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro His
            580                 585                 590

Glu Val Glu Lys Glu Val Gln Arg Val Val Gln Glu Leu Glu Met Glu
        595                 600                 605

Asn Ile Gln Asp Ile Leu Ala Gln Asn Leu Ser Gly Gly Gln Asn Arg
    610                 615                 620

Lys Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Val Leu Leu
625                 630                 635                 640

Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro Leu Ser Arg His Arg Ile
                645                 650                 655

Trp Asn Leu Leu Lys Glu Gly Lys Ser Asp Arg Val Ile Leu Phe Ser
            660                 665                 670

Thr Gln Phe Ile Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe
        675                 680                 685

Ile Ser Asn Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys
    690                 695                 700

Lys Lys Trp Gly Ile Gly Tyr His Leu Ser Leu His Leu Asn Glu Arg
705                 710                 715                 720

Cys Asp Pro Glu Ser Ile Thr Ser Leu Val Lys Gln His Ile Ser Asp
                725                 730                 735
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```
Ala Lys Leu Thr Ala Gln Ser Glu Glu Lys Leu Val Tyr Ile Leu Pro
            740                 745                 750

Leu Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Arg Asp Leu Asp Arg
        755                 760                 765

Cys Ser Asn Gln Gly Ile Glu Asp Tyr Gly Val Ser Ile Thr Thr Leu
    770                 775                 780

Asn Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asp Glu Ser
785                 790                 795                 800

Asp Ile Gly Ile Trp Gly Gln Leu Gln Thr Asp Gly Ala Lys Asp Ile
                805                 810                 815

Gly Ser Leu Val Glu Leu Glu Gln Val Leu Ser Ser Phe His Glu Thr
            820                 825                 830

Arg Lys Thr Ile Ser Gly Val Ala Leu Trp Arg Gln Gln Val Cys Ala
        835                 840                 845

Ile Ala Lys Val Arg Phe Leu Lys Leu Lys Lys Glu Arg Lys Ser Leu
    850                 855                 860

Trp Thr Ile Leu Leu Leu Phe Gly Ile Ser Phe Ile Pro Gln Leu Leu
865                 870                 875                 880

Glu His Leu Phe Tyr Glu Ser Tyr Gln Lys Ser Tyr Pro Trp Glu Leu
                885                 890                 895

Ser Pro Asn Thr Tyr Phe Leu Ser Pro Gly Gln Gln Pro Gln Asp Pro
            900                 905                 910

Leu Thr His Leu Leu Val Ile Asn Lys Thr Gly Ser Thr Ile Asp Asn
        915                 920                 925

Phe Leu His Ser Leu Arg Arg Gln Asn Ile Ala Ile Glu Val Asp Ala
    930                 935                 940

Phe Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile
945                 950                 955                 960
```

```
Ile Val Ser Gly Asp Glu Lys Asp His Arg Phe Ser Ile Ala Cys Asn
                965                 970                 975

Thr Lys Arg Leu Asn Cys Phe Pro Val Leu Leu Asp Val Ile Ser Asn
            980                 985                 990

Gly Leu Leu Gly Ile Phe Asn Ser  Ser Glu His Ile Gln  Thr Asp
Arg
        995                 1000                1005

Ser Thr  Phe Phe Glu Glu His  Met Asp Tyr Glu Tyr  Gly Tyr Arg
    1010                1015                1020

Ser Asn  Thr Phe Phe Trp Ile  Pro Met Ala Ala Ser  Phe Thr Pro
    1025                1030                1035

Tyr Ile  Ala Met Ser Ser Ile  Gly Asp Tyr Lys Lys  Lys Ala His
    1040                1045                1050

Ser Gln  Leu Arg Ile Ser Gly  Leu Tyr Pro Ser Ala  Tyr Trp Phe
    1055                1060                1065

Gly Gln  Ala Leu Val Asp Val  Ser Leu Tyr Phe Leu  Ile Leu Leu
    1070                1075                1080

Leu Met  Gln Ile Met Asp Tyr  Ile Phe Ser Pro Glu  Glu Ile Ile
    1085                1090                1095

Phe Ile  Ile Gln Asn Leu Leu  Ile Gln Ile Leu Cys  Ser Ile Gly
    1100                1105                1110

Tyr Val  Ser Ser Leu Val Phe  Leu Thr Tyr Val Ile  Ser Phe Ile
    1115                1120                1125

Phe Arg  Asn Gly Arg Lys Asn  Ser Gly Ile Trp Ser  Phe Phe Phe
    1130                1135                1140

Leu Ile  Val Val Ile Phe Ser  Ile Val Ala Thr Asp  Leu Asn Glu
    1145                1150                1155

Tyr Gly  Phe Leu Gly Leu Phe  Phe Gly Thr Met Leu  Ile Pro Pro
    1160                1165                1170
```

```
Phe Thr  Leu Ile Gly Ser Leu  Phe Ile Phe Ser Glu  Ile Ser Pro
    1175                1180                1185

Asp Ser  Met Asp Tyr Leu Gly  Ala Ser Glu Ser Glu  Ile Val Tyr
    1190                1195                1200

Leu Ala  Leu Leu Ile Pro Tyr  Leu His Phe Leu Ile  Phe Leu Phe
    1205                1210                1215

Ile Leu  Arg Cys Leu Glu Met  Asn Cys Arg Lys Lys  Leu Met Arg
    1220                1225                1230

Lys Asp  Pro Val Phe Arg Ile  Ser Pro Arg Ser Asn  Ala Ile Phe
    1235                1240                1245

Pro Asn  Pro Glu Glu Pro Glu  Gly Glu Glu Glu Asp  Ile Gln Met
    1250                1255                1260

Glu Arg  Met Arg Thr Val Asn  Ala Met Ala Val Arg  Asp Phe Asp
    1265                1270                1275

Glu Thr  Pro Val Ile Ile Ala  Ser Cys Leu Arg Lys  Glu Tyr Ala
    1280                1285                1290

Gly Lys  Lys Lys Asn Cys Phe  Ser Lys Arg Lys Lys  Lys Ile Ala
    1295                1300                1305

Thr Arg  Asn Val Ser Phe Cys  Val Lys Lys Gly Glu  Val Ile Gly
    1310                1315                1320

Leu Leu  Gly His Asn Gly Ala  Gly Lys Ser Thr Thr  Ile Lys Met
    1325                1330                1335

Ile Thr  Gly Asp Thr Lys Pro  Thr Ala Gly Gln Val  Ile Leu Lys
    1340                1345                1350

Gly Ser  Gly Gly Gly Glu Pro  Leu Gly Phe Leu Gly  Tyr Cys Pro
    1355                1360                1365

Gln Glu  Asn Ala Leu Trp Pro  Asn Leu Thr Val Arg  Gln His Leu
    1370                1375                1380
```

```
Glu Val  Tyr Ala Ala Val Lys  Gly Leu Arg Lys Gly  Asp Ala Met
    1385                1390                1395

Ile Ala  Ile Thr Arg Leu Val  Asp Ala Leu Lys Leu  Gln Asp Gln
    1400                1405                1410

Leu Lys  Ala Pro Val Lys Thr  Leu Ser Glu Gly Ile  Lys Arg Lys
    1415                1420                1425

Leu Cys  Phe Val Leu Ser Ile  Leu Gly Asn Pro Ser  Val Val Leu
    1430                1435                1440

Leu Asp  Glu Pro Ser Thr Gly  Met Asp Pro Glu Gly  Gln Gln Gln
    1445                1450                1455

Met Trp  Gln Val Ile Arg Ala  Thr Phe Arg Asn Thr  Glu Arg Gly
    1460                1465                1470

Ala Leu  Leu Thr Thr His Tyr  Met Ala Glu Ala Glu  Ala Val Cys
    1475                1480                1485

Asp Arg  Val Ala Ile Met Val  Ser Gly Arg Leu Arg  Cys Ile Gly
    1490                1495                1500

Ser Ile  Gln His Leu Lys Ser  Lys Phe Gly Lys Asp  Tyr Leu Leu
    1505                1510                1515

Glu Met  Lys Leu Lys Asn Leu  Ala Gln Met Glu Pro  Leu His Ala
    1520                1525                1530

Glu Ile  Leu Arg Leu Phe Pro  Gln Ala Ala Gln Gln  Glu Arg Phe
    1535                1540                1545

Ser Ser  Leu Met Val Tyr Lys  Leu Pro Val Glu Asp  Val Arg Pro
    1550                1555                1560

Leu Ser  Gln Ala Phe Phe Lys  Leu Glu Ile Val Lys  Gln Ser Phe
    1565                1570                1575

Asp Leu  Glu Glu Tyr Ser Leu  Ser Gln Ser Thr Leu  Glu Gln Val
    1580                1585                1590

Phe Leu  Glu Leu Ser Lys Glu  Gln Glu Leu Gly Asp  Leu Glu Glu
```

```
    1595                1600                1605

Asp Phe  Asp Pro Ser Val Lys  Trp Lys Leu Leu Leu  Gln Glu Glu
    1610                1615                1620

Pro
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<210> 7632
<211> 1586
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCA9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 9; "

<220>
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<223> /note="ENSP ID: ENSP00000394264"

<400> 7632

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Met Ser Lys Arg Arg Met Ser Val Gly Gln Gln Thr Trp Ala Leu Leu
1               5                  10                  15

Cys Lys Asn Cys Leu Lys Lys Trp Arg Met Lys Arg Gln Thr Leu Leu
            20                  25                  30

Glu Trp Leu Phe Ser Phe Leu Leu Val Leu Phe Leu Tyr Leu Phe Phe
        35                  40                  45

Ser Asn Leu His Gln Val His Asp Thr Pro Gln Met Ser Ser Met Asp
    50                  55                  60

Leu Gly Arg Val Asp Ser Phe Asn Asp Thr Asn Tyr Val Ile Ala Phe
65                  70                  75                  80

Ala Pro Glu Ser Lys Thr Thr Gln Glu Ile Met Asn Lys Val Ala Ser
```

```
                85                  90                  95

Ala Pro Phe Leu Lys Gly Arg Thr Ile Met Gly Trp Pro Asp Glu Lys
            100                 105                 110

Ser Met Asp Glu Leu Asp Leu Asn Tyr Ser Ile Asp Ala Val Arg Val
        115                 120                 125

Ile Phe Thr Asp Thr Phe Ser Tyr His Leu Lys Phe Ser Trp Gly His
    130                 135                 140

Arg Ile Pro Met Met Lys Glu His Arg Asp His Ser Ala His Cys Gln
145                 150                 155                 160

Ala Val Asn Glu Lys Met Lys Cys Glu Gly Ser Glu Phe Trp Glu Lys
                165                 170                 175

Gly Phe Val Ala Phe Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile
            180                 185                 190

Ala Thr Asn His Ser Val Met Glu Gln Leu Met Ser Val Thr Gly Val
        195                 200                 205

His Met Lys Ile Leu Pro Phe Val Ala Gln Gly Gly Val Ala Thr Asp
    210                 215                 220

Phe Phe Ile Phe Phe Cys Ile Ile Ser Phe Ser Thr Phe Ile Tyr Tyr
225                 230                 235                 240

Val Ser Val Asn Val Thr Gln Glu Arg Gln Tyr Ile Thr Ser Leu Met
                245                 250                 255

Thr Met Met Gly Leu Arg Glu Ser Ala Phe Trp Leu Ser Trp Gly Leu
            260                 265                 270

Met Tyr Ala Gly Phe Ile Leu Ile Met Ala Thr Leu Met Ala Leu Ile
        275                 280                 285

Val Lys Ser Ala Gln Ile Val Val Leu Thr Gly Phe Val Met Val Phe
    290                 295                 300

Thr Leu Phe Leu Leu Tyr Gly Leu Ser Leu Ile Thr Leu Ala Phe Leu
305                 310                 315                 320
```

```
Met Ser Val Leu Ile Lys Lys Pro Phe Leu Thr Gly Leu Val Val Phe
                325                 330                 335

Leu Leu Ile Val Phe Trp Gly Ile Leu Gly Phe Pro Ala Leu Tyr Thr
            340                 345                 350

Arg Leu Pro Ala Phe Leu Glu Trp Thr Leu Cys Leu Leu Ser Pro Phe
        355                 360                 365

Ala Phe Thr Val Gly Met Ala Gln Leu Ile His Leu Asp Tyr Asp Val
    370                 375                 380

Asn Ser Asn Ala His Leu Asp Ser Ser Gln Asn Pro Tyr Leu Ile Ile
385                 390                 395                 400

Ala Thr Leu Phe Met Leu Val Phe Asp Thr Leu Leu Tyr Leu Val Leu
                405                 410                 415

Thr Leu Tyr Phe Asp Lys Ile Leu Pro Ala Glu Tyr Gly His Arg Cys
            420                 425                 430

Ser Pro Leu Phe Phe Leu Lys Ser Cys Phe Trp Phe Gln His Gly Arg
        435                 440                 445

Ala Asn His Val Val Leu Glu Asn Glu Thr Asp Ser Asp Pro Thr Pro
    450                 455                 460

Asn Asp Cys Phe Glu Pro Val Ser Pro Glu Phe Cys Gly Lys Glu Ala
465                 470                 475                 480

Ile Arg Ile Lys Asn Leu Lys Lys Glu Tyr Ala Gly Lys Cys Glu Arg
                485                 490                 495

Val Glu Ala Leu Lys Gly Val Val Phe Asp Ile Tyr Glu Gly Gln Ile
            500                 505                 510

Thr Ala Leu Leu Gly His Ser Gly Ala Gly Lys Thr Thr Leu Leu Asn
        515                 520                 525

Ile Leu Ser Gly Leu Ser Val Pro Thr Ser Gly Ser Val Thr Val Tyr
    530                 535                 540
```

```
Asn His Thr Leu Ser Arg Met Ala Asp Ile Glu Asn Ile Ser Lys Phe
545                 550                 555                 560

Thr Gly Phe Cys Pro Gln Ser Asn Val Gln Phe Gly Phe Leu Thr Val
                565                 570                 575

Lys Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro His
            580                 585                 590

Glu Val Glu Lys Glu Val Gln Arg Val Val Gln Glu Leu Glu Met Glu
        595                 600                 605

Asn Ile Gln Asp Ile Leu Ala Gln Asn Leu Ser Gly Gly Gln Asn Arg
    610                 615                 620

Lys Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Val Leu Leu
625                 630                 635                 640

Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro Leu Ser Arg His Arg Ile
                645                 650                 655

Trp Asn Leu Leu Lys Glu Gly Lys Ser Asp Arg Val Ile Leu Phe Ser
            660                 665                 670

Thr Gln Phe Ile Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe
        675                 680                 685

Ile Ser Asn Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys
    690                 695                 700

Lys Lys Trp Gly Ile Gly Tyr His Leu Ser Leu His Leu Asn Glu Arg
705                 710                 715                 720

Cys Asp Pro Glu Ser Ile Thr Ser Leu Val Lys Gln His Ile Ser Asp
                725                 730                 735

Ala Lys Leu Thr Ala Gln Ser Glu Glu Lys Leu Val Tyr Ile Leu Pro
            740                 745                 750

Leu Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Arg Asp Leu Asp Arg
        755                 760                 765
```

```
Cys Ser Asn Gln Gly Ile Glu Asp Tyr Gly Val Ser Ile Thr Thr Leu
    770                 775                 780

Asn Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asp Glu Ser
785                 790                 795                 800

Asp Ile Gly Ile Trp Gly Gln Leu Gln Thr Asp Gly Ala Lys Asp Ile
                805                 810                 815

Gly Ser Leu Val Glu Leu Glu Gln Val Leu Ser Ser Phe His Glu Thr
            820                 825                 830

Arg Lys Thr Ile Ser Gly Val Ala Leu Trp Arg Gln Gln Val Cys Ala
        835                 840                 845

Ile Ala Lys Val Arg Phe Leu Lys Leu Lys Lys Glu Arg Lys Ser Leu
    850                 855                 860

Trp Thr Ile Leu Leu Leu Phe Gly Ile Ser Phe Ile Pro Gln Leu Leu
865                 870                 875                 880

Glu His Leu Phe Tyr Glu Ser Tyr Gln Lys Ser Tyr Pro Trp Glu Leu
                885                 890                 895

Ser Pro Asn Thr Tyr Phe Leu Ser Pro Gly Gln Gln Pro Gln Asp Pro
            900                 905                 910

Leu Thr His Leu Leu Val Ile Asn Lys Thr Gly Ser Thr Ile Asp Asn
        915                 920                 925

Phe Leu His Ser Leu Arg Arg Gln Asn Ile Ala Ile Glu Val Asp Ala
    930                 935                 940

Phe Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile
945                 950                 955                 960

Ile Val Ser Gly Asp Glu Lys Asp His Arg Phe Ser Ile Ala Cys Asn
                965                 970                 975

Thr Lys Arg Leu Asn Cys Phe Pro Val Leu Leu Asp Val Ile Ser Asn
            980                 985                 990

Gly Leu Leu Gly Ile Phe Asn Ser  Ser Glu His Ile Gln  Thr Asp
```

Arg
995 1000 1005

Ser Thr Phe Phe Glu Glu His Met Asp Tyr Glu Tyr Gly Tyr Arg
1010 1015 1020

Ser Asn Thr Phe Phe Trp Ile Pro Met Ala Ala Ser Phe Thr Pro
1025 1030 1035

Tyr Ile Ala Met Ser Ser Ile Gly Asp Tyr Lys Lys Lys Ala His
1040 1045 1050

Ser Gln Leu Arg Ile Ser Gly Leu Tyr Pro Ser Ala Tyr Trp Phe
1055 1060 1065

Gly Gln Ala Leu Val Asp Val Ser Leu Tyr Phe Leu Ile Leu Leu
1070 1075 1080

Leu Met Gln Ile Met Asp Tyr Ile Phe Ser Pro Glu Glu Ile Ile
1085 1090 1095

Phe Ile Ile Gln Asn Leu Leu Ile Gln Val Val Ile Phe Ser Ile
1100 1105 1110

Val Ala Thr Asp Leu Asn Glu Tyr Gly Phe Leu Gly Leu Phe Phe
1115 1120 1125

Gly Thr Met Leu Ile Pro Pro Phe Thr Leu Ile Gly Ser Leu Phe
1130 1135 1140

Ile Phe Ser Glu Ile Ser Pro Asp Ser Met Asp Tyr Leu Gly Ala
1145 1150 1155

Ser Glu Ser Glu Ile Val Tyr Leu Ala Leu Leu Ile Pro Tyr Leu
1160 1165 1170

His Phe Leu Ile Phe Leu Phe Ile Leu Arg Cys Leu Glu Met Asn
1175 1180 1185

Cys Arg Lys Lys Leu Met Arg Lys Asp Pro Val Phe Arg Ile Ser
1190 1195 1200

Pro Arg Ser Asn Ala Ile Phe Pro Asn Pro Glu Glu Pro Glu Gly

1205 1210 1215

Glu Glu Glu Asp Ile Gln Met Glu Arg Met Arg Thr Val Asn Ala
1220 1225 1230

Met Ala Val Arg Asp Phe Asp Glu Thr Pro Val Ile Ile Ala Ser
1235 1240 1245

Cys Leu Arg Lys Glu Tyr Ala Gly Lys Lys Lys Asn Cys Phe Ser
1250 1255 1260

Lys Arg Lys Lys Lys Ile Ala Thr Arg Asn Val Ser Phe Cys Val
1265 1270 1275

Lys Lys Gly Glu Val Ile Gly Leu Leu Gly His Asn Gly Ala Gly
1280 1285 1290

Lys Ser Thr Thr Ile Lys Met Ile Thr Gly Asp Thr Lys Pro Thr
1295 1300 1305

Ala Gly Gln Val Ile Leu Lys Gly Ser Gly Gly Gly Glu Pro Leu
1310 1315 1320

Gly Phe Leu Gly Tyr Cys Pro Gln Glu Asn Ala Leu Trp Pro Asn
1325 1330 1335

Leu Thr Val Arg Gln His Leu Glu Val Tyr Ala Ala Val Lys Gly
1340 1345 1350

Leu Arg Lys Gly Asp Ala Met Ile Ala Ile Thr Arg Leu Val Asp
1355 1360 1365

Ala Leu Lys Leu Gln Asp Gln Leu Lys Ala Pro Val Lys Thr Leu
1370 1375 1380

Ser Glu Gly Ile Lys Arg Lys Leu Cys Phe Val Leu Ser Ile Leu
1385 1390 1395

Gly Asn Pro Ser Val Val Leu Leu Asp Glu Pro Ser Thr Gly Met
1400 1405 1410

Asp Pro Glu Gly Gln Gln Gln Met Trp Gln Val Ile Arg Ala Thr
1415 1420 1425

```
Phe Arg  Asn Thr Glu Arg Gly  Ala Leu Leu Thr Thr  His Tyr Met
    1430                1435                1440

Ala Glu  Ala Glu Ala Val Cys  Asp Arg Val Ala Ile  Met Val Ser
    1445                1450                1455

Gly Arg  Leu Arg Cys Ile Gly  Ser Ile Gln His Leu  Lys Ser Lys
    1460                1465                1470

Phe Gly  Lys Asp Tyr Leu Leu  Glu Met Lys Leu Lys  Asn Leu Ala
    1475                1480                1485

Gln Met  Glu Pro Leu His Ala  Glu Ile Leu Arg Leu  Phe Pro Gln
    1490                1495                1500

Ala Ala  Gln Gln Glu Arg Phe  Ser Ser Leu Met Val  Tyr Lys Leu
    1505                1510                1515

Pro Val  Glu Asp Val Arg Pro  Leu Ser Gln Ala Phe  Phe Lys Leu
    1520                1525                1530

Glu Ile  Val Lys Gln Ser Phe  Asp Leu Glu Glu Tyr  Ser Leu Ser
    1535                1540                1545

Gln Ser  Thr Leu Glu Gln Val  Phe Leu Glu Leu Ser  Lys Glu Gln
    1550                1555                1560

Glu Leu  Gly Asp Leu Glu Glu  Asp Phe Asp Pro Ser  Val Lys Trp
    1565                1570                1575

Lys Leu  Leu Leu Gln Glu Glu  Pro
    1580                1585


<210> 7633
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1609; "

<220>
<221> source
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<223> /note="Gene Symbol: ABCA9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465191"

<400> 7633
Met Ser Lys Arg Arg Met Ser Val Gly Gln Gln Thr Trp Ala Leu Leu
1 5 10 15

Cys Lys Asn Cys Leu Lys Lys Trp Arg Met Lys Arg Gln Thr Leu Leu
20 25 30

Glu Trp Leu Phe Ser Phe Leu Leu Val Leu Phe Leu Tyr Leu Phe Phe
35 40 45

Ser Asn Leu His Gln Val His Asp Thr Pro Gln Met Ser Ser Met Asp
50 55 60

Leu Gly Arg Val Asp Ser Phe Asn Asp Thr Asn Tyr Val Ile Ala Phe
65 70 75 80

Ala Pro Glu Ser Lys Thr Thr Gln Glu
85

<210> 7634
<211> 267
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1609; "

<220>
<221> source
<223> /note="Gene Symbol: ABCA9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
A (ABC1),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IUA7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465601"

<400> 7634
Met Ser Lys Arg Arg Met Ser Val Gly Gln Gln Thr Trp Ala Leu Leu
1   5   10   15

Cys Lys Asn Cys Leu Lys Lys Trp Arg Met Lys Arg Gln Thr Leu Leu
            20   25   30

Glu Trp Leu Phe Ser Phe Leu Leu Val Leu Phe Leu Tyr Leu Phe Phe
        35   40   45

Ser Asn Leu His Gln Val His Asp Thr Pro Gln Met Ser Ser Met Asp
    50   55   60

Leu Gly Arg Val Asp Ser Phe Asn Asp Thr Asn Tyr Val Ile Ala Phe
65   70   75   80

Ala Pro Glu Ser Lys Thr Thr Gln Glu Ile Met Asn Lys Val Ala Ser
                85   90   95

Ala Pro Phe Leu Lys Gly Arg Thr Ile Met Gly Trp Pro Asp Glu Lys
            100   105   110

Ser Met Asp Glu Leu Asp Leu Asn Tyr Ser Ile Asp Ala Val Arg Val
        115   120   125

Ile Phe Thr Asp Thr Phe Ser Tyr His Leu Lys Phe Ser Trp Gly His
    130   135   140

Arg Ile Pro Met Met Lys Glu His Arg Asp His Ser Ala His Cys Gln
145   150   155   160

Ala Val Asn Glu Lys Met Lys Cys Glu Gly Ser Glu Phe Trp Glu Lys
                165   170   175

Gly Phe Val Ala Phe Gln Ala Ala Ile Asn Ala Ala Ile Ile Glu Ile
            180   185   190

```
Ala Thr Asn His Ser Val Met Glu Gln Leu Met Ser Val Thr Gly Val
        195                 200                 205

His Met Lys Ile Leu Pro Phe Val Ala Gln Gly Gly Val Ala Thr Asp
    210                 215                 220

Phe Phe Ile Phe Phe Cys Ile Ile Ser Phe Ser Thr Phe Ile Tyr Tyr
225                 230                 235                 240

Val Ser Val Asn Val Thr Gln Glu Arg Gln Tyr Ile Thr Ser Leu Met
                245                 250                 255

Thr Met Met Gly Leu Arg Glu Ser Ala Phe Trp
            260                 265


<210> 7635
<211> 1280
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1610; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P08183; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265724"

<400> 7635
Met Asp Leu Glu Gly Asp Arg Asn Gly Gly Ala Lys Lys Lys Asn Phe
1               5                   10                  15

Phe Lys Leu Asn Asn Lys Ser Glu Lys Asp Lys Lys Glu Lys Lys Pro
            20                  25                  30
```

```
Thr Val Ser Val Phe Ser Met Phe Arg Tyr Ser Asn Trp Leu Asp Lys
        35                  40                  45

Leu Tyr Met Val Val Gly Thr Leu Ala Ala Ile Ile His Gly Ala Gly
    50                  55                  60

Leu Pro Leu Met Met Leu Val Phe Gly Glu Met Thr Asp Ile Phe Ala
65                  70                  75                  80

Asn Ala Gly Asn Leu Glu Asp Leu Met Ser Asn Ile Thr Asn Arg Ser
                85                  90                  95

Asp Ile Asn Asp Thr Gly Phe Phe Met Asn Leu Glu Glu Asp Met Thr
            100                 105                 110

Arg Tyr Ala Tyr Tyr Tyr Ser Gly Ile Gly Ala Gly Val Leu Val Ala
        115                 120                 125

Ala Tyr Ile Gln Val Ser Phe Trp Cys Leu Ala Ala Gly Arg Gln Ile
    130                 135                 140

His Lys Ile Arg Lys Gln Phe Phe His Ala Ile Met Arg Gln Glu Ile
145                 150                 155                 160

Gly Trp Phe Asp Val His Asp Val Gly Glu Leu Asn Thr Arg Leu Thr
                165                 170                 175

Asp Asp Val Ser Lys Ile Asn Glu Gly Ile Gly Asp Lys Ile Gly Met
            180                 185                 190

Phe Phe Gln Ser Met Ala Thr Phe Phe Thr Gly Phe Ile Val Gly Phe
        195                 200                 205

Thr Arg Gly Trp Lys Leu Thr Leu Val Ile Leu Ala Ile Ser Pro Val
    210                 215                 220

Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ser Phe Thr
225                 230                 235                 240

Asp Lys Glu Leu Leu Ala Tyr Ala Lys Ala Gly Ala Val Ala Glu Glu
                245                 250                 255
```

```
Val Leu Ala Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln Lys Lys
            260                 265                 270

Glu Leu Glu Arg Tyr Asn Lys Asn Leu Glu Glu Ala Lys Arg Ile Gly
        275                 280                 285

Ile Lys Lys Ala Ile Thr Ala Asn Ile Ser Ile Gly Ala Ala Phe Leu
    290                 295                 300

Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Thr Thr Leu
305                 310                 315                 320

Val Leu Ser Gly Glu Tyr Ser Ile Gly Gln Val Leu Thr Val Phe Phe
                325                 330                 335

Ser Val Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ser Pro Ser Ile
            340                 345                 350

Glu Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Glu Ile Phe Lys Ile
        355                 360                 365

Ile Asp Asn Lys Pro Ser Ile Asp Ser Tyr Ser Lys Ser Gly His Lys
    370                 375                 380

Pro Asp Asn Ile Lys Gly Asn Leu Glu Phe Arg Asn Val His Phe Ser
385                 390                 395                 400

Tyr Pro Ser Arg Lys Glu Val Lys Ile Leu Lys Gly Leu Asn Leu Lys
                405                 410                 415

Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Asn Ser Gly Cys Gly
            420                 425                 430

Lys Ser Thr Thr Val Gln Leu Met Gln Arg Leu Tyr Asp Pro Thr Glu
        435                 440                 445

Gly Met Val Ser Val Asp Gly Gln Asp Ile Arg Thr Ile Asn Val Arg
    450                 455                 460

Phe Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe
465                 470                 475                 480

Ala Thr Thr Ile Ala Glu Asn Ile Arg Tyr Gly Arg Glu Asn Val Thr
```

```
                485                 490                 495

Met Asp Glu Ile Glu Lys Ala Val Lys Glu Ala Asn Ala Tyr Asp Phe
            500                 505                 510

Ile Met Lys Leu Pro His Lys Phe Asp Thr Leu Val Gly Glu Arg Gly
        515                 520                 525

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala
    530                 535                 540

Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr Ser Ala
545                 550                 555                 560

Leu Asp Thr Glu Ser Glu Ala Val Val Gln Val Ala Leu Asp Lys Ala
                565                 570                 575

Arg Lys Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser Thr Val
            580                 585                 590

Arg Asn Ala Asp Val Ile Ala Gly Phe Asp Asp Gly Val Ile Val Glu
        595                 600                 605

Lys Gly Asn His Asp Glu Leu Met Lys Glu Lys Gly Ile Tyr Phe Lys
    610                 615                 620

Leu Val Thr Met Gln Thr Ala Gly Asn Glu Val Glu Leu Glu Asn Ala
625                 630                 635                 640

Ala Asp Glu Ser Lys Ser Glu Ile Asp Ala Leu Glu Met Ser Ser Asn
                645                 650                 655

Asp Ser Arg Ser Ser Leu Ile Arg Lys Arg Ser Thr Arg Arg Ser Val
            660                 665                 670

Arg Gly Ser Gln Ala Gln Asp Arg Lys Leu Ser Thr Lys Glu Ala Leu
        675                 680                 685

Asp Glu Ser Ile Pro Pro Val Ser Phe Trp Arg Ile Met Lys Leu Asn
    690                 695                 700

Leu Thr Glu Trp Pro Tyr Phe Val Val Gly Val Phe Cys Ala Ile Ile
705                 710                 715                 720
```

```
Asn Gly Gly Leu Gln Pro Ala Phe Ala Ile Ile Phe Ser Lys Ile Ile
                725                 730                 735

Gly Val Phe Thr Arg Ile Asp Asp Pro Glu Thr Lys Arg Gln Asn Ser
            740                 745                 750

Asn Leu Phe Ser Leu Leu Phe Leu Ala Leu Gly Ile Ile Ser Phe Ile
        755                 760                 765

Thr Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu
    770                 775                 780

Thr Lys Arg Leu Arg Tyr Met Val Phe Arg Ser Met Leu Arg Gln Asp
785                 790                 795                 800

Val Ser Trp Phe Asp Asp Pro Lys Asn Thr Thr Gly Ala Leu Thr Thr
                805                 810                 815

Arg Leu Ala Asn Asp Ala Ala Gln Val Lys Gly Ala Ile Gly Ser Arg
            820                 825                 830

Leu Ala Val Ile Thr Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile
        835                 840                 845

Ile Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Ile
    850                 855                 860

Val Pro Ile Ile Ala Ile Ala Gly Val Val Glu Met Lys Met Leu Ser
865                 870                 875                 880

Gly Gln Ala Leu Lys Asp Lys Lys Glu Leu Glu Gly Ser Gly Lys Ile
                885                 890                 895

Ala Thr Glu Ala Ile Glu Asn Phe Arg Thr Val Val Ser Leu Thr Gln
            900                 905                 910

Glu Gln Lys Phe Glu His Met Tyr Ala Gln Ser Leu Gln Val Pro Tyr
        915                 920                 925

Arg Asn Ser Leu Arg Lys Ala His Ile Phe Gly Ile Thr Phe Ser Phe
    930                 935                 940
```

```
Thr Gln Ala Met Met Tyr Phe Ser Tyr Ala Gly Cys Phe Arg Phe Gly
945                 950                 955                 960

Ala Tyr Leu Val Ala His Lys Leu Met Ser Phe Glu Asp Val Leu Leu
                965                 970                 975

Val Phe Ser Ala Val Val Phe Gly Ala Met Ala Val Gly Gln Val Ser
            980                 985                 990

Ser Phe Ala Pro Asp Tyr Ala Lys  Ala Lys Ile Ser Ala  Ala His
Ile
        995                 1000                1005

Ile Met  Ile Ile Glu Lys Thr  Pro Leu Ile Asp Ser  Tyr Ser Thr
    1010                1015                1020

Glu Gly  Leu Met Pro Asn Thr  Leu Glu Gly Asn Val  Thr Phe Gly
    1025                1030                1035

Glu Val  Val Phe Asn Tyr Pro  Thr Arg Pro Asp Ile  Pro Val Leu
    1040                1045                1050

Gln Gly  Leu Ser Leu Glu Val  Lys Lys Gly Gln Thr  Leu Ala Leu
    1055                1060                1065

Val Gly  Ser Ser Gly Cys Gly  Lys Ser Thr Val Val  Gln Leu Leu
    1070                1075                1080

Glu Arg  Phe Tyr Asp Pro Leu  Ala Gly Lys Val Leu  Leu Asp Gly
    1085                1090                1095

Lys Glu  Ile Lys Arg Leu Asn  Val Gln Trp Leu Arg  Ala His Leu
    1100                1105                1110

Gly Ile  Val Ser Gln Glu Pro  Ile Leu Phe Asp Cys  Ser Ile Ala
    1115                1120                1125

Glu Asn  Ile Ala Tyr Gly Asp  Asn Ser Arg Val Val  Ser Gln Glu
    1130                1135                1140

Glu Ile  Val Arg Ala Ala Lys  Glu Ala Asn Ile His  Ala Phe Ile
    1145                1150                1155
```

```
Glu Ser  Leu Pro Asn Lys Tyr  Ser Thr Lys Val Gly  Asp Lys Gly
    1160                1165                1170

Thr Gln  Leu Ser Gly Gly Gln  Lys Gln Arg Ile Ala  Ile Ala Arg
    1175                1180                1185

Ala Leu  Val Arg Gln Pro His  Ile Leu Leu Leu Asp  Glu Ala Thr
    1190                1195                1200

Ser Ala  Leu Asp Thr Glu Ser  Glu Lys Val Val Gln  Glu Ala Leu
    1205                1210                1215

Asp Lys  Ala Arg Glu Gly Arg  Thr Cys Ile Val Ile  Ala His Arg
    1220                1225                1230

Leu Ser  Thr Ile Gln Asn Ala  Asp Leu Ile Val Val  Phe Gln Asn
    1235                1240                1245

Gly Arg  Val Lys Glu His Gly  Thr His Gln Gln Leu  Leu Ala Gln
    1250                1255                1260

Lys Gly  Ile Tyr Phe Ser Met  Val Ser Val Gln Ala  Gly Thr Lys
    1265                1270                1275

Arg Gln
    1280


<210> 7636
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1610; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000399419"

<400> 7636
Met Asp Leu Glu Gly Asp Arg Asn Gly Gly Ala Lys Lys Lys Asn Phe
1   5   10   15

Phe Lys Leu Asn Asn Lys Ser Glu Lys Asp Lys Lys Glu Lys Lys Pro
            20   25   30

Thr Val Ser Val Phe Ser Met Phe Arg Tyr Ser Asn Trp Leu Asp Lys
        35   40   45

<210> 7637
<211> 1216
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1610; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P08183; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444095"

<400> 7637
Met Asp Leu Glu Gly Asp Arg Asn Gly Gly Ala Lys Lys Lys Asn Phe
1   5   10   15

Phe Lys Leu Asn Asn Lys Ser Glu Lys Asp Lys Lys Glu Lys Lys Pro
            20   25   30

Thr Val Ser Val Phe Ser Met Phe Arg Tyr Ser Asn Trp Leu Asp Lys
        35   40   45

```
Leu Tyr Met Val Val Gly Thr Leu Ala Ala Ile Ile His Gly Ala Gly
    50                  55                  60

Leu Pro Leu Met Met Leu Val Phe Gly Glu Met Thr Asp Ile Phe Ala
65                  70                  75                  80

Asn Ala Gly Asn Leu Glu Asp Leu Met Ser Asn Ile Thr Asn Arg Ser
                85                  90                  95

Asp Ile Asn Asp Thr Gly Phe Phe Met Asn Leu Glu Glu Asp Met Thr
            100                 105                 110

Ser Asp Val Ser Lys Ile Asn Glu Gly Ile Gly Asp Lys Ile Gly Met
        115                 120                 125

Phe Phe Gln Ser Met Ala Thr Phe Phe Thr Gly Phe Ile Val Gly Phe
    130                 135                 140

Thr Arg Gly Trp Lys Leu Thr Leu Val Ile Leu Ala Ile Ser Pro Val
145                 150                 155                 160

Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ser Phe Thr
                165                 170                 175

Asp Lys Glu Leu Leu Ala Tyr Ala Lys Ala Gly Ala Val Ala Glu Glu
            180                 185                 190

Val Leu Ala Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln Lys Lys
        195                 200                 205

Glu Leu Glu Arg Tyr Asn Lys Asn Leu Glu Glu Ala Lys Arg Ile Gly
    210                 215                 220

Ile Lys Lys Ala Ile Thr Ala Asn Ile Ser Ile Gly Ala Ala Phe Leu
225                 230                 235                 240

Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Thr Thr Leu
                245                 250                 255

Val Leu Ser Gly Glu Tyr Ser Ile Gly Gln Val Leu Thr Val Phe Phe
            260                 265                 270
```

```
Ser Val Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ser Pro Ser Ile
        275                 280                 285

Glu Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Glu Ile Phe Lys Ile
    290                 295                 300

Ile Asp Asn Lys Pro Ser Ile Asp Ser Tyr Ser Lys Ser Gly His Lys
305                 310                 315                 320

Pro Asp Asn Ile Lys Gly Asn Leu Glu Phe Arg Asn Val His Phe Ser
                325                 330                 335

Tyr Pro Ser Arg Lys Glu Val Lys Ile Leu Lys Gly Leu Asn Leu Lys
            340                 345                 350

Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Asn Ser Gly Cys Gly
        355                 360                 365

Lys Ser Thr Thr Val Gln Leu Met Gln Arg Leu Tyr Asp Pro Thr Glu
    370                 375                 380

Gly Met Val Ser Val Asp Gly Gln Asp Ile Arg Thr Ile Asn Val Arg
385                 390                 395                 400

Phe Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe
                405                 410                 415

Ala Thr Thr Ile Ala Glu Asn Ile Arg Tyr Gly Arg Glu Asn Val Thr
            420                 425                 430

Met Asp Glu Ile Glu Lys Ala Val Lys Glu Ala Asn Ala Tyr Asp Phe
        435                 440                 445

Ile Met Lys Leu Pro His Lys Phe Asp Thr Leu Val Gly Glu Arg Gly
    450                 455                 460

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala
465                 470                 475                 480

Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr Ser Ala
                485                 490                 495

Leu Asp Thr Glu Ser Glu Ala Val Val Gln Val Ala Leu Asp Lys Ala
```

```
            500                 505                 510

Arg Lys Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser Thr Val
        515                 520                 525

Arg Asn Ala Asp Val Ile Ala Gly Phe Asp Asp Gly Val Ile Val Glu
    530                 535                 540

Lys Gly Asn His Asp Glu Leu Met Lys Glu Lys Gly Ile Tyr Phe Lys
545                 550                 555                 560

Leu Val Thr Met Gln Thr Ala Gly Asn Glu Val Glu Leu Glu Asn Ala
                565                 570                 575

Ala Asp Glu Ser Lys Ser Glu Ile Asp Ala Leu Glu Met Ser Ser Asn
            580                 585                 590

Asp Ser Arg Ser Ser Leu Ile Arg Lys Arg Ser Thr Arg Arg Ser Val
        595                 600                 605

Arg Gly Ser Gln Ala Gln Asp Arg Lys Leu Ser Thr Lys Glu Ala Leu
    610                 615                 620

Asp Glu Ser Ile Pro Pro Val Ser Phe Trp Arg Ile Met Lys Leu Asn
625                 630                 635                 640

Leu Thr Glu Trp Pro Tyr Phe Val Val Gly Val Phe Cys Ala Ile Ile
                645                 650                 655

Asn Gly Gly Leu Gln Pro Ala Phe Ala Ile Ile Phe Ser Lys Ile Ile
            660                 665                 670

Gly Val Phe Thr Arg Ile Asp Asp Pro Glu Thr Lys Arg Gln Asn Ser
        675                 680                 685

Asn Leu Phe Ser Leu Leu Phe Leu Ala Leu Gly Ile Ile Ser Phe Ile
    690                 695                 700

Thr Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu
705                 710                 715                 720

Thr Lys Arg Leu Arg Tyr Met Val Phe Arg Ser Met Leu Arg Gln Asp
                725                 730                 735
```

```
Val Ser Trp Phe Asp Asp Pro Lys Asn Thr Thr Gly Ala Leu Thr Thr
            740                 745                 750

Arg Leu Ala Asn Asp Ala Ala Gln Val Lys Gly Ala Ile Gly Ser Arg
        755                 760                 765

Leu Ala Val Ile Thr Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile
    770                 775                 780

Ile Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Ile
785                 790                 795                 800

Val Pro Ile Ile Ala Ile Ala Gly Val Val Glu Met Lys Met Leu Ser
                805                 810                 815

Gly Gln Ala Leu Lys Asp Lys Lys Glu Leu Glu Gly Ser Gly Lys Ile
            820                 825                 830

Ala Thr Glu Ala Ile Glu Asn Phe Arg Thr Val Val Ser Leu Thr Gln
        835                 840                 845

Glu Gln Lys Phe Glu His Met Tyr Ala Gln Ser Leu Gln Val Pro Tyr
    850                 855                 860

Arg Asn Ser Leu Arg Lys Ala His Ile Phe Gly Ile Thr Phe Ser Phe
865                 870                 875                 880

Thr Gln Ala Met Met Tyr Phe Ser Tyr Ala Gly Cys Phe Arg Phe Gly
                885                 890                 895

Ala Tyr Leu Val Ala His Lys Leu Met Ser Phe Glu Asp Val Leu Leu
            900                 905                 910

Val Phe Ser Ala Val Val Phe Gly Ala Met Ala Val Gly Gln Val Ser
        915                 920                 925

Ser Phe Ala Pro Asp Tyr Ala Lys Ala Lys Ile Ser Ala Ala His Ile
    930                 935                 940

Ile Met Ile Ile Glu Lys Thr Pro Leu Ile Asp Ser Tyr Ser Thr Glu
945                 950                 955                 960
```

```
Gly Leu Met Pro Asn Thr Leu Glu Gly Asn Val Thr Phe Gly Glu Val
                965                 970                 975

Val Phe Asn Tyr Pro Thr Arg Pro Asp Ile Pro Val Leu Gln Gly Leu
            980                 985                 990

Ser Leu Glu Val Lys Lys Gly Gln  Thr Leu Ala Leu Val  Gly Ser
Ser
        995                 1000                1005

Gly Cys  Gly Lys Ser Thr Val  Val Gln Leu Leu Glu  Arg Phe Tyr
    1010                1015                1020

Asp Pro  Leu Ala Gly Lys Val  Leu Leu Asp Gly Lys  Glu Ile Lys
    1025                1030                1035

Arg Leu  Asn Val Gln Trp Leu  Arg Ala His Leu Gly  Ile Val Ser
    1040                1045                1050

Gln Glu  Pro Ile Leu Phe Asp  Cys Ser Ile Ala Glu  Asn Ile Ala
    1055                1060                1065

Tyr Gly  Asp Asn Ser Arg Val  Val Ser Gln Glu Glu  Ile Val Arg
    1070                1075                1080

Ala Ala  Lys Glu Ala Asn Ile  His Ala Phe Ile Glu  Ser Leu Pro
    1085                1090                1095

Asn Lys  Tyr Ser Thr Lys Val  Gly Asp Lys Gly Thr  Gln Leu Ser
    1100                1105                1110

Gly Gly  Gln Lys Gln Arg Ile  Ala Ile Ala Arg Ala  Leu Val Arg
    1115                1120                1125

Gln Pro  His Ile Leu Leu Leu  Asp Glu Ala Thr Ser  Ala Leu Asp
    1130                1135                1140

Thr Glu  Ser Glu Lys Val Val  Gln Glu Ala Leu Asp  Lys Ala Arg
    1145                1150                1155

Glu Gly  Arg Thr Cys Ile Val  Ile Ala His Arg Leu  Ser Thr Ile
    1160                1165                1170
```

```
Gln Asn  Ala Asp Leu Ile Val  Val Phe Gln Asn Gly  Arg Val Lys
    1175                1180                1185


Glu His  Gly Thr His Gln Gln  Leu Leu Ala Gln Lys  Gly Ile Tyr
    1190                1195                1200


Phe Ser  Met Val Ser Val Gln  Ala Gly Thr Lys Arg  Gln
    1205                1210                1215


<210> 7638
<211> 1280
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1610; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P08183; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478255"

<400> 7638
Met Asp Leu Glu Gly Asp Arg Asn Gly Gly Ala Lys Lys Lys Asn Phe
1               5                  10                  15


Phe Lys Leu Asn Asn Lys Ser Glu Lys Asp Lys Lys Glu Lys Lys Pro
            20                  25                  30


Thr Val Ser Val Phe Ser Met Phe Arg Tyr Ser Asn Trp Leu Asp Lys
        35                  40                  45


Leu Tyr Met Val Val Gly Thr Leu Ala Ala Ile Ile His Gly Ala Gly
    50                  55                  60
```

```
Leu Pro Leu Met Met Leu Val Phe Gly Glu Met Thr Asp Ile Phe Ala
65                  70                  75                  80

Asn Ala Gly Asn Leu Glu Asp Leu Met Ser Asn Ile Thr Asn Arg Ser
                85                  90                  95

Asp Ile Asn Asp Thr Gly Phe Phe Met Asn Leu Glu Glu Asp Met Thr
            100                 105                 110

Arg Tyr Ala Tyr Tyr Tyr Ser Gly Ile Gly Ala Gly Val Leu Val Ala
        115                 120                 125

Ala Tyr Ile Gln Val Ser Phe Trp Cys Leu Ala Ala Gly Arg Gln Ile
    130                 135                 140

His Lys Ile Arg Lys Gln Phe Phe His Ala Ile Met Arg Gln Glu Ile
145                 150                 155                 160

Gly Trp Phe Asp Val His Asp Val Gly Glu Leu Asn Thr Arg Leu Thr
                165                 170                 175

Asp Asp Val Ser Lys Ile Asn Glu Gly Ile Gly Asp Lys Ile Gly Met
            180                 185                 190

Phe Phe Gln Ser Met Ala Thr Phe Phe Thr Gly Phe Ile Val Gly Phe
        195                 200                 205

Thr Arg Gly Trp Lys Leu Thr Leu Val Ile Leu Ala Ile Ser Pro Val
    210                 215                 220

Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ser Phe Thr
225                 230                 235                 240

Asp Lys Glu Leu Leu Ala Tyr Ala Lys Ala Gly Ala Val Ala Glu Glu
                245                 250                 255

Val Leu Ala Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln Lys Lys
            260                 265                 270

Glu Leu Glu Arg Tyr Asn Lys Asn Leu Glu Glu Ala Lys Arg Ile Gly
        275                 280                 285
```

```
Ile Lys Lys Ala Ile Thr Ala Asn Ile Ser Ile Gly Ala Ala Phe Leu
    290                 295                 300

Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Thr Thr Leu
305                 310                 315                 320

Val Leu Ser Gly Glu Tyr Ser Ile Gly Gln Val Leu Thr Val Phe Phe
                325                 330                 335

Ser Val Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ser Pro Ser Ile
            340                 345                 350

Glu Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Glu Ile Phe Lys Ile
        355                 360                 365

Ile Asp Asn Lys Pro Ser Ile Asp Ser Tyr Ser Lys Ser Gly His Lys
    370                 375                 380

Pro Asp Asn Ile Lys Gly Asn Leu Glu Phe Arg Asn Val His Phe Ser
385                 390                 395                 400

Tyr Pro Ser Arg Lys Glu Val Lys Ile Leu Lys Gly Leu Asn Leu Lys
                405                 410                 415

Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Asn Ser Gly Cys Gly
            420                 425                 430

Lys Ser Thr Thr Val Gln Leu Met Gln Arg Leu Tyr Asp Pro Thr Glu
        435                 440                 445

Gly Met Val Ser Val Asp Gly Gln Asp Ile Arg Thr Ile Asn Val Arg
    450                 455                 460

Phe Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe
465                 470                 475                 480

Ala Thr Thr Ile Ala Glu Asn Ile Arg Tyr Gly Arg Glu Asn Val Thr
                485                 490                 495

Met Asp Glu Ile Glu Lys Ala Val Lys Glu Ala Asn Ala Tyr Asp Phe
            500                 505                 510

Ile Met Lys Leu Pro His Lys Phe Asp Thr Leu Val Gly Glu Arg Gly
```

```
        515                 520                 525

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala
    530                 535                 540

Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr Ser Ala
545                 550                 555                 560

Leu Asp Thr Glu Ser Glu Ala Val Val Gln Val Ala Leu Asp Lys Ala
                565                 570                 575

Arg Lys Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser Thr Val
            580                 585                 590

Arg Asn Ala Asp Val Ile Ala Gly Phe Asp Asp Gly Val Ile Val Glu
        595                 600                 605

Lys Gly Asn His Asp Glu Leu Met Lys Glu Lys Gly Ile Tyr Phe Lys
    610                 615                 620

Leu Val Thr Met Gln Thr Ala Gly Asn Glu Val Glu Leu Glu Asn Ala
625                 630                 635                 640

Ala Asp Glu Ser Lys Ser Glu Ile Asp Ala Leu Glu Met Ser Ser Asn
                645                 650                 655

Asp Ser Arg Ser Ser Leu Ile Arg Lys Arg Ser Thr Arg Arg Ser Val
            660                 665                 670

Arg Gly Ser Gln Ala Gln Asp Arg Lys Leu Ser Thr Lys Glu Ala Leu
        675                 680                 685

Asp Glu Ser Ile Pro Pro Val Ser Phe Trp Arg Ile Met Lys Leu Asn
    690                 695                 700

Leu Thr Glu Trp Pro Tyr Phe Val Val Gly Val Phe Cys Ala Ile Ile
705                 710                 715                 720

Asn Gly Gly Leu Gln Pro Ala Phe Ala Ile Ile Phe Ser Lys Ile Ile
                725                 730                 735

Gly Val Phe Thr Arg Ile Asp Asp Pro Glu Thr Lys Arg Gln Asn Ser
            740                 745                 750
```

```
Asn Leu Phe Ser Leu Leu Phe Leu Ala Leu Gly Ile Ile Ser Phe Ile
        755                 760                 765

Thr Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu
    770                 775                 780

Thr Lys Arg Leu Arg Tyr Met Val Phe Arg Ser Met Leu Arg Gln Asp
785                 790                 795                 800

Val Ser Trp Phe Asp Asp Pro Lys Asn Thr Thr Gly Ala Leu Thr Thr
                805                 810                 815

Arg Leu Ala Asn Asp Ala Ala Gln Val Lys Gly Ala Ile Gly Ser Arg
            820                 825                 830

Leu Ala Val Ile Thr Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile
        835                 840                 845

Ile Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Ile
    850                 855                 860

Val Pro Ile Ile Ala Ile Ala Gly Val Val Glu Met Lys Met Leu Ser
865                 870                 875                 880

Gly Gln Ala Leu Lys Asp Lys Lys Glu Leu Glu Gly Ser Gly Lys Ile
                885                 890                 895

Ala Thr Glu Ala Ile Glu Asn Phe Arg Thr Val Val Ser Leu Thr Gln
            900                 905                 910

Glu Gln Lys Phe Glu His Met Tyr Ala Gln Ser Leu Gln Val Pro Tyr
        915                 920                 925

Arg Asn Ser Leu Arg Lys Ala His Ile Phe Gly Ile Thr Phe Ser Phe
    930                 935                 940

Thr Gln Ala Met Met Tyr Phe Ser Tyr Ala Gly Cys Phe Arg Phe Gly
945                 950                 955                 960

Ala Tyr Leu Val Ala His Lys Leu Met Ser Phe Glu Asp Val Leu Leu
                965                 970                 975
```

```
Val Phe Ser Ala Val Val Phe Gly Ala Met Ala Val Gly Gln Val Ser
            980                 985                 990

Ser Phe Ala Pro Asp Tyr Ala Lys  Ala Lys Ile Ser Ala  Ala His
Ile
        995                1000                1005

Ile Met  Ile Ile Glu Lys Thr  Pro Leu Ile Asp Ser  Tyr Ser Thr
    1010                1015                1020

Glu Gly  Leu Met Pro Asn Thr  Leu Glu Gly Asn Val  Thr Phe Gly
    1025                1030                1035

Glu Val  Val Phe Asn Tyr Pro  Thr Arg Pro Asp Ile  Pro Val Leu
    1040                1045                1050

Gln Gly  Leu Ser Leu Glu Val  Lys Lys Gly Gln Thr  Leu Ala Leu
    1055                1060                1065

Val Gly  Ser Ser Gly Cys Gly  Lys Ser Thr Val Val  Gln Leu Leu
    1070                1075                1080

Glu Arg  Phe Tyr Asp Pro Leu  Ala Gly Lys Val Leu  Leu Asp Gly
    1085                1090                1095

Lys Glu  Ile Lys Arg Leu Asn  Val Gln Trp Leu Arg  Ala His Leu
    1100                1105                1110

Gly Ile  Val Ser Gln Glu Pro  Ile Leu Phe Asp Cys  Ser Ile Ala
    1115                1120                1125

Glu Asn  Ile Ala Tyr Gly Asp  Asn Ser Arg Val Val  Ser Gln Glu
    1130                1135                1140

Glu Ile  Val Arg Ala Ala Lys  Glu Ala Asn Ile His  Ala Phe Ile
    1145                1150                1155

Glu Ser  Leu Pro Asn Lys Tyr  Ser Thr Lys Val Gly  Asp Lys Gly
    1160                1165                1170

Thr Gln  Leu Ser Gly Gly Gln  Lys Gln Arg Ile Ala  Ile Ala Arg
    1175                1180                1185
```

```
Ala Leu  Val Arg Gln Pro His  Ile Leu Leu Leu Asp  Glu Ala Thr
    1190                 1195                 1200

Ser Ala  Leu Asp Thr Glu Ser  Glu Lys Val Val Gln  Glu Ala Leu
    1205                 1210                 1215

Asp Lys  Ala Arg Glu Gly Arg  Thr Cys Ile Val Ile  Ala His Arg
    1220                 1225                 1230

Leu Ser  Thr Ile Gln Asn Ala  Asp Leu Ile Val Val  Phe Gln Asn
    1235                 1240                 1245

Gly Arg  Val Lys Glu His Gly  Thr His Gln Gln Leu  Leu Ala Gln
    1250                 1255                 1260

Lys Gly  Ile Tyr Phe Ser Met  Val Ser Val Gln Ala  Gly Thr Lys
    1265                 1270                 1275

Arg Gln
    1280
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<210> 7639
<211> 738
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1611; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NRK6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355637"

<400> 7639
Met Arg Gly Pro Pro Ala Trp Pro Leu Arg Leu Leu Glu Pro Pro Ser
1 5 10 15

Pro Ala Glu Pro Gly Arg Leu Leu Pro Val Ala Cys Val Trp Ala Ala
20 25 30

Ala Ser Arg Val Pro Gly Ser Leu Ser Pro Phe Thr Gly Leu Arg Pro
35 40 45

Ala Arg Leu Trp Gly Ala Gly Pro Ala Leu Leu Trp Gly Val Gly Ala
50 55 60

Ala Arg Arg Trp Arg Ser Gly Cys Arg Gly Gly Gly Pro Gly Ala Ser
65 70 75 80

Arg Gly Val Leu Gly Leu Ala Arg Leu Leu Gly Leu Trp Ala Arg Gly
85 90 95

Pro Gly Ser Cys Arg Cys Gly Ala Phe Ala Gly Pro Gly Ala Pro Arg
100 105 110

Leu Pro Arg Ala Arg Phe Pro Gly Gly Pro Ala Ala Ala Ala Trp Ala
115 120 125

Gly Asp Glu Ala Trp Arg Arg Gly Pro Ala Ala Pro Pro Gly Asp Lys
130 135 140

Gly Arg Leu Arg Pro Ala Ala Ala Gly Leu Pro Glu Ala Arg Lys Leu
145 150 155 160

Leu Gly Leu Ala Tyr Pro Glu Arg Arg Arg Leu Ala Ala Ala Val Gly
165 170 175

Phe Leu Thr Met Ser Ser Val Ile Ser Met Ser Ala Pro Phe Phe Leu
180 185 190

Gly Lys Ile Ile Asp Val Ile Tyr Thr Asn Pro Thr Val Asp Tyr Ser
195 200 205

Asp Asn Leu Thr Arg Leu Cys Leu Gly Leu Ser Ala Val Phe Leu Cys
210 215 220

```
Gly Ala Ala Ala Asn Ala Ile Arg Val Tyr Leu Met Gln Thr Ser Gly
225                 230                 235                 240

Gln Arg Ile Val Asn Arg Leu Arg Thr Ser Leu Phe Ser Ser Ile Leu
                245                 250                 255

Arg Gln Glu Val Ala Phe Phe Asp Lys Thr Arg Thr Gly Glu Leu Ile
            260                 265                 270

Asn Arg Leu Ser Ser Asp Thr Ala Leu Leu Gly Arg Ser Val Thr Glu
        275                 280                 285

Asn Leu Ser Asp Gly Leu Arg Ala Gly Ala Gln Ala Ser Val Gly Ile
    290                 295                 300

Ser Met Met Phe Phe Val Ser Pro Asn Leu Ala Thr Phe Val Leu Ser
305                 310                 315                 320

Val Val Pro Pro Val Ser Ile Ile Ala Val Ile Tyr Gly Arg Tyr Leu
                325                 330                 335

Arg Lys Leu Thr Lys Val Thr Gln Asp Ser Leu Ala Gln Ala Thr Gln
            340                 345                 350

Leu Ala Glu Glu Arg Ile Gly Asn Val Arg Thr Val Arg Ala Phe Gly
        355                 360                 365

Lys Glu Met Thr Glu Ile Glu Lys Tyr Ala Ser Lys Val Asp His Val
    370                 375                 380

Met Gln Leu Ala Arg Lys Glu Ala Phe Ala Arg Ala Gly Phe Phe Gly
385                 390                 395                 400

Ala Thr Gly Leu Ser Gly Asn Leu Ile Val Leu Ser Val Leu Tyr Lys
                405                 410                 415

Gly Gly Leu Leu Met Gly Ser Ala His Met Thr Val Gly Glu Leu Ser
            420                 425                 430

Ser Phe Leu Met Tyr Ala Phe Trp Val Gly Ile Ser Ile Gly Gly Leu
        435                 440                 445

Ser Ser Phe Tyr Ser Glu Leu Met Lys Gly Leu Gly Ala Gly Gly Arg
```

```
    450                 455                 460

Leu Trp Glu Leu Leu Glu Arg Glu Pro Lys Leu Pro Phe Asn Glu Gly
465                 470                 475                 480

Val Ile Leu Asn Glu Lys Ser Phe Gln Gly Ala Leu Glu Phe Lys Asn
                485                 490                 495

Val His Phe Ala Tyr Pro Ala Arg Pro Glu Val Pro Ile Phe Gln Asp
            500                 505                 510

Phe Ser Leu Ser Ile Pro Ser Gly Ser Val Thr Ala Leu Val Gly Pro
        515                 520                 525

Ser Gly Ser Gly Lys Ser Thr Val Leu Ser Leu Leu Leu Arg Leu Tyr
    530                 535                 540

Asp Pro Ala Ser Gly Thr Ile Ser Leu Asp Gly His Asp Ile Arg Gln
545                 550                 555                 560

Leu Asn Pro Val Trp Leu Arg Ser Lys Ile Gly Thr Val Ser Gln Glu
                565                 570                 575

Pro Ile Leu Phe Ser Cys Ser Ile Ala Glu Asn Ile Ala Tyr Gly Ala
            580                 585                 590

Asp Asp Pro Ser Ser Val Thr Ala Glu Glu Ile Gln Arg Val Ala Glu
        595                 600                 605

Val Ala Asn Ala Val Ala Phe Ile Arg Asn Phe Pro Gln Gly Phe Asn
    610                 615                 620

Thr Val Val Gly Glu Lys Gly Val Leu Leu Ser Gly Gly Gln Lys Gln
625                 630                 635                 640

Arg Ile Ala Ile Ala Arg Ala Leu Leu Lys Asn Pro Lys Ile Leu Leu
                645                 650                 655

Leu Asp Glu Ala Thr Ser Ala Leu Asp Ala Glu Asn Glu Tyr Leu Val
            660                 665                 670

Gln Glu Ala Leu Asp Arg Leu Met Asp Gly Arg Thr Val Leu Val Ile
        675                 680                 685
```

```
Ala His Arg Leu Ser Thr Ile Lys Asn Ala Asn Met Val Ala Val Leu
    690                 695                 700

Asp Gln Gly Lys Ile Thr Glu Tyr Gly Lys His Glu Glu Leu Leu Ser
705                 710                 715                 720

Lys Pro Asn Gly Ile Tyr Arg Lys Leu Met Asn Lys Gln Ser Phe Ile
                725                 730                 735

Ser Ala
```

<210> 7640
<211> 1321
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1612; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB11; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 11; "

<220>
<221> source
<223> /note="Uniprot ID: O95342; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263817"

<400> 7640

```
Met Ser Asp Ser Val Ile Leu Arg Ser Ile Lys Lys Phe Gly Glu Glu
1               5                   10                  15

Asn Asp Gly Phe Glu Ser Asp Lys Ser Tyr Asn Asn Asp Lys Lys Ser
            20                  25                  30

Arg Leu Gln Asp Glu Lys Lys Gly Asp Gly Val Arg Val Gly Phe Phe
        35                  40                  45
```

```
Gln Leu Phe Arg Phe Ser Ser Ser Thr Asp Ile Trp Leu Met Phe Val
    50                  55                  60

Gly Ser Leu Cys Ala Phe Leu His Gly Ile Ala Gln Pro Gly Val Leu
65                  70                  75                  80

Leu Ile Phe Gly Thr Met Thr Asp Val Phe Ile Asp Tyr Asp Val Glu
                85                  90                  95

Leu Gln Glu Leu Gln Ile Pro Gly Lys Ala Cys Val Asn Asn Thr Ile
            100                 105                 110

Val Trp Thr Asn Ser Ser Leu Asn Gln Asn Met Thr Asn Gly Thr Arg
        115                 120                 125

Cys Gly Leu Leu Asn Ile Glu Ser Glu Met Ile Lys Phe Ala Ser Tyr
    130                 135                 140

Tyr Ala Gly Ile Ala Val Ala Val Leu Ile Thr Gly Tyr Ile Gln Ile
145                 150                 155                 160

Cys Phe Trp Val Ile Ala Ala Ala Arg Gln Ile Gln Lys Met Arg Lys
                165                 170                 175

Phe Tyr Phe Arg Arg Ile Met Arg Met Glu Ile Gly Trp Phe Asp Cys
            180                 185                 190

Asn Ser Val Gly Glu Leu Asn Thr Arg Phe Ser Asp Asp Ile Asn Lys
        195                 200                 205

Ile Asn Asp Ala Ile Ala Asp Gln Met Ala Leu Phe Ile Gln Arg Met
    210                 215                 220

Thr Ser Thr Ile Cys Gly Phe Leu Leu Gly Phe Phe Arg Gly Trp Lys
225                 230                 235                 240

Leu Thr Leu Val Ile Ile Ser Val Ser Pro Leu Ile Gly Ile Gly Ala
                245                 250                 255

Ala Thr Ile Gly Leu Ser Val Ser Lys Phe Thr Asp Tyr Glu Leu Lys
            260                 265                 270
```

```
Ala Tyr Ala Lys Ala Gly Val Val Ala Asp Glu Val Ile Ser Ser Met
        275                 280                 285

Arg Thr Val Ala Ala Phe Gly Gly Glu Lys Arg Glu Val Glu Arg Tyr
    290                 295                 300

Glu Lys Asn Leu Val Phe Ala Gln Arg Trp Gly Ile Arg Lys Gly Ile
305                 310                 315                 320

Val Met Gly Phe Phe Thr Gly Phe Val Trp Cys Leu Ile Phe Leu Cys
                325                 330                 335

Tyr Ala Leu Ala Phe Trp Tyr Gly Ser Thr Leu Val Leu Asp Glu Gly
            340                 345                 350

Glu Tyr Thr Pro Gly Thr Leu Val Gln Ile Phe Leu Ser Val Ile Val
        355                 360                 365

Gly Ala Leu Asn Leu Gly Asn Ala Ser Pro Cys Leu Glu Ala Phe Ala
    370                 375                 380

Thr Gly Arg Ala Ala Ala Thr Ser Ile Phe Glu Thr Ile Asp Arg Lys
385                 390                 395                 400

Pro Ile Ile Asp Cys Met Ser Glu Asp Gly Tyr Lys Leu Asp Arg Ile
                405                 410                 415

Lys Gly Glu Ile Glu Phe His Asn Val Thr Phe His Tyr Pro Ser Arg
            420                 425                 430

Pro Glu Val Lys Ile Leu Asn Asp Leu Asn Met Val Ile Lys Pro Gly
        435                 440                 445

Glu Met Thr Ala Leu Val Gly Pro Ser Gly Ala Gly Lys Ser Thr Ala
    450                 455                 460

Leu Gln Leu Ile Gln Arg Phe Tyr Asp Pro Cys Glu Gly Met Val Thr
465                 470                 475                 480

Val Asp Gly His Asp Ile Arg Ser Leu Asn Ile Gln Trp Leu Arg Asp
                485                 490                 495
```

```
Gln Ile Gly Ile Val Glu Gln Glu Pro Val Leu Phe Ser Thr Thr Ile
            500                 505                 510

Ala Glu Asn Ile Arg Tyr Gly Arg Glu Asp Ala Thr Met Glu Asp Ile
        515                 520                 525

Val Gln Ala Ala Lys Glu Ala Asn Ala Tyr Asn Phe Ile Met Asp Leu
    530                 535                 540

Pro Gln Gln Phe Asp Thr Leu Val Gly Glu Gly Gly Gly Gln Met Ser
545                 550                 555                 560

Gly Gly Gln Lys Gln Arg Val Ala Ile Ala Arg Ala Leu Ile Arg Asn
                565                 570                 575

Pro Lys Ile Leu Leu Leu Asp Met Ala Thr Ser Ala Leu Asp Asn Glu
            580                 585                 590

Ser Glu Ala Met Val Gln Glu Val Leu Ser Lys Ile Gln His Gly His
        595                 600                 605

Thr Ile Ile Ser Val Ala His Arg Leu Ser Thr Val Arg Ala Ala Asp
    610                 615                 620

Thr Ile Ile Gly Phe Glu His Gly Thr Ala Val Glu Arg Gly Thr His
625                 630                 635                 640

Glu Glu Leu Leu Glu Arg Lys Gly Val Tyr Phe Thr Leu Val Thr Leu
                645                 650                 655

Gln Ser Gln Gly Asn Gln Ala Leu Asn Glu Glu Asp Ile Lys Asp Ala
            660                 665                 670

Thr Glu Asp Asp Met Leu Ala Arg Thr Phe Ser Arg Gly Ser Tyr Gln
        675                 680                 685

Asp Ser Leu Arg Ala Ser Ile Arg Gln Arg Ser Lys Ser Gln Leu Ser
    690                 695                 700

Tyr Leu Val His Glu Pro Pro Leu Ala Val Val Asp His Lys Ser Thr
705                 710                 715                 720

Tyr Glu Glu Asp Arg Lys Asp Lys Asp Ile Pro Val Gln Glu Glu Val
```

```
                725                 730                 735

Glu Pro Ala Pro Val Arg Arg Ile Leu Lys Phe Ser Ala Pro Glu Trp
            740                 745                 750

Pro Tyr Met Leu Val Gly Ser Val Gly Ala Ala Val Asn Gly Thr Val
        755                 760                 765

Thr Pro Leu Tyr Ala Phe Leu Phe Ser Gln Ile Leu Gly Thr Phe Ser
    770                 775                 780

Ile Pro Asp Lys Glu Glu Gln Arg Ser Gln Ile Asn Gly Val Cys Leu
785                 790                 795                 800

Leu Phe Val Ala Met Gly Cys Val Ser Leu Phe Thr Gln Phe Leu Gln
                805                 810                 815

Gly Tyr Ala Phe Ala Lys Ser Gly Glu Leu Leu Thr Lys Arg Leu Arg
            820                 825                 830

Lys Phe Gly Phe Arg Ala Met Leu Gly Gln Asp Ile Ala Trp Phe Asp
        835                 840                 845

Asp Leu Arg Asn Ser Pro Gly Ala Leu Thr Thr Arg Leu Ala Thr Asp
    850                 855                 860

Ala Ser Gln Val Gln Gly Ala Ala Gly Ser Gln Ile Gly Met Ile Val
865                 870                 875                 880

Asn Ser Phe Thr Asn Val Thr Val Ala Met Ile Ile Ala Phe Ser Phe
                885                 890                 895

Ser Trp Lys Leu Ser Leu Val Ile Leu Cys Phe Phe Pro Phe Leu Ala
            900                 905                 910

Leu Ser Gly Ala Thr Gln Thr Arg Met Leu Thr Gly Phe Ala Ser Arg
        915                 920                 925

Asp Lys Gln Ala Leu Glu Met Val Gly Gln Ile Thr Asn Glu Ala Leu
    930                 935                 940

Ser Asn Ile Arg Thr Val Ala Gly Ile Gly Lys Glu Arg Arg Phe Ile
945                 950                 955                 960
```

```
Glu Ala Leu Glu Thr Glu Leu Glu Lys Pro Phe Lys Thr Ala Ile Gln
                965                 970                 975

Lys Ala Asn Ile Tyr Gly Phe Cys Phe Ala Phe Ala Gln Cys Ile Met
            980                 985                 990

Phe Ile Ala Asn Ser Ala Ser Tyr  Arg Tyr Gly Gly Tyr  Leu Ile
Ser
        995                 1000                1005

Asn Glu  Gly Leu His Phe Ser  Tyr Val Phe Arg Val  Ile Ser Ala
    1010                1015                1020

Val Val  Leu Ser Ala Thr Ala  Leu Gly Arg Ala Phe  Ser Tyr Thr
    1025                1030                1035

Pro Ser  Tyr Ala Lys Ala Lys  Ile Ser Ala Ala Arg  Phe Phe Gln
    1040                1045                1050

Leu Leu  Asp Arg Gln Pro Pro  Ile Ser Val Tyr Asn  Thr Ala Gly
    1055                1060                1065

Glu Lys  Trp Asp Asn Phe Gln  Gly Lys Ile Asp Phe  Val Asp Cys
    1070                1075                1080

Lys Phe  Thr Tyr Pro Ser Arg  Pro Asp Ser Gln Val  Leu Asn Gly
    1085                1090                1095

Leu Ser  Val Ser Ile Ser Pro  Gly Gln Thr Leu Ala  Phe Val Gly
    1100                1105                1110

Ser Ser  Gly Cys Gly Lys Ser  Thr Ser Ile Gln Leu  Leu Glu Arg
    1115                1120                1125

Phe Tyr  Asp Pro Asp Gln Gly  Lys Val Met Ile Asp  Gly His Asp
    1130                1135                1140

Ser Lys  Lys Val Asn Val Gln  Phe Leu Arg Ser Asn  Ile Gly Ile
    1145                1150                1155

Val Ser  Gln Glu Pro Val Leu  Phe Ala Cys Ser Ile  Met Asp Asn
    1160                1165                1170
```

```
Ile Lys  Tyr Gly Asp Asn Thr  Lys Glu Ile Pro Met  Glu Arg Val
    1175                1180                1185

Ile Ala  Ala Ala Lys Gln Ala  Gln Leu His Asp Phe  Val Met Ser
    1190                1195                1200

Leu Pro  Glu Lys Tyr Glu Thr  Asn Val Gly Ser Gln  Gly Ser Gln
    1205                1210                1215

Leu Ser  Arg Gly Glu Lys Gln  Arg Ile Ala Ile Ala  Arg Ala Ile
    1220                1225                1230

Val Arg  Asp Pro Lys Ile Leu  Leu Leu Asp Glu Ala  Thr Ser Ala
    1235                1240                1245

Leu Asp  Thr Glu Ser Glu Lys  Thr Val Gln Val Ala  Leu Asp Lys
    1250                1255                1260

Ala Arg  Glu Gly Arg Thr Cys  Ile Val Ile Ala His  Arg Leu Ser
    1265                1270                1275

Thr Ile  Gln Asn Ala Asp Ile  Ile Ala Val Met Ala  Gln Gly Val
    1280                1285                1290

Val Ile  Glu Lys Gly Thr His  Glu Glu Leu Met Ala  Gln Lys Gly
    1295                1300                1305

Ala Tyr  Tyr Lys Leu Val Thr  Thr Gly Ser Pro Ile  Ser
    1310                1315                1320


<210> 7641
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1612; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB11; "

<220>
<221> source
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416058"

<400> 7641
Asp Ile Arg Ser Leu Asn Ile Gln Trp Leu Arg Asp Gln Ile Gly Ile
1 5 10 15

Val Glu Gln Glu Pro Val Leu Phe Ser Thr Thr Ile Ala Glu Asn Ile
20 25 30

Arg Tyr Gly Arg Glu Asp Ala Thr Met Glu Asp Ile Val Gln Ala Ala
35 40 45

Lys Glu Ala Asn Ala Tyr Asn Phe Ile Met Asp Leu Pro Gln Gly Tyr
50 55 60

Phe Phe Gln Trp Lys Ser Glu Gln
65 70

<210> 7642
<211> 451
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1612; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB11; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480206"

<400> 7642
Ala Ala Gly Ser Gln Ile Gly Met Ile Val Asn Ser Phe Thr Asn Val
1 5 10 15

```
Thr Val Ala Met Ile Ile Ala Phe Ser Phe Ser Trp Lys Leu Ser Leu
            20                  25                  30

Val Ile Leu Cys Phe Phe Pro Phe Leu Ala Leu Ser Gly Ala Thr Gln
        35                  40                  45

Thr Arg Met Leu Thr Gly Phe Ala Ser Arg Asp Lys Gln Ala Leu Glu
    50                  55                  60

Met Val Gly Gln Ile Thr Asn Glu Ala Leu Ser Asn Ile Arg Thr Val
65                  70                  75                  80

Ala Gly Ile Gly Lys Glu Arg Arg Phe Ile Glu Ala Leu Glu Thr Glu
                85                  90                  95

Leu Glu Lys Pro Phe Lys Thr Ala Ile Gln Lys Ala Asn Ile Tyr Gly
            100                 105                 110

Phe Cys Phe Ala Phe Ala Gln Cys Ile Met Phe Ile Ala Asn Ser Ala
        115                 120                 125

Ser Tyr Arg Tyr Gly Gly Tyr Leu Ile Ser Asn Glu Gly Leu His Phe
    130                 135                 140

Ser Tyr Val Phe Arg Val Ile Ser Ala Val Val Leu Ser Ala Thr Ala
145                 150                 155                 160

Leu Gly Arg Ala Phe Ser Tyr Thr Pro Ser Tyr Ala Lys Ala Lys Ile
                165                 170                 175

Ser Ala Ala Arg Phe Phe Gln Leu Leu Asp Arg Gln Pro Pro Ile Ser
            180                 185                 190

Val Tyr Asn Thr Ala Gly Glu Lys Trp Asp Asn Phe Gln Gly Lys Ile
        195                 200                 205

Asp Phe Val Asp Cys Lys Phe Thr Tyr Pro Ser Arg Pro Asp Ser Gln
    210                 215                 220

Val Leu Asn Gly Leu Ser Val Ser Ile Ser Pro Gly Gln Thr Leu Ala
225                 230                 235                 240
```

```
Phe Val Gly Ser Ser Gly Cys Gly Lys Ser Thr Ser Ile Gln Leu Leu
                245                 250                 255

Glu Arg Phe Tyr Asp Pro Asp Gln Gly Lys Val Met Ile Asp Gly His
            260                 265                 270

Asp Ser Lys Lys Val Asn Val Gln Phe Leu Arg Ser Asn Ile Gly Ile
        275                 280                 285

Val Ser Gln Glu Pro Val Leu Phe Ala Cys Ser Ile Met Asp Asn Ile
    290                 295                 300

Lys Tyr Gly Asp Asn Thr Lys Glu Ile Pro Met Glu Arg Val Ile Ala
305                 310                 315                 320

Ala Ala Lys Gln Ala Gln Leu His Asp Phe Val Met Ser Leu Pro Glu
                325                 330                 335

Lys Tyr Glu Thr Asn Val Gly Ser Gln Gly Ser Gln Leu Ser Arg Gly
            340                 345                 350

Glu Lys Gln Arg Ile Ala Ile Ala Arg Ala Ile Val Arg Asp Pro Lys
        355                 360                 365

Ile Leu Leu Leu Asp Glu Ala Thr Ser Ala Leu Asp Thr Glu Ser Glu
    370                 375                 380

Lys Thr Val Gln Val Ala Leu Asp Lys Ala Arg Glu Gly Arg Thr Cys
385                 390                 395                 400

Ile Val Ile Ala His Arg Leu Ser Thr Ile Gln Asn Ala Asp Ile Ile
                405                 410                 415

Ala Val Met Ala Gln Gly Val Val Ile Glu Lys Gly Thr His Glu Glu
            420                 425                 430

Leu Met Ala Gln Lys Gly Ala Tyr Tyr Lys Leu Val Thr Thr Gly Ser
        435                 440                 445

Pro Ile Ser
    450
```

<210> 7643
<211> 1286
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1613; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 4; "

<220>
<221> source
<223> /note="Uniprot ID: P21439; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265723"

<400> 7643

```
Met Asp Leu Glu Ala Ala Lys Asn Gly Thr Ala Trp Arg Pro Thr Ser
1               5                  10                  15

Ala Glu Gly Asp Phe Glu Leu Gly Ile Ser Ser Lys Gln Lys Arg Lys
            20                  25                  30

Lys Thr Lys Thr Val Lys Met Ile Gly Val Leu Thr Leu Phe Arg Tyr
        35                  40                  45

Ser Asp Trp Gln Asp Lys Leu Phe Met Ser Leu Gly Thr Ile Met Ala
    50                  55                  60

Ile Ala His Gly Ser Gly Leu Pro Leu Met Met Ile Val Phe Gly Glu
65                  70                  75                  80

Met Thr Asp Lys Phe Val Asp Thr Ala Gly Asn Phe Ser Phe Pro Val
                85                  90                  95

Asn Phe Ser Leu Ser Leu Leu Asn Pro Gly Lys Ile Leu Glu Glu Glu
            100                 105                 110
```

```
Met Thr Arg Tyr Ala Tyr Tyr Tyr Ser Gly Leu Gly Ala Gly Val Leu
        115                 120                 125

Val Ala Ala Tyr Ile Gln Val Ser Phe Trp Thr Leu Ala Ala Gly Arg
    130                 135                 140

Gln Ile Arg Lys Ile Arg Gln Lys Phe Phe His Ala Ile Leu Arg Gln
145                 150                 155                 160

Glu Ile Gly Trp Phe Asp Ile Asn Asp Thr Thr Glu Leu Asn Thr Arg
                165                 170                 175

Leu Thr Asp Asp Ile Ser Lys Ile Ser Glu Gly Ile Gly Asp Lys Val
            180                 185                 190

Gly Met Phe Phe Gln Ala Val Ala Thr Phe Phe Ala Gly Phe Ile Val
        195                 200                 205

Gly Phe Ile Arg Gly Trp Lys Leu Thr Leu Val Ile Met Ala Ile Ser
    210                 215                 220

Pro Ile Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ala
225                 230                 235                 240

Phe Ser Asp Lys Glu Leu Ala Ala Tyr Ala Lys Ala Gly Ala Val Ala
                245                 250                 255

Glu Glu Ala Leu Gly Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln
            260                 265                 270

Asn Lys Glu Leu Glu Arg Tyr Gln Lys His Leu Glu Asn Ala Lys Glu
        275                 280                 285

Ile Gly Ile Lys Lys Ala Ile Ser Ala Asn Ile Ser Met Gly Ile Ala
    290                 295                 300

Phe Leu Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Ser
305                 310                 315                 320

Thr Leu Val Ile Ser Lys Glu Tyr Thr Ile Gly Asn Ala Met Thr Val
                325                 330                 335

Phe Phe Ser Ile Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ala Pro
```

```
            340                 345                 350

Cys Ile Asp Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Val Ile Phe
        355                 360                 365

Asp Ile Ile Asp Asn Asn Pro Lys Ile Asp Ser Phe Ser Glu Arg Gly
    370                 375                 380

His Lys Pro Asp Ser Ile Lys Gly Asn Leu Glu Phe Asn Asp Val His
385                 390                 395                 400

Phe Ser Tyr Pro Ser Arg Ala Asn Val Lys Ile Leu Lys Gly Leu Asn
                405                 410                 415

Leu Lys Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Ser Ser Gly
            420                 425                 430

Cys Gly Lys Ser Thr Thr Val Gln Leu Ile Gln Arg Leu Tyr Asp Pro
        435                 440                 445

Asp Glu Gly Thr Ile Asn Ile Asp Gly Gln Asp Ile Arg Asn Phe Asn
    450                 455                 460

Val Asn Tyr Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val
465                 470                 475                 480

Leu Phe Ser Thr Thr Ile Ala Glu Asn Ile Cys Tyr Gly Arg Gly Asn
                485                 490                 495

Val Thr Met Asp Glu Ile Lys Lys Ala Val Lys Glu Ala Asn Ala Tyr
            500                 505                 510

Glu Phe Ile Met Lys Leu Pro Gln Lys Phe Asp Thr Leu Val Gly Glu
        515                 520                 525

Arg Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala
    530                 535                 540

Arg Ala Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr
545                 550                 555                 560

Ser Ala Leu Asp Thr Glu Ser Glu Ala Glu Val Gln Ala Ala Leu Asp
                565                 570                 575
```

```
Lys Ala Arg Glu Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser
            580                 585                 590

Thr Val Arg Asn Ala Asp Val Ile Ala Gly Phe Glu Asp Gly Val Ile
        595                 600                 605

Val Glu Gln Gly Ser His Ser Glu Leu Met Lys Lys Glu Gly Val Tyr
    610                 615                 620

Phe Lys Leu Val Asn Met Gln Thr Ser Gly Ser Gln Ile Gln Ser Glu
625                 630                 635                 640

Glu Phe Glu Leu Asn Asp Glu Lys Ala Ala Thr Arg Met Ala Pro Asn
                645                 650                 655

Gly Trp Lys Ser Arg Leu Phe Arg His Ser Thr Gln Lys Asn Leu Lys
            660                 665                 670

Asn Ser Gln Met Cys Gln Lys Ser Leu Asp Val Glu Thr Asp Gly Leu
        675                 680                 685

Glu Ala Asn Val Pro Pro Val Ser Phe Leu Lys Val Leu Lys Leu Asn
    690                 695                 700

Lys Thr Glu Trp Pro Tyr Phe Val Val Gly Thr Val Cys Ala Ile Ala
705                 710                 715                 720

Asn Gly Gly Leu Gln Pro Ala Phe Ser Val Ile Phe Ser Glu Ile Ile
                725                 730                 735

Ala Ile Phe Gly Pro Gly Asp Asp Ala Val Lys Gln Gln Lys Cys Asn
            740                 745                 750

Ile Phe Ser Leu Ile Phe Leu Phe Leu Gly Ile Ile Ser Phe Phe Thr
        755                 760                 765

Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu Thr
    770                 775                 780

Arg Arg Leu Arg Ser Met Ala Phe Lys Ala Met Leu Arg Gln Asp Met
785                 790                 795                 800
```

```
Ser Trp Phe Asp Asp His Lys Asn Ser Thr Gly Ala Leu Ser Thr Arg
                805                 810                 815

Leu Ala Thr Asp Ala Ala Gln Val Gln Gly Ala Thr Gly Thr Arg Leu
            820                 825                 830

Ala Leu Ile Ala Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile Ile
        835                 840                 845

Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Val Val
    850                 855                 860

Pro Ile Ile Ala Val Ser Gly Ile Val Glu Met Lys Leu Leu Ala Gly
865                 870                 875                 880

Asn Ala Lys Arg Asp Lys Lys Glu Leu Glu Ala Ala Gly Lys Ile Ala
                885                 890                 895

Thr Glu Ala Ile Glu Asn Ile Arg Thr Val Val Ser Leu Thr Gln Glu
            900                 905                 910

Arg Lys Phe Glu Ser Met Tyr Val Glu Lys Leu Tyr Gly Pro Tyr Arg
        915                 920                 925

Asn Ser Val Gln Lys Ala His Ile Tyr Gly Ile Thr Phe Ser Ile Ser
    930                 935                 940

Gln Ala Phe Met Tyr Phe Ser Tyr Ala Gly Cys Phe Arg Phe Gly Ala
945                 950                 955                 960

Tyr Leu Ile Val Asn Gly His Met Arg Phe Arg Asp Val Ile Leu Val
                965                 970                 975

Phe Ser Ala Ile Val Phe Gly Ala Val Ala Leu Gly His Ala Ser Ser
            980                 985                 990

Phe Ala Pro Asp Tyr Ala Lys Ala  Lys Leu Ser Ala Ala  His Leu
Phe
        995                 1000                1005

Met Leu  Phe Glu Arg Gln Pro  Leu Ile Asp Ser Tyr  Ser Glu Glu
    1010                1015                1020
```

```
Gly Leu  Lys Pro Asp Lys Phe  Glu Gly Asn Ile Thr  Phe Asn Glu
    1025                1030                1035

Val Val  Phe Asn Tyr Pro Thr  Arg Ala Asn Val Pro  Val Leu Gln
    1040                1045                1050

Gly Leu  Ser Leu Glu Val Lys  Lys Gly Gln Thr Leu  Ala Leu Val
    1055                1060                1065

Gly Ser  Ser Gly Cys Gly Lys  Ser Thr Val Val Gln  Leu Leu Glu
    1070                1075                1080

Arg Phe  Tyr Asp Pro Leu Ala  Gly Thr Val Phe Val  Asp Phe Gly
    1085                1090                1095

Phe Gln  Leu Leu Asp Gly Gln  Glu Ala Lys Lys Leu  Asn Val Gln
    1100                1105                1110

Trp Leu  Arg Ala Gln Leu Gly  Ile Val Ser Gln Glu  Pro Ile Leu
    1115                1120                1125

Phe Asp  Cys Ser Ile Ala Glu  Asn Ile Ala Tyr Gly  Asp Asn Ser
    1130                1135                1140

Arg Val  Val Ser Gln Asp Glu  Ile Val Ser Ala Ala  Lys Ala Ala
    1145                1150                1155

Asn Ile  His Pro Phe Ile Glu  Thr Leu Pro His Lys  Tyr Glu Thr
    1160                1165                1170

Arg Val  Gly Asp Lys Gly Thr  Gln Leu Ser Gly Gly  Gln Lys Gln
    1175                1180                1185

Arg Ile  Ala Ile Ala Arg Ala  Leu Ile Arg Gln Pro  Gln Ile Leu
    1190                1195                1200

Leu Leu  Asp Glu Ala Thr Ser  Ala Leu Asp Thr Glu  Ser Glu Lys
    1205                1210                1215

Val Val  Gln Glu Ala Leu Asp  Lys Ala Arg Glu Gly  Arg Thr Cys
    1220                1225                1230
```

```
Ile Val  Ile Ala His Arg Leu  Ser Thr Ile Gln Asn  Ala Asp Leu
    1235                1240                1245


Ile Val  Val Phe Gln Asn Gly  Arg Val Lys Glu His  Gly Thr His
    1250                1255                1260


Gln Gln  Leu Leu Ala Gln Lys  Gly Ile Tyr Phe Ser  Met Val Ser
    1265                1270                1275


Val Gln  Ala Gly Thr Gln Asn  Leu
    1280                1285


<210> 7644
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<220>
<221> source
<223> /note="Gene Symbol: ABCB4; "

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      B (MDR/TAP),
      member 4; "

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Met Asp Leu Glu Ala Ala Lys Asn Gly Thr Ala Trp Arg Pro Thr Ser
1               5                   10                  15


Ala Glu Gly Asp Phe Glu Leu Gly Ile Ser Ser Lys Gln Lys Arg Lys
            20                  25                  30


Lys Thr Lys Thr Val Lys Met Ile Gly Val Leu Thr Leu Phe Arg Tyr
        35                  40                  45
```

```
Ser Asp Trp Gln Asp Lys Leu Phe Met Ser Leu Gly Thr Ile Met Ala
    50                  55                  60

Ile Ala His Gly Ser Gly Leu Pro Leu Met Met Ile Val Phe Gly Glu
65                  70                  75                  80

Met Thr Asp Lys Phe Val Asp Thr Ala Gly Asn Phe Ser Phe Pro Val
                85                  90                  95

Asn Phe Ser Leu Ser Leu Leu Asn Pro Gly Lys Ile Leu Glu Glu Glu
            100                 105                 110

Met Thr Arg Tyr Ala Tyr Tyr Tyr Ser Gly Leu Gly Ala Gly Val Leu
        115                 120                 125

Val Ala Ala Tyr Ile Gln Val Ser Phe Trp Thr Leu Ala Ala Gly Arg
    130                 135                 140

Gln Ile Arg Lys Ile Arg Gln Lys Phe Phe His Ala Ile Leu Arg Gln
145                 150                 155                 160

Glu Ile Gly Trp Phe Asp Ile Asn Asp Thr Thr Glu Leu Asn Thr Arg
                165                 170                 175

Leu Thr Asp Asp Ile Ser Lys Ile Ser Glu Gly Ile Gly Asp Lys Val
            180                 185                 190

Gly Met Phe Phe Gln Ala Val Ala Thr Phe Phe Ala Gly Phe Ile Val
        195                 200                 205

Gly Phe Ile Arg Gly Trp Lys Leu Thr Leu Val Ile Met Ala Ile Ser
    210                 215                 220

Pro Ile Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ala
225                 230                 235                 240

Phe Ser Asp Lys Glu Leu Ala Ala Tyr Ala Lys Ala Gly Ala Val Ala
                245                 250                 255

Glu Glu Ala Leu Gly Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln
            260                 265                 270

Asn Lys Glu Leu Glu Arg Tyr Gln Lys His Leu Glu Asn Ala Lys Glu
```

```
        275                 280                 285

Ile Gly Ile Lys Lys Ala Ile Ser Ala Asn Ile Ser Met Gly Ile Ala
    290                 295                 300

Phe Leu Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Ser
305                 310                 315                 320

Thr Leu Val Ile Ser Lys Glu Tyr Thr Ile Gly Asn Ala Met Thr Val
                325                 330                 335

Phe Phe Ser Ile Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ala Pro
            340                 345                 350

Cys Ile Asp Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Val Ile Phe
        355                 360                 365

Asp Ile Ile Asp Asn Asn Pro Lys Ile Asp Ser Phe Ser Glu Arg Gly
    370                 375                 380

His Lys Pro Asp Ser Ile Lys Gly Asn Leu Glu Phe Asn Asp Val His
385                 390                 395                 400

Phe Ser Tyr Pro Ser Arg Ala Asn Val Lys Ile Leu Lys Gly Leu Asn
                405                 410                 415

Leu Lys Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Ser Ser Gly
            420                 425                 430

Cys Gly Lys Ser Thr Thr Val Gln Leu Ile Gln Arg Leu Tyr Asp Pro
        435                 440                 445

Asp Glu Gly Thr Ile Asn Ile Asp Gly Gln Asp Ile Arg Asn Phe Asn
    450                 455                 460

Val Asn Tyr Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val
465                 470                 475                 480

Leu Phe Ser Thr Thr Ile Ala Glu Asn Ile Cys Tyr Gly Arg Gly Asn
                485                 490                 495

Val Thr Met Asp Glu Ile Lys Lys Ala Val Lys Glu Ala Asn Ala Tyr
            500                 505                 510
```

```
Glu Phe Ile Met Lys Leu Pro Gln Lys Phe Asp Thr Leu Val Gly Glu
        515                 520                 525

Arg Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala
    530                 535                 540

Arg Ala Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr
545                 550                 555                 560

Ser Ala Leu Asp Thr Glu Ser Glu Ala Glu Val Gln Ala Ala Leu Asp
                565                 570                 575

Lys Ala Arg Glu Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser
            580                 585                 590

Thr Val Arg Asn Ala Asp Val Ile Ala Gly Phe Glu Asp Gly Val Ile
        595                 600                 605

Val Glu Gln Gly Ser His Ser Glu Leu Met Lys Lys Glu Gly Val Tyr
    610                 615                 620

Phe Lys Leu Val Asn Met Gln Thr Ser Gly Ser Gln Ile Gln Ser Glu
625                 630                 635                 640

Glu Phe Glu Leu Asn Asp Glu Lys Ala Ala Thr Arg Met Ala Pro Asn
                645                 650                 655

Gly Trp Lys Ser Arg Leu Phe Arg His Ser Thr Gln Lys Asn Leu Lys
            660                 665                 670

Asn Ser Gln Met Cys Gln Lys Ser Leu Asp Val Glu Thr Asp Gly Leu
        675                 680                 685

Glu Ala Asn Val Pro Pro Val Ser Phe Leu Lys Val Leu Lys Leu Asn
    690                 695                 700

Lys Thr Glu Trp Pro Tyr Phe Val Val Gly Thr Val Cys Ala Ile Ala
705                 710                 715                 720

Asn Gly Gly Leu Gln Pro Ala Phe Ser Val Ile Phe Ser Glu Ile Ile
                725                 730                 735
```

```
Ala Ile Phe Gly Pro Gly Asp Asp Ala Val Lys Gln Gln Lys Cys Asn
            740                 745                 750

Ile Phe Ser Leu Ile Phe Leu Phe Leu Gly Ile Ile Ser Phe Phe Thr
        755                 760                 765

Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu Thr
    770                 775                 780

Arg Arg Leu Arg Ser Met Ala Phe Lys Ala Met Leu Arg Gln Asp Met
785                 790                 795                 800

Ser Trp Phe Asp Asp His Lys Asn Ser Thr Gly Ala Leu Ser Thr Arg
                805                 810                 815

Leu Ala Thr Asp Ala Ala Gln Val Gln Gly Ala Thr Gly Thr Arg Leu
            820                 825                 830

Ala Leu Ile Ala Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile Ile
        835                 840                 845

Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Val Val
    850                 855                 860

Pro Ile Ile Ala Val Ser Gly Ile Val Glu Met Lys Leu Leu Ala Gly
865                 870                 875                 880

Asn Ala Lys Arg Asp Lys Lys Glu Leu Glu Ala Ala Gly Lys Ile Ala
                885                 890                 895

Thr Glu Ala Ile Glu Asn Ile Arg Thr Val Val Ser Leu Thr Gln Glu
            900                 905                 910

Arg Lys Phe Glu Ser Met Tyr Val Glu Lys Leu Tyr Gly Pro Tyr Arg
        915                 920                 925

Val Phe Ser Ala Ile Val Phe Gly Ala Val Ala Leu Gly His Ala Ser
    930                 935                 940

Ser Phe Ala Pro Asp Tyr Ala Lys Ala Lys Leu Ser Ala Ala His Leu
945                 950                 955                 960
```

```
Phe Met Leu Phe Glu Arg Gln Pro Leu Ile Asp Ser Tyr Ser Glu Glu
                965                 970                 975

Gly Leu Lys Pro Asp Lys Phe Glu Gly Asn Ile Thr Phe Asn Glu Val
            980                 985                 990

Val Phe Asn Tyr Pro Thr Arg Ala  Asn Val Pro Val Leu  Gln Gly
Leu
        995                 1000                1005

Ser Leu  Glu Val Lys Lys Gly  Gln Thr Leu Ala Leu  Val Gly Ser
    1010                1015                1020

Ser Gly  Cys Gly Lys Ser Thr  Val Val Gln Leu Leu  Glu Arg Phe
    1025                1030                1035

Tyr Asp  Pro Leu Ala Gly Thr  Val Leu Leu Asp Gly  Gln Glu Ala
    1040                1045                1050

Lys Lys  Leu Asn Val Gln Trp  Leu Arg Ala Gln Leu  Gly Ile Val
    1055                1060                1065

Ser Gln  Glu Pro Ile Leu Phe  Asp Cys Ser Ile Ala  Glu Asn Ile
    1070                1075                1080

Ala Tyr  Gly Asp Asn Ser Arg  Val Val Ser Gln Asp  Glu Ile Val
    1085                1090                1095

Ser Ala  Ala Lys Ala Ala Asn  Ile His Pro Phe Ile  Glu Thr Leu
    1100                1105                1110

Pro His  Lys Tyr Glu Thr Arg  Val Gly Asp Lys Gly  Thr Gln Leu
    1115                1120                1125

Ser Gly  Gly Gln Lys Gln Arg  Ile Ala Ile Ala Arg  Ala Leu Ile
    1130                1135                1140

Arg Gln  Pro Gln Ile Leu Leu  Leu Asp Glu Ala Thr  Ser Ala Leu
    1145                1150                1155

Asp Thr  Glu Ser Glu Lys Val  Val Gln Glu Ala Leu  Asp Lys Ala
    1160                1165                1170
```

```
Arg Glu  Gly Arg Thr Cys Ile  Val Ile Ala His Arg  Leu Ser Thr
    1175                1180                1185


Ile Gln  Asn Ala Asp Leu Ile  Val Val Phe Gln Asn  Gly Arg Val
    1190                1195                1200


Lys Glu  His Gly Thr His Gln  Gln Leu Leu Ala Gln  Lys Gly Ile
    1205                1210                1215


Tyr Phe  Ser Met Val Ser Val  Gln Ala Gly Thr Gln  Asn Leu
    1220                1225                1230


<210> 7645
<211> 1279
<212> PRT
<213> Homo sapiens

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      B (MDR/TAP),
      member 4; "

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Met Asp Leu Glu Ala Ala Lys Asn Gly Thr Ala Trp Arg Pro Thr Ser
1               5                  10                  15


Ala Glu Gly Asp Phe Glu Leu Gly Ile Ser Ser Lys Gln Lys Arg Lys
            20                  25                  30


Lys Thr Lys Thr Val Lys Met Ile Gly Val Leu Thr Leu Phe Arg Tyr
        35                  40                  45
```

```
Ser Asp Trp Gln Asp Lys Leu Phe Met Ser Leu Gly Thr Ile Met Ala
    50                  55                  60

Ile Ala His Gly Ser Gly Leu Pro Leu Met Met Ile Val Phe Gly Glu
65                  70                  75                  80

Met Thr Asp Lys Phe Val Asp Thr Ala Gly Asn Phe Ser Phe Pro Val
                85                  90                  95

Asn Phe Ser Leu Ser Leu Leu Asn Pro Gly Lys Ile Leu Glu Glu Glu
            100                 105                 110

Met Thr Arg Tyr Ala Tyr Tyr Tyr Ser Gly Leu Gly Ala Gly Val Leu
        115                 120                 125

Val Ala Ala Tyr Ile Gln Val Ser Phe Trp Thr Leu Ala Ala Gly Arg
    130                 135                 140

Gln Ile Arg Lys Ile Arg Gln Lys Phe Phe His Ala Ile Leu Arg Gln
145                 150                 155                 160

Glu Ile Gly Trp Phe Asp Ile Asn Asp Thr Thr Glu Leu Asn Thr Arg
                165                 170                 175

Leu Thr Asp Asp Ile Ser Lys Ile Ser Glu Gly Ile Gly Asp Lys Val
            180                 185                 190

Gly Met Phe Phe Gln Ala Val Ala Thr Phe Phe Ala Gly Phe Ile Val
        195                 200                 205

Gly Phe Ile Arg Gly Trp Lys Leu Thr Leu Val Ile Met Ala Ile Ser
    210                 215                 220

Pro Ile Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ala
225                 230                 235                 240

Phe Ser Asp Lys Glu Leu Ala Ala Tyr Ala Lys Ala Gly Ala Val Ala
                245                 250                 255

Glu Glu Ala Leu Gly Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln
            260                 265                 270

Asn Lys Glu Leu Glu Arg Tyr Gln Lys His Leu Glu Asn Ala Lys Glu
```

```
        275                 280                 285

Ile Gly Ile Lys Lys Ala Ile Ser Ala Asn Ile Ser Met Gly Ile Ala
    290                 295                 300

Phe Leu Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Ser
305                 310                 315                 320

Thr Leu Val Ile Ser Lys Glu Tyr Thr Ile Gly Asn Ala Met Thr Val
                325                 330                 335

Phe Phe Ser Ile Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ala Pro
            340                 345                 350

Cys Ile Asp Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Val Ile Phe
        355                 360                 365

Asp Ile Ile Asp Asn Asn Pro Lys Ile Asp Ser Phe Ser Glu Arg Gly
    370                 375                 380

His Lys Pro Asp Ser Ile Lys Gly Asn Leu Glu Phe Asn Asp Val His
385                 390                 395                 400

Phe Ser Tyr Pro Ser Arg Ala Asn Val Lys Ile Leu Lys Gly Leu Asn
                405                 410                 415

Leu Lys Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Ser Ser Gly
            420                 425                 430

Cys Gly Lys Ser Thr Thr Val Gln Leu Ile Gln Arg Leu Tyr Asp Pro
        435                 440                 445

Asp Glu Gly Thr Ile Asn Ile Asp Gly Gln Asp Ile Arg Asn Phe Asn
    450                 455                 460

Val Asn Tyr Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val
465                 470                 475                 480

Leu Phe Ser Thr Thr Ile Ala Glu Asn Ile Cys Tyr Gly Arg Gly Asn
                485                 490                 495

Val Thr Met Asp Glu Ile Lys Lys Ala Val Lys Glu Ala Asn Ala Tyr
            500                 505                 510
```

```
Glu Phe Ile Met Lys Leu Pro Gln Lys Phe Asp Thr Leu Val Gly Glu
        515                 520                 525

Arg Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala
    530                 535                 540

Arg Ala Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr
545                 550                 555                 560

Ser Ala Leu Asp Thr Glu Ser Glu Ala Glu Val Gln Ala Ala Leu Asp
                565                 570                 575

Lys Ala Arg Glu Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser
            580                 585                 590

Thr Val Arg Asn Ala Asp Val Ile Ala Gly Phe Glu Asp Gly Val Ile
        595                 600                 605

Val Glu Gln Gly Ser His Ser Glu Leu Met Lys Lys Glu Gly Val Tyr
    610                 615                 620

Phe Lys Leu Val Asn Met Gln Thr Ser Gly Ser Gln Ile Gln Ser Glu
625                 630                 635                 640

Glu Phe Glu Leu Asn Asp Glu Lys Ala Ala Thr Arg Met Ala Pro Asn
                645                 650                 655

Gly Trp Lys Ser Arg Leu Phe Arg His Ser Thr Gln Lys Asn Leu Lys
            660                 665                 670

Asn Ser Gln Met Cys Gln Lys Ser Leu Asp Val Glu Thr Asp Gly Leu
        675                 680                 685

Glu Ala Asn Val Pro Pro Val Ser Phe Leu Lys Val Leu Lys Leu Asn
    690                 695                 700

Lys Thr Glu Trp Pro Tyr Phe Val Val Gly Thr Val Cys Ala Ile Ala
705                 710                 715                 720

Asn Gly Gly Leu Gln Pro Ala Phe Ser Val Ile Phe Ser Glu Ile Ile
                725                 730                 735
```

```
Ala Ile Phe Gly Pro Gly Asp Asp Ala Val Lys Gln Gln Lys Cys Asn
            740                 745                 750

Ile Phe Ser Leu Ile Phe Leu Phe Leu Gly Ile Ile Ser Phe Phe Thr
        755                 760                 765

Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu Thr
    770                 775                 780

Arg Arg Leu Arg Ser Met Ala Phe Lys Ala Met Leu Arg Gln Asp Met
785                 790                 795                 800

Ser Trp Phe Asp Asp His Lys Asn Ser Thr Gly Ala Leu Ser Thr Arg
                805                 810                 815

Leu Ala Thr Asp Ala Ala Gln Val Gln Gly Ala Thr Gly Thr Arg Leu
            820                 825                 830

Ala Leu Ile Ala Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile Ile
        835                 840                 845

Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Val Val
    850                 855                 860

Pro Ile Ile Ala Val Ser Gly Ile Val Glu Met Lys Leu Leu Ala Gly
865                 870                 875                 880

Asn Ala Lys Arg Asp Lys Lys Glu Leu Glu Ala Ala Gly Lys Ile Ala
                885                 890                 895

Thr Glu Ala Ile Glu Asn Ile Arg Thr Val Val Ser Leu Thr Gln Glu
            900                 905                 910

Arg Lys Phe Glu Ser Met Tyr Val Glu Lys Leu Tyr Gly Pro Tyr Arg
        915                 920                 925

Asn Ser Val Gln Lys Ala His Ile Tyr Gly Ile Thr Phe Ser Ile Ser
    930                 935                 940

Gln Ala Phe Met Tyr Phe Ser Tyr Ala Gly Cys Phe Arg Phe Gly Ala
945                 950                 955                 960
```

```
Tyr Leu Ile Val Asn Gly His Met Arg Phe Arg Asp Val Ile Leu Val
                965                 970                 975

Phe Ser Ala Ile Val Phe Gly Ala Val Ala Leu Gly His Ala Ser Ser
            980                 985                 990

Phe Ala Pro Asp Tyr Ala Lys Ala  Lys Leu Ser Ala Ala  His Leu
Phe
        995                 1000                1005

Met Leu  Phe Glu Arg Gln Pro  Leu Ile Asp Ser Tyr  Ser Glu Glu
    1010                1015                1020

Gly Leu  Lys Pro Asp Lys Phe  Glu Gly Asn Ile Thr  Phe Asn Glu
    1025                1030                1035

Val Val  Phe Asn Tyr Pro Thr  Arg Ala Asn Val Pro  Val Leu Gln
    1040                1045                1050

Gly Leu  Ser Leu Glu Val Lys  Lys Gly Gln Thr Leu  Ala Leu Val
    1055                1060                1065

Gly Ser  Ser Gly Cys Gly Lys  Ser Thr Val Val Gln  Leu Leu Glu
    1070                1075                1080

Arg Phe  Tyr Asp Pro Leu Ala  Gly Thr Val Leu Leu  Asp Gly Gln
    1085                1090                1095

Glu Ala  Lys Lys Leu Asn Val  Gln Trp Leu Arg Ala  Gln Leu Gly
    1100                1105                1110

Ile Val  Ser Gln Glu Pro Ile  Leu Phe Asp Cys Ser  Ile Ala Glu
    1115                1120                1125

Asn Ile  Ala Tyr Gly Asp Asn  Ser Arg Val Val Ser  Gln Asp Glu
    1130                1135                1140

Ile Val  Ser Ala Ala Lys Ala  Ala Asn Ile His Pro  Phe Ile Glu
    1145                1150                1155

Thr Leu  Pro His Lys Tyr Glu  Thr Arg Val Gly Asp  Lys Gly Thr
    1160                1165                1170
```

```
Gln Leu  Ser Gly Gly Gln Lys  Gln Arg Ile Ala Ile  Ala Arg Ala
    1175                1180                1185

Leu Ile  Arg Gln Pro Gln Ile  Leu Leu Leu Asp Glu  Ala Thr Ser
    1190                1195                1200

Ala Leu  Asp Thr Glu Ser Glu  Lys Val Val Gln Glu  Ala Leu Asp
    1205                1210                1215

Lys Ala  Arg Glu Gly Arg Thr  Cys Ile Val Ile Ala  His Arg Leu
    1220                1225                1230

Ser Thr  Ile Gln Asn Ala Asp  Leu Ile Val Val Phe  Gln Asn Gly
    1235                1240                1245

Arg Val  Lys Glu His Gly Thr  His Gln Gln Leu Leu  Ala Gln Lys
    1250                1255                1260

Gly Ile  Tyr Phe Ser Met Val  Ser Val Gln Ala Gly  Thr Gln Asn
    1265                1270                1275

Leu
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<212> PRT
<213> Homo sapiens

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ATP-binding cassette, sub-family
B (MDR/TAP),
member 4; "

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<400> 7646

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Met Asp Leu Glu Ala Ala Lys Asn Gly Thr Ala Trp Arg Pro Thr Ser
1               5                  10                  15

Ala Glu Gly Asp Phe Glu Leu Gly Ile Ser Ser Lys Gln Lys Arg Lys
            20                  25                  30

Lys Thr Lys Thr Val Lys Met Ile Gly Val Leu Thr Leu Phe Arg Tyr
        35                  40                  45

Ser Asp Trp Gln Asp Lys Leu Phe Met Ser Leu Gly Thr Ile Met Ala
    50                  55                  60

Ile Ala His Gly Ser Gly Leu Pro Leu Met Met Ile Val Phe Gly Glu
65                  70                  75                  80

Met Thr Asp Lys Phe Val Asp Thr Ala Gly Asn Phe Ser Phe Pro Val
                85                  90                  95

Asn Phe Ser Leu Ser Leu Leu Asn Pro Gly Lys Ile Leu Glu Glu Glu
            100                 105                 110

Met Thr Arg Tyr Ala Tyr Tyr Tyr Ser Gly Leu Gly Ala Gly Val Leu
        115                 120                 125

Val Ala Ala Tyr Ile Gln Val Ser Phe Trp Thr Leu Ala Ala Gly Arg
    130                 135                 140

Gln Ile Arg Lys Ile Arg Gln Lys Phe Phe His Ala Ile Leu Arg Gln
145                 150                 155                 160

Glu Ile Gly Trp Phe Asp Ile Asn Asp Thr Thr Glu Leu Asn Thr Arg
                165                 170                 175

Leu Thr Asp Asp Ile Ser Lys Ile Ser Glu Gly Ile Gly Asp Lys Val
            180                 185                 190

Gly Met Phe Phe Gln Ala Val Ala Thr Phe Phe Ala Gly Phe Ile Val
        195                 200                 205

Gly Phe Ile Arg Gly Trp Lys Leu Thr Leu Val Ile Met Ala Ile Ser
```

```
    210                 215                 220

Pro Ile Leu Gly Leu Ser Ala Ala Val Trp Ala Lys Ile Leu Ser Ala
225                 230                 235                 240

Phe Ser Asp Lys Glu Leu Ala Ala Tyr Ala Lys Ala Gly Ala Val Ala
                245                 250                 255

Glu Glu Ala Leu Gly Ala Ile Arg Thr Val Ile Ala Phe Gly Gly Gln
            260                 265                 270

Asn Lys Glu Leu Glu Arg Tyr Gln Lys His Leu Glu Asn Ala Lys Glu
        275                 280                 285

Ile Gly Ile Lys Lys Ala Ile Ser Ala Asn Ile Ser Met Gly Ile Ala
    290                 295                 300

Phe Leu Leu Ile Tyr Ala Ser Tyr Ala Leu Ala Phe Trp Tyr Gly Ser
305                 310                 315                 320

Thr Leu Val Ile Ser Lys Glu Tyr Thr Ile Gly Asn Ala Met Thr Val
                325                 330                 335

Phe Phe Ser Ile Leu Ile Gly Ala Phe Ser Val Gly Gln Ala Ala Pro
            340                 345                 350

Cys Ile Asp Ala Phe Ala Asn Ala Arg Gly Ala Ala Tyr Val Ile Phe
        355                 360                 365

Asp Ile Ile Asp Asn Asn Pro Lys Ile Asp Ser Phe Ser Glu Arg Gly
    370                 375                 380

His Lys Pro Asp Ser Ile Lys Gly Asn Leu Glu Phe Asn Asp Val His
385                 390                 395                 400

Phe Ser Tyr Pro Ser Arg Ala Asn Val Lys Ile Leu Lys Gly Leu Asn
                405                 410                 415

Leu Lys Val Gln Ser Gly Gln Thr Val Ala Leu Val Gly Ser Ser Gly
            420                 425                 430

Cys Gly Lys Ser Thr Thr Val Gln Leu Ile Gln Arg Leu Tyr Asp Pro
        435                 440                 445
```

```
Asp Glu Gly Thr Ile Asn Ile Asp Gly Gln Asp Ile Arg Asn Phe Asn
    450                 455                 460

Val Asn Tyr Leu Arg Glu Ile Ile Gly Val Val Ser Gln Glu Pro Val
465                 470                 475                 480

Leu Phe Ser Thr Thr Ile Ala Glu Asn Ile Cys Tyr Gly Arg Gly Asn
                485                 490                 495

Val Thr Met Asp Glu Ile Lys Lys Ala Val Lys Glu Ala Asn Ala Tyr
            500                 505                 510

Glu Phe Ile Met Lys Leu Pro Gln Lys Phe Asp Thr Leu Val Gly Glu
        515                 520                 525

Arg Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala
    530                 535                 540

Arg Ala Leu Val Arg Asn Pro Lys Ile Leu Leu Leu Asp Glu Ala Thr
545                 550                 555                 560

Ser Ala Leu Asp Thr Glu Ser Glu Ala Glu Val Gln Ala Ala Leu Asp
                565                 570                 575

Lys Ala Arg Glu Gly Arg Thr Thr Ile Val Ile Ala His Arg Leu Ser
            580                 585                 590

Thr Val Arg Asn Ala Asp Val Ile Ala Gly Phe Glu Asp Gly Val Ile
        595                 600                 605

Val Glu Gln Gly Ser His Ser Glu Leu Met Lys Lys Glu Gly Val Tyr
    610                 615                 620

Phe Lys Leu Val Asn Met Gln Thr Ser Gly Ser Gln Ile Gln Ser Glu
625                 630                 635                 640

Glu Phe Glu Leu Asn Asp Glu Lys Ala Ala Thr Arg Met Ala Pro Asn
                645                 650                 655

Gly Trp Lys Ser Arg Leu Phe Arg His Ser Thr Gln Lys Asn Leu Lys
            660                 665                 670
```

```
Asn Ser Gln Met Cys Gln Lys Ser Leu Asp Val Glu Thr Asp Gly Leu
        675                 680                 685

Glu Ala Asn Val Pro Pro Val Ser Phe Leu Lys Val Leu Lys Leu Asn
    690                 695                 700

Lys Thr Glu Trp Pro Tyr Phe Val Val Gly Thr Val Cys Ala Ile Ala
705                 710                 715                 720

Asn Gly Gly Leu Gln Pro Ala Phe Ser Val Ile Phe Ser Glu Ile Ile
                725                 730                 735

Ala Ile Phe Gly Pro Gly Asp Asp Ala Val Lys Gln Gln Lys Cys Asn
            740                 745                 750

Ile Phe Ser Leu Ile Phe Leu Phe Leu Gly Ile Ile Ser Phe Phe Thr
        755                 760                 765

Phe Phe Leu Gln Gly Phe Thr Phe Gly Lys Ala Gly Glu Ile Leu Thr
    770                 775                 780

Arg Arg Leu Arg Ser Met Ala Phe Lys Ala Met Leu Arg Gln Asp Met
785                 790                 795                 800

Ser Trp Phe Asp Asp His Lys Asn Ser Thr Gly Ala Leu Ser Thr Arg
                805                 810                 815

Leu Ala Thr Asp Ala Ala Gln Val Gln Gly Ala Thr Gly Thr Arg Leu
            820                 825                 830

Ala Leu Ile Ala Gln Asn Ile Ala Asn Leu Gly Thr Gly Ile Ile Ile
        835                 840                 845

Ser Phe Ile Tyr Gly Trp Gln Leu Thr Leu Leu Leu Leu Ala Val Val
    850                 855                 860

Pro Ile Ile Ala Val Ser Gly Ile Val Glu Met Lys Leu Leu Ala Gly
865                 870                 875                 880

Asn Ala Lys Arg Asp Lys Lys Glu Leu Glu Ala Ala Gly Lys Ile Ala
                885                 890                 895
```

```
Thr Glu Ala Ile Glu Asn Ile Arg Thr Val Val Ser Leu Thr Gln Glu
            900                 905                 910

Arg Lys Phe Glu Ser Met Tyr Val Glu Lys Leu Tyr Gly Pro Tyr Arg
        915                 920                 925

Val Phe Ser Ala Ile Val Phe Gly Ala Val Ala Leu Gly His Ala Ser
    930                 935                 940

Ser Phe Ala Pro Asp Tyr Ala Lys Ala Lys Leu Ser Ala Ala His Leu
945                 950                 955                 960

Phe Met Leu Phe Glu Arg Gln Pro Leu Ile Asp Ser Tyr Ser Glu Glu
                965                 970                 975

Gly Leu Lys Pro Asp Lys Phe Glu Gly Asn Ile Thr Phe Asn Glu Val
            980                 985                 990

Val Phe Asn Tyr Pro Thr Arg Ala  Asn Val Pro Val Leu  Gln Gly
Leu
        995                 1000                1005

Ser Leu  Glu Val Lys Lys Gly  Gln Thr Leu Ala Leu  Val Gly Ser
    1010                1015                1020

Ser Gly  Cys Gly Lys Ser Thr  Val Val Gln Leu Leu  Glu Arg Phe
    1025                1030                1035

Tyr Asp  Pro Leu Ala Gly Thr  Val Leu Leu Asp Gly  Gln Glu Ala
    1040                1045                1050

Lys Lys  Leu Asn Val Gln Trp  Leu Arg Ala Gln Leu  Gly Ile Val
    1055                1060                1065

Ser Gln  Glu Pro Ile Leu Phe  Asp Cys Ser Ile Ala  Glu Asn Ile
    1070                1075                1080

Ala Tyr  Gly Asp Asn Ser Arg  Val Val Ser Gln Asp  Glu Ile Val
    1085                1090                1095

Ser Ala  Ala Lys Ala Ala Asn  Ile His Pro Phe Ile  Glu Thr Leu
    1100                1105                1110
```

```
Pro His  Lys Tyr Glu Thr Arg  Val Gly Asp Lys Gly  Thr Gln Leu
    1115                1120                1125

Ser Gly  Gly Gln Lys Gln Arg  Ile Ala Ile Ala Arg  Ala Leu Ile
    1130                1135                1140

Arg Gln  Pro Gln Ile Leu Leu  Leu Asp Glu Ala Thr  Ser Ala Leu
    1145                1150                1155

Asp Thr  Glu Ser Glu Lys Val  Val Gln Glu Ala Leu  Asp Lys Ala
    1160                1165                1170

Arg Glu  Gly Arg Thr Cys Ile  Val Ile Ala His Arg  Leu Ser Thr
    1175                1180                1185

Ile Gln  Asn Ala Asp Leu Ile  Val Val Phe Gln Asn  Gly Arg Val
    1190                1195                1200

Lys Glu  His Gly Thr His Gln  Gln Leu Leu Ala Gln  Lys Gly Ile
    1205                1210                1215

Tyr Phe  Ser Met Val Ser Val  Gln Ala Gly Thr Gln  Asn Leu
    1220                1225                1230
```

<210> 7647
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1613; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394511"

<400> 7647

```
Met Asp Leu Glu Ala Ala Lys Asn Gly Thr Ala Trp Arg Pro Thr Ser
1               5                   10                  15

Ala Glu Gly Asp Phe Glu Leu Gly Ile Ser Ser Lys Gln Lys Arg Lys
            20                  25                  30

Lys Thr Lys Thr Val Lys Met Ile Gly Val Leu Thr Leu Phe Arg Tyr
        35                  40                  45

Ser Asp Trp Gln Asp Lys Leu Phe Met Ser Leu Gly Thr
    50                  55                  60
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<210> 7648
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395716"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7648

```
Xaa Ile Arg Gln Pro Gln Ile Leu Leu Leu Asp Glu Ala Thr Ser Ala
1               5                   10                  15

Leu Asp Thr Glu Ser Glu Lys Val Val Gln Glu Ala Leu Asp Lys Ala
            20                  25                  30

Arg Glu Gly Arg Thr Cys Ile Val Ile Ala His Arg Leu Ser Thr Ile
        35                  40                  45
```

```
Gln Asn Ala Asp Leu Ile Val Val Phe Gln Asn Gly Arg Val Lys Glu
    50                  55                  60

His Gly Thr His Gln Gln Leu Leu Ala Gln Lys Gly Ile Tyr Phe Ser
65                  70                  75                  80

Met Ile Asn Leu Glu Asp Pro Ile Trp Gly Leu Leu Arg His Leu Lys
                85                  90                  95

Phe Glu Ser
```

<210> 7649
<211> 812
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1614; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q2M3G0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000258738"

<400> 7649

```
Met Val Asp Glu Asn Asp Ile Arg Ala Leu Asn Val Arg His Tyr Arg
1               5                   10                  15

Asp His Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe Gly Thr Thr
            20                  25                  30

Ile Ser Asn Asn Ile Lys Tyr Gly Arg Asp Asp Val Thr Asp Glu Glu
        35                  40                  45
```

```
Met Glu Arg Ala Ala Arg Glu Ala Asn Ala Tyr Asp Phe Ile Met Glu
    50                  55                  60

Phe Pro Asn Lys Phe Asn Thr Leu Val Gly Glu Lys Gly Ala Gln Met
65                  70                  75                  80

Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala Leu Val Arg
                85                  90                  95

Asn Pro Lys Ile Leu Ile Leu Asp Glu Ala Thr Ser Ala Leu Asp Ser
            100                 105                 110

Glu Ser Lys Ser Ala Val Gln Ala Ala Leu Glu Lys Ala Ser Lys Gly
        115                 120                 125

Arg Thr Thr Ile Val Val Ala His Arg Leu Ser Thr Ile Arg Ser Ala
    130                 135                 140

Asp Leu Ile Val Thr Leu Lys Asp Gly Met Leu Ala Glu Lys Gly Ala
145                 150                 155                 160

His Ala Glu Leu Met Ala Lys Arg Gly Leu Tyr Tyr Ser Leu Val Met
                165                 170                 175

Ser Gln Asp Ile Lys Lys Ala Asp Glu Gln Met Glu Ser Met Thr Tyr
            180                 185                 190

Ser Thr Glu Arg Lys Thr Asn Ser Leu Pro Leu His Ser Val Lys Ser
        195                 200                 205

Ile Lys Ser Asp Phe Ile Asp Lys Ala Glu Glu Ser Thr Gln Ser Lys
    210                 215                 220

Glu Ile Ser Leu Pro Glu Val Ser Leu Leu Lys Ile Leu Lys Leu Asn
225                 230                 235                 240

Lys Pro Glu Trp Pro Phe Val Val Leu Gly Thr Leu Ala Ser Val Leu
                245                 250                 255

Asn Gly Thr Val His Pro Val Phe Ser Ile Ile Phe Ala Lys Ile Ile
            260                 265                 270
```

```
Thr Met Phe Gly Asn Asn Asp Lys Thr Thr Leu Lys His Asp Ala Glu
        275                 280                 285

Ile Tyr Ser Met Ile Phe Val Ile Leu Gly Val Ile Cys Phe Val Ser
    290                 295                 300

Tyr Phe Met Gln Gly Leu Phe Tyr Gly Arg Ala Gly Glu Ile Leu Thr
305                 310                 315                 320

Met Arg Leu Arg His Leu Ala Phe Lys Ala Met Leu Tyr Gln Asp Ile
                325                 330                 335

Ala Trp Phe Asp Glu Lys Glu Asn Ser Thr Gly Gly Leu Thr Thr Ile
            340                 345                 350

Leu Ala Ile Asp Ile Ala Gln Ile Gln Gly Ala Thr Gly Ser Arg Ile
        355                 360                 365

Gly Val Leu Thr Gln Asn Ala Thr Asn Met Gly Leu Ser Val Ile Ile
    370                 375                 380

Ser Phe Ile Tyr Gly Trp Glu Met Thr Phe Leu Ile Leu Ser Ile Ala
385                 390                 395                 400

Pro Val Leu Ala Val Thr Gly Met Ile Glu Thr Ala Ala Met Thr Gly
                405                 410                 415

Phe Ala Asn Lys Asp Lys Gln Glu Leu Lys His Ala Gly Lys Ile Ala
            420                 425                 430

Thr Glu Ala Leu Glu Asn Ile Arg Thr Ile Val Ser Leu Thr Arg Glu
        435                 440                 445

Lys Ala Phe Glu Gln Met Tyr Glu Glu Met Leu Gln Thr Gln His Arg
    450                 455                 460

Asn Thr Ser Lys Lys Ala Gln Ile Ile Gly Ser Cys Tyr Ala Phe Ser
465                 470                 475                 480

His Ala Phe Ile Tyr Phe Ala Tyr Ala Ala Gly Phe Arg Phe Gly Ala
                485                 490                 495
```

```
Tyr Leu Ile Gln Ala Gly Arg Met Thr Pro Glu Gly Met Phe Ile Val
            500                 505                 510

Phe Thr Ala Ile Ala Tyr Gly Ala Met Ala Ile Gly Glu Thr Leu Val
        515                 520                 525

Leu Ala Pro Glu Tyr Ser Lys Ala Lys Ser Gly Ala Ala His Leu Phe
    530                 535                 540

Ala Leu Leu Glu Lys Lys Pro Asn Ile Asp Ser Arg Ser Gln Glu Gly
545                 550                 555                 560

Lys Lys Pro Asp Thr Cys Glu Gly Asn Leu Glu Phe Arg Glu Val Ser
                565                 570                 575

Phe Phe Tyr Pro Cys Arg Pro Asp Val Phe Ile Leu Arg Gly Leu Ser
            580                 585                 590

Leu Ser Ile Glu Arg Gly Lys Thr Val Ala Phe Val Gly Ser Ser Gly
        595                 600                 605

Cys Gly Lys Ser Thr Ser Val Gln Leu Leu Gln Arg Leu Tyr Asp Pro
    610                 615                 620

Val Gln Gly Gln Val Leu Phe Asp Gly Val Asp Ala Lys Glu Leu Asn
625                 630                 635                 640

Val Gln Trp Leu Arg Ser Gln Ile Ala Ile Val Pro Gln Glu Pro Val
                645                 650                 655

Leu Phe Asn Cys Ser Ile Ala Glu Asn Ile Ala Tyr Gly Asp Asn Ser
            660                 665                 670

Arg Val Val Pro Leu Asp Glu Ile Lys Glu Ala Ala Asn Ala Ala Asn
        675                 680                 685

Ile His Ser Phe Ile Glu Gly Leu Pro Glu Lys Tyr Asn Thr Gln Val
    690                 695                 700

Gly Leu Lys Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Leu Ala
705                 710                 715                 720

Ile Ala Arg Ala Leu Leu Gln Lys Pro Lys Ile Leu Leu Leu Asp Glu
```

```
                725                 730                 735

Ala Thr Ser Ala Leu Asp Asn Asp Ser Glu Lys Val Val Gln His Ala
            740                 745                 750

Leu Asp Lys Ala Arg Thr Gly Arg Thr Cys Leu Val Val Thr His Arg
        755                 760                 765

Leu Ser Ala Ile Gln Asn Ala Asp Leu Ile Val Val Leu His Asn Gly
    770                 775                 780

Lys Ile Lys Glu Gln Gly Thr His Gln Glu Leu Leu Arg Asn Arg Asp
785                 790                 795                 800

Ile Tyr Phe Lys Leu Val Asn Ala Gln Ser Val Gln
                805                 810


<210> 7650
<211> 126
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1614; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB5; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q2M3G0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000383899"

<400> 7650
Met Val Asp Glu Asn Asp Ile Arg Ala Leu Asn Val Arg His Tyr Arg
1               5                   10                  15

Asp His Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe Gly Thr Thr
```

```
            20                  25                  30

Ile Ser Asn Asn Ile Lys Tyr Gly Arg Asp Asp Val Thr Asp Glu Glu
        35                  40                  45

Met Glu Arg Ala Ala Arg Glu Ala Asn Ala Tyr Asp Phe Ile Met Glu
    50                  55                  60

Phe Pro Asn Lys Phe Asn Thr Leu Val Gly Glu Lys Gly Ala Gln Met
65                  70                  75                  80

Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala Leu Val Arg
                85                  90                  95

Asn Pro Lys Ile Leu Ile Leu Asp Glu Ala Thr Ser Ala Leu Asp Ser
            100                 105                 110

Glu Ser Lys Ser Ala Val Gln Ala Ala Leu Glu Lys Lys Lys
        115                 120                 125


<210> 7651
<211> 1257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1614; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q2M3G0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384881"

<400> 7651
Met Glu Asn Ser Glu Arg Ala Glu Glu Met Gln Glu Asn Tyr Gln Arg
```

```
1               5                   10                  15

Asn Gly Thr Ala Glu Glu Gln Pro Lys Leu Arg Lys Glu Ala Val Gly
            20                  25                  30

Ser Ile Glu Ile Phe Arg Phe Ala Asp Gly Leu Asp Ile Thr Leu Met
        35                  40                  45

Ile Leu Gly Ile Leu Ala Ser Leu Val Asn Gly Ala Cys Leu Pro Leu
    50                  55                  60

Met Pro Leu Val Leu Gly Glu Met Ser Asp Asn Leu Ile Ser Gly Cys
65                  70                  75                  80

Leu Val Gln Thr Asn Thr Thr Asn Tyr Gln Asn Cys Thr Gln Ser Gln
                85                  90                  95

Glu Lys Leu Asn Glu Asp Met Thr Leu Leu Thr Leu Tyr Tyr Val Gly
            100                 105                 110

Ile Gly Val Ala Ala Leu Ile Phe Gly Tyr Ile Gln Ile Ser Leu Trp
        115                 120                 125

Ile Ile Thr Ala Ala Arg Gln Thr Lys Arg Ile Arg Lys Gln Phe Phe
    130                 135                 140

His Ser Val Leu Ala Gln Asp Ile Gly Trp Phe Asp Ser Cys Asp Ile
145                 150                 155                 160

Gly Glu Leu Asn Thr Arg Met Thr Asp Asp Ile Asp Lys Ile Ser Asp
                165                 170                 175

Gly Ile Gly Asp Lys Ile Ala Leu Leu Phe Gln Asn Met Ser Thr Phe
            180                 185                 190

Ser Ile Gly Leu Ala Val Gly Leu Val Lys Gly Trp Lys Leu Thr Leu
        195                 200                 205

Val Thr Leu Ser Thr Ser Pro Leu Ile Met Ala Ser Ala Ala Ala Cys
    210                 215                 220

Ser Arg Met Val Ile Ser Leu Thr Ser Lys Glu Leu Ser Ala Tyr Ser
225                 230                 235                 240
```

```
Lys Ala Gly Ala Val Ala Glu Glu Val Leu Ser Ser Ile Arg Thr Val
                245                 250                 255

Ile Ala Phe Arg Ala Gln Glu Lys Glu Leu Gln Arg Tyr Thr Gln Asn
            260                 265                 270

Leu Lys Asp Ala Lys Asp Phe Gly Ile Lys Arg Thr Ile Ala Ser Lys
        275                 280                 285

Val Ser Leu Gly Ala Val Tyr Phe Phe Met Asn Gly Thr Tyr Gly Leu
    290                 295                 300

Ala Phe Trp Tyr Gly Thr Ser Leu Ile Leu Asn Gly Glu Pro Gly Tyr
305                 310                 315                 320

Thr Ile Gly Thr Val Leu Ala Val Phe Phe Ser Val Ile His Ser Ser
                325                 330                 335

Tyr Cys Ile Gly Ala Ala Val Pro His Phe Glu Thr Phe Ala Ile Ala
            340                 345                 350

Arg Gly Ala Ala Phe His Ile Phe Gln Val Ile Asp Lys Lys Pro Ser
        355                 360                 365

Ile Asp Asn Phe Ser Thr Ala Gly Tyr Lys Pro Glu Ser Ile Glu Gly
    370                 375                 380

Thr Val Glu Phe Lys Asn Val Ser Phe Asn Tyr Pro Ser Arg Pro Ser
385                 390                 395                 400

Ile Lys Ile Leu Lys Gly Leu Asn Leu Arg Ile Lys Ser Gly Glu Thr
                405                 410                 415

Val Ala Leu Val Gly Leu Asn Gly Ser Gly Lys Ser Thr Val Val Gln
            420                 425                 430

Leu Leu Gln Arg Leu Tyr Asp Pro Asp Asp Gly Phe Ile Met Val Asp
        435                 440                 445

Glu Asn Asp Ile Arg Ala Leu Asn Val Arg His Tyr Arg Asp His Ile
    450                 455                 460
```

```
Gly Val Val Ser Gln Glu Pro Val Leu Phe Gly Thr Thr Ile Ser Asn
465                 470                 475                 480

Asn Ile Lys Tyr Gly Arg Asp Asp Val Thr Asp Glu Glu Met Glu Arg
                485                 490                 495

Ala Ala Arg Glu Ala Asn Ala Tyr Asp Phe Ile Met Glu Phe Pro Asn
            500                 505                 510

Lys Phe Asn Thr Leu Val Gly Glu Lys Gly Ala Gln Met Ser Gly Gly
        515                 520                 525

Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala Leu Val Arg Asn Pro Lys
    530                 535                 540

Ile Leu Ile Leu Asp Glu Ala Thr Ser Ala Leu Asp Ser Glu Ser Lys
545                 550                 555                 560

Ser Ala Val Gln Ala Ala Leu Glu Lys Ala Ser Lys Gly Arg Thr Thr
                565                 570                 575

Ile Val Val Ala His Arg Leu Ser Thr Ile Arg Ser Ala Asp Leu Ile
            580                 585                 590

Val Thr Leu Lys Asp Gly Met Leu Ala Glu Lys Gly Ala His Ala Glu
        595                 600                 605

Leu Met Ala Lys Arg Gly Leu Tyr Tyr Ser Leu Val Met Ser Gln Asp
    610                 615                 620

Ile Lys Lys Ala Asp Glu Gln Met Glu Ser Met Thr Tyr Ser Thr Glu
625                 630                 635                 640

Arg Lys Thr Asn Ser Leu Pro Leu His Ser Val Lys Ser Ile Lys Ser
                645                 650                 655

Asp Phe Ile Asp Lys Ala Glu Glu Ser Thr Gln Ser Lys Glu Ile Ser
            660                 665                 670

Leu Pro Glu Val Ser Leu Leu Lys Ile Leu Lys Leu Asn Lys Pro Glu
        675                 680                 685
```

```
Trp Pro Phe Val Val Leu Gly Thr Leu Ala Ser Val Leu Asn Gly Thr
    690                 695                 700

Val His Pro Val Phe Ser Ile Ile Phe Ala Lys Ile Ile Thr Met Phe
705                 710                 715                 720

Gly Asn Asn Asp Lys Thr Thr Leu Lys His Asp Ala Glu Ile Tyr Ser
                725                 730                 735

Met Ile Phe Val Ile Leu Gly Val Ile Cys Phe Val Ser Tyr Phe Met
            740                 745                 750

Gln Gly Leu Phe Tyr Gly Arg Ala Gly Glu Ile Leu Thr Met Arg Leu
        755                 760                 765

Arg His Leu Ala Phe Lys Ala Met Leu Tyr Gln Asp Ile Ala Trp Phe
    770                 775                 780

Asp Glu Lys Glu Asn Ser Thr Gly Gly Leu Thr Thr Ile Leu Ala Ile
785                 790                 795                 800

Asp Ile Ala Gln Ile Gln Gly Ala Thr Gly Ser Arg Ile Gly Val Leu
                805                 810                 815

Thr Gln Asn Ala Thr Asn Met Gly Leu Ser Val Ile Ile Ser Phe Ile
            820                 825                 830

Tyr Gly Trp Glu Met Thr Phe Leu Ile Leu Ser Ile Ala Pro Val Leu
        835                 840                 845

Ala Val Thr Gly Met Ile Glu Thr Ala Ala Met Thr Gly Phe Ala Asn
    850                 855                 860

Lys Asp Lys Gln Glu Leu Lys His Ala Gly Lys Ile Ala Thr Glu Ala
865                 870                 875                 880

Leu Glu Asn Ile Arg Thr Ile Val Ser Leu Thr Arg Glu Lys Ala Phe
                885                 890                 895

Glu Gln Met Tyr Glu Glu Met Leu Gln Thr Gln His Arg Asn Thr Ser
            900                 905                 910

Lys Lys Ala Gln Ile Ile Gly Ser Cys Tyr Ala Phe Ser His Ala Phe
```

915 920 925

Ile Tyr Phe Ala Tyr Ala Ala Gly Phe Arg Phe Gly Ala Tyr Leu Ile
930 935 940

Gln Ala Gly Arg Met Thr Pro Glu Gly Met Phe Ile Val Phe Thr Ala
945 950 955 960

Ile Ala Tyr Gly Ala Met Ala Ile Gly Glu Thr Leu Val Leu Ala Pro
965 970 975

Glu Tyr Ser Lys Ala Lys Ser Gly Ala Ala His Leu Phe Ala Leu Leu
980 985 990

Glu Lys Lys Pro Asn Ile Asp Ser Arg Ser Gln Glu Gly Lys Lys
Pro
995 1000 1005

Asp Thr Cys Glu Gly Asn Leu Glu Phe Arg Glu Val Ser Phe Phe
1010 1015 1020

Tyr Pro Cys Arg Pro Asp Val Phe Ile Leu Arg Gly Leu Ser Leu
1025 1030 1035

Ser Ile Glu Arg Gly Lys Thr Val Ala Phe Val Gly Ser Ser Gly
1040 1045 1050

Cys Gly Lys Ser Thr Ser Val Gln Leu Leu Gln Arg Leu Tyr Asp
1055 1060 1065

Pro Val Gln Gly Gln Val Leu Phe Asp Gly Val Asp Ala Lys Glu
1070 1075 1080

Leu Asn Val Gln Trp Leu Arg Ser Gln Ile Ala Ile Val Pro Gln
1085 1090 1095

Glu Pro Val Leu Phe Asn Cys Ser Ile Ala Glu Asn Ile Ala Tyr
1100 1105 1110

Gly Asp Asn Ser Arg Val Val Pro Leu Asp Glu Ile Lys Glu Ala
1115 1120 1125

Ala Asn Ala Ala Asn Ile His Ser Phe Ile Glu Gly Leu Pro Glu

```
    1130                1135                1140

Lys Tyr  Asn Thr Gln Val Gly  Leu Lys Gly Ala Gln  Leu Ser Gly
    1145                1150                1155

Gly Gln  Lys Gln Arg Leu Ala  Ile Ala Arg Ala Leu  Leu Gln Lys
    1160                1165                1170

Pro Lys  Ile Leu Leu Leu Asp  Glu Ala Thr Ser Ala  Leu Asp Asn
    1175                1180                1185

Asp Ser  Glu Lys Val Val Gln  His Ala Leu Asp Lys  Ala Arg Thr
    1190                1195                1200

Gly Arg  Thr Cys Leu Val Val  Thr His Arg Leu Ser  Ala Ile Gln
    1205                1210                1215

Asn Ala  Asp Leu Ile Val Val  Leu His Asn Gly Lys  Ile Lys Glu
    1220                1225                1230

Gln Gly  Thr His Gln Glu Leu  Leu Arg Asn Arg Asp  Ile Tyr Phe
    1235                1240                1245

Lys Leu  Val Asn Ala Gln Ser  Val Gln
    1250                1255


<210> 7652
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1614; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 5; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000398692"

<400> 7652

```
Gly Trp Glu Met Thr Phe Leu Ile Leu Ser Ile Ala Pro Val Leu Ala
1               5                  10                  15

Val Thr Gly Met Ile Glu Thr Ala Ala Met Thr Gly Phe Ala Asn Lys
            20                  25                  30

Asp Lys Gln Glu Leu Lys His Ala Gly Lys Ile Ala Thr Glu Ala Leu
        35                  40                  45

Glu Asn Ile Arg Thr Ile Val Ser Leu Thr Arg Glu Lys Ala Phe Glu
    50                  55                  60

Gln Met Tyr Glu Glu Met Leu Gln Thr Gln His Arg Asn Thr Ser Lys
65                  70                  75                  80

Lys Ala Gln Ile Ile Gly Ser Cys Tyr Ala Phe Ser His Ala Phe Ile
                85                  90                  95

Tyr Phe Ala Tyr Ala Ala Gly Phe Arg Phe Gly Ala Tyr Leu Ile Gln
            100                 105                 110

Ala Gly Arg Met Thr Pro Glu Gly Met Phe Ile Val Phe Thr Ala Ile
        115                 120                 125

Ala Tyr Gly Ala Met Ala Ile Gly Glu Thr Leu Val Leu Ala Pro Glu
    130                 135                 140

Tyr Ser Lys Ala Lys Ser Gly Ala Ala His Leu Phe Ala Leu Leu Glu
145                 150                 155                 160

Lys Lys Pro Asn Ile Asp Ser Arg Ser Gln Glu Gly Lys Lys Pro Asp
                165                 170                 175

Thr Cys Glu Gly Asn Leu Glu Phe Arg Glu Val Ser Phe Phe Tyr Pro
            180                 185                 190

Cys Arg Pro Asp Val Phe Ile Leu Arg Gly Leu Ser Leu Ser Ile Glu
        195                 200                 205

Arg Gly Lys Thr Val Ala Phe Val Gly Ser Ser Gly Cys Gly Lys Ser
    210                 215                 220
```

```
Thr Ser Val Gln Leu Leu Gln Arg Leu Tyr Asp Pro Val Gln Gly Gln
225                 230                 235                 240

Val Leu Phe Asp Gly Val Asp Ala Lys Glu Leu Asn Val Gln Trp Leu
                245                 250                 255

Arg Ser Gln Ile Ala Ile Val Pro Gln Glu Pro Val Leu Phe Asn Cys
            260                 265                 270

Ser Ile Ala Glu Asn Ile Ala Tyr Gly Asp Asn Ser Arg Val Val Pro
        275                 280                 285

Leu Asp Glu Ile Lys Glu Ala Ala Asn Ala Ala Asn Ile His Ser Phe
    290                 295                 300

Ile Glu Gly Leu Pro Glu Ser Leu Glu Cys
305                 310


<210> 7653
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1614; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q2M3G0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406730"

<400> 7653
Met Val Asp Glu Asn Asp Ile Arg Ala Leu Asn Val Arg His Tyr Arg
1               5                   10                  15
```

```
Asp His Ile Gly Val Val Ser Gln Glu Pro Val Leu Phe Gly Thr Thr
            20                  25                  30

Ile Ser Asn Asn Ile Lys Tyr Gly Arg Asp Asp Val Thr Asp Glu Glu
        35                  40                  45

Met Glu Arg Ala Ala Arg Glu Ala Asn Ala Tyr Asp Phe Ile Met Glu
    50                  55                  60

Phe Pro Asn Lys Phe Asn Thr Leu Val Gly Glu Lys Gly Ala Gln Met
65                  70                  75                  80

Ser Gly Gly Gln Lys Gln Arg Ile Ala Ile Ala Arg Ala Leu Val Arg
                85                  90                  95

Asn Pro Lys Ile Leu Ile Leu Asp Glu Ala Thr Ser Ala Leu Asp Ser
            100                 105                 110

Glu Ser Lys Ser Ala Val Gln Ala Ala Leu Glu Lys Asp Thr Pro Arg
        115                 120                 125

Tyr Ser Phe
    130


<210> 7654
<211> 842
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1615; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB6; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 6 (Langereis blood group); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NP58; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000265316"

<400> 7654
Met Val Thr Val Gly Asn Tyr Cys Glu Ala Glu Gly Pro Val Gly Pro
1   5   10   15

Ala Trp Met Gln Asp Gly Leu Ser Pro Cys Phe Phe Phe Thr Leu Val
            20   25   30

Pro Ser Thr Arg Met Ala Leu Gly Thr Leu Ala Leu Val Leu Ala Leu
        35   40   45

Pro Cys Arg Arg Arg Glu Arg Pro Ala Gly Ala Asp Ser Leu Ser Trp
    50   55   60

Gly Ala Gly Pro Arg Ile Ser Pro Tyr Val Leu Gln Leu Leu Leu Ala
65   70   75   80

Thr Leu Gln Ala Ala Leu Pro Leu Ala Gly Leu Ala Gly Arg Val Gly
                85   90   95

Thr Ala Arg Gly Ala Pro Leu Pro Ser Tyr Leu Leu Leu Ala Ser Val
            100   105   110

Leu Glu Ser Leu Ala Gly Ala Cys Gly Leu Trp Leu Leu Val Val Glu
        115   120   125

Arg Ser Gln Ala Arg Gln Arg Leu Ala Met Gly Ile Trp Ile Lys Phe
    130   135   140

Arg His Ser Pro Gly Leu Leu Leu Leu Trp Thr Val Ala Phe Ala Ala
145   150   155   160

Glu Asn Leu Ala Leu Val Ser Trp Asn Ser Pro Gln Trp Trp Trp Ala
                165   170   175

Arg Ala Asp Leu Gly Gln Gln Val Gln Phe Ser Leu Trp Val Leu Arg
            180   185   190

Tyr Val Val Ser Gly Gly Leu Phe Val Leu Gly Leu Trp Ala Pro Gly
        195   200   205

```
Leu Arg Pro Gln Ser Tyr Thr Leu Gln Val His Glu Glu Asp Gln Asp
    210                 215                 220

Val Glu Arg Ser Gln Val Arg Ser Ala Ala Gln Gln Ser Thr Trp Arg
225                 230                 235                 240

Asp Phe Gly Arg Lys Leu Arg Leu Leu Ser Gly Tyr Leu Trp Pro Arg
                245                 250                 255

Gly Ser Pro Ala Leu Gln Leu Val Val Leu Ile Cys Leu Gly Leu Met
            260                 265                 270

Gly Leu Glu Arg Ala Leu Asn Val Leu Val Pro Ile Phe Tyr Arg Asn
        275                 280                 285

Ile Val Asn Leu Leu Thr Glu Lys Ala Pro Trp Asn Ser Leu Ala Trp
    290                 295                 300

Thr Val Thr Ser Tyr Val Phe Leu Lys Phe Leu Gln Gly Gly Gly Thr
305                 310                 315                 320

Gly Ser Thr Gly Phe Val Ser Asn Leu Arg Thr Phe Leu Trp Ile Arg
                325                 330                 335

Val Gln Gln Phe Thr Ser Arg Arg Val Glu Leu Leu Ile Phe Ser His
            340                 345                 350

Leu His Glu Leu Ser Leu Arg Trp His Leu Gly Arg Arg Thr Gly Glu
        355                 360                 365

Val Leu Arg Ile Ala Asp Arg Gly Thr Ser Ser Val Thr Gly Leu Leu
    370                 375                 380

Ser Tyr Leu Val Phe Asn Val Ile Pro Thr Leu Ala Asp Ile Ile Ile
385                 390                 395                 400

Gly Ile Ile Tyr Phe Ser Met Phe Phe Asn Ala Trp Phe Gly Leu Ile
                405                 410                 415

Val Phe Leu Cys Met Ser Leu Tyr Leu Thr Leu Thr Ile Val Val Thr
            420                 425                 430
```

```
Glu Trp Arg Thr Lys Phe Arg Arg Ala Met Asn Thr Gln Glu Asn Ala
        435                 440                 445

Thr Arg Ala Arg Ala Val Asp Ser Leu Leu Asn Phe Glu Thr Val Lys
    450                 455                 460

Tyr Tyr Asn Ala Glu Ser Tyr Glu Val Glu Arg Tyr Arg Glu Ala Ile
465                 470                 475                 480

Ile Lys Tyr Gln Gly Leu Glu Trp Lys Ser Ser Ala Ser Leu Val Leu
                485                 490                 495

Leu Asn Gln Thr Gln Asn Leu Val Ile Gly Leu Gly Leu Leu Ala Gly
            500                 505                 510

Ser Leu Leu Cys Ala Tyr Phe Val Thr Glu Gln Lys Leu Gln Val Gly
        515                 520                 525

Asp Tyr Val Leu Phe Gly Thr Tyr Ile Ile Gln Leu Tyr Met Pro Leu
    530                 535                 540

Asn Trp Phe Gly Thr Tyr Tyr Arg Met Ile Gln Thr Asn Phe Ile Asp
545                 550                 555                 560

Met Glu Asn Met Phe Asp Leu Leu Lys Glu Glu Thr Glu Val Lys Asp
                565                 570                 575

Leu Pro Gly Ala Gly Pro Leu Arg Phe Gln Lys Gly Arg Ile Glu Phe
            580                 585                 590

Glu Asn Val His Phe Ser Tyr Ala Asp Gly Arg Glu Thr Leu Gln Asp
        595                 600                 605

Val Ser Phe Thr Val Met Pro Gly Gln Thr Leu Ala Leu Val Gly Pro
    610                 615                 620

Ser Gly Ala Gly Lys Ser Thr Ile Leu Arg Leu Leu Phe Arg Phe Tyr
625                 630                 635                 640

Asp Ile Ser Ser Gly Cys Ile Arg Ile Asp Gly Gln Asp Ile Ser Gln
                645                 650                 655

Val Thr Gln Ala Ser Leu Arg Ser His Ile Gly Val Val Pro Gln Asp
```

660 665 670

Thr Val Leu Phe Asn Asp Thr Ile Ala Asp Asn Ile Arg Tyr Gly Arg
675 680 685

Val Thr Ala Gly Asn Asp Glu Val Glu Ala Ala Ala Gln Ala Ala Gly
690 695 700

Ile His Asp Ala Ile Met Ala Phe Pro Glu Gly Tyr Arg Thr Gln Val
705 710 715 720

Gly Glu Arg Gly Leu Lys Leu Ser Gly Gly Glu Lys Gln Arg Val Ala
725 730 735

Ile Ala Arg Thr Ile Leu Lys Ala Pro Gly Ile Ile Leu Leu Asp Glu
740 745 750

Ala Thr Ser Ala Leu Asp Thr Ser Asn Glu Arg Ala Ile Gln Ala Ser
755 760 765

Leu Ala Lys Val Cys Ala Asn Arg Thr Thr Ile Val Val Ala His Arg
770 775 780

Leu Ser Thr Val Val Asn Ala Asp Gln Ile Leu Val Ile Lys Asp Gly
785 790 795 800

Cys Ile Val Glu Arg Gly Arg His Glu Ala Leu Leu Ser Arg Gly Gly
805 810 815

Val Tyr Ala Asp Met Trp Gln Leu Gln Gln Gly Gln Glu Glu Thr Ser
820 825 830

Glu Asp Thr Lys Pro Gln Thr Met Glu Arg
835 840

<210> 7655
<211> 690
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1615; "

<220>

<221> source
<223> /note="Gene Symbol: ABCB6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 6 (Langereis blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295750"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7655

```
Xaa Leu Leu Ala Ser Val Leu Glu Ser Leu Ala Gly Ala Cys Gly Leu
1               5                  10                  15

Trp Leu Leu Val Val Glu Arg Ser Gln Ala Arg Gln Arg Leu Ala Met
            20                  25                  30

Gly Ile Trp Ile Lys Phe Arg His Ser Pro Gly Leu Leu Leu Leu Trp
        35                  40                  45

Thr Val Ala Phe Ala Ala Glu Asn Leu Ala Leu Val Ser Trp Asn Ser
    50                  55                  60

Pro Gln Trp Trp Trp Ala Arg Ala Asp Leu Gly Gln Gln Val Arg Ser
65                  70                  75                  80

Ala Ala Gln Gln Ser Thr Trp Arg Asp Phe Gly Arg Lys Leu Arg Leu
                85                  90                  95

Leu Ser Gly Tyr Leu Trp Pro Arg Gly Ser Pro Ala Leu Gln Leu Val
            100                 105                 110

Val Leu Ile Cys Leu Gly Leu Met Gly Leu Glu Arg Ala Leu Asn Val
        115                 120                 125

Leu Val Pro Ile Phe Tyr Arg Asn Ile Val Asn Leu Leu Thr Glu Lys
    130                 135                 140
```

```
Ala Pro Trp Asn Ser Leu Ala Trp Thr Val Thr Ser Tyr Val Phe Leu
145                 150                 155                 160

Lys Phe Leu Gln Gly Gly Gly Thr Gly Ser Thr Gly Phe Val Ser Asn
                165                 170                 175

Leu Arg Thr Phe Leu Trp Ile Arg Val Gln Gln Phe Thr Ser Arg Arg
            180                 185                 190

Val Glu Leu Leu Ile Phe Ser His Leu His Glu Leu Ser Leu Arg Trp
        195                 200                 205

His Leu Gly Arg Arg Thr Gly Glu Val Leu Arg Ile Ala Asp Arg Gly
    210                 215                 220

Thr Ser Ser Val Thr Gly Leu Leu Ser Tyr Leu Val Phe Asn Val Ile
225                 230                 235                 240

Pro Thr Leu Ala Asp Ile Ile Ile Gly Ile Ile Tyr Phe Ser Met Phe
                245                 250                 255

Phe Asn Ala Trp Phe Gly Leu Ile Val Phe Leu Cys Met Ser Leu Tyr
            260                 265                 270

Leu Thr Leu Thr Ile Val Val Thr Glu Trp Arg Thr Lys Phe Arg Arg
        275                 280                 285

Ala Met Asn Thr Gln Glu Asn Ala Thr Arg Ala Arg Ala Val Asp Ser
    290                 295                 300

Leu Leu Asn Phe Glu Thr Val Lys Tyr Tyr Asn Ala Glu Ser Tyr Glu
305                 310                 315                 320

Val Glu Arg Tyr Arg Glu Ala Ile Ile Lys Tyr Gln Gly Leu Glu Trp
                325                 330                 335

Lys Ser Ser Ala Ser Leu Val Leu Leu Asn Gln Thr Gln Asn Leu Val
            340                 345                 350

Ile Gly Leu Gly Leu Leu Ala Gly Ser Leu Leu Cys Ala Tyr Phe Val
        355                 360                 365

Thr Glu Gln Lys Leu Gln Val Gly Asp Tyr Val Leu Phe Gly Thr Tyr
```

370 375 380

Ile Ile Gln Leu Tyr Met Pro Leu Asn Trp Phe Gly Thr Tyr Tyr Arg
385 390 395 400

Met Ile Gln Thr Asn Phe Ile Asp Met Glu Asn Met Phe Asp Leu Leu
405 410 415

Lys Glu Glu Thr Glu Val Lys Asp Leu Pro Gly Ala Gly Pro Leu Arg
420 425 430

Phe Gln Lys Gly Arg Ile Glu Phe Glu Asn Val His Phe Ser Tyr Ala
435 440 445

Asp Gly Arg Glu Thr Leu Gln Asp Val Ser Phe Thr Val Met Pro Gly
450 455 460

Gln Thr Leu Ala Leu Val Gly Pro Ser Gly Ala Gly Lys Ser Thr Ile
465 470 475 480

Leu Arg Leu Leu Phe Arg Phe Tyr Asp Ile Ser Ser Gly Cys Ile Arg
485 490 495

Ile Asp Gly Gln Asp Ile Ser Gln Val Thr Gln Ala Ser Leu Arg Ser
500 505 510

His Ile Gly Val Val Pro Gln Asp Thr Val Leu Phe Asn Asp Thr Ile
515 520 525

Ala Asp Asn Ile Arg Tyr Gly Arg Val Thr Ala Gly Asn Asp Glu Val
530 535 540

Glu Ala Ala Ala Gln Ala Ala Gly Ile His Asp Ala Ile Met Ala Phe
545 550 555 560

Pro Glu Gly Tyr Arg Thr Gln Val Gly Glu Arg Gly Leu Lys Leu Ser
565 570 575

Gly Gly Glu Lys Gln Arg Val Ala Ile Ala Arg Thr Ile Leu Lys Ala
580 585 590

Pro Gly Ile Ile Leu Leu Asp Glu Ala Thr Ser Ala Leu Asp Thr Ser
595 600 605

```
Asn Glu Arg Ala Ile Gln Ala Ser Leu Ala Lys Val Cys Ala Asn Arg
    610                 615                 620

Thr Thr Ile Val Val Ala His Arg Leu Ser Thr Val Val Asn Ala Asp
625                 630                 635                 640

Gln Ile Leu Val Ile Lys Asp Gly Cys Ile Val Glu Arg Gly Arg His
                645                 650                 655

Glu Ala Leu Leu Ser Arg Gly Gly Val Tyr Ala Asp Met Trp Gln Leu
            660                 665                 670

Gln Gln Gly Gln Glu Glu Thr Ser Glu Asp Thr Lys Pro Gln Thr Met
        675                 680                 685

Glu Arg
    690
```

<210> 7656
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1615; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 6 (Langereis blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392988"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7656

```
Xaa Ala Ala Leu Pro Leu Ala Gly Leu Ala Gly Arg Val Gly Thr Ala
1               5                   10                  15

Arg Gly Ala Pro Leu Pro Ser Tyr Leu Leu Leu Ala Ser Val Leu Glu
            20                  25                  30

Ser Leu Ala Gly Ala Cys Gly Leu Trp Leu Leu Val Val Glu Arg Ser
        35                  40                  45

Gln Ala Arg Gln Arg Leu Ala Met Gly Ile Trp Ile Lys Phe Arg His
    50                  55                  60

Ser Pro Gly Leu Leu Leu Leu Trp Thr Val Ala Phe Ala Ala Glu Asn
65                  70                  75                  80

Leu Ala Leu Val Ser Trp Asn Ser Pro Gln Trp Trp Trp Ala Arg Ala
                85                  90                  95

Asp Leu Gly Gln Gln Val Gln Phe Ser Leu Trp Val Leu Arg Tyr Val
            100                 105                 110

Val Ser Gly Gly Leu Phe Val Leu Gly Leu Trp Ala Pro Gly Leu Arg
        115                 120                 125

Pro Gln Ser Tyr Thr Leu Gln Val His Glu Glu Asp Gln Asp Val Glu
    130                 135                 140

Arg Ser Gln
145
```

<210> 7657
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1615; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family

B (MDR/TAP),
member 6 (Langereis blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401811"

<400> 7657
Asn Leu Ala Leu Val Ser Trp Asn Ser Pro Gln Trp Trp Trp Ala Arg
1 5 10 15

Ala Asp Leu Gly Gln Gln Val Gln Phe Ser Leu Trp Val Leu Arg Tyr
20 25 30

Val Val Ser Gly Gly Leu Phe Val Leu Gly Leu Trp Ala Pro Gly Leu
35 40 45

Arg Pro Gln Ser Tyr Thr Leu Gln Val His Glu Glu Asp Gln Asp Val
50 55 60

Glu Arg Ser Gln
65

<210> 7658
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1615; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 6 (Langereis blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404006"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7658
Xaa Gly Pro Arg Ile Ser Pro Tyr Val Leu Gln Leu Leu Leu Ala Thr
1 5 10 15

Leu Gln Ala Ala Leu Pro Leu Ala Gly Leu Ala Gly Arg Val Gly Thr
20 25 30

Ala Arg Gly Ala Pro Leu Pro Ser Tyr Leu Leu Leu Ala Ser Val Leu
35 40 45

Glu Ser Leu Ala Gly Ala Cys Gly Leu Trp Leu Leu Val Val Glu Arg
50 55 60

Ser Gln Ala Arg Gln Arg Leu Ala Met Gly Ile Trp Ile Lys Phe Arg
65 70 75 80

His Ser Pro Gly Leu Leu Leu Leu Trp Thr Val Ala Phe Ala Ala Glu
85 90 95

Asn Leu Ala Leu Val Ser Trp Asn Ser Pro Gln Trp Trp Trp Ala Arg
100 105 110

Ala Asp Leu Gly Gln Gln Pro
115

<210> 7659
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1615; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 6 (Langereis blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414646"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7659
Xaa Ala Asp Asn Ile Arg Tyr Gly Arg Val Thr Ala Gly Asn Asp Glu
1   5   10   15

Val Glu Ala Ala Ala Gln Ala Ala Gly Ile His Asp Ala Ile Met Ala
            20   25   30

Phe Pro Glu Glu Thr Cys Gly Gly
        35   40

<210> 7660
<211> 753
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="Uniprot ID: O75027; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000253577"

<400> 7660
Met Ala Leu Leu Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala
1   5   10   15

Ala Phe Glu Lys Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val
            20   25   30

```
Ser Val Ser Gly Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala
        35                  40                  45

Leu Gly Thr Ala Arg Ala Tyr Gln Gln Ile Pro Glu Ser Leu Lys Ser
    50                  55                  60

Ile Thr Trp Gln Arg Leu Gly Lys Gly Asn Ser Gly Gln Phe Leu Asp
65                  70                  75                  80

Ala Ala Lys Ala Leu Gln Val Trp Pro Leu Ile Glu Lys Arg Thr Cys
                85                  90                  95

Trp His Gly His Ala Gly Gly Gly Leu His Thr Asp Pro Lys Glu Gly
            100                 105                 110

Leu Lys Asp Val Asp Thr Arg Lys Ile Ile Lys Ala Met Leu Ser Tyr
        115                 120                 125

Val Trp Pro Lys Asp Arg Pro Asp Leu Arg Ala Arg Val Ala Ile Ser
    130                 135                 140

Leu Gly Phe Leu Gly Gly Ala Lys Ala Met Asn Ile Val Val Pro Phe
145                 150                 155                 160

Met Phe Lys Tyr Ala Val Asp Ser Leu Asn Gln Met Ser Gly Asn Met
                165                 170                 175

Leu Asn Leu Ser Asp Ala Pro Asn Thr Val Ala Thr Met Ala Thr Ala
            180                 185                 190

Val Leu Ile Gly Tyr Gly Val Ser Arg Ala Gly Ala Ala Phe Phe Asn
        195                 200                 205

Glu Val Arg Asn Ala Val Phe Gly Lys Val Ala Gln Asn Ser Ile Arg
    210                 215                 220

Arg Ile Ala Lys Asn Val Phe Leu His Leu His Asn Leu Asp Leu Gly
225                 230                 235                 240

Phe His Leu Ser Arg Gln Thr Gly Ala Leu Ser Lys Ala Ile Asp Arg
                245                 250                 255

Gly Thr Arg Gly Ile Ser Phe Val Leu Ser Ala Leu Val Phe Asn Leu
```

260 265 270

Leu Pro Ile Met Phe Glu Val Met Leu Val Ser Gly Val Leu Tyr Tyr
275 280 285

Lys Cys Gly Ala Gln Phe Ala Leu Val Thr Leu Gly Thr Leu Gly Thr
290 295 300

Tyr Thr Ala Phe Thr Val Ala Val Thr Arg Trp Arg Thr Arg Phe Arg
305 310 315 320

Ile Glu Met Asn Lys Ala Asp Asn Asp Ala Gly Asn Ala Ala Ile Asp
325 330 335

Ser Leu Leu Asn Tyr Glu Thr Val Lys Tyr Phe Asn Asn Glu Arg Tyr
340 345 350

Glu Ala Gln Arg Tyr Asp Gly Phe Leu Lys Thr Tyr Glu Thr Ala Ser
355 360 365

Leu Lys Ser Thr Ser Thr Leu Ala Met Leu Asn Phe Gly Gln Ser Ala
370 375 380

Ile Phe Ser Val Gly Leu Thr Ala Ile Met Val Leu Ala Ser Gln Gly
385 390 395 400

Ile Val Ala Gly Thr Leu Thr Val Gly Asp Leu Val Met Val Asn Gly
405 410 415

Leu Leu Phe Gln Leu Ser Leu Pro Leu Asn Phe Leu Gly Thr Val Tyr
420 425 430

Arg Glu Thr Arg Gln Ala Leu Ile Asp Met Asn Thr Leu Phe Thr Leu
435 440 445

Leu Lys Val Asp Thr Gln Ile Lys Asp Lys Val Met Ala Ser Pro Leu
450 455 460

Gln Ile Thr Pro Gln Thr Ala Thr Val Ala Phe Asp Asn Val His Phe
465 470 475 480

Glu Tyr Ile Glu Gly Gln Lys Val Leu Ser Gly Ile Ser Phe Glu Val
485 490 495

```
Pro Ala Gly Lys Lys Val Ala Ile Val Gly Gly Ser Gly Ser Gly Lys
            500                 505                 510

Ser Thr Ile Val Arg Leu Leu Phe Arg Phe Tyr Glu Pro Gln Lys Gly
        515                 520                 525

Ser Ile Tyr Leu Ala Gly Gln Asn Ile Gln Asp Val Ser Leu Glu Ser
    530                 535                 540

Leu Arg Arg Ala Val Gly Val Val Pro Gln Asp Ala Val Leu Phe His
545                 550                 555                 560

Asn Thr Ile Tyr Tyr Asn Leu Leu Tyr Gly Asn Ile Ser Ala Ser Pro
                565                 570                 575

Glu Glu Val Tyr Ala Val Ala Lys Leu Ala Gly Leu His Asp Ala Ile
            580                 585                 590

Leu Arg Met Pro His Gly Tyr Asp Thr Gln Val Gly Glu Arg Gly Leu
        595                 600                 605

Lys Leu Ser Gly Gly Glu Lys Gln Arg Val Ala Ile Ala Arg Ala Ile
    610                 615                 620

Leu Lys Asp Pro Pro Val Ile Leu Tyr Asp Glu Ala Thr Ser Ser Leu
625                 630                 635                 640

Asp Ser Ile Thr Glu Glu Thr Ile Leu Gly Ala Met Lys Asp Val Val
                645                 650                 655

Lys His Arg Thr Ser Ile Phe Ile Ala His Arg Leu Ser Thr Val Val
            660                 665                 670

Asp Ala Asp Glu Ile Ile Val Leu Asp Gln Gly Lys Val Ala Glu Arg
        675                 680                 685

Gly Thr His His Gly Leu Leu Ala Asn Pro His Ser Ile Tyr Ser Glu
    690                 695                 700

Met Trp His Thr Gln Ser Ser Arg Val Gln Asn His Asp Asn Pro Lys
705                 710                 715                 720
```

```
Trp Glu Ala Lys Lys Glu Asn Ile Ser Lys Glu Glu Glu Arg Lys Lys
                725                 730                 735

Leu Gln Glu Glu Ile Val Asn Ser Val Lys Gly Cys Gly Asn Cys Ser
            740                 745                 750

Cys
```

<210> 7661
<211> 712
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="Uniprot ID: O75027; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000343849"

<400> 7661

```
Met Ala Leu Leu Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala
1               5                  10                  15

Ala Phe Glu Lys Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val
            20                  25                  30

Ser Val Ser Gly Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala
        35                  40                  45

Leu Gly Thr Ala Arg Ala Tyr Gln Ile Pro Glu Ser Leu Lys Ser Ile
    50                  55                  60
```

```
Thr Trp Gln Arg Leu Gly Lys Gly Asn Ser Gly Gln Phe Leu Asp Ala
65                  70                  75                  80

Ala Lys Ala Leu Gln Val Trp Pro Leu Ile Glu Lys Arg Thr Cys Trp
                85                  90                  95

His Gly His Ala Gly Gly Gly Leu His Thr Asp Pro Lys Glu Gly Ala
            100                 105                 110

Met Asn Ile Val Val Pro Phe Met Phe Lys Tyr Ala Val Asp Ser Leu
        115                 120                 125

Asn Gln Met Ser Gly Asn Met Leu Asn Leu Ser Asp Ala Pro Asn Thr
    130                 135                 140

Val Ala Thr Met Ala Thr Ala Val Leu Ile Gly Tyr Gly Val Ser Arg
145                 150                 155                 160

Ala Gly Ala Ala Phe Phe Asn Glu Val Arg Asn Ala Val Phe Gly Lys
                165                 170                 175

Val Ala Gln Asn Ser Ile Arg Arg Ile Ala Lys Asn Val Phe Leu His
            180                 185                 190

Leu His Asn Leu Asp Leu Gly Phe His Leu Ser Arg Gln Thr Gly Ala
        195                 200                 205

Leu Ser Lys Ala Ile Asp Arg Gly Thr Arg Gly Ile Ser Phe Val Leu
    210                 215                 220

Ser Ala Leu Val Phe Asn Leu Leu Pro Ile Met Phe Glu Val Met Leu
225                 230                 235                 240

Val Ser Gly Val Leu Tyr Tyr Lys Cys Gly Ala Gln Phe Ala Leu Val
                245                 250                 255

Thr Leu Gly Thr Leu Gly Thr Tyr Thr Ala Phe Thr Val Ala Val Thr
            260                 265                 270

Arg Trp Arg Thr Arg Phe Arg Ile Glu Met Asn Lys Ala Asp Asn Asp
        275                 280                 285
```

```
Ala Gly Asn Ala Ala Ile Asp Ser Leu Leu Asn Tyr Glu Thr Val Lys
    290                 295                 300

Tyr Phe Asn Asn Glu Arg Tyr Glu Ala Gln Arg Tyr Asp Gly Phe Leu
305                 310                 315                 320

Lys Thr Tyr Glu Thr Ala Ser Leu Lys Ser Thr Ser Thr Leu Ala Met
                325                 330                 335

Leu Asn Phe Gly Gln Ser Ala Ile Phe Ser Val Gly Leu Thr Ala Ile
            340                 345                 350

Met Val Leu Ala Ser Gln Gly Ile Val Ala Gly Thr Leu Thr Val Gly
        355                 360                 365

Asp Leu Val Met Val Asn Gly Leu Leu Phe Gln Leu Ser Leu Pro Leu
    370                 375                 380

Asn Phe Leu Gly Thr Val Tyr Arg Glu Thr Arg Gln Ala Leu Ile Asp
385                 390                 395                 400

Met Asn Thr Leu Phe Thr Leu Leu Lys Val Asp Thr Gln Ile Lys Asp
                405                 410                 415

Lys Val Met Ala Ser Pro Leu Gln Ile Thr Pro Gln Thr Ala Thr Val
            420                 425                 430

Ala Phe Asp Asn Val His Phe Glu Tyr Ile Glu Gly Gln Lys Val Leu
        435                 440                 445

Ser Gly Ile Ser Phe Glu Val Pro Ala Gly Lys Lys Val Ala Ile Val
    450                 455                 460

Gly Gly Ser Gly Ser Gly Lys Ser Thr Ile Val Arg Leu Leu Phe Arg
465                 470                 475                 480

Phe Tyr Glu Pro Gln Lys Gly Ser Ile Tyr Leu Ala Gly Gln Asn Ile
                485                 490                 495

Gln Asp Val Ser Leu Glu Ser Leu Arg Arg Ala Val Gly Val Val Pro
            500                 505                 510

Gln Asp Ala Val Leu Phe His Asn Thr Ile Tyr Tyr Asn Leu Leu Tyr
```

515 520 525

Gly Asn Ile Ser Ala Ser Pro Glu Glu Val Tyr Ala Val Ala Lys Leu
530 535 540

Ala Gly Leu His Asp Ala Ile Leu Arg Met Pro His Gly Tyr Asp Thr
545 550 555 560

Gln Val Gly Glu Arg Gly Leu Lys Leu Ser Gly Gly Glu Lys Gln Arg
565 570 575

Val Ala Ile Ala Arg Ala Ile Leu Lys Asp Pro Pro Val Ile Leu Tyr
580 585 590

Asp Glu Ala Thr Ser Ser Leu Asp Ser Ile Thr Glu Glu Thr Ile Leu
595 600 605

Gly Ala Met Lys Asp Val Val Lys His Arg Thr Ser Ile Phe Ile Ala
610 615 620

His Arg Leu Ser Thr Val Val Asp Ala Asp Glu Ile Ile Val Leu Asp
625 630 635 640

Gln Gly Lys Val Ala Glu Arg Gly Thr His His Gly Leu Leu Ala Asn
645 650 655

Pro His Ser Ile Tyr Ser Glu Met Trp His Thr Gln Ser Ser Arg Val
660 665 670

Gln Asn His Asp Asn Pro Lys Trp Glu Ala Lys Lys Glu Asn Ile Ser
675 680 685

Lys Glu Glu Glu Arg Lys Lys Leu Gln Glu Glu Ile Val Asn Ser Val
690 695 700

Lys Gly Cys Gly Asn Cys Ser Cys
705 710

<210> 7662
<211> 752
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="Uniprot ID: O75027; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362492"

<400> 7662

```
Met Ala Leu Leu Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala
1               5                   10                  15

Ala Phe Glu Lys Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val
            20                  25                  30

Ser Val Ser Gly Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala
        35                  40                  45

Leu Gly Thr Ala Arg Ala Tyr Gln Ile Pro Glu Ser Leu Lys Ser Ile
    50                  55                  60

Thr Trp Gln Arg Leu Gly Lys Gly Asn Ser Gly Gln Phe Leu Asp Ala
65                  70                  75                  80

Ala Lys Ala Leu Gln Val Trp Pro Leu Ile Glu Lys Arg Thr Cys Trp
                85                  90                  95

His Gly His Ala Gly Gly Gly Leu His Thr Asp Pro Lys Glu Gly Leu
            100                 105                 110

Lys Asp Val Asp Thr Arg Lys Ile Ile Lys Ala Met Leu Ser Tyr Val
        115                 120                 125

Trp Pro Lys Asp Arg Pro Asp Leu Arg Ala Arg Val Ala Ile Ser Leu
    130                 135                 140
```

```
Gly Phe Leu Gly Gly Ala Lys Ala Met Asn Ile Val Val Pro Phe Met
145                 150                 155                 160

Phe Lys Tyr Ala Val Asp Ser Leu Asn Gln Met Ser Gly Asn Met Leu
                165                 170                 175

Asn Leu Ser Asp Ala Pro Asn Thr Val Ala Thr Met Ala Thr Ala Val
            180                 185                 190

Leu Ile Gly Tyr Gly Val Ser Arg Ala Gly Ala Ala Phe Phe Asn Glu
        195                 200                 205

Val Arg Asn Ala Val Phe Gly Lys Val Ala Gln Asn Ser Ile Arg Arg
    210                 215                 220

Ile Ala Lys Asn Val Phe Leu His Leu His Asn Leu Asp Leu Gly Phe
225                 230                 235                 240

His Leu Ser Arg Gln Thr Gly Ala Leu Ser Lys Ala Ile Asp Arg Gly
                245                 250                 255

Thr Arg Gly Ile Ser Phe Val Leu Ser Ala Leu Val Phe Asn Leu Leu
            260                 265                 270

Pro Ile Met Phe Glu Val Met Leu Val Ser Gly Val Leu Tyr Tyr Lys
        275                 280                 285

Cys Gly Ala Gln Phe Ala Leu Val Thr Leu Gly Thr Leu Gly Thr Tyr
    290                 295                 300

Thr Ala Phe Thr Val Ala Val Thr Arg Trp Arg Thr Arg Phe Arg Ile
305                 310                 315                 320

Glu Met Asn Lys Ala Asp Asn Asp Ala Gly Asn Ala Ala Ile Asp Ser
                325                 330                 335

Leu Leu Asn Tyr Glu Thr Val Lys Tyr Phe Asn Asn Glu Arg Tyr Glu
            340                 345                 350

Ala Gln Arg Tyr Asp Gly Phe Leu Lys Thr Tyr Glu Thr Ala Ser Leu
        355                 360                 365
```

```
Lys Ser Thr Ser Thr Leu Ala Met Leu Asn Phe Gly Gln Ser Ala Ile
    370                 375                 380

Phe Ser Val Gly Leu Thr Ala Ile Met Val Leu Ala Ser Gln Gly Ile
385                 390                 395                 400

Val Ala Gly Thr Leu Thr Val Gly Asp Leu Val Met Val Asn Gly Leu
                405                 410                 415

Leu Phe Gln Leu Ser Leu Pro Leu Asn Phe Leu Gly Thr Val Tyr Arg
            420                 425                 430

Glu Thr Arg Gln Ala Leu Ile Asp Met Asn Thr Leu Phe Thr Leu Leu
        435                 440                 445

Lys Val Asp Thr Gln Ile Lys Asp Lys Val Met Ala Ser Pro Leu Gln
    450                 455                 460

Ile Thr Pro Gln Thr Ala Thr Val Ala Phe Asp Asn Val His Phe Glu
465                 470                 475                 480

Tyr Ile Glu Gly Gln Lys Val Leu Ser Gly Ile Ser Phe Glu Val Pro
                485                 490                 495

Ala Gly Lys Lys Val Ala Ile Val Gly Gly Ser Gly Ser Gly Lys Ser
            500                 505                 510

Thr Ile Val Arg Leu Leu Phe Arg Phe Tyr Glu Pro Gln Lys Gly Ser
        515                 520                 525

Ile Tyr Leu Ala Gly Gln Asn Ile Gln Asp Val Ser Leu Glu Ser Leu
    530                 535                 540

Arg Arg Ala Val Gly Val Val Pro Gln Asp Ala Val Leu Phe His Asn
545                 550                 555                 560

Thr Ile Tyr Tyr Asn Leu Leu Tyr Gly Asn Ile Ser Ala Ser Pro Glu
                565                 570                 575

Glu Val Tyr Ala Val Ala Lys Leu Ala Gly Leu His Asp Ala Ile Leu
            580                 585                 590
```

```
Arg Met Pro His Gly Tyr Asp Thr Gln Val Gly Glu Arg Gly Leu Lys
        595                 600                 605

Leu Ser Gly Gly Glu Lys Gln Arg Val Ala Ile Ala Arg Ala Ile Leu
    610                 615                 620

Lys Asp Pro Pro Val Ile Leu Tyr Asp Glu Ala Thr Ser Ser Leu Asp
625                 630                 635                 640

Ser Ile Thr Glu Glu Thr Ile Leu Gly Ala Met Lys Asp Val Val Lys
                645                 650                 655

His Arg Thr Ser Ile Phe Ile Ala His Arg Leu Ser Thr Val Val Asp
            660                 665                 670

Ala Asp Glu Ile Ile Val Leu Asp Gln Gly Lys Val Ala Glu Arg Gly
        675                 680                 685

Thr His His Gly Leu Leu Ala Asn Pro His Ser Ile Tyr Ser Glu Met
    690                 695                 700

Trp His Thr Gln Ser Ser Arg Val Gln Asn His Asp Asn Pro Lys Trp
705                 710                 715                 720

Glu Ala Lys Lys Glu Asn Ile Ser Lys Glu Glu Glu Arg Lys Lys Leu
                725                 730                 735

Gln Glu Glu Ile Val Asn Ser Val Lys Gly Cys Gly Asn Cys Ser Cys
            740                 745                 750


<210> 7663
<211> 171
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
```

B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432813"

<400> 7663
Met Glu Arg Gly Glu Arg Asp Ile Glu Leu Glu Glu Met Ala Leu Leu
1 5 10 15

Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala Ala Phe Glu Lys
20 25 30

Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val Ser Val Ser Gly
35 40 45

Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala Leu Gly Thr Ala
50 55 60

Arg Ala Tyr Gln Gln Ile Pro Glu Ser Leu Lys Ser Ile Thr Trp Gln
65 70 75 80

Arg Leu Gly Lys Gly Asn Ser Gly Gln Phe Leu Asp Ala Ala Lys Ala
85 90 95

Leu Gln Val Trp Pro Leu Ile Glu Lys Arg Thr Cys Trp His Gly His
100 105 110

Ala Gly Gly Gly Leu His Thr Asp Pro Lys Glu Gly Leu Lys Asp Val
115 120 125

Asp Thr Arg Lys Ile Ile Lys Ala Met Leu Ser Tyr Val Trp Pro Lys
130 135 140

Asp Arg Pro Asp Leu Arg Ala Arg Val Ala Ile Ser Leu Gly Phe Leu
145 150 155 160

Gly Gly Ala Lys Ala Met Asn Ile Val Val Pro
165 170

<210> 7664
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435521"

<400> 7664
Met Ala Leu Leu Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala
1 5 10 15

Ala Phe Glu Lys Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val
20 25 30

Ser Val Ser Gly Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala
35 40 45

Leu Gly Thr Ala Arg Ala Tyr Gln Leu Lys Asp Val Asp Thr Arg Lys
50 55 60

Ile Ile Lys Ala Met Leu Ser Tyr Val Trp Pro Lys Asp Arg Pro Asp
65 70 75 80

Leu Arg Ala Arg Val Ala Ile Ser Leu Gly Phe Leu Gly Gly Ala Lys
85 90 95

Ala Met Asn Ile Val Val Pro Phe Met Phe Lys Tyr Ala Val Asp Ser
100 105 110

Leu Asn Gln Met Ser Gly Asn Met Leu Asn Leu Ser Asp Ala Pro Asn
115 120 125

Thr Val Ala Thr Met Ala Thr Ala Val Leu Ile Gly Tyr Gly Val Ser
130 135 140

Arg Ala Gly Ala Ala Phe Phe Asn Glu Val Arg Asn Ala Val Phe Gly

145 150 155 160

Lys Val Ala Gln Asn Ser Ile Arg Arg Ile Ala Lys Asn Val Phe Leu
165 170 175

His Leu His Asn Leu Asp Leu Gly Phe His Leu Ser
180 185

<210> 7665
<211> 702
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436586"

<400> 7665
Met Ala Leu Leu Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala
1 5 10 15

Ala Phe Glu Lys Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val
20 25 30

Ser Val Ser Gly Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala
35 40 45

Leu Gly Thr Ala Arg Ala Tyr Gln Ala Leu Gln Val Trp Pro Leu Ile
50 55 60

Glu Lys Arg Thr Cys Trp His Gly His Ala Gly Gly Gly Leu His Thr
65 70 75 80

Asp Pro Lys Glu Gly Leu Lys Asp Val Asp Thr Arg Lys Ile Ile Lys

```
                85                  90                  95

Ala Met Leu Ser Tyr Val Trp Pro Lys Asp Arg Pro Asp Leu Arg Ala
            100                 105                 110

Arg Val Ala Ile Ser Leu Gly Phe Leu Gly Gly Ala Lys Ala Met Asn
        115                 120                 125

Ile Val Val Pro Phe Met Phe Lys Tyr Ala Val Asp Ser Leu Asn Gln
    130                 135                 140

Met Ser Gly Asn Met Leu Asn Leu Ser Asp Ala Pro Asn Thr Val Ala
145                 150                 155                 160

Thr Met Ala Thr Ala Val Leu Ile Gly Tyr Gly Val Ser Arg Ala Gly
                165                 170                 175

Ala Ala Phe Phe Asn Glu Val Arg Asn Ala Val Phe Gly Lys Val Ala
            180                 185                 190

Gln Asn Ser Ile Arg Arg Ile Ala Lys Asn Val Phe Leu His Leu His
        195                 200                 205

Asn Leu Asp Leu Gly Phe His Leu Ser Arg Gln Thr Gly Ala Leu Ser
    210                 215                 220

Lys Ala Ile Asp Arg Gly Thr Arg Gly Ile Ser Phe Val Leu Ser Ala
225                 230                 235                 240

Leu Val Phe Asn Leu Leu Pro Ile Met Phe Glu Val Met Leu Val Ser
                245                 250                 255

Gly Val Leu Tyr Tyr Lys Cys Gly Ala Gln Phe Ala Leu Val Thr Leu
            260                 265                 270

Gly Thr Leu Gly Thr Tyr Thr Ala Phe Thr Val Ala Val Thr Arg Trp
        275                 280                 285

Arg Thr Arg Phe Arg Ile Glu Met Asn Lys Ala Asp Asn Asp Ala Gly
    290                 295                 300

Asn Ala Ala Ile Asp Ser Leu Leu Asn Tyr Glu Thr Val Lys Tyr Phe
305                 310                 315                 320
```

```
Asn Asn Glu Arg Tyr Glu Ala Gln Arg Tyr Asp Gly Phe Leu Lys Thr
                325                 330                 335

Tyr Glu Thr Ala Ser Leu Lys Ser Thr Ser Thr Leu Ala Met Leu Asn
            340                 345                 350

Phe Gly Gln Ser Ala Ile Phe Ser Val Gly Leu Thr Ala Ile Met Val
        355                 360                 365

Leu Ala Ser Gln Gly Ile Val Ala Gly Thr Leu Thr Val Gly Asp Leu
    370                 375                 380

Val Met Val Asn Gly Leu Leu Phe Gln Leu Ser Leu Pro Leu Asn Phe
385                 390                 395                 400

Leu Gly Thr Val Tyr Arg Glu Thr Arg Gln Ala Leu Ile Asp Met Asn
                405                 410                 415

Thr Leu Phe Thr Leu Leu Lys Val Asp Thr Gln Ile Lys Asp Lys Val
            420                 425                 430

Met Ala Ser Pro Leu Gln Ile Thr Pro Gln Thr Ala Thr Val Ala Phe
        435                 440                 445

Asp Asn Val His Phe Glu Tyr Ile Glu Gly Gln Lys Val Leu Ser Gly
    450                 455                 460

Ile Ser Phe Glu Val Pro Ala Gly Lys Lys Val Ala Ile Val Gly Gly
465                 470                 475                 480

Ser Gly Ser Gly Lys Ser Thr Ile Val Arg Leu Leu Phe Arg Phe Tyr
                485                 490                 495

Glu Pro Gln Lys Gly Ser Ile Tyr Leu Ala Gly Gln Asn Ile Gln Asp
            500                 505                 510

Val Ser Leu Glu Ser Leu Arg Arg Ala Val Gly Val Val Pro Gln Asp
        515                 520                 525

Ala Val Leu Phe His Asn Thr Ile Tyr Tyr Asn Leu Leu Tyr Gly Asn
    530                 535                 540
```

```
Ile Ser Ala Ser Pro Glu Glu Val Tyr Ala Val Ala Lys Leu Ala Gly
545                 550                 555                 560

Leu His Asp Ala Ile Leu Arg Met Pro His Gly Tyr Asp Thr Gln Val
                565                 570                 575

Gly Glu Arg Gly Leu Lys Leu Ser Gly Gly Glu Lys Gln Arg Val Ala
            580                 585                 590

Ile Ala Arg Ala Ile Leu Lys Asp Pro Pro Val Ile Leu Tyr Asp Glu
        595                 600                 605

Ala Thr Ser Ser Leu Asp Ser Ile Thr Glu Glu Thr Ile Leu Gly Ala
    610                 615                 620

Met Lys Asp Val Val Lys His Arg Thr Ser Ile Phe Ile Ala His Arg
625                 630                 635                 640

Leu Ser Thr Val Val Asp Ala Asp Glu Ile Ile Val Leu Asp Gln Gly
                645                 650                 655

Lys Val Ala Glu Arg Gly Thr His His Gly Leu Leu Ala Asn Pro His
            660                 665                 670

Ser Ile Tyr Ser Glu Met Trp His Thr Gln Ser Ser Arg Val Gln Asn
        675                 680                 685

His Asp Asn Pro Lys Trp Glu Ala Lys Lys Glu Asn Ile Ser
    690                 695                 700


<210> 7666
<211> 713
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1616; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB7; "

<220>
<221> source
<223> /note="Gene Name:
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ATP-binding cassette, sub-family
B (MDR/TAP),
member 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479985"

<400> 7666

```
Met Ala Leu Leu Ala Met His Ser Trp Arg Trp Ala Ala Ala Ala Ala
1               5                  10                  15

Ala Phe Glu Lys Arg Arg His Ser Ala Ile Leu Ile Arg Pro Leu Val
            20                  25                  30

Ser Val Ser Gly Ser Gly Pro Gln Trp Arg Pro His Gln Leu Gly Ala
        35                  40                  45

Leu Gly Thr Ala Arg Ala Tyr Gln Gln Ile Pro Glu Ser Leu Lys Ser
    50                  55                  60

Ile Thr Trp Gln Arg Leu Gly Lys Gly Asn Ser Gly Gln Phe Leu Asp
65                  70                  75                  80

Ala Ala Lys Ala Leu Gln Val Trp Pro Leu Ile Glu Lys Arg Thr Cys
                85                  90                  95

Trp His Gly His Ala Gly Gly Gly Leu His Thr Asp Pro Lys Glu Gly
            100                 105                 110

Ala Met Asn Ile Val Val Pro Phe Met Phe Lys Tyr Ala Val Asp Ser
        115                 120                 125

Leu Asn Gln Met Ser Gly Asn Met Leu Asn Leu Ser Asp Ala Pro Asn
    130                 135                 140

Thr Val Ala Thr Met Ala Thr Ala Val Leu Ile Gly Tyr Gly Val Ser
145                 150                 155                 160

Arg Ala Gly Ala Ala Phe Phe Asn Glu Val Arg Asn Ala Val Phe Gly
                165                 170                 175

Lys Val Ala Gln Asn Ser Ile Arg Arg Ile Ala Lys Asn Val Phe Leu
            180                 185                 190
```

```
His Leu His Asn Leu Asp Leu Gly Phe His Leu Ser Arg Gln Thr Gly
        195                 200                 205

Ala Leu Ser Lys Ala Ile Asp Arg Gly Thr Arg Gly Ile Ser Phe Val
    210                 215                 220

Leu Ser Ala Leu Val Phe Asn Leu Leu Pro Ile Met Phe Glu Val Met
225                 230                 235                 240

Leu Val Ser Gly Val Leu Tyr Tyr Lys Cys Gly Ala Gln Phe Ala Leu
                245                 250                 255

Val Thr Leu Gly Thr Leu Gly Thr Tyr Thr Ala Phe Thr Val Ala Val
            260                 265                 270

Thr Arg Trp Arg Thr Arg Phe Arg Ile Glu Met Asn Lys Ala Asp Asn
        275                 280                 285

Asp Ala Gly Asn Ala Ala Ile Asp Ser Leu Leu Asn Tyr Glu Thr Val
    290                 295                 300

Lys Tyr Phe Asn Asn Glu Arg Tyr Glu Ala Gln Arg Tyr Asp Gly Phe
305                 310                 315                 320

Leu Lys Thr Tyr Glu Thr Ala Ser Leu Lys Ser Thr Ser Thr Leu Ala
                325                 330                 335

Met Leu Asn Phe Gly Gln Ser Ala Ile Phe Ser Val Gly Leu Thr Ala
            340                 345                 350

Ile Met Val Leu Ala Ser Gln Gly Ile Val Ala Gly Thr Leu Thr Val
        355                 360                 365

Gly Asp Leu Val Met Val Asn Gly Leu Leu Phe Gln Leu Ser Leu Pro
    370                 375                 380

Leu Asn Phe Leu Gly Thr Val Tyr Arg Glu Thr Arg Gln Ala Leu Ile
385                 390                 395                 400

Asp Met Asn Thr Leu Phe Thr Leu Leu Lys Val Asp Thr Gln Ile Lys
                405                 410                 415

Asp Lys Val Met Ala Ser Pro Leu Gln Ile Thr Pro Gln Thr Ala Thr
```

```
            420                 425                 430

Val Ala Phe Asp Asn Val His Phe Glu Tyr Ile Glu Gly Gln Lys Val
        435                 440                 445

Leu Ser Gly Ile Ser Phe Glu Val Pro Ala Gly Lys Lys Val Ala Ile
    450                 455                 460

Val Gly Gly Ser Gly Ser Gly Lys Ser Thr Ile Val Arg Leu Leu Phe
465                 470                 475                 480

Arg Phe Tyr Glu Pro Gln Lys Gly Ser Ile Tyr Leu Ala Gly Gln Asn
                485                 490                 495

Ile Gln Asp Val Ser Leu Glu Ser Leu Arg Arg Ala Val Gly Val Val
            500                 505                 510

Pro Gln Asp Ala Val Leu Phe His Asn Thr Ile Tyr Tyr Asn Leu Leu
        515                 520                 525

Tyr Gly Asn Ile Ser Ala Ser Pro Glu Glu Val Tyr Ala Val Ala Lys
    530                 535                 540

Leu Ala Gly Leu His Asp Ala Ile Leu Arg Met Pro His Gly Tyr Asp
545                 550                 555                 560

Thr Gln Val Gly Glu Arg Gly Leu Lys Leu Ser Gly Gly Glu Lys Gln
                565                 570                 575

Arg Val Ala Ile Ala Arg Ala Ile Leu Lys Asp Pro Pro Val Ile Leu
            580                 585                 590

Tyr Asp Glu Ala Thr Ser Ser Leu Asp Ser Ile Thr Glu Glu Thr Ile
        595                 600                 605

Leu Gly Ala Met Lys Asp Val Val Lys His Arg Thr Ser Ile Phe Ile
    610                 615                 620

Ala His Arg Leu Ser Thr Val Val Asp Ala Asp Glu Ile Ile Val Leu
625                 630                 635                 640

Asp Gln Gly Lys Val Ala Glu Arg Gly Thr His His Gly Leu Leu Ala
                645                 650                 655
```

```
Asn Pro His Ser Ile Tyr Ser Glu Met Trp His Thr Gln Ser Ser Arg
            660                 665                 670

Val Gln Asn His Asp Asn Pro Lys Trp Glu Ala Lys Lys Glu Asn Ile
        675                 680                 685

Ser Lys Glu Glu Glu Arg Lys Lys Leu Gln Glu Glu Ile Val Asn Ser
    690                 695                 700

Val Lys Gly Cys Gly Asn Cys Ser Cys
705                 710
```

<210> 7667
<211> 735
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NUT2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000297504"

<400> 7667

```
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1               5                  10                  15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Arg
            20                  25                  30

Asn Thr Trp Arg Asn Gly Lys Thr Gly Gln Leu His Lys Ala Glu Gly
        35                  40                  45
```

```
Glu Tyr Ser Asp Gly Tyr Arg Ser Ser Ser Leu Leu Arg Ala Val Ala
    50                  55                  60

His Leu Arg Ser Gln Leu Trp Ala His Leu Pro Arg Ala Pro Leu Ala
65                  70                  75                  80

Pro Arg Trp Ser Pro Ser Ala Trp Cys Trp Val Gly Gly Ala Leu Leu
                85                  90                  95

Gly Pro Met Val Leu Ser Lys His Pro His Leu Cys Leu Val Ala Leu
            100                 105                 110

Cys Glu Ala Glu Glu Ala Pro Pro Ala Ser Ser Thr Pro His Val Val
        115                 120                 125

Gly Ser Arg Phe Asn Trp Lys Leu Phe Trp Gln Phe Leu His Pro His
    130                 135                 140

Leu Leu Val Leu Gly Val Ala Val Val Leu Ala Leu Gly Ala Ala Leu
145                 150                 155                 160

Val Asn Val Gln Ile Pro Leu Leu Leu Gly Gln Leu Val Glu Val Val
                165                 170                 175

Ala Lys Tyr Thr Arg Asp His Val Gly Ser Phe Met Thr Glu Ser Gln
            180                 185                 190

Asn Leu Ser Thr His Leu Leu Ile Leu Tyr Gly Val Gln Gly Leu Leu
        195                 200                 205

Thr Phe Gly Tyr Leu Val Leu Leu Ser His Val Gly Glu Arg Met Ala
    210                 215                 220

Val Asp Met Arg Arg Ala Leu Phe Ser Ser Leu Leu Arg Gln Asp Ile
225                 230                 235                 240

Thr Phe Phe Asp Ala Asn Lys Thr Gly Gln Leu Val Ser Arg Leu Thr
                245                 250                 255

Thr Asp Val Gln Glu Phe Lys Ser Ser Phe Lys Leu Val Ile Ser Gln
            260                 265                 270
```

```
Gly Leu Arg Ser Cys Thr Gln Val Ala Gly Cys Leu Val Ser Leu Ser
        275                 280                 285

Met Leu Ser Thr Arg Leu Thr Leu Leu Leu Met Val Ala Thr Pro Ala
    290                 295                 300

Leu Met Gly Val Gly Thr Leu Met Gly Ser Gly Leu Arg Lys Leu Ser
305                 310                 315                 320

Arg Gln Cys Gln Glu Gln Ile Ala Arg Ala Met Gly Val Ala Asp Glu
                325                 330                 335

Ala Leu Gly Asn Val Arg Thr Val Arg Ala Phe Ala Met Glu Gln Arg
            340                 345                 350

Glu Glu Glu Arg Tyr Gly Ala Glu Leu Glu Ala Cys Arg Cys Arg Ala
        355                 360                 365

Glu Glu Leu Gly Arg Gly Ile Ala Leu Phe Gln Gly Leu Ser Asn Ile
    370                 375                 380

Ala Phe Asn Cys Met Val Leu Gly Thr Leu Phe Ile Gly Gly Ser Leu
385                 390                 395                 400

Val Ala Gly Gln Gln Leu Thr Gly Gly Asp Leu Met Ser Phe Leu Val
                405                 410                 415

Ala Ser Gln Thr Val Gln Arg Ser Met Ala Asn Leu Ser Val Leu Phe
            420                 425                 430

Gly Gln Val Val Arg Gly Leu Ser Ala Gly Ala Arg Val Phe Glu Tyr
        435                 440                 445

Met Ala Leu Asn Pro Cys Ile Pro Leu Ser Gly Gly Cys Cys Val Pro
    450                 455                 460

Lys Glu Gln Leu Arg Gly Ser Val Thr Phe Gln Asn Val Cys Phe Ser
465                 470                 475                 480

Tyr Pro Cys Arg Pro Gly Phe Glu Val Leu Lys Asp Phe Thr Leu Thr
                485                 490                 495
```

```
Leu Pro Pro Gly Lys Ile Val Ala Leu Val Gly Gln Ser Gly Gly Gly
            500                 505                 510

Lys Thr Thr Val Ala Ser Leu Leu Glu Arg Phe Tyr Asp Pro Thr Ala
        515                 520                 525

Gly Val Val Met Leu Asp Gly Arg Asp Leu Arg Thr Leu Asp Pro Ser
    530                 535                 540

Trp Leu Arg Gly Gln Val Val Gly Phe Ile Ser Gln Glu Pro Val Leu
545                 550                 555                 560

Phe Gly Thr Thr Ile Met Glu Asn Ile Arg Phe Gly Lys Leu Glu Ala
                565                 570                 575

Ser Asp Glu Glu Val Tyr Thr Ala Ala Arg Glu Ala Asn Ala His Glu
            580                 585                 590

Phe Ile Thr Ser Phe Pro Glu Gly Tyr Asn Thr Val Val Gly Glu Arg
        595                 600                 605

Gly Thr Thr Leu Ser Gly Gly Gln Lys Gln Arg Leu Ala Ile Ala Arg
    610                 615                 620

Ala Leu Ile Lys Gln Pro Thr Val Leu Ile Leu Asp Glu Ala Thr Ser
625                 630                 635                 640

Ala Leu Asp Ala Glu Ser Glu Arg Val Val Gln Glu Ala Leu Asp Arg
                645                 650                 655

Ala Ser Ala Gly Arg Thr Val Leu Val Ile Ala His Arg Leu Ser Thr
            660                 665                 670

Val Arg Gly Ala His Cys Ile Val Val Met Ala Asp Gly Arg Val Trp
        675                 680                 685

Glu Ala Gly Thr His Glu Glu Leu Leu Lys Lys Gly Gly Leu Tyr Ala
    690                 695                 700

Glu Leu Ile Arg Arg Gln Ala Leu Asp Ala Pro Arg Thr Ala Ala Pro
705                 710                 715                 720

Pro Pro Lys Lys Pro Glu Gly Pro Arg Ser His Gln His Lys Ser
```

725 730 735

<210> 7668
<211> 718
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NUT2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351717"

<400> 7668
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1 5 10 15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Arg
20 25 30

Tyr Ser Asp Gly Tyr Arg Ser Ser Ser Leu Leu Arg Ala Val Ala His
35 40 45

Leu Arg Ser Gln Leu Trp Ala His Leu Pro Arg Ala Pro Leu Ala Pro
50 55 60

Arg Trp Ser Pro Ser Ala Trp Cys Trp Val Gly Gly Ala Leu Leu Gly
65 70 75 80

Pro Met Val Leu Ser Lys His Pro His Leu Cys Leu Val Ala Leu Cys
85 90 95

Glu Ala Glu Glu Ala Pro Pro Ala Ser Ser Thr Pro His Val Val Gly

```
            100                 105                 110

Ser Arg Phe Asn Trp Lys Leu Phe Trp Gln Phe Leu His Pro His Leu
        115                 120                 125

Leu Val Leu Gly Val Ala Val Val Leu Ala Leu Gly Ala Ala Leu Val
    130                 135                 140

Asn Val Gln Ile Pro Leu Leu Leu Gly Gln Leu Val Glu Val Val Ala
145                 150                 155                 160

Lys Tyr Thr Arg Asp His Val Gly Ser Phe Met Thr Glu Ser Gln Asn
                165                 170                 175

Leu Ser Thr His Leu Leu Ile Leu Tyr Gly Val Gln Gly Leu Leu Thr
            180                 185                 190

Phe Gly Tyr Leu Val Leu Leu Ser His Val Gly Glu Arg Met Ala Val
        195                 200                 205

Asp Met Arg Arg Ala Leu Phe Ser Ser Leu Leu Arg Gln Asp Ile Thr
    210                 215                 220

Phe Phe Asp Ala Asn Lys Thr Gly Gln Leu Val Ser Arg Leu Thr Thr
225                 230                 235                 240

Asp Val Gln Glu Phe Lys Ser Ser Phe Lys Leu Val Ile Ser Gln Gly
                245                 250                 255

Leu Arg Ser Cys Thr Gln Val Ala Gly Cys Leu Val Ser Leu Ser Met
            260                 265                 270

Leu Ser Thr Arg Leu Thr Leu Leu Leu Met Val Ala Thr Pro Ala Leu
        275                 280                 285

Met Gly Val Gly Thr Leu Met Gly Ser Gly Leu Arg Lys Leu Ser Arg
    290                 295                 300

Gln Cys Gln Glu Gln Ile Ala Arg Ala Met Gly Val Ala Asp Glu Ala
305                 310                 315                 320

Leu Gly Asn Val Arg Thr Val Arg Ala Phe Ala Met Glu Gln Arg Glu
                325                 330                 335
```

```
Glu Glu Arg Tyr Gly Ala Glu Leu Glu Ala Cys Arg Cys Arg Ala Glu
            340                 345                 350

Glu Leu Gly Arg Gly Ile Ala Leu Phe Gln Gly Leu Ser Asn Ile Ala
        355                 360                 365

Phe Asn Cys Met Val Leu Gly Thr Leu Phe Ile Gly Gly Ser Leu Val
    370                 375                 380

Ala Gly Gln Gln Leu Thr Gly Gly Asp Leu Met Ser Phe Leu Val Ala
385                 390                 395                 400

Ser Gln Thr Val Gln Arg Ser Met Ala Asn Leu Ser Val Leu Phe Gly
                405                 410                 415

Gln Val Val Arg Gly Leu Ser Ala Gly Ala Arg Val Phe Glu Tyr Met
            420                 425                 430

Ala Leu Asn Pro Cys Ile Pro Leu Ser Gly Gly Cys Cys Val Pro Lys
        435                 440                 445

Glu Gln Leu Arg Gly Ser Val Thr Phe Gln Asn Val Cys Phe Ser Tyr
    450                 455                 460

Pro Cys Arg Pro Gly Phe Glu Val Leu Lys Asp Phe Thr Leu Thr Leu
465                 470                 475                 480

Pro Pro Gly Lys Ile Val Ala Leu Val Gly Gln Ser Gly Gly Gly Lys
                485                 490                 495

Thr Thr Val Ala Ser Leu Leu Glu Arg Phe Tyr Asp Pro Thr Ala Gly
            500                 505                 510

Val Val Met Leu Asp Gly Arg Asp Leu Arg Thr Leu Asp Pro Ser Trp
        515                 520                 525

Leu Arg Gly Gln Val Val Gly Phe Ile Ser Gln Glu Pro Val Leu Phe
    530                 535                 540

Gly Thr Thr Ile Met Glu Asn Ile Arg Phe Gly Lys Leu Glu Ala Ser
545                 550                 555                 560
```

```
Asp Glu Glu Val Tyr Thr Ala Ala Arg Glu Ala Asn Ala His Glu Phe
                565                 570                 575

Ile Thr Ser Phe Pro Glu Gly Tyr Asn Thr Val Val Gly Glu Arg Gly
            580                 585                 590

Thr Thr Leu Ser Gly Gly Gln Lys Gln Arg Leu Ala Ile Ala Arg Ala
        595                 600                 605

Leu Ile Lys Gln Pro Thr Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
    610                 615                 620

Leu Asp Ala Glu Ser Glu Arg Val Val Gln Glu Ala Leu Asp Arg Ala
625                 630                 635                 640

Ser Ala Gly Arg Thr Val Leu Val Ile Ala His Arg Leu Ser Thr Val
                645                 650                 655

Arg Gly Ala His Cys Ile Val Val Met Ala Asp Gly Arg Val Trp Glu
            660                 665                 670

Ala Gly Thr His Glu Glu Leu Leu Lys Lys Gly Gly Leu Tyr Ala Glu
        675                 680                 685

Leu Ile Arg Arg Gln Ala Leu Asp Ala Pro Arg Thr Ala Ala Pro Pro
    690                 695                 700

Pro Lys Lys Pro Glu Gly Pro Arg Ser His Gln His Lys Ser
705                 710                 715


<210> 7669
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
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ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417563"

<400> 7669
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1 5 10 15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Arg
20 25 30

Arg Leu Leu Arg Leu Gln Pro Arg Val Ser Gln Lys Glu Gly Thr Leu
35 40 45

Gly Val Ser Asp His Ala Gln Ser Ala Leu Pro Thr Gly Gly Pro Leu
50 55 60

Ser Trp Pro Trp Arg Tyr Ser Asp Gly Tyr Arg Ser Ser Ser Leu Leu
65 70 75 80

Arg Ala Val Ala His Leu Arg Ser Gln Leu Trp Ala His Leu Pro Arg
85 90 95

Ala Pro Leu Ala Pro Arg Trp Ser Pro Ser Ala Trp Cys Trp Val Gly
100 105 110

Gly Ala Leu Leu Gly Pro Met Val Leu Ser Lys His Pro His Leu Cys
115 120 125

Leu Val Ala Leu Cys Glu Ala Glu Glu Ala Pro Pro Ala Ser Ser Thr
130 135 140

Pro His Val Val
145

<210> 7670
<211> 693
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NUT2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418271"

<400> 7670
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1   5   10   15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Arg
            20   25   30

Tyr Ser Asp Gly Tyr Arg Ser Ser Ser Leu Leu Arg Ala Val Ala His
        35   40   45

Leu Arg Ser Gln Leu Trp Ala His Leu Pro Arg Ala Pro Leu Ala Pro
    50   55   60

Arg Trp Ser Pro Ser Ala Trp Cys Trp Val Gly Gly Ala Leu Leu Gly
65   70   75   80

Pro Met Val Leu Ser Lys His Pro His Leu Cys Leu Val Ala Leu Cys
                85   90   95

Glu Ala Glu Glu Ala Pro Pro Ala Ser Ser Thr Pro His Val Val Gly
            100   105   110

Ser Arg Phe Asn Trp Lys Leu Phe Trp Gln Phe Leu His Pro His Leu
        115   120   125

Leu Val Leu Gly Val Ala Val Val Leu Ala Leu Gly Ala Ala Leu Val
    130   135   140

```
Asn Val Gln Ile Pro Leu Leu Leu Gly Gln Leu Val Glu Val Val Ala
145                 150                 155                 160

Lys Tyr Thr Arg Asp His Val Gly Ser Phe Met Thr Glu Ser Gln Asn
                165                 170                 175

Leu Ser Thr His Leu Leu Ile Leu Tyr Gly Val Gln Gly Leu Leu Thr
            180                 185                 190

Phe Gly Tyr Leu Val Leu Leu Ser His Val Gly Glu Arg Met Ala Val
        195                 200                 205

Asp Met Arg Arg Ala Leu Phe Ser Ser Leu Leu Arg Gln Asp Ile Thr
    210                 215                 220

Phe Phe Asp Ala Asn Lys Thr Gly Gln Leu Val Ser Arg Leu Thr Thr
225                 230                 235                 240

Asp Val Gln Glu Phe Lys Ser Ser Phe Lys Leu Val Ile Ser Gln Gly
                245                 250                 255

Leu Arg Ser Cys Thr Gln Val Ala Gly Cys Leu Val Ser Leu Ser Met
            260                 265                 270

Leu Ser Thr Arg Leu Thr Leu Leu Leu Met Val Ala Thr Pro Ala Leu
        275                 280                 285

Met Gly Val Gly Thr Leu Met Gly Ser Gly Leu Arg Lys Leu Ser Arg
    290                 295                 300

Gln Cys Gln Glu Gln Ile Ala Arg Ala Met Gly Val Ala Asp Glu Ala
305                 310                 315                 320

Leu Gly Asn Val Arg Thr Val Arg Ala Phe Ala Met Glu Gln Arg Glu
                325                 330                 335

Glu Glu Arg Tyr Gly Ala Glu Leu Glu Ala Cys Arg Cys Arg Ala Glu
            340                 345                 350

Glu Leu Gly Arg Gly Ile Ala Leu Phe Gln Gly Leu Ser Asn Ile Ala
        355                 360                 365

Phe Asn Cys Met Val Leu Gly Thr Leu Phe Ile Gly Gly Ser Leu Val
```

370 375 380

Ala Gly Gln Gln Leu Thr Gly Gly Asp Leu Met Ser Phe Leu Val Ala
385 390 395 400

Ser Gln Thr Val Gln Arg Ser Met Ala Asn Leu Ser Val Leu Phe Gly
405 410 415

Gln Val Val Arg Gly Leu Ser Ala Gly Ala Arg Val Phe Glu Tyr Met
420 425 430

Ala Leu Asn Pro Cys Ile Pro Leu Ser Gly Gly Cys Cys Val Pro Lys
435 440 445

Glu Gln Leu Arg Gly Ser Val Thr Phe Gln Asn Val Cys Phe Ser Tyr
450 455 460

Pro Cys Arg Pro Gly Phe Glu Val Leu Lys Asp Phe Thr Leu Thr Leu
465 470 475 480

Pro Pro Gly Lys Ile Val Ala Leu Val Gly Gln Ser Gly Gly Gly Lys
485 490 495

Thr Thr Val Ala Ser Leu Leu Glu Arg Phe Tyr Asp Pro Thr Ala Gly
500 505 510

Val Val Met Leu Asp Gly Arg Asp Leu Arg Thr Leu Asp Pro Ser Trp
515 520 525

Leu Arg Gly Gln Val Val Gly Phe Ile Ser Gln Glu Pro Val Leu Phe
530 535 540

Gly Thr Thr Ile Met Glu Asn Ile Arg Phe Gly Lys Leu Glu Ala Ser
545 550 555 560

Asp Glu Glu Val Tyr Thr Ala Ala Arg Glu Ala Asn Ala His Glu Phe
565 570 575

Ile Thr Ser Phe Pro Glu Gly Tyr Asn Thr Val Val Gly Glu Arg Gly
580 585 590

Thr Thr Leu Ser Gly Gly Gln Lys Gln Arg Leu Ala Ile Ala Arg Ala
595 600 605

```
Leu Ile Lys Gln Pro Thr Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
    610                 615                 620

Leu Asp Ala Glu Ser Glu Arg Val Val Gln Glu Ala Leu Asp Arg Ala
625                 630                 635                 640

Ser Ala Gly Arg Thr Val Leu Ala Gly Thr His Glu Glu Leu Leu Lys
                645                 650                 655

Lys Gly Gly Leu Tyr Ala Glu Leu Ile Arg Arg Gln Ala Leu Asp Ala
            660                 665                 670

Pro Arg Thr Ala Ala Pro Pro Pro Lys Lys Pro Glu Gly Pro Arg Ser
        675                 680                 685

His Gln His Lys Ser
    690


<210> 7671
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418316"

<400> 7671
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1               5                   10                  15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Ser
            20                  25                  30
```

```
Cys Gly Glu Gly Val Cys Val Met Ala Pro Gln Ala Arg Glu Gly Arg
        35                  40                  45


<210> 7672
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418970"

<400> 7672
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1               5                   10                  15


Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Ser
            20                  25                  30


Asp Thr Pro Val Ala Ser Arg Arg Leu Leu Arg Leu Gln Pro Arg Val
        35                  40                  45


Ser Gln Lys Glu Gly Thr Leu Gly Val Leu
    50                  55


<210> 7673
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
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<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419014"

<400> 7673
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1 5 10 15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Ser
20 25 30

Trp Pro Trp Val Arg His Ser
35

<210> 7674
<211> 431
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419558"

<400> 7674
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1 5 10 15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Arg

```
            20                  25                  30

Tyr Ser Asp Gly Tyr Arg Ser Ser Ser Leu Leu Arg Ala Val Ala His
        35                  40                  45

Leu Arg Ser Gln Leu Trp Ala His Leu Pro Arg Ala Pro Leu Ala Pro
    50                  55                  60

Arg Trp Ser Pro Ser Ala Trp Cys Trp Val Gly Gly Ala Leu Leu Gly
65                  70                  75                  80

Pro Met Val Leu Ser Lys His Pro His Leu Cys Leu Val Ala Leu Cys
                85                  90                  95

Glu Ala Glu Glu Ala Pro Pro Ala Ser Ser Thr Pro His Val Val Gly
            100                 105                 110

Ser Arg Phe Asn Trp Lys Leu Phe Trp Gln Phe Leu His Pro His Leu
        115                 120                 125

Leu Val Leu Gly Val Ala Val Val Leu Ala Leu Gly Ala Ala Leu Val
    130                 135                 140

Asn Val Gln Ile Pro Leu Leu Leu Gly Gln Leu Val Glu Val Val Ala
145                 150                 155                 160

Lys Tyr Thr Arg Asp His Val Gly Ser Phe Met Thr Glu Ser Gln Asn
                165                 170                 175

Leu Ser Thr His Leu Leu Ile Leu Tyr Gly Val Gln Gly Leu Leu Thr
            180                 185                 190

Phe Gly Tyr Leu Val Leu Leu Ser His Val Gly Glu Arg Met Ala Val
        195                 200                 205

Asp Met Arg Arg Ala Leu Phe Ser Ser Leu Leu Arg Gln Asp Ile Thr
    210                 215                 220

Phe Phe Asp Ala Asn Lys Thr Gly Gln Leu Val Ser Arg Leu Thr Thr
225                 230                 235                 240

Asp Val Gln Glu Phe Lys Ser Ser Phe Lys Leu Val Ile Ser Gln Gly
                245                 250                 255
```

```
Leu Arg Ser Cys Thr Gln Val Ala Gly Cys Leu Val Ser Leu Ser Met
            260                 265                 270

Leu Ser Thr Arg Leu Thr Leu Leu Leu Met Val Ala Thr Pro Ala Leu
        275                 280                 285

Met Gly Val Gly Thr Leu Met Gly Ser Gly Leu Arg Lys Leu Ser Arg
    290                 295                 300

Gln Cys Gln Glu Gln Ile Ala Arg Ala Met Gly Val Ala Asp Glu Ala
305                 310                 315                 320

Leu Gly Asn Val Arg Thr Val Arg Ala Phe Ala Met Glu Gln Arg Glu
                325                 330                 335

Glu Glu Arg Tyr Gly Ala Glu Leu Glu Ala Cys Arg Cys Arg Ala Glu
            340                 345                 350

Glu Leu Gly Arg Gly Ile Ala Leu Phe Gln Gly Leu Ser Asn Ile Ala
        355                 360                 365

Phe Asn Cys Met Val Leu Gly Thr Leu Phe Ile Gly Gly Ser Leu Val
    370                 375                 380

Ala Gly Gln Gln Leu Thr Gly Gly Asp Leu Met Ser Phe Leu Val Ala
385                 390                 395                 400

Ser Gln Thr Val Gln Ser Phe Leu Arg Val Ala Pro Cys Pro Asn Ser
                405                 410                 415

Leu Pro Leu Gln Ala Val Thr Phe His Ala Trp Lys Asp His Pro
            420                 425                 430


<210> 7675
<211> 409
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
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<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419891"

<400> 7675

```
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1               5                  10                  15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Arg
            20                  25                  30

Tyr Ser Asp Gly Tyr Arg Ser Ser Ser Leu Leu Arg Ala Val Ala His
        35                  40                  45

Leu Arg Ser Gln Leu Trp Ala His Leu Pro Arg Ala Pro Leu Ala Pro
    50                  55                  60

Arg Trp Ser Pro Ser Ala Trp Cys Trp Val Gly Gly Ala Leu Leu Gly
65                  70                  75                  80

Pro Met Val Leu Ser Lys His Pro His Leu Cys Leu Val Ala Leu Cys
                85                  90                  95

Glu Ala Glu Glu Ala Pro Pro Ala Ser Ser Thr Pro His Val Val Gly
            100                 105                 110

Ser Arg Phe Asn Trp Lys Leu Phe Trp Gln Phe Leu His Pro His Leu
        115                 120                 125

Leu Val Leu Gly Val Ala Val Val Leu Ala Leu Gly Ala Ala Leu Val
    130                 135                 140

Asn Val Gln Ile Pro Leu Leu Leu Gly Gln Leu Val Glu Val Val Ala
145                 150                 155                 160

Lys Tyr Thr Arg Asp His Val Gly Ser Phe Met Thr Glu Ser Gln Asn
                165                 170                 175
```

```
Leu Ser Thr His Leu Leu Ile Leu Tyr Gly Val Gln Gly Leu Leu Thr
            180                 185                 190

Phe Gly Tyr Leu Val Leu Leu Ser His Val Gly Glu Arg Met Ala Val
        195                 200                 205

Asp Met Arg Arg Ala Leu Phe Ser Ser Leu Leu Arg Gln Asp Ile Thr
    210                 215                 220

Phe Phe Asp Ala Asn Lys Thr Gly Gln Leu Val Ser Arg Leu Thr Thr
225                 230                 235                 240

Asp Val Gln Glu Phe Lys Ser Ser Phe Lys Leu Val Ile Ser Gln Gly
                245                 250                 255

Leu Arg Ser Cys Thr Gln Val Ala Gly Cys Leu Val Ser Leu Ser Met
            260                 265                 270

Leu Ser Thr Arg Leu Thr Leu Leu Leu Met Val Ala Thr Pro Ala Leu
        275                 280                 285

Met Gly Val Gly Thr Leu Met Gly Ser Gly Leu Arg Lys Leu Ser Arg
    290                 295                 300

Gln Cys Gln Glu Gln Ile Ala Arg Ala Met Gly Val Ala Asp Glu Ala
305                 310                 315                 320

Leu Gly Asn Val Arg Thr Val Arg Ala Phe Ala Met Glu Gln Arg Glu
                325                 330                 335

Glu Glu Arg Tyr Gly Ala Glu Leu Glu Ala Cys Arg Cys Arg Ala Glu
            340                 345                 350

Glu Leu Gly Arg Gly Ile Ala Leu Phe Gln Gly Leu Ser Asn Ile Ala
        355                 360                 365

Phe Asn Cys Met Val Leu Gly Thr Leu Phe Ile Gly Gly Ser Leu Val
    370                 375                 380

Ala Gly Gln Gln Leu Thr Gly Gly Asp Leu Met Ser Phe Leu Val Ala
385                 390                 395                 400
```

Ser Gln Thr Val Gln Arg Asp Val Leu
405

<210> 7676
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420162"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7676
Xaa Ser Leu Ser Met Leu Ser Thr Arg Leu Thr Leu Leu Leu Met Val
1 5 10 15

Ala Thr Pro Ala Leu Met Gly Val Gly Thr Leu Met Gly Ser Gly Leu
20 25 30

Arg Lys Leu Ser Arg Gln Cys Gln Glu Gln Ile Ala Arg Ala Met Gly
35 40 45

Val Ala Asp Glu Ala Leu Gly Asn Val Arg Thr Val Arg Ala Phe Ala
50 55 60

Met Glu Gln Arg Glu Glu Glu Arg Tyr Gly Ala Glu Leu Glu Ala Cys
65 70 75 80

Arg Cys Arg Ala Glu Glu Leu Gly Arg Gly Ile Ala Leu Phe Gln Gly
85 90 95

```
Leu Ser Asn Ile Ala Phe Asn Cys Met Val Leu Gly Thr Leu Phe Ile
            100                 105                 110

Gly Gly Ser Leu Val Ala Gly Gln Gln Leu Thr Gly Gly Asp Leu Met
        115                 120                 125

Ser Phe Leu Val Ala Ser Gln Thr Val Gln Arg Leu
    130                 135                 140


<210> 7677
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420216"

<400> 7677
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1               5                   10                  15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Ser
            20                  25                  30

Cys Gly Glu Gly Val Cys Val Met Ala Pro Gln Ala Arg Glu Gly Arg
        35                  40                  45


<210> 7678
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420631"

<400> 7678
Met Leu Val His Leu Phe Arg Val Gly Ile Arg Gly Gly Pro Phe Pro
1 5 10 15

Gly Arg Leu Leu Pro Pro Leu Arg Phe Gln Thr Phe Ser Ala Val Ser
20 25 30

Trp Pro Trp Val Arg His Ser
35

<210> 7679
<211> 630
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1617; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NUT2; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000438776"

<400> 7679

```
Met Arg Val Lys Leu Leu Leu Pro Ala Ala Pro Val Leu Pro Arg Gln
1               5                  10                  15

His Ala Gly Ala Phe Ile Ser Gly Arg Asp Ser Gly Trp Pro Ile Pro
            20                  25                  30

Arg Gln Ala Ala Thr Ala Pro Pro Leu Pro Asp Ile Leu Ser Cys Gln
        35                  40                  45

Leu Ala Leu Gly Ala Ala Leu Val Asn Val Gln Ile Pro Leu Leu Leu
    50                  55                  60

Gly Gln Leu Val Glu Val Val Ala Lys Tyr Thr Arg Asp His Val Gly
65                  70                  75                  80

Ser Phe Met Thr Glu Ser Gln Asn Leu Ser Thr His Leu Leu Ile Leu
                85                  90                  95

Tyr Gly Val Gln Gly Leu Leu Thr Phe Gly Tyr Leu Val Leu Leu Ser
            100                 105                 110

His Val Gly Glu Arg Met Ala Val Asp Met Arg Arg Ala Leu Phe Ser
        115                 120                 125

Ser Leu Leu Arg Gln Asp Ile Thr Phe Phe Asp Ala Asn Lys Thr Gly
    130                 135                 140

Gln Leu Val Ser Arg Leu Thr Thr Asp Val Gln Glu Phe Lys Ser Ser
145                 150                 155                 160

Phe Lys Leu Val Ile Ser Gln Gly Leu Arg Ser Cys Thr Gln Val Ala
                165                 170                 175

Gly Cys Leu Val Ser Leu Ser Met Leu Ser Thr Arg Leu Thr Leu Leu
            180                 185                 190

Leu Met Val Ala Thr Pro Ala Leu Met Gly Val Gly Thr Leu Met Gly
        195                 200                 205

Ser Gly Leu Arg Lys Leu Ser Arg Gln Cys Gln Glu Gln Ile Ala Arg
    210                 215                 220
```

```
Ala Met Gly Val Ala Asp Glu Ala Leu Gly Asn Val Arg Thr Val Arg
225                 230                 235                 240

Ala Phe Ala Met Glu Gln Arg Glu Glu Glu Arg Tyr Gly Ala Glu Leu
                245                 250                 255

Glu Ala Cys Arg Cys Arg Ala Glu Glu Leu Gly Arg Gly Ile Ala Leu
            260                 265                 270

Phe Gln Gly Leu Ser Asn Ile Ala Phe Asn Cys Met Val Leu Gly Thr
        275                 280                 285

Leu Phe Ile Gly Gly Ser Leu Val Ala Gly Gln Gln Leu Thr Gly Gly
    290                 295                 300

Asp Leu Met Ser Phe Leu Val Ala Ser Gln Thr Val Gln Arg Ser Met
305                 310                 315                 320

Ala Asn Leu Ser Val Leu Phe Gly Gln Val Val Arg Gly Leu Ser Ala
                325                 330                 335

Gly Ala Arg Val Phe Glu Tyr Met Ala Leu Asn Pro Cys Ile Pro Leu
            340                 345                 350

Ser Gly Gly Cys Cys Val Pro Lys Glu Gln Leu Arg Gly Ser Val Thr
        355                 360                 365

Phe Gln Asn Val Cys Phe Ser Tyr Pro Cys Arg Pro Gly Phe Glu Val
    370                 375                 380

Leu Lys Asp Phe Thr Leu Thr Leu Pro Pro Gly Lys Ile Val Ala Leu
385                 390                 395                 400

Val Gly Gln Ser Gly Gly Gly Lys Thr Thr Val Ala Ser Leu Leu Glu
                405                 410                 415

Arg Phe Tyr Asp Pro Thr Ala Gly Val Val Met Leu Asp Gly Arg Asp
            420                 425                 430

Leu Arg Thr Leu Asp Pro Ser Trp Leu Arg Gly Gln Val Val Gly Phe
        435                 440                 445
```

```
Ile Ser Gln Glu Pro Val Leu Phe Gly Thr Thr Ile Met Glu Asn Ile
    450                 455                 460

Arg Phe Gly Lys Leu Glu Ala Ser Asp Glu Glu Val Tyr Thr Ala Ala
465                 470                 475                 480

Arg Glu Ala Asn Ala His Glu Phe Ile Thr Ser Phe Pro Glu Gly Tyr
                485                 490                 495

Asn Thr Val Val Gly Glu Arg Gly Thr Thr Leu Ser Gly Gly Gln Lys
            500                 505                 510

Gln Arg Leu Ala Ile Ala Arg Ala Leu Ile Lys Gln Pro Thr Val Leu
        515                 520                 525

Ile Leu Asp Glu Ala Thr Ser Ala Leu Asp Ala Glu Ser Glu Arg Val
    530                 535                 540

Val Gln Glu Ala Leu Asp Arg Ala Ser Ala Gly Arg Thr Val Leu Val
545                 550                 555                 560

Ile Ala His Arg Leu Ser Thr Val Arg Gly Ala His Cys Ile Val Val
                565                 570                 575

Met Ala Asp Gly Arg Val Trp Glu Ala Gly Thr His Glu Glu Leu Leu
            580                 585                 590

Lys Lys Gly Gly Leu Tyr Ala Glu Leu Ile Arg Arg Gln Ala Leu Asp
        595                 600                 605

Ala Pro Arg Thr Ala Ala Pro Pro Pro Lys Lys Pro Glu Gly Pro Arg
    610                 615                 620

Ser His Gln His Lys Ser
625                 630


<210> 7680
<211> 723
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "
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<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NP78; "

<220>
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<223> /note="ENSP ID: ENSP00000280559"

<400> 7680
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1   5   10   15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20   25   30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35   40   45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50   55   60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65   70   75   80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85   90   95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100   105   110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115   120   125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130   135   140

```
Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145                 150                 155                 160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
```

370 375 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385 390 395 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
405 410 415

Gly Ser Val Gly Ser Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala
420 425 430

Ala Glu Lys Val Phe Glu Phe Ile Asp Arg Gln Pro Thr Met Val His
435 440 445

Asp Gly Ser Leu Ala Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu
450 455 460

Asn Val Thr Phe Thr Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln
465 470 475 480

Asn Val Ser Phe Ser Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly
485 490 495

Pro Ser Gly Ser Gly Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe
500 505 510

Tyr Pro Leu Glu Gly Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser
515 520 525

Ala Tyr Asp His Lys Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln
530 535 540

Glu Pro Val Leu Phe Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly
545 550 555 560

Leu Pro Thr Val Pro Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala
565 570 575

Asn Ala His Gly Phe Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu
580 585 590

Thr Gly Glu Lys Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val
595 600 605

```
Ala Met Ala Arg Ala Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp
    610                 615                 620

Glu Ala Thr Ser Ala Leu Asp Ala Glu Ser Glu Tyr Leu Ile Gln Gln
625                 630                 635                 640

Ala Ile His Gly Asn Leu Gln Lys His Thr Val Leu Ile Ile Ala His
                645                 650                 655

Arg Leu Ser Thr Val Glu His Ala His Leu Ile Val Val Leu Asp Lys
            660                 665                 670

Gly Arg Val Val Gln Gln Gly Thr His Gln Gln Leu Leu Ala Gln Gly
        675                 680                 685

Gly Leu Tyr Ala Lys Leu Val Gln Arg Gln Met Leu Gly Leu Gln Pro
    690                 695                 700

Ala Ala Asp Phe Thr Ala Gly His Asn Glu Pro Val Ala Asn Gly Ser
705                 710                 715                 720

His Lys Ala
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<210> 7681
<211> 766
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "

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<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NP78; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000280560"

<400> 7681
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1   5   10   15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20   25   30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35   40   45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50   55   60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65   70   75   80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85   90   95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100   105   110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115   120   125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130   135   140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145   150   155   160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165   170   175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180   185   190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195   200   205

```
Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430
```

```
His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Ser Val Gly Ser
    450                 455                 460

Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala Ala Glu Lys Val Phe
465                 470                 475                 480

Glu Phe Ile Asp Arg Gln Pro Thr Met Val His Asp Gly Ser Leu Ala
                485                 490                 495

Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu Asn Val Thr Phe Thr
            500                 505                 510

Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln Asn Val Ser Phe Ser
        515                 520                 525

Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser Gly
    530                 535                 540

Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly
545                 550                 555                 560

Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His Lys
                565                 570                 575

Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu Phe
            580                 585                 590

Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro
        595                 600                 605

Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly Phe
    610                 615                 620

Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys Gly
625                 630                 635                 640

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg Ala
                645                 650                 655

Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
```

660 665 670

Leu Asp Ala Glu Ser Glu Tyr Leu Ile Gln Gln Ala Ile His Gly Asn
675 680 685

Leu Gln Lys His Thr Val Leu Ile Ile Ala His Arg Leu Ser Thr Val
690 695 700

Glu His Ala His Leu Ile Val Val Leu Asp Lys Gly Arg Val Val Gln
705 710 715 720

Gln Gly Thr His Gln Gln Leu Leu Ala Gln Gly Gly Leu Tyr Ala Lys
725 730 735

Leu Val Gln Arg Gln Met Leu Gly Leu Gln Pro Ala Ala Asp Phe Thr
740 745 750

Ala Gly His Asn Glu Pro Val Ala Asn Gly Ser His Lys Ala
755 760 765

<210> 7682
<211> 766
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NP78; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376234"

<400> 7682
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val

```
1               5                   10                  15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20                  25                  30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35                  40                  45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50                  55                  60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65                  70                  75                  80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85                  90                  95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100                 105                 110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115                 120                 125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130                 135                 140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145                 150                 155                 160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240
```

```
Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430

His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Ser Val Gly Ser
    450                 455                 460
```

```
Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala Ala Glu Lys Val Phe
465                 470                 475                 480

Glu Phe Ile Asp Arg Gln Pro Thr Met Val His Asp Gly Ser Leu Ala
                485                 490                 495

Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu Asn Val Thr Phe Thr
            500                 505                 510

Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln Asn Val Ser Phe Ser
        515                 520                 525

Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser Gly
    530                 535                 540

Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly
545                 550                 555                 560

Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His Lys
                565                 570                 575

Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu Phe
            580                 585                 590

Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro
        595                 600                 605

Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly Phe
    610                 615                 620

Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys Gly
625                 630                 635                 640

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg Ala
                645                 650                 655

Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
            660                 665                 670

Leu Asp Ala Glu Ser Glu Tyr Leu Ile Gln Gln Ala Ile His Gly Asn
        675                 680                 685
```

```
Leu Gln Lys His Thr Val Leu Ile Ile Ala His Arg Leu Ser Thr Val
    690                 695                 700

Glu His Ala His Leu Ile Val Val Leu Asp Lys Gly Arg Val Val Gln
705                 710                 715                 720

Gln Gly Thr His Gln Gln Leu Leu Ala Gln Gly Gly Leu Tyr Ala Lys
                725                 730                 735

Leu Val Gln Arg Gln Met Leu Gly Leu Gln Pro Ala Ala Asp Phe Thr
            740                 745                 750

Ala Gly His Asn Glu Pro Val Ala Asn Gly Ser His Lys Ala
        755                 760                 765


<210> 7683
<211> 769
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394898"

<400> 7683
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1               5                   10                  15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20                  25                  30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35                  40                  45
```

```
Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50                  55                  60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65                  70                  75                  80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85                  90                  95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100                 105                 110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115                 120                 125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130                 135                 140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145                 150                 155                 160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
```

```
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430

His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Ser Val Gly Ser
    450                 455                 460

Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala Ala Glu Lys Val Phe
465                 470                 475                 480

Glu Phe Ile Asp Arg Gln Pro Thr Met Val His Asp Gly Ser Leu Ala
                485                 490                 495

Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu Asn Val Thr Phe Thr
            500                 505                 510
```

```
Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln Asn Val Ser Phe Ser
        515                 520                 525

Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser Gly
    530                 535                 540

Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly
545                 550                 555                 560

Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His Lys
                565                 570                 575

Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu Phe
            580                 585                 590

Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro
        595                 600                 605

Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly Phe
    610                 615                 620

Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys Gly
625                 630                 635                 640

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg Ala
                645                 650                 655

Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
            660                 665                 670

Leu Asp Ala Glu Ser Glu Tyr Leu Ser Pro Gln Ile Gln Gln Ala Ile
        675                 680                 685

His Gly Asn Leu Gln Lys His Thr Val Leu Ile Ile Ala His Arg Leu
    690                 695                 700

Ser Thr Val Glu His Ala His Leu Ile Val Val Leu Asp Lys Gly Arg
705                 710                 715                 720

Val Val Gln Gln Gly Thr His Gln Gln Leu Leu Ala Gln Gly Gly Leu
                725                 730                 735
```

```
Tyr Ala Lys Leu Val Gln Arg Gln Met Leu Gly Leu Gln Pro Ala Ala
            740                 745                 750

Asp Phe Thr Ala Gly His Asn Glu Pro Val Ala Asn Gly Ser His Lys
        755                 760                 765

Ala
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<210> 7684
<211> 145
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ABCB9; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415967"

<400> 7684

```
Gly Arg Pro Pro Arg Leu Arg Ala Ser Leu Gly Ala Ala Gly His Arg
1               5                   10                  15

Pro Ser Arg Arg Leu Gly Pro Arg Cys Arg Ser Cys Ser Pro Thr Pro
            20                  25                  30

Ser Pro Thr Trp Pro Ser Ser Trp Pro Pro Pro Ser Ser Ser Ser Trp
        35                  40                  45

Gln Leu Trp Glu Arg Pro Ser Cys Pro Thr Thr Arg Ala Ala Pro Leu
    50                  55                  60

Met Ala Ser Ser Ser Arg Lys Ala Trp Ile Ser Ser Ala Arg Leu Ser
65                  70                  75                  80
```

```
Ser Ser Cys Ala Cys Trp Pro Leu Ala Gly Ile Arg Gly Gly Ile Phe
                85                  90                  95

Thr Leu Ile Phe Ala Arg Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe
            100                 105                 110

Arg Ser Leu Val Ser Gln Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr
        115                 120                 125

Ala Ser His Gly Ser Ser Pro Trp Ser Pro Ser Trp Ala Ser Pro Ser
    130                 135                 140

Ser
145


<210> 7685
<211> 272
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439871"

<400> 7685
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1               5                  10                  15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20                  25                  30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35                  40                  45
```

```
Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50                  55                  60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65                  70                  75                  80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85                  90                  95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100                 105                 110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115                 120                 125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130                 135                 140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145                 150                 155                 160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Arg Tyr
225                 230                 235                 240

Ser Gly Arg His Phe Tyr Pro His Ile Cys Gln Thr Glu His Ser Pro
                245                 250                 255

Ser Lys Leu Ser Leu Pro Leu Thr Gly Val Pro Gly Asp Lys Leu Leu
            260                 265                 270
```

<210> 7686
<211> 145
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440138"

<400> 7686

```
Met Asp Gln Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile
1               5                  10                  15


Gly Ser Ser Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile
            20                  25                  30


Phe Ala Arg Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu
        35                  40                  45


Val Ser Gln Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu
    50                  55                  60


Ile Ser Arg Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser
65                  70                  75                  80


Gln Asn Ile Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val
                85                  90                  95


Val Val Phe Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe
            100                 105                 110


Met Gly Phe Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr
        115                 120                 125
```

```
Tyr Lys Arg Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser
    130                 135                 140


Asn
145


<210> 7687
<211> 260
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
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      B (MDR/TAP),
      member 9; "

<220>
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<223> /note="ENSP ID: ENSP00000440244"

<400> 7687
Met Lys Thr Val Arg Ser Phe Ala Asn Glu Glu Glu Glu Ala Glu Val
1               5                   10                  15


Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys Leu Asn Arg Lys Glu Ala
            20                  25                  30


Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser Gly Leu Thr Leu Leu Val
        35                  40                  45


Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly His Leu Val Ile Ser Gly
    50                  55                  60


Gln Met Thr Ser Gly Asn Leu Ile Ala Phe Ile Ile Tyr Glu Phe Val
65                  70                  75                  80


Leu Gly Asp Cys Met Glu Ser Val Gly Ser Val Tyr Ser Gly Leu Met
                85                  90                  95
```

```
Gln Gly Val Gly Ala Ala Glu Lys Val Phe Glu Phe Ile Asp Arg Gln
            100                 105                 110

Pro Thr Met Val His Asp Gly Ser Leu Ala Pro Asp His Leu Glu Gly
        115                 120                 125

Arg Val Asp Phe Glu Asn Val Thr Phe Thr Tyr Arg Thr Arg Pro His
    130                 135                 140

Thr Gln Val Leu Gln Asn Val Ser Phe Ser Leu Ser Pro Gly Lys Val
145                 150                 155                 160

Thr Ala Leu Val Gly Pro Ser Gly Ser Gly Lys Ser Ser Cys Val Asn
                165                 170                 175

Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly Gly Arg Val Leu Leu Asp
            180                 185                 190

Gly Lys Pro Ile Ser Ala Tyr Asp His Lys Tyr Leu His Arg Val Ile
        195                 200                 205

Ser Leu Val Ser Gln Glu Pro Val Leu Phe Ala Arg Ser Ile Thr Asp
    210                 215                 220

Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro Phe Glu Met Val Val Glu
225                 230                 235                 240

Ala Ala Gln Lys Ala Asn Ala His Gly Phe Ile Met Glu Leu Gln Asp
                245                 250                 255

Gly Tyr Ser Thr
            260
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<210> 7688
<211> 766
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
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ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NP78; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440288"

<400> 7688
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1   5   10   15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20   25   30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35   40   45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50   55   60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65   70   75   80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85   90   95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100   105   110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115   120   125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130   135   140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145   150   155   160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys

```
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400
```

```
Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430

His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Ser Val Gly Ser
    450                 455                 460

Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala Ala Glu Lys Val Phe
465                 470                 475                 480

Glu Phe Ile Asp Arg Gln Pro Thr Met Val His Asp Gly Ser Leu Ala
                485                 490                 495

Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu Asn Val Thr Phe Thr
            500                 505                 510

Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln Asn Val Ser Phe Ser
        515                 520                 525

Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser Gly
    530                 535                 540

Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly
545                 550                 555                 560

Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His Lys
                565                 570                 575

Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu Phe
            580                 585                 590

Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro
        595                 600                 605

Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly Phe
    610                 615                 620
```

```
Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys Gly
625                 630                 635                 640

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg Ala
                645                 650                 655

Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
            660                 665                 670

Leu Asp Ala Glu Ser Glu Tyr Leu Ile Gln Gln Ala Ile His Gly Asn
        675                 680                 685

Leu Gln Lys His Thr Val Leu Ile Ile Ala His Arg Leu Ser Thr Val
    690                 695                 700

Glu His Ala His Leu Ile Val Val Leu Asp Lys Gly Arg Val Val Gln
705                 710                 715                 720

Gln Gly Thr His Gln Gln Leu Leu Ala Gln Gly Gly Leu Tyr Ala Lys
                725                 730                 735

Leu Val Gln Arg Gln Met Leu Gly Leu Gln Pro Ala Ala Asp Phe Thr
            740                 745                 750

Ala Gly His Asn Glu Pro Val Ala Asn Gly Ser His Lys Ala
        755                 760                 765
```

<210> 7689
<211> 182
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441086"

<400> 7689
Met Val Ser Asp Leu Val Ser Gln Asn Ile Asn Val Phe Leu Arg Asn
1 5 10 15

Thr Val Lys Val Thr Gly Val Val Val Phe Met Phe Ser Leu Ser Trp
20 25 30

Gln Leu Ser Leu Val Thr Phe Met Gly Phe Pro Ile Ile Met Met Val
35 40 45

Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg Leu Ser Lys Glu Val Gln
50 55 60

Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala Glu Glu Thr Ile Ser Ala
65 70 75 80

Met Lys Thr Val Arg Ser Phe Ala Asn Glu Glu Glu Glu Ala Glu Val
85 90 95

Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys Leu Asn Arg Lys Glu Ala
100 105 110

Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser Gly Leu Thr Leu Leu Val
115 120 125

Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly His Leu Val Ile Ser Gly
130 135 140

Gln Met Thr Ser Gly Asn Leu Ile Ala Phe Ile Ile Tyr Glu Phe Val
145 150 155 160

Leu Gly Asp Cys Met Glu Ser Val Gly Ser Val Tyr Ser Gly Leu Met
165 170 175

Gln Gly Val Gly Ala Ala
180

<210> 7690
<211> 703
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NP78; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441734"

<400> 7690
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1   5   10   15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20   25   30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35   40   45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50   55   60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65   70   75   80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85   90   95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100   105   110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115   120   125

```
Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130                 135                 140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145                 150                 155                 160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
```

```
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430

His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Asn Val Ser Phe
    450                 455                 460

Ser Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser
465                 470                 475                 480

Gly Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu
                485                 490                 495

Gly Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His
            500                 505                 510

Lys Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu
        515                 520                 525

Phe Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val
    530                 535                 540

Pro Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly
545                 550                 555                 560

Phe Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys
                565                 570                 575

Gly Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg
            580                 585                 590
```

```
Ala Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser
        595                 600                 605

Ala Leu Asp Ala Glu Ser Glu Tyr Leu Ile Gln Gln Ala Ile His Gly
    610                 615                 620

Asn Leu Gln Lys His Thr Val Leu Ile Ile Ala His Arg Leu Ser Thr
625                 630                 635                 640

Val Glu His Ala His Leu Ile Val Val Leu Asp Lys Gly Arg Val Val
                645                 650                 655

Gln Gln Gly Thr His Gln Gln Leu Leu Ala Gln Gly Gly Leu Tyr Ala
            660                 665                 670

Lys Leu Val Gln Arg Gln Met Leu Gly Leu Gln Pro Ala Ala Asp Phe
        675                 680                 685

Thr Ala Gly His Asn Glu Pro Val Ala Asn Gly Ser His Lys Ala
    690                 695                 700


<210> 7691
<211> 277
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442281"

<400> 7691
Met Gly Gln Gly Met Gly Met Val Gly Asp Leu Arg Ser Pro Arg Pro
1               5                   10                  15
```

```
Thr Ser Pro Leu Pro Leu Pro Gln Leu Thr Leu Leu Val Val Gln Val
            20                  25                  30

Ser Ile Leu Tyr Tyr Gly Gly His Leu Val Ile Ser Gly Gln Met Thr
        35                  40                  45

Ser Gly Asn Leu Ile Ala Phe Ile Ile Tyr Glu Phe Val Leu Gly Asp
    50                  55                  60

Cys Met Glu Asn Val Ser Phe Ser Leu Ser Pro Gly Lys Val Thr Ala
65                  70                  75                  80

Leu Val Gly Pro Ser Gly Ser Gly Lys Ser Ser Cys Val Asn Ile Leu
                85                  90                  95

Glu Asn Phe Tyr Pro Leu Glu Gly Gly Arg Val Leu Leu Asp Gly Lys
            100                 105                 110

Pro Ile Ser Ala Tyr Asp His Lys Tyr Leu His Arg Val Ile Ser Leu
        115                 120                 125

Val Ser Gln Glu Pro Val Leu Phe Ala Arg Ser Ile Thr Asp Asn Ile
    130                 135                 140

Ser Tyr Gly Leu Pro Thr Val Pro Phe Glu Met Val Val Glu Ala Ala
145                 150                 155                 160

Gln Lys Ala Asn Ala His Gly Phe Ile Met Glu Leu Gln Asp Gly Tyr
                165                 170                 175

Ser Thr Glu Thr Gly Glu Lys Gly Ala Gln Leu Ser Gly Gly Gln Lys
            180                 185                 190

Gln Arg Val Ala Met Ala Arg Ala Leu Val Arg Asn Pro Pro Val Leu
        195                 200                 205

Ile Leu Asp Glu Ala Thr Ser Ala Leu Asp Ala Glu Ser Glu Tyr Leu
    210                 215                 220

Ile Gln Gln Ala Ile His Gly Asn Leu Gln Lys His Thr Val Leu Ile
225                 230                 235                 240
```

```
Ile Ala His Arg Leu Ser Thr Val Glu His Ala His Leu Ile Val Val
                245                 250                 255


Leu Asp Lys Gly Arg Val Val Gln Gln Gly Thr His Gln Gln Leu Leu
            260                 265                 270


Ala Gln Gly Gly Leu
        275


<210> 7692
<211> 115
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443224"

<400> 7692
Met Thr Ala Ser Arg Trp Cys Arg Arg Leu Ser Lys Glu Val Gln Asn
1               5                   10                  15


Ala Leu Ala Arg Ala Ser Asn Thr Ala Glu Glu Thr Ile Ser Ala Met
            20                  25                  30


Lys Thr Val Arg Ser Phe Ala Asn Glu Glu Glu Glu Ala Glu Val Tyr
        35                  40                  45


Leu Arg Lys Leu Gln Gln Val Tyr Lys Leu Asn Arg Lys Glu Ala Ala
    50                  55                  60


Ala Tyr Met Tyr Tyr Val Trp Gly Ser Gly Leu Thr Leu Leu Val Val
65                  70                  75                  80
```

```
Gln Val Ser Ile Leu Tyr Tyr Gly Gly His Leu Val Ile Ser Gly Gln
                85                  90                  95


Met Thr Ser Gly Asn Leu Ile Ala Phe Ile Ile Tyr Glu Phe Val Leu
            100                 105                 110


Gly Asp Cys
        115


<210> 7693
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443382"

<400> 7693
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1               5                   10                  15


Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20                  25                  30


Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35                  40                  45


Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50                  55                  60


Thr
65
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<210> 7694
<211> 222
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443433"

<400> 7694

```
Met Asp Gln Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile
1               5                  10                  15


Gly Arg Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val
            20                  25                  30


Ser Gln Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile
        35                  40                  45


Ser Arg Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln
    50                  55                  60


Asn Ile Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val
65                  70                  75                  80


Val Phe Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met
                85                  90                  95


Gly Phe Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr
            100                 105                 110


Lys Arg Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn
        115                 120                 125
```

```
Thr Ala Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala
    130                 135                 140

Asn Glu Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val
145                 150                 155                 160

Tyr Lys Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp
                165                 170                 175

Gly Ser Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr
            180                 185                 190

Gly Gly His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile
        195                 200                 205

Ala Phe Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu
    210                 215                 220
```

<210> 7695
<211> 156
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444834"

<400> 7695

```
Met Gly Gln Gly Met Gly Met Val Gly Asp Leu Arg Ser Pro Arg Pro
1               5                   10                  15

Thr Ser Pro Leu Pro Leu Pro Gln Leu Thr Leu Leu Val Val Gln Val
            20                  25                  30
```

```
Ser Ile Leu Tyr Tyr Gly Gly His Leu Val Ile Ser Gly Gln Met Thr
        35                  40                  45

Ser Gly Asn Leu Ile Ala Phe Ile Ile Tyr Glu Phe Val Leu Gly Asp
    50                  55                  60

Cys Met Glu Ser Val Gly Ser Val Tyr Ser Gly Leu Met Gln Gly Val
65                  70                  75                  80

Gly Ala Ala Glu Lys Val Phe Glu Phe Ile Asp Arg Gln Pro Thr Met
                85                  90                  95

Val His Asp Gly Ser Leu Ala Pro Asp His Leu Glu Gly Arg Val Asp
            100                 105                 110

Phe Glu Asn Val Thr Phe Thr Tyr Arg Thr Arg Pro His Thr Gln Val
        115                 120                 125

Leu Gln Asn Val Ser Phe Ser Leu Ser Pro Gly Lys Val Thr Ala Leu
    130                 135                 140

Val Gly Pro Ser Gly Ser Gly Lys Ser Ser Cys Val
145                 150                 155


<210> 7696
<211> 683
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      B (MDR/TAP),
      member 9; "

<220>
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<223> /note="Uniprot ID:  Q9NP78; "
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<220>
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<400> 7696
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1   5   10   15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
            20   25   30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
        35   40   45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
    50   55   60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65   70   75   80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
                85   90   95

Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100   105   110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115   120   125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130   135   140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145   150   155   160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165   170   175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180   185   190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195   200   205

```
Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320

Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430

His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
```

```
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Ser Val Gly Ser
    450                 455                 460

Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala Ala Glu Lys Val Phe
465                 470                 475                 480

Glu Phe Ile Asp Arg Gln Pro Thr Met Val His Asp Gly Ser Leu Ala
                485                 490                 495

Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu Asn Val Thr Phe Thr
            500                 505                 510

Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln Asn Val Ser Phe Ser
        515                 520                 525

Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser Gly
    530                 535                 540

Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly
545                 550                 555                 560

Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His Lys
                565                 570                 575

Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu Phe
            580                 585                 590

Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro
        595                 600                 605

Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly Phe
    610                 615                 620

Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys Gly
625                 630                 635                 640

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg Ala
                645                 650                 655

Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
            660                 665                 670
```

Leu Asp Ala Glu Ser Glu Tyr Leu Cys Ala Gly
675 680

<210> 7697
<211> 681
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1618; "

<220>
<221> source
<223> /note="Gene Symbol: ABCB9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
B (MDR/TAP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NP78; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456813"

<400> 7697
Met Arg Leu Trp Lys Ala Val Val Val Thr Leu Ala Phe Met Ser Val
1 5 10 15

Asp Ile Cys Val Thr Thr Ala Ile Tyr Val Phe Ser His Leu Asp Arg
20 25 30

Ser Leu Leu Glu Asp Ile Arg His Phe Asn Ile Phe Asp Ser Val Leu
35 40 45

Asp Leu Trp Ala Ala Cys Leu Tyr Arg Ser Cys Leu Leu Leu Gly Ala
50 55 60

Thr Ile Gly Val Ala Lys Asn Ser Ala Leu Gly Pro Arg Arg Leu Arg
65 70 75 80

Ala Ser Trp Leu Val Ile Thr Leu Val Cys Leu Phe Val Gly Ile Tyr
85 90 95

```
Ala Met Val Lys Leu Leu Leu Phe Ser Glu Val Arg Arg Pro Ile Arg
            100                 105                 110

Asp Pro Trp Phe Trp Ala Leu Phe Val Trp Thr Tyr Ile Ser Leu Gly
        115                 120                 125

Ala Ser Phe Leu Leu Trp Trp Leu Leu Ser Thr Val Arg Pro Gly Thr
    130                 135                 140

Gln Ala Leu Glu Pro Gly Ala Ala Thr Glu Ala Glu Gly Phe Pro Gly
145                 150                 155                 160

Ser Gly Arg Pro Pro Pro Glu Gln Ala Ser Gly Ala Thr Leu Gln Lys
                165                 170                 175

Leu Leu Ser Tyr Thr Lys Pro Asp Val Ala Phe Leu Val Ala Ala Ser
            180                 185                 190

Phe Phe Leu Ile Val Ala Ala Leu Gly Glu Thr Phe Leu Pro Tyr Tyr
        195                 200                 205

Thr Gly Arg Ala Ile Asp Gly Ile Val Ile Gln Lys Ser Met Asp Gln
    210                 215                 220

Phe Ser Thr Ala Val Val Ile Val Cys Leu Leu Ala Ile Gly Ser Ser
225                 230                 235                 240

Phe Ala Ala Gly Ile Arg Gly Gly Ile Phe Thr Leu Ile Phe Ala Arg
                245                 250                 255

Leu Asn Ile Arg Leu Arg Asn Cys Leu Phe Arg Ser Leu Val Ser Gln
            260                 265                 270

Glu Thr Ser Phe Phe Asp Glu Asn Arg Thr Gly Asp Leu Ile Ser Arg
        275                 280                 285

Leu Thr Ser Asp Thr Thr Met Val Ser Asp Leu Val Ser Gln Asn Ile
    290                 295                 300

Asn Val Phe Leu Arg Asn Thr Val Lys Val Thr Gly Val Val Val Phe
305                 310                 315                 320
```

```
Met Phe Ser Leu Ser Trp Gln Leu Ser Leu Val Thr Phe Met Gly Phe
                325                 330                 335

Pro Ile Ile Met Met Val Ser Asn Ile Tyr Gly Lys Tyr Tyr Lys Arg
            340                 345                 350

Leu Ser Lys Glu Val Gln Asn Ala Leu Ala Arg Ala Ser Asn Thr Ala
        355                 360                 365

Glu Glu Thr Ile Ser Ala Met Lys Thr Val Arg Ser Phe Ala Asn Glu
    370                 375                 380

Glu Glu Glu Ala Glu Val Tyr Leu Arg Lys Leu Gln Gln Val Tyr Lys
385                 390                 395                 400

Leu Asn Arg Lys Glu Ala Ala Ala Tyr Met Tyr Tyr Val Trp Gly Ser
                405                 410                 415

Gly Leu Thr Leu Leu Val Val Gln Val Ser Ile Leu Tyr Tyr Gly Gly
            420                 425                 430

His Leu Val Ile Ser Gly Gln Met Thr Ser Gly Asn Leu Ile Ala Phe
        435                 440                 445

Ile Ile Tyr Glu Phe Val Leu Gly Asp Cys Met Glu Ser Val Gly Ser
    450                 455                 460

Val Tyr Ser Gly Leu Met Gln Gly Val Gly Ala Ala Glu Lys Val Phe
465                 470                 475                 480

Glu Phe Ile Asp Arg Gln Pro Thr Met Val His Asp Gly Ser Leu Ala
                485                 490                 495

Pro Asp His Leu Glu Gly Arg Val Asp Phe Glu Asn Val Thr Phe Thr
            500                 505                 510

Tyr Arg Thr Arg Pro His Thr Gln Val Leu Gln Asn Val Ser Phe Ser
        515                 520                 525

Leu Ser Pro Gly Lys Val Thr Ala Leu Val Gly Pro Ser Gly Ser Gly
    530                 535                 540
```

```
Lys Ser Ser Cys Val Asn Ile Leu Glu Asn Phe Tyr Pro Leu Glu Gly
545                 550                 555                 560

Gly Arg Val Leu Leu Asp Gly Lys Pro Ile Ser Ala Tyr Asp His Lys
                565                 570                 575

Tyr Leu His Arg Val Ile Ser Leu Val Ser Gln Glu Pro Val Leu Phe
            580                 585                 590

Ala Arg Ser Ile Thr Asp Asn Ile Ser Tyr Gly Leu Pro Thr Val Pro
        595                 600                 605

Phe Glu Met Val Val Glu Ala Ala Gln Lys Ala Asn Ala His Gly Phe
    610                 615                 620

Ile Met Glu Leu Gln Asp Gly Tyr Ser Thr Glu Thr Gly Glu Lys Gly
625                 630                 635                 640

Ala Gln Leu Ser Gly Gly Gln Lys Gln Arg Val Ala Met Ala Arg Ala
                645                 650                 655

Leu Val Arg Asn Pro Pro Val Leu Ile Leu Asp Glu Ala Thr Ser Ala
            660                 665                 670

Leu Asp Ala Glu Ser Glu Tyr Leu Ile
        675                 680


<210> 7698
<211> 1215
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1619; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 1; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000382340"

<400> 7698
Met Ser Phe Phe Phe Lys Ala Ile His Asp Leu Met Met Phe Ser Gly
1 5 10 15

Pro Gln Ile Leu Lys Leu Leu Ile Lys Phe Val Asn Asp Thr Lys Ala
20 25 30

Pro Asp Trp Gln Gly Tyr Phe Tyr Thr Val Leu Leu Phe Val Thr Ala
35 40 45

Cys Leu Gln Thr Leu Val Leu His Gln Tyr Phe His Ile Cys Phe Val
50 55 60

Ser Gly Met Arg Ile Lys Thr Ala Val Ile Gly Ala Val Tyr Arg Lys
65 70 75 80

Ala Leu Val Ile Thr Asn Ser Ala Arg Lys Ser Ser Thr Val Gly Glu
85 90 95

Ile Val Asn Leu Met Ser Val Asp Ala Gln Arg Phe Met Asp Leu Ala
100 105 110

Thr Tyr Ile Asn Met Ile Trp Ser Ala Pro Leu Gln Val Ile Leu Ala
115 120 125

Leu Tyr Leu Leu Trp Leu Asn Leu Gly Pro Ser Val Leu Ala Gly Val
130 135 140

Ala Val Met Val Leu Met Val Pro Val Asn Ala Val Met Ala Met Lys
145 150 155 160

Thr Lys Thr Tyr Gln Val Ala His Met Lys Ser Lys Asp Asn Arg Ile
165 170 175

Lys Leu Met Asn Glu Ile Leu Asn Gly Ile Lys Val Leu Lys Leu Tyr
180 185 190

Ala Trp Glu Leu Ala Phe Lys Asp Lys Val Leu Ala Ile Arg Gln Glu
195 200 205

Glu Leu Lys Val Leu Lys Lys Ser Ala Tyr Leu Ser Ala Val Gly Thr

```
    210                 215                 220

Phe Thr Trp Val Cys Thr Pro Phe Leu Val Ala Leu Cys Thr Phe Ala
225                 230                 235                 240

Val Tyr Val Thr Ile Asp Glu Asn Asn Ile Leu Asp Ala Gln Thr Ala
                245                 250                 255

Phe Val Ser Leu Ala Leu Phe Asn Ile Leu Arg Phe Pro Leu Asn Ile
            260                 265                 270

Leu Pro Met Val Ile Ser Ser Ile Val Gln Ala Ser Val Ser Leu Lys
        275                 280                 285

Arg Leu Arg Ile Phe Leu Ser His Glu Glu Leu Glu Pro Asp Ser Ile
    290                 295                 300

Glu Arg Arg Pro Val Lys Asp Gly Gly Gly Thr Asn Ser Ile Thr Val
305                 310                 315                 320

Arg Asn Ala Thr Phe Thr Trp Ala Arg Ser Asp Pro Pro Thr Leu Asn
                325                 330                 335

Gly Ile Thr Phe Ser Ile Pro Glu Gly Ala Leu Val Ala Val Val Gly
            340                 345                 350

Gln Val Gly Cys Gly Lys Ser Ser Leu Leu Ser Ala Leu Leu Ala Glu
        355                 360                 365

Met Asp Lys Val Glu Gly His Val Ala Ile Lys Gly Ser Val Ala Tyr
    370                 375                 380

Val Pro Gln Gln Ala Trp Ile Gln Asn Asp Ser Leu Arg Glu Asn Ile
385                 390                 395                 400

Leu Phe Gly Cys Gln Leu Glu Glu Pro Tyr Tyr Arg Ser Val Ile Gln
                405                 410                 415

Ala Cys Ala Leu Leu Pro Asp Leu Glu Ile Leu Pro Ser Gly Asp Arg
            420                 425                 430

Thr Glu Ile Gly Glu Lys Gly Val Asn Leu Ser Gly Gly Gln Lys Gln
        435                 440                 445
```

```
Arg Val Ser Leu Ala Arg Ala Val Tyr Ser Asn Ala Asp Ile Tyr Leu
    450                 455                 460

Phe Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile
465                 470                 475                 480

Phe Glu Asn Val Ile Gly Pro Lys Gly Met Leu Lys Asn Lys Thr Arg
                485                 490                 495

Ile Leu Val Thr His Ser Met Ser Tyr Leu Pro Gln Val Asp Val Ile
            500                 505                 510

Ile Val Met Ser Gly Gly Lys Ile Ser Glu Met Gly Ser Tyr Gln Glu
        515                 520                 525

Leu Leu Ala Arg Asp Gly Ala Phe Ala Glu Phe Leu Arg Thr Tyr Ala
    530                 535                 540

Ser Thr Glu Gln Glu Gln Asp Ala Glu Glu Asn Gly Ser Thr Val Met
545                 550                 555                 560

Asp Glu Glu Glu Ala Gly Val Thr Gly Val Ser Gly Pro Gly Lys Glu
                565                 570                 575

Ala Lys Gln Met Glu Asn Gly Met Leu Val Thr Asp Ser Ala Gly Lys
            580                 585                 590

Gln Leu Gln Arg Gln Leu Ser Ser Ser Ser Ser Tyr Ser Gly Asp Ile
        595                 600                 605

Ser Arg His His Asn Ser Thr Ala Glu Leu Gln Lys Ala Glu Ala Lys
    610                 615                 620

Lys Glu Glu Thr Trp Lys Leu Met Glu Ala Asp Lys Ala Gln Thr Gly
625                 630                 635                 640

Gln Val Lys Leu Ser Val Tyr Trp Asp Tyr Met Lys Ala Ile Gly Leu
                645                 650                 655

Phe Ile Ser Phe Leu Ser Ile Phe Leu Phe Met Cys Asn His Val Ser
            660                 665                 670
```

```
Ala Leu Ala Ser Asn Tyr Trp Leu Ser Leu Trp Thr Asp Asp Pro Ile
        675                 680                 685

Val Asn Gly Thr Gln Glu His Thr Lys Val Arg Leu Ser Val Tyr Gly
    690                 695                 700

Ala Leu Gly Ile Ser Gln Gly Ile Ala Val Phe Gly Tyr Ser Met Ala
705                 710                 715                 720

Val Ser Ile Gly Gly Ile Leu Ala Ser Arg Cys Leu His Val Asp Leu
                725                 730                 735

Leu His Ser Ile Leu Arg Ser Pro Met Ser Phe Phe Glu Arg Thr Pro
            740                 745                 750

Ser Gly Asn Leu Val Asn Arg Phe Ser Lys Glu Leu Asp Thr Val Asp
        755                 760                 765

Ser Met Ile Pro Glu Val Ile Lys Met Phe Met Gly Ser Leu Phe Asn
    770                 775                 780

Val Ile Gly Ala Cys Ile Val Ile Leu Leu Ala Thr Pro Ile Ala Ala
785                 790                 795                 800

Ile Ile Ile Pro Pro Leu Gly Leu Ile Tyr Phe Phe Val Gln Arg Phe
                805                 810                 815

Tyr Val Ala Ser Ser Arg Gln Leu Lys Arg Leu Glu Ser Val Ser Arg
            820                 825                 830

Ser Pro Val Tyr Ser His Phe Asn Glu Thr Leu Leu Gly Val Ser Val
        835                 840                 845

Ile Arg Ala Phe Glu Glu Gln Glu Arg Phe Ile His Gln Ser Asp Leu
    850                 855                 860

Lys Val Asp Glu Asn Gln Lys Ala Tyr Tyr Pro Ser Ile Val Ala Asn
865                 870                 875                 880

Arg Trp Leu Ala Val Arg Leu Glu Cys Val Gly Asn Cys Ile Val Leu
                885                 890                 895
```

```
Phe Ala Ala Leu Phe Ala Val Ile Ser Arg His Ser Leu Ser Ala Gly
            900                 905                 910

Leu Val Gly Leu Ser Val Ser Tyr Ser Leu Gln Val Thr Thr Tyr Leu
        915                 920                 925

Asn Trp Leu Val Arg Met Ser Ser Glu Met Glu Thr Asn Ile Val Ala
    930                 935                 940

Val Glu Arg Leu Lys Glu Tyr Ser Glu Thr Glu Lys Glu Ala Pro Trp
945                 950                 955                 960

Gln Ile Gln Glu Thr Ala Pro Pro Ser Ser Trp Pro Gln Val Gly Arg
                965                 970                 975

Val Glu Phe Arg Asn Tyr Cys Leu Arg Tyr Arg Glu Asp Leu Asp Phe
            980                 985                 990

Val Leu Arg His Ile Asn Val Thr  Ile Asn Gly Gly Glu  Lys Val
Gly
        995                 1000                1005

Ile Val  Gly Arg Thr Gly Ala  Gly Lys Ser Ser Leu  Thr Leu Gly
    1010                1015                1020

Leu Phe  Arg Ile Asn Glu Ser  Ala Glu Gly Glu Ile  Ile Ile Asp
    1025                1030                1035

Gly Ile  Asn Ile Ala Lys Ile  Gly Leu His Asp Leu  Arg Phe Lys
    1040                1045                1050

Ile Thr  Ile Ile Pro Gln Asp  Pro Val Leu Phe Ser  Gly Ser Leu
    1055                1060                1065

Arg Met  Asn Leu Asp Pro Phe  Ser Gln Tyr Ser Asp  Glu Glu Val
    1070                1075                1080

Trp Thr  Ser Leu Glu Leu Ala  His Leu Lys Asp Phe  Val Ser Ala
    1085                1090                1095

Leu Pro  Asp Lys Leu Asp His  Glu Cys Ala Glu Gly  Gly Glu Asn
    1100                1105                1110
```

```
Leu Ser  Val Gly Gln Arg Gln  Leu Val Cys Leu Ala  Arg Ala Leu
    1115                1120                1125

Leu Arg  Lys Thr Lys Ile Leu  Val Leu Asp Glu Ala  Thr Ala Ala
    1130                1135                1140

Val Asp  Leu Glu Thr Asp Asp  Leu Ile Gln Ser Thr  Ile Arg Thr
    1145                1150                1155

Gln Phe  Glu Asp Cys Thr Val  Leu Thr Ile Ala His  Arg Leu Asn
    1160                1165                1170

Thr Ile  Met Asp Tyr Thr Arg  Val Ile Val Leu Asp  Lys Gly Glu
    1175                1180                1185

Ile Gln  Glu Tyr Gly Ala Pro  Ser Asp Leu Leu Gln  Gln Arg Gly
    1190                1195                1200

Leu Phe  Tyr Ser Met Ala Lys  Asp Ala Gly Leu Val
    1205                1210                1215


<210> 7699
<211> 1531
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ABCC1; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 1; "

<220>
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<223> /note="Uniprot ID:  P33527; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382342"

<400> 7699
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Met Ala Leu Arg Gly Phe Cys Ser Ala Asp Gly Ser Asp Pro Leu Trp
1               5                  10                  15

Asp Trp Asn Val Thr Trp Asn Thr Ser Asn Pro Asp Phe Thr Lys Cys
            20                  25                  30

Phe Gln Asn Thr Val Leu Val Trp Val Pro Cys Phe Tyr Leu Trp Ala
        35                  40                  45

Cys Phe Pro Phe Tyr Phe Leu Tyr Leu Ser Arg His Asp Arg Gly Tyr
    50                  55                  60

Ile Gln Met Thr Pro Leu Asn Lys Thr Lys Thr Ala Leu Gly Phe Leu
65                  70                  75                  80

Leu Trp Ile Val Cys Trp Ala Asp Leu Phe Tyr Ser Phe Trp Glu Arg
                85                  90                  95

Ser Arg Gly Ile Phe Leu Ala Pro Val Phe Leu Val Ser Pro Thr Leu
            100                 105                 110

Leu Gly Ile Thr Met Leu Leu Ala Thr Phe Leu Ile Gln Leu Glu Arg
        115                 120                 125

Arg Lys Gly Val Gln Ser Ser Gly Ile Met Leu Thr Phe Trp Leu Val
    130                 135                 140

Ala Leu Val Cys Ala Leu Ala Ile Leu Arg Ser Lys Ile Met Thr Ala
145                 150                 155                 160

Leu Lys Glu Asp Ala Gln Val Asp Leu Phe Arg Asp Ile Thr Phe Tyr
                165                 170                 175

Val Tyr Phe Ser Leu Leu Leu Ile Gln Leu Val Leu Ser Cys Phe Ser
            180                 185                 190

Asp Arg Ser Pro Leu Phe Ser Glu Thr Ile His Asp Pro Asn Pro Cys
        195                 200                 205

Pro Glu Ser Ser Ala Ser Phe Leu Ser Arg Ile Thr Phe Trp Trp Ile
    210                 215                 220

Thr Gly Leu Ile Val Arg Gly Tyr Arg Gln Pro Leu Glu Gly Ser Asp
```

225 230 235 240

Leu Trp Ser Leu Asn Lys Glu Asp Thr Ser Glu Gln Val Val Pro Val
245 250 255

Leu Val Lys Asn Trp Lys Lys Glu Cys Ala Lys Thr Arg Lys Gln Pro
260 265 270

Val Lys Val Val Tyr Ser Ser Lys Asp Pro Ala Gln Pro Lys Glu Ser
275 280 285

Ser Lys Val Asp Ala Asn Glu Glu Val Glu Ala Leu Ile Val Lys Ser
290 295 300

Pro Gln Lys Glu Trp Asn Pro Ser Leu Phe Lys Val Leu Tyr Lys Thr
305 310 315 320

Phe Gly Pro Tyr Phe Leu Met Ser Phe Phe Phe Lys Ala Ile His Asp
325 330 335

Leu Met Met Phe Ser Gly Pro Gln Ile Leu Lys Leu Leu Ile Lys Phe
340 345 350

Val Asn Asp Thr Lys Ala Pro Asp Trp Gln Gly Tyr Phe Tyr Thr Val
355 360 365

Leu Leu Phe Val Thr Ala Cys Leu Gln Thr Leu Val Leu His Gln Tyr
370 375 380

Phe His Ile Cys Phe Val Ser Gly Met Arg Ile Lys Thr Ala Val Ile
385 390 395 400

Gly Ala Val Tyr Arg Lys Ala Leu Val Ile Thr Asn Ser Ala Arg Lys
405 410 415

Ser Ser Thr Val Gly Glu Ile Val Asn Leu Met Ser Val Asp Ala Gln
420 425 430

Arg Phe Met Asp Leu Ala Thr Tyr Ile Asn Met Ile Trp Ser Ala Pro
435 440 445

Leu Gln Val Ile Leu Ala Leu Tyr Leu Leu Trp Leu Asn Leu Gly Pro
450 455 460

```
Ser Val Leu Ala Gly Val Ala Val Met Val Leu Met Val Pro Val Asn
465                 470                 475                 480

Ala Val Met Ala Met Lys Thr Lys Thr Tyr Gln Val Ala His Met Lys
                485                 490                 495

Ser Lys Asp Asn Arg Ile Lys Leu Met Asn Glu Ile Leu Asn Gly Ile
            500                 505                 510

Lys Val Leu Lys Leu Tyr Ala Trp Glu Leu Ala Phe Lys Asp Lys Val
        515                 520                 525

Leu Ala Ile Arg Gln Glu Glu Leu Lys Val Leu Lys Lys Ser Ala Tyr
    530                 535                 540

Leu Ser Ala Val Gly Thr Phe Thr Trp Val Cys Thr Pro Phe Leu Val
545                 550                 555                 560

Ala Leu Cys Thr Phe Ala Val Tyr Val Thr Ile Asp Glu Asn Asn Ile
                565                 570                 575

Leu Asp Ala Gln Thr Ala Phe Val Ser Leu Ala Leu Phe Asn Ile Leu
            580                 585                 590

Arg Phe Pro Leu Asn Ile Leu Pro Met Val Ile Ser Ser Ile Val Gln
        595                 600                 605

Ala Ser Val Ser Leu Lys Arg Leu Arg Ile Phe Leu Ser His Glu Glu
    610                 615                 620

Leu Glu Pro Asp Ser Ile Glu Arg Arg Pro Val Lys Asp Gly Gly Gly
625                 630                 635                 640

Thr Asn Ser Ile Thr Val Arg Asn Ala Thr Phe Thr Trp Ala Arg Ser
                645                 650                 655

Asp Pro Pro Thr Leu Asn Gly Ile Thr Phe Ser Ile Pro Glu Gly Ala
            660                 665                 670

Leu Val Ala Val Val Gly Gln Val Gly Cys Gly Lys Ser Ser Leu Leu
        675                 680                 685
```

Ser Ala Leu Leu Ala Glu Met Asp Lys Val Glu Gly His Val Ala Ile
690 695 700

Lys Gly Ser Val Ala Tyr Val Pro Gln Gln Ala Trp Ile Gln Asn Asp
705 710 715 720

Ser Leu Arg Glu Asn Ile Leu Phe Gly Cys Gln Leu Glu Glu Pro Tyr
725 730 735

Tyr Arg Ser Val Ile Gln Ala Cys Ala Leu Leu Pro Asp Leu Glu Ile
740 745 750

Leu Pro Ser Gly Asp Arg Thr Glu Ile Gly Glu Lys Gly Val Asn Leu
755 760 765

Ser Gly Gly Gln Lys Gln Arg Val Ser Leu Ala Arg Ala Val Tyr Ser
770 775 780

Asn Ala Asp Ile Tyr Leu Phe Asp Asp Pro Leu Ser Ala Val Asp Ala
785 790 795 800

His Val Gly Lys His Ile Phe Glu Asn Val Ile Gly Pro Lys Gly Met
805 810 815

Leu Lys Asn Lys Thr Arg Ile Leu Val Thr His Ser Met Ser Tyr Leu
820 825 830

Pro Gln Val Asp Val Ile Ile Val Met Ser Gly Gly Lys Ile Ser Glu
835 840 845

Met Gly Ser Tyr Gln Glu Leu Leu Ala Arg Asp Gly Ala Phe Ala Glu
850 855 860

Phe Leu Arg Thr Tyr Ala Ser Thr Glu Gln Glu Gln Asp Ala Glu Glu
865 870 875 880

Asn Gly Val Thr Gly Val Ser Gly Pro Gly Lys Glu Ala Lys Gln Met
885 890 895

Glu Asn Gly Met Leu Val Thr Asp Ser Ala Gly Lys Gln Leu Gln Arg
900 905 910

```
Gln Leu Ser Ser Ser Ser Ser Tyr Ser Gly Asp Ile Ser Arg His His
        915                 920                 925

Asn Ser Thr Ala Glu Leu Gln Lys Ala Glu Ala Lys Lys Glu Glu Thr
    930                 935                 940

Trp Lys Leu Met Glu Ala Asp Lys Ala Gln Thr Gly Gln Val Lys Leu
945                 950                 955                 960

Ser Val Tyr Trp Asp Tyr Met Lys Ala Ile Gly Leu Phe Ile Ser Phe
                965                 970                 975

Leu Ser Ile Phe Leu Phe Met Cys Asn His Val Ser Ala Leu Ala Ser
            980                 985                 990

Asn Tyr Trp Leu Ser Leu Trp Thr  Asp Asp Pro Ile Val  Asn Gly
Thr
        995                 1000                1005

Gln Glu  His Thr Lys Val Arg  Leu Ser Val Tyr Gly  Ala Leu Gly
    1010                1015                1020

Ile Ser  Gln Gly Ile Ala Val  Phe Gly Tyr Ser Met  Ala Val Ser
    1025                1030                1035

Ile Gly  Gly Ile Leu Ala Ser  Arg Cys Leu His Val  Asp Leu Leu
    1040                1045                1050

His Ser  Ile Leu Arg Ser Pro  Met Ser Phe Phe Glu  Arg Thr Pro
    1055                1060                1065

Ser Gly  Asn Leu Val Asn Arg  Phe Ser Lys Glu Leu  Asp Thr Val
    1070                1075                1080

Asp Ser  Met Ile Pro Glu Val  Ile Lys Met Phe Met  Gly Ser Leu
    1085                1090                1095

Phe Asn  Val Ile Gly Ala Cys  Ile Val Ile Leu Leu  Ala Thr Pro
    1100                1105                1110

Ile Ala  Ala Ile Ile Ile Pro  Pro Leu Gly Leu Ile  Tyr Phe Phe
    1115                1120                1125
```

Val Gln Arg Phe Tyr Val Ala Ser Ser Arg Gln Leu Lys Arg Leu
1130 1135 1140

Glu Ser Val Ser Arg Ser Pro Val Tyr Ser His Phe Asn Glu Thr
1145 1150 1155

Leu Leu Gly Val Ser Val Ile Arg Ala Phe Glu Glu Gln Glu Arg
1160 1165 1170

Phe Ile His Gln Ser Asp Leu Lys Val Asp Glu Asn Gln Lys Ala
1175 1180 1185

Tyr Tyr Pro Ser Ile Val Ala Asn Arg Trp Leu Ala Val Arg Leu
1190 1195 1200

Glu Cys Val Gly Asn Cys Ile Val Leu Phe Ala Ala Leu Phe Ala
1205 1210 1215

Val Ile Ser Arg His Ser Leu Ser Ala Gly Leu Val Gly Leu Ser
1220 1225 1230

Val Ser Tyr Ser Leu Gln Val Thr Thr Tyr Leu Asn Trp Leu Val
1235 1240 1245

Arg Met Ser Ser Glu Met Glu Thr Asn Ile Val Ala Val Glu Arg
1250 1255 1260

Leu Lys Glu Tyr Ser Glu Thr Glu Lys Glu Ala Pro Trp Gln Ile
1265 1270 1275

Gln Glu Thr Ala Pro Pro Ser Ser Trp Pro Gln Val Gly Arg Val
1280 1285 1290

Glu Phe Arg Asn Tyr Cys Leu Arg Tyr Arg Glu Asp Leu Asp Phe
1295 1300 1305

Val Leu Arg His Ile Asn Val Thr Ile Asn Gly Gly Glu Lys Val
1310 1315 1320

Gly Ile Val Gly Arg Thr Gly Ala Gly Lys Ser Ser Leu Thr Leu
1325 1330 1335

Gly Leu Phe Arg Ile Asn Glu Ser Ala Glu Gly Glu Ile Ile Ile

1340 1345 1350

Asp Gly Ile Asn Ile Ala Lys Ile Gly Leu His Asp Leu Arg Phe
1355 1360 1365

Lys Ile Thr Ile Ile Pro Gln Asp Pro Val Leu Phe Ser Gly Ser
1370 1375 1380

Leu Arg Met Asn Leu Asp Pro Phe Ser Gln Tyr Ser Asp Glu Glu
1385 1390 1395

Val Trp Thr Ser Leu Glu Leu Ala His Leu Lys Asp Phe Val Ser
1400 1405 1410

Ala Leu Pro Asp Lys Leu Asp His Glu Cys Ala Glu Gly Gly Glu
1415 1420 1425

Asn Leu Ser Val Gly Gln Arg Gln Leu Val Cys Leu Ala Arg Ala
1430 1435 1440

Leu Leu Arg Lys Thr Lys Ile Leu Val Leu Asp Glu Ala Thr Ala
1445 1450 1455

Ala Val Asp Leu Glu Thr Asp Asp Leu Ile Gln Ser Thr Ile Arg
1460 1465 1470

Thr Gln Phe Glu Asp Cys Thr Val Leu Thr Ile Ala His Arg Leu
1475 1480 1485

Asn Thr Ile Met Asp Tyr Thr Arg Val Ile Val Leu Asp Lys Gly
1490 1495 1500

Glu Ile Gln Glu Tyr Gly Ala Pro Ser Asp Leu Leu Gln Gln Arg
1505 1510 1515

Gly Leu Phe Tyr Ser Met Ala Lys Asp Ala Gly Leu Val
1520 1525 1530

<210> 7700
<211> 22
<212> PRT
<213> Homo sapiens

<220>

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<220>
<221> source
<223> /note="Gene Symbol: ABCC1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000459693"

<400> 7700
Leu Val Thr Asp Ser Ala Gly Lys Gln Leu Gln Arg Phe Glu Gly His
1 5 10 15

Phe His Leu Thr Arg Pro
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<210> 7701
<211> 1440
<212> PRT
<213> Homo sapiens

<220>
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C (CFTR/MRP),
member 1; "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7701
Xaa Ala Pro Val Phe Leu Val Ser Pro Thr Leu Leu Gly Ile Thr Met
1 5 10 15

Leu Leu Ala Thr Phe Leu Ile Gln Leu Glu Arg Arg Lys Gly Val Gln
20 25 30

Ser Ser Gly Ile Met Leu Thr Phe Trp Leu Val Ala Leu Val Cys Ala
35 40 45

Leu Ala Ile Leu Arg Ser Lys Ile Met Thr Ala Leu Lys Glu Asp Ala
50 55 60

Gln Val Asp Leu Phe Arg Asp Ile Thr Phe Tyr Val Tyr Phe Ser Leu
65 70 75 80

Leu Leu Ile Gln Leu Val Leu Ser Cys Phe Ser Asp Arg Ser Pro Leu
85 90 95

Phe Ser Glu Thr Ile His Asp Pro Asn Pro Cys Pro Glu Ser Ser Ala
100 105 110

Ser Phe Leu Ser Arg Ile Thr Phe Trp Trp Ile Thr Gly Leu Ile Val
115 120 125

Arg Gly Tyr Arg Gln Pro Leu Glu Gly Ser Asp Leu Trp Ser Leu Asn
130 135 140

Lys Glu Asp Thr Ser Glu Gln Val Val Pro Val Leu Val Lys Asn Trp
145 150 155 160

Lys Lys Glu Cys Ala Lys Thr Arg Lys Gln Pro Val Lys Val Val Tyr
165 170 175

Ser Ser Lys Asp Pro Ala Gln Pro Lys Glu Ser Ser Lys Val Asp Ala
180 185 190

Asn Glu Glu Val Glu Ala Leu Ile Val Lys Ser Pro Gln Lys Glu Trp
195 200 205

Asn Pro Ser Leu Phe Lys Val Leu Tyr Lys Thr Phe Gly Pro Tyr Phe
210 215 220

```
Leu Met Ser Phe Phe Phe Lys Ala Ile His Asp Leu Met Met Phe Ser
225                 230                 235                 240

Gly Pro Gln Ile Leu Lys Leu Leu Ile Lys Phe Val Asn Asp Thr Lys
                245                 250                 255

Ala Pro Asp Trp Gln Gly Tyr Phe Tyr Thr Val Leu Leu Phe Val Thr
            260                 265                 270

Ala Cys Leu Gln Thr Leu Val Leu His Gln Tyr Phe His Ile Cys Phe
        275                 280                 285

Val Ser Gly Met Arg Ile Lys Thr Ala Val Ile Gly Ala Val Tyr Arg
    290                 295                 300

Lys Ala Leu Val Ile Thr Asn Ser Ala Arg Lys Ser Ser Thr Val Gly
305                 310                 315                 320

Glu Ile Val Asn Leu Met Ser Val Asp Ala Gln Arg Phe Met Asp Leu
                325                 330                 335

Ala Thr Tyr Ile Asn Met Ile Trp Ser Ala Pro Leu Gln Val Ile Leu
            340                 345                 350

Ala Leu Tyr Leu Leu Trp Leu Asn Leu Gly Pro Ser Val Leu Ala Gly
        355                 360                 365

Val Ala Val Met Val Leu Met Val Pro Val Asn Ala Val Met Ala Met
    370                 375                 380

Lys Thr Lys Thr Tyr Gln Val Ala His Met Lys Ser Lys Asp Asn Arg
385                 390                 395                 400

Ile Lys Leu Met Asn Glu Ile Leu Asn Gly Ile Lys Val Leu Lys Leu
                405                 410                 415

Tyr Ala Trp Glu Leu Ala Phe Lys Asp Lys Val Leu Ala Ile Arg Gln
            420                 425                 430

Glu Glu Leu Lys Val Leu Lys Lys Ser Ala Tyr Leu Ser Ala Val Gly
        435                 440                 445

Thr Phe Thr Trp Val Cys Thr Pro Phe Leu Val Ala Leu Cys Thr Phe
```

```
    450                 455                 460

Ala Val Tyr Val Thr Ile Asp Glu Asn Asn Ile Leu Asp Ala Gln Thr
465                 470                 475                 480

Ala Phe Val Ser Leu Ala Leu Phe Asn Ile Leu Arg Phe Pro Leu Asn
                485                 490                 495

Ile Leu Pro Met Val Ile Ser Ser Ile Val Gln Ala Ser Val Ser Leu
            500                 505                 510

Lys Arg Leu Arg Ile Phe Leu Ser His Glu Glu Leu Glu Pro Asp Ser
        515                 520                 525

Ile Glu Arg Arg Pro Val Lys Asp Gly Gly Gly Thr Asn Ser Ile Thr
    530                 535                 540

Val Arg Asn Ala Thr Phe Thr Trp Ala Arg Ser Asp Pro Pro Thr Leu
545                 550                 555                 560

Asn Gly Ile Thr Phe Ser Ile Pro Glu Gly Ala Leu Val Ala Val Val
                565                 570                 575

Gly Gln Val Gly Cys Gly Lys Ser Ser Leu Leu Ser Ala Leu Leu Ala
            580                 585                 590

Glu Met Asp Lys Val Glu Gly His Val Ala Ile Lys Gly Ser Val Ala
        595                 600                 605

Tyr Val Pro Gln Gln Ala Trp Ile Gln Asn Asp Ser Leu Arg Glu Asn
    610                 615                 620

Ile Leu Phe Gly Cys Gln Leu Glu Glu Pro Tyr Tyr Arg Ser Val Ile
625                 630                 635                 640

Gln Ala Cys Ala Leu Leu Pro Asp Leu Glu Ile Leu Pro Ser Gly Asp
                645                 650                 655

Arg Thr Glu Ile Gly Glu Lys Gly Val Asn Leu Ser Gly Gly Gln Lys
            660                 665                 670

Gln Arg Val Ser Leu Ala Arg Ala Val Tyr Ser Asn Ala Asp Ile Tyr
        675                 680                 685
```

```
Leu Phe Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His
    690                 695                 700

Ile Phe Glu Asn Val Ile Gly Pro Lys Gly Met Leu Lys Asn Lys Thr
705                 710                 715                 720

Arg Ile Leu Val Thr His Ser Met Ser Tyr Leu Pro Gln Val Asp Val
                725                 730                 735

Ile Ile Val Met Ser Gly Gly Lys Ile Ser Glu Met Gly Ser Tyr Gln
            740                 745                 750

Glu Leu Leu Ala Arg Asp Gly Ala Phe Ala Glu Phe Leu Arg Thr Tyr
        755                 760                 765

Ala Ser Thr Glu Gln Glu Gln Asp Ala Glu Glu Asn Gly Ser Thr Val
    770                 775                 780

Met Asp Glu Glu Glu Ala Gly Val Thr Gly Val Ser Gly Pro Gly Lys
785                 790                 795                 800

Glu Ala Lys Gln Met Glu Asn Gly Met Leu Val Thr Asp Ser Ala Gly
                805                 810                 815

Lys Gln Leu Gln Arg Gln Leu Ser Ser Ser Ser Ser Tyr Ser Gly Asp
            820                 825                 830

Ile Ser Arg His His Asn Ser Thr Ala Glu Leu Gln Lys Ala Glu Ala
        835                 840                 845

Lys Lys Glu Glu Thr Trp Lys Leu Met Glu Ala Asp Lys Ala Gln Thr
    850                 855                 860

Gly Gln Val Lys Leu Ser Val Tyr Trp Asp Tyr Met Lys Ala Ile Gly
865                 870                 875                 880

Leu Phe Ile Ser Phe Leu Ser Ile Phe Leu Phe Met Cys Asn His Val
                885                 890                 895

Ser Ala Leu Ala Ser Asn Tyr Trp Leu Ser Leu Trp Thr Asp Asp Pro
            900                 905                 910
```

```
Ile Val Asn Gly Thr Gln Glu His Thr Lys Val Arg Leu Ser Val Tyr
        915                 920                 925

Gly Ala Leu Gly Ile Ser Gln Gly Ile Ala Val Phe Gly Tyr Ser Met
    930                 935                 940

Ala Val Ser Ile Gly Gly Ile Leu Ala Ser Arg Cys Leu His Val Asp
945                 950                 955                 960

Leu Leu His Ser Ile Leu Arg Ser Pro Met Ser Phe Phe Glu Arg Thr
                965                 970                 975

Pro Ser Gly Asn Leu Val Asn Arg Phe Ser Lys Glu Leu Asp Thr Val
            980                 985                 990

Asp Ser Met Ile Pro Glu Val Ile  Lys Met Phe Met Gly  Ser Leu
Phe
        995                 1000                1005

Asn Val  Ile Gly Ala Cys Ile  Val Ile Leu Leu Ala  Thr Pro Ile
    1010                1015                1020

Ala Ala  Ile Ile Ile Pro Pro  Leu Gly Leu Ile Tyr  Phe Phe Val
    1025                1030                1035

Gln Arg  Phe Tyr Val Ala Ser  Ser Arg Gln Leu Lys  Arg Leu Glu
    1040                1045                1050

Ser Val  Ser Arg Ser Pro Val  Tyr Ser His Phe Asn  Glu Thr Leu
    1055                1060                1065

Leu Gly  Val Ser Val Ile Arg  Ala Phe Glu Glu Gln  Glu Arg Phe
    1070                1075                1080

Ile His  Gln Ser Asp Leu Lys  Val Asp Glu Asn Gln  Lys Ala Tyr
    1085                1090                1095

Tyr Pro  Ser Ile Val Ala Asn  Arg Trp Leu Ala Val  Arg Leu Glu
    1100                1105                1110

Cys Val  Gly Asn Cys Ile Val  Leu Phe Ala Ala Leu  Phe Ala Val
    1115                1120                1125
```

```
Ile Ser  Arg His Ser Leu Ser  Ala Gly Leu Val Gly  Leu Ser Val
    1130                1135                1140

Ser Tyr  Ser Leu Gln Val Thr  Thr Tyr Leu Asn Trp  Leu Val Arg
    1145                1150                1155

Met Ser  Ser Glu Met Glu Thr  Asn Ile Val Ala Val  Glu Arg Leu
    1160                1165                1170

Lys Glu  Tyr Ser Glu Thr Glu  Lys Glu Ala Pro Trp  Gln Ile Gln
    1175                1180                1185

Glu Thr  Ala Pro Pro Ser Ser  Trp Pro Gln Val Gly  Arg Val Glu
    1190                1195                1200

Phe Arg  Asn Tyr Cys Leu Arg  Tyr Arg Glu Asp Leu  Asp Phe Val
    1205                1210                1215

Leu Arg  His Ile Asn Val Thr  Ile Asn Gly Gly Glu  Lys Val Gly
    1220                1225                1230

Ile Val  Gly Arg Thr Gly Ala  Gly Lys Ser Ser Leu  Thr Leu Gly
    1235                1240                1245

Leu Phe  Arg Ile Asn Glu Ser  Ala Glu Gly Glu Ile  Ile Ile Asp
    1250                1255                1260

Gly Ile  Asn Ile Ala Lys Ile  Gly Leu His Asp Leu  Arg Phe Lys
    1265                1270                1275

Ile Thr  Ile Ile Pro Gln Asp  Pro Val Leu Phe Ser  Gly Ser Leu
    1280                1285                1290

Arg Met  Asn Leu Asp Pro Phe  Ser Gln Tyr Ser Asp  Glu Glu Val
    1295                1300                1305

Trp Thr  Ser Leu Glu Leu Ala  His Leu Lys Asp Phe  Val Ser Ala
    1310                1315                1320

Leu Pro  Asp Lys Leu Asp His  Glu Cys Ala Glu Gly  Gly Glu Asn
    1325                1330                1335
```

```
Leu Ser  Val Gly Gln Arg Gln  Leu Val Cys Leu Ala  Arg Ala Leu
    1340                1345                1350

Leu Arg  Lys Thr Lys Ile Leu  Val Leu Asp Glu Ala  Thr Ala Ala
    1355                1360                1365

Val Asp  Leu Glu Thr Asp Asp  Leu Ile Gln Ser Thr  Ile Arg Thr
    1370                1375                1380

Gln Phe  Glu Asp Cys Thr Val  Leu Thr Ile Ala His  Arg Leu Asn
    1385                1390                1395

Thr Ile  Met Asp Tyr Thr Arg  Val Ile Val Leu Asp  Lys Gly Glu
    1400                1405                1410

Ile Gln  Glu Tyr Gly Ala Pro  Ser Asp Leu Leu Gln  Gln Arg Gly
    1415                1420                1425

Leu Phe  Tyr Ser Met Ala Lys  Asp Ala Gly Leu Val
    1430                1435                1440


<210> 7702
<211> 1215
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1619; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478647"

<400> 7702
Met Ser Phe Phe Phe Lys Ala Ile His Asp Leu Met Met Phe Ser Gly
1               5                  10                  15
```

```
Pro Gln Ile Leu Lys Leu Leu Ile Lys Phe Val Asn Asp Thr Lys Ala
            20                  25                  30

Pro Asp Trp Gln Gly Tyr Phe Tyr Thr Val Leu Leu Phe Val Thr Ala
        35                  40                  45

Cys Leu Gln Thr Leu Val Leu His Gln Tyr Phe His Ile Cys Phe Val
    50                  55                  60

Ser Gly Met Arg Ile Lys Thr Ala Val Ile Gly Ala Val Tyr Arg Lys
65                  70                  75                  80

Ala Leu Val Ile Thr Asn Ser Ala Arg Lys Ser Ser Thr Val Gly Glu
                85                  90                  95

Ile Val Asn Leu Met Ser Val Asp Ala Gln Arg Phe Met Asp Leu Ala
            100                 105                 110

Thr Tyr Ile Asn Met Ile Trp Ser Ala Pro Leu Gln Val Ile Leu Ala
        115                 120                 125

Leu Tyr Leu Leu Trp Leu Asn Leu Gly Pro Ser Val Leu Ala Gly Val
    130                 135                 140

Ala Val Met Val Leu Met Val Pro Val Asn Ala Val Met Ala Met Lys
145                 150                 155                 160

Thr Lys Thr Tyr Gln Val Ala His Met Lys Ser Lys Asp Asn Arg Ile
                165                 170                 175

Lys Leu Met Asn Glu Ile Leu Asn Gly Ile Lys Val Leu Lys Leu Tyr
            180                 185                 190

Ala Trp Glu Leu Ala Phe Lys Asp Lys Val Leu Ala Ile Arg Gln Glu
        195                 200                 205

Glu Leu Lys Val Leu Lys Lys Ser Ala Tyr Leu Ser Ala Val Gly Thr
    210                 215                 220

Phe Thr Trp Val Cys Thr Pro Phe Leu Val Ala Leu Cys Thr Phe Ala
225                 230                 235                 240

Val Tyr Val Thr Ile Asp Glu Asn Asn Ile Leu Asp Ala Gln Thr Ala
```

```
                245                 250                 255

Phe Val Ser Leu Ala Leu Phe Asn Ile Leu Arg Phe Pro Leu Asn Ile
            260                 265                 270

Leu Pro Met Val Ile Ser Ser Ile Val Gln Ala Ser Val Ser Leu Lys
        275                 280                 285

Arg Leu Arg Ile Phe Leu Ser His Glu Glu Leu Glu Pro Asp Ser Ile
    290                 295                 300

Glu Arg Arg Pro Val Lys Asp Gly Gly Gly Thr Asn Ser Ile Thr Val
305                 310                 315                 320

Arg Asn Ala Thr Phe Thr Trp Ala Arg Ser Asp Pro Pro Thr Leu Asn
                325                 330                 335

Gly Ile Thr Phe Ser Ile Pro Glu Gly Ala Leu Val Ala Val Val Gly
            340                 345                 350

Gln Val Gly Cys Gly Lys Ser Ser Leu Leu Ser Ala Leu Leu Ala Glu
        355                 360                 365

Met Asp Lys Val Glu Gly His Val Ala Ile Lys Gly Ser Val Ala Tyr
    370                 375                 380

Val Pro Gln Gln Ala Trp Ile Gln Asn Asp Ser Leu Arg Glu Asn Ile
385                 390                 395                 400

Leu Phe Gly Cys Gln Leu Glu Glu Pro Tyr Tyr Arg Ser Val Ile Gln
                405                 410                 415

Ala Cys Ala Leu Leu Pro Asp Leu Glu Ile Leu Pro Ser Gly Asp Arg
            420                 425                 430

Thr Glu Ile Gly Glu Lys Gly Val Asn Leu Ser Gly Gly Gln Lys Gln
        435                 440                 445

Arg Val Ser Leu Ala Arg Ala Val Tyr Ser Asn Ala Asp Ile Tyr Leu
    450                 455                 460

Phe Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile
465                 470                 475                 480
```

```
Phe Glu Asn Val Ile Gly Pro Lys Gly Met Leu Lys Asn Lys Thr Arg
                485                 490                 495

Ile Leu Val Thr His Ser Met Ser Tyr Leu Pro Gln Val Asp Val Ile
            500                 505                 510

Ile Val Met Ser Gly Gly Lys Ile Ser Glu Met Gly Ser Tyr Gln Glu
        515                 520                 525

Leu Leu Ala Arg Asp Gly Ala Phe Ala Glu Phe Leu Arg Thr Tyr Ala
    530                 535                 540

Ser Thr Glu Gln Glu Gln Asp Ala Glu Glu Asn Gly Ser Thr Val Met
545                 550                 555                 560

Asp Glu Glu Glu Ala Gly Val Thr Gly Val Ser Gly Pro Gly Lys Glu
                565                 570                 575

Ala Lys Gln Met Glu Asn Gly Met Leu Val Thr Asp Ser Ala Gly Lys
            580                 585                 590

Gln Leu Gln Arg Gln Leu Ser Ser Ser Ser Ser Tyr Ser Gly Asp Ile
        595                 600                 605

Ser Arg His His Asn Ser Thr Ala Glu Leu Gln Lys Ala Glu Ala Lys
    610                 615                 620

Lys Glu Glu Thr Trp Lys Leu Met Glu Ala Asp Lys Ala Gln Thr Gly
625                 630                 635                 640

Gln Val Lys Leu Ser Val Tyr Trp Asp Tyr Met Lys Ala Ile Gly Leu
                645                 650                 655

Phe Ile Ser Phe Leu Ser Ile Phe Leu Phe Met Cys Asn His Val Ser
            660                 665                 670

Ala Leu Ala Ser Asn Tyr Trp Leu Ser Leu Trp Thr Asp Asp Pro Ile
        675                 680                 685

Val Asn Gly Thr Gln Glu His Thr Lys Val Arg Leu Ser Val Tyr Gly
    690                 695                 700
```

```
Ala Leu Gly Ile Ser Gln Gly Ile Ala Val Phe Gly Tyr Ser Met Ala
705                 710                 715                 720

Val Ser Ile Gly Gly Ile Leu Ala Ser Arg Cys Leu His Val Asp Leu
                725                 730                 735

Leu His Ser Ile Leu Arg Ser Pro Met Ser Phe Phe Glu Arg Thr Pro
            740                 745                 750

Ser Gly Asn Leu Val Asn Arg Phe Ser Lys Glu Leu Asp Thr Val Asp
        755                 760                 765

Ser Met Ile Pro Glu Val Ile Lys Met Phe Met Gly Ser Leu Phe Asn
    770                 775                 780

Val Ile Gly Ala Cys Ile Val Ile Leu Leu Ala Thr Pro Ile Ala Ala
785                 790                 795                 800

Ile Ile Ile Pro Pro Leu Gly Leu Ile Tyr Phe Phe Val Gln Arg Phe
                805                 810                 815

Tyr Val Ala Ser Ser Arg Gln Leu Lys Arg Leu Glu Ser Val Ser Arg
            820                 825                 830

Ser Pro Val Tyr Ser His Phe Asn Glu Thr Leu Leu Gly Val Ser Val
        835                 840                 845

Ile Arg Ala Phe Glu Glu Gln Glu Arg Phe Ile His Gln Ser Asp Leu
    850                 855                 860

Lys Val Asp Glu Asn Gln Lys Ala Tyr Tyr Pro Ser Ile Val Ala Asn
865                 870                 875                 880

Arg Trp Leu Ala Val Arg Leu Glu Cys Val Gly Asn Cys Ile Val Leu
                885                 890                 895

Phe Ala Ala Leu Phe Ala Val Ile Ser Arg His Ser Leu Ser Ala Gly
            900                 905                 910

Leu Val Gly Leu Ser Val Ser Tyr Ser Leu Gln Val Thr Thr Tyr Leu
        915                 920                 925
```

```
Asn Trp Leu Val Arg Met Ser Ser Glu Met Glu Thr Asn Ile Val Ala
    930                 935                 940

Val Glu Arg Leu Lys Glu Tyr Ser Glu Thr Glu Lys Glu Ala Pro Trp
945                 950                 955                 960

Gln Ile Gln Glu Thr Ala Pro Pro Ser Ser Trp Pro Gln Val Gly Arg
                965                 970                 975

Val Glu Phe Arg Asn Tyr Cys Leu Arg Tyr Arg Glu Asp Leu Asp Phe
            980                 985                 990

Val Leu Arg His Ile Asn Val Thr  Ile Asn Gly Gly Glu  Lys Val
Gly
        995                 1000                1005

Ile Val  Gly Arg Thr Gly Ala  Gly Lys Ser Ser Leu  Thr Leu Gly
    1010                1015                1020

Leu Phe  Arg Ile Asn Glu Ser  Ala Glu Gly Glu Ile  Ile Ile Asp
    1025                1030                1035

Gly Ile  Asn Ile Ala Lys Ile  Gly Leu His Asp Leu  Arg Phe Lys
    1040                1045                1050

Ile Thr  Ile Ile Pro Gln Asp  Pro Val Leu Phe Ser  Gly Ser Leu
    1055                1060                1065

Arg Met  Asn Leu Asp Pro Phe  Ser Gln Tyr Ser Asp  Glu Glu Val
    1070                1075                1080

Trp Thr  Ser Leu Glu Leu Ala  His Leu Lys Asp Phe  Val Ser Ala
    1085                1090                1095

Leu Pro  Asp Lys Leu Asp His  Glu Cys Ala Glu Gly  Gly Glu Asn
    1100                1105                1110

Leu Ser  Val Gly Gln Arg Gln  Leu Val Cys Leu Ala  Arg Ala Leu
    1115                1120                1125

Leu Arg  Lys Thr Lys Ile Leu  Val Leu Asp Glu Ala  Thr Ala Ala
    1130                1135                1140
```

```
Val Asp  Leu Glu Thr Asp Asp  Leu Ile Gln Ser Thr  Ile Arg Thr
    1145                1150                1155


Gln Phe  Glu Asp Cys Thr Val  Leu Thr Ile Ala His  Arg Leu Asn
    1160                1165                1170


Thr Ile  Met Asp Tyr Thr Arg  Val Ile Val Leu Asp  Lys Gly Glu
    1175                1180                1185


Ile Gln  Glu Tyr Gly Ala Pro  Ser Asp Leu Leu Gln  Gln Arg Gly
    1190                1195                1200


Leu Phe  Tyr Ser Met Ala Lys  Asp Ala Gly Leu Val
    1205                1210                1215


<210> 7703
<211> 1440
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCC1; "

<220>
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<223> /note="Gene Name:
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      C (CFTR/MRP),
      member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000481080"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7703
Xaa Ala Pro Val Phe Leu Val Ser Pro Thr Leu Leu Gly Ile Thr Met
1               5                  10                  15


Leu Leu Ala Thr Phe Leu Ile Gln Leu Glu Arg Arg Lys Gly Val Gln
            20                  25                  30
```

```
Ser Ser Gly Ile Met Leu Thr Phe Trp Leu Val Ala Leu Val Cys Ala
        35                  40                  45

Leu Ala Ile Leu Arg Ser Lys Ile Met Thr Ala Leu Lys Glu Asp Ala
    50                  55                  60

Gln Val Asp Leu Phe Arg Asp Ile Thr Phe Tyr Val Tyr Phe Ser Leu
65                  70                  75                  80

Leu Leu Ile Gln Leu Val Leu Ser Cys Phe Ser Asp Arg Ser Pro Leu
                85                  90                  95

Phe Ser Glu Thr Ile His Asp Pro Asn Pro Cys Pro Glu Ser Ser Ala
            100                 105                 110

Ser Phe Leu Ser Arg Ile Thr Phe Trp Trp Ile Thr Gly Leu Ile Val
        115                 120                 125

Arg Gly Tyr Arg Gln Pro Leu Glu Gly Ser Asp Leu Trp Ser Leu Asn
    130                 135                 140

Lys Glu Asp Thr Ser Glu Gln Val Val Pro Val Leu Val Lys Asn Trp
145                 150                 155                 160

Lys Lys Glu Cys Ala Lys Thr Arg Lys Gln Pro Val Lys Val Val Tyr
                165                 170                 175

Ser Ser Lys Asp Pro Ala Gln Pro Lys Glu Ser Ser Lys Val Asp Ala
            180                 185                 190

Asn Glu Glu Val Glu Ala Leu Ile Val Lys Ser Pro Gln Lys Glu Trp
        195                 200                 205

Asn Pro Ser Leu Phe Lys Val Leu Tyr Lys Thr Phe Gly Pro Tyr Phe
    210                 215                 220

Leu Met Ser Phe Phe Phe Lys Ala Ile His Asp Leu Met Met Phe Ser
225                 230                 235                 240

Gly Pro Gln Ile Leu Lys Leu Leu Ile Lys Phe Val Asn Asp Thr Lys
                245                 250                 255
```

```
Ala Pro Asp Trp Gln Gly Tyr Phe Tyr Thr Val Leu Leu Phe Val Thr
            260                 265                 270

Ala Cys Leu Gln Thr Leu Val Leu His Gln Tyr Phe His Ile Cys Phe
        275                 280                 285

Val Ser Gly Met Arg Ile Lys Thr Ala Val Ile Gly Ala Val Tyr Arg
    290                 295                 300

Lys Ala Leu Val Ile Thr Asn Ser Ala Arg Lys Ser Ser Thr Val Gly
305                 310                 315                 320

Glu Ile Val Asn Leu Met Ser Val Asp Ala Gln Arg Phe Met Asp Leu
                325                 330                 335

Ala Thr Tyr Ile Asn Met Ile Trp Ser Ala Pro Leu Gln Val Ile Leu
            340                 345                 350

Ala Leu Tyr Leu Leu Trp Leu Asn Leu Gly Pro Ser Val Leu Ala Gly
        355                 360                 365

Val Ala Val Met Val Leu Met Val Pro Val Asn Ala Val Met Ala Met
    370                 375                 380

Lys Thr Lys Thr Tyr Gln Val Ala His Met Lys Ser Lys Asp Asn Arg
385                 390                 395                 400

Ile Lys Leu Met Asn Glu Ile Leu Asn Gly Ile Lys Val Leu Lys Leu
                405                 410                 415

Tyr Ala Trp Glu Leu Ala Phe Lys Asp Lys Val Leu Ala Ile Arg Gln
            420                 425                 430

Glu Glu Leu Lys Val Leu Lys Lys Ser Ala Tyr Leu Ser Ala Val Gly
        435                 440                 445

Thr Phe Thr Trp Val Cys Thr Pro Phe Leu Val Ala Leu Cys Thr Phe
    450                 455                 460

Ala Val Tyr Val Thr Ile Asp Glu Asn Asn Ile Leu Asp Ala Gln Thr
465                 470                 475                 480
```

```
Ala Phe Val Ser Leu Ala Leu Phe Asn Ile Leu Arg Phe Pro Leu Asn
                485                 490                 495

Ile Leu Pro Met Val Ile Ser Ser Ile Val Gln Ala Ser Val Ser Leu
            500                 505                 510

Lys Arg Leu Arg Ile Phe Leu Ser His Glu Glu Leu Glu Pro Asp Ser
        515                 520                 525

Ile Glu Arg Arg Pro Val Lys Asp Gly Gly Gly Thr Asn Ser Ile Thr
    530                 535                 540

Val Arg Asn Ala Thr Phe Thr Trp Ala Arg Ser Asp Pro Pro Thr Leu
545                 550                 555                 560

Asn Gly Ile Thr Phe Ser Ile Pro Glu Gly Ala Leu Val Ala Val Val
                565                 570                 575

Gly Gln Val Gly Cys Gly Lys Ser Ser Leu Leu Ser Ala Leu Leu Ala
            580                 585                 590

Glu Met Asp Lys Val Glu Gly His Val Ala Ile Lys Gly Ser Val Ala
        595                 600                 605

Tyr Val Pro Gln Gln Ala Trp Ile Gln Asn Asp Ser Leu Arg Glu Asn
    610                 615                 620

Ile Leu Phe Gly Cys Gln Leu Glu Glu Pro Tyr Tyr Arg Ser Val Ile
625                 630                 635                 640

Gln Ala Cys Ala Leu Leu Pro Asp Leu Glu Ile Leu Pro Ser Gly Asp
                645                 650                 655

Arg Thr Glu Ile Gly Glu Lys Gly Val Asn Leu Ser Gly Gly Gln Lys
            660                 665                 670

Gln Arg Val Ser Leu Ala Arg Ala Val Tyr Ser Asn Ala Asp Ile Tyr
        675                 680                 685

Leu Phe Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His
    690                 695                 700

Ile Phe Glu Asn Val Ile Gly Pro Lys Gly Met Leu Lys Asn Lys Thr
```

705 710 715 720

Arg Ile Leu Val Thr His Ser Met Ser Tyr Leu Pro Gln Val Asp Val
725 730 735

Ile Ile Val Met Ser Gly Gly Lys Ile Ser Glu Met Gly Ser Tyr Gln
740 745 750

Glu Leu Leu Ala Arg Asp Gly Ala Phe Ala Glu Phe Leu Arg Thr Tyr
755 760 765

Ala Ser Thr Glu Gln Glu Gln Asp Ala Glu Glu Asn Gly Ser Thr Val
770 775 780

Met Asp Glu Glu Glu Ala Gly Val Thr Gly Val Ser Gly Pro Gly Lys
785 790 795 800

Glu Ala Lys Gln Met Glu Asn Gly Met Leu Val Thr Asp Ser Ala Gly
805 810 815

Lys Gln Leu Gln Arg Gln Leu Ser Ser Ser Ser Ser Tyr Ser Gly Asp
820 825 830

Ile Ser Arg His His Asn Ser Thr Ala Glu Leu Gln Lys Ala Glu Ala
835 840 845

Lys Lys Glu Glu Thr Trp Lys Leu Met Glu Ala Asp Lys Ala Gln Thr
850 855 860

Gly Gln Val Lys Leu Ser Val Tyr Trp Asp Tyr Met Lys Ala Ile Gly
865 870 875 880

Leu Phe Ile Ser Phe Leu Ser Ile Phe Leu Phe Met Cys Asn His Val
885 890 895

Ser Ala Leu Ala Ser Asn Tyr Trp Leu Ser Leu Trp Thr Asp Asp Pro
900 905 910

Ile Val Asn Gly Thr Gln Glu His Thr Lys Val Arg Leu Ser Val Tyr
915 920 925

Gly Ala Leu Gly Ile Ser Gln Gly Ile Ala Val Phe Gly Tyr Ser Met
930 935 940

```
Ala Val Ser Ile Gly Gly Ile Leu Ala Ser Arg Cys Leu His Val Asp
945                 950                 955                 960

Leu Leu His Ser Ile Leu Arg Ser Pro Met Ser Phe Phe Glu Arg Thr
                965                 970                 975

Pro Ser Gly Asn Leu Val Asn Arg Phe Ser Lys Glu Leu Asp Thr Val
            980                 985                 990

Asp Ser Met Ile Pro Glu Val Ile  Lys Met Phe Met Gly  Ser Leu
Phe
        995                 1000                1005

Asn Val  Ile Gly Ala Cys Ile  Val Ile Leu Leu Ala  Thr Pro Ile
    1010                1015                1020

Ala Ala  Ile Ile Ile Pro Pro  Leu Gly Leu Ile Tyr  Phe Phe Val
    1025                1030                1035

Gln Arg  Phe Tyr Val Ala Ser  Ser Arg Gln Leu Lys  Arg Leu Glu
    1040                1045                1050

Ser Val  Ser Arg Ser Pro Val  Tyr Ser His Phe Asn  Glu Thr Leu
    1055                1060                1065

Leu Gly  Val Ser Val Ile Arg  Ala Phe Glu Glu Gln  Glu Arg Phe
    1070                1075                1080

Ile His  Gln Ser Asp Leu Lys  Val Asp Glu Asn Gln  Lys Ala Tyr
    1085                1090                1095

Tyr Pro  Ser Ile Val Ala Asn  Arg Trp Leu Ala Val  Arg Leu Glu
    1100                1105                1110

Cys Val  Gly Asn Cys Ile Val  Leu Phe Ala Ala Leu  Phe Ala Val
    1115                1120                1125

Ile Ser  Arg His Ser Leu Ser  Ala Gly Leu Val Gly  Leu Ser Val
    1130                1135                1140

Ser Tyr  Ser Leu Gln Val Thr  Thr Tyr Leu Asn Trp  Leu Val Arg
    1145                1150                1155
```

```
Met Ser  Ser Glu Met Glu Thr  Asn Ile Val Ala Val  Glu Arg Leu
    1160                1165                1170

Lys Glu  Tyr Ser Glu Thr Glu  Lys Glu Ala Pro Trp  Gln Ile Gln
    1175                1180                1185

Glu Thr  Ala Pro Pro Ser Ser  Trp Pro Gln Val Gly  Arg Val Glu
    1190                1195                1200

Phe Arg  Asn Tyr Cys Leu Arg  Tyr Arg Glu Asp Leu  Asp Phe Val
    1205                1210                1215

Leu Arg  His Ile Asn Val Thr  Ile Asn Gly Gly Glu  Lys Val Gly
    1220                1225                1230

Ile Val  Gly Arg Thr Gly Ala  Gly Lys Ser Ser Leu  Thr Leu Gly
    1235                1240                1245

Leu Phe  Arg Ile Asn Glu Ser  Ala Glu Gly Glu Ile  Ile Ile Asp
    1250                1255                1260

Gly Ile  Asn Ile Ala Lys Ile  Gly Leu His Asp Leu  Arg Phe Lys
    1265                1270                1275

Ile Thr  Ile Ile Pro Gln Asp  Pro Val Leu Phe Ser  Gly Ser Leu
    1280                1285                1290

Arg Met  Asn Leu Asp Pro Phe  Ser Gln Tyr Ser Asp  Glu Glu Val
    1295                1300                1305

Trp Thr  Ser Leu Glu Leu Ala  His Leu Lys Asp Phe  Val Ser Ala
    1310                1315                1320

Leu Pro  Asp Lys Leu Asp His  Glu Cys Ala Glu Gly  Gly Glu Asn
    1325                1330                1335

Leu Ser  Val Gly Gln Arg Gln  Leu Val Cys Leu Ala  Arg Ala Leu
    1340                1345                1350

Leu Arg  Lys Thr Lys Ile Leu  Val Leu Asp Glu Ala  Thr Ala Ala
    1355                1360                1365
```

```
Val Asp  Leu Glu Thr Asp Asp  Leu Ile Gln Ser Thr  Ile Arg Thr
    1370                1375                1380

Gln Phe  Glu Asp Cys Thr Val  Leu Thr Ile Ala His  Arg Leu Asn
    1385                1390                1395

Thr Ile  Met Asp Tyr Thr Arg  Val Ile Val Leu Asp  Lys Gly Glu
    1400                1405                1410

Ile Gln  Glu Tyr Gly Ala Pro  Ser Asp Leu Leu Gln  Gln Arg Gly
    1415                1420                1425

Leu Phe  Tyr Ser Met Ala Lys  Asp Ala Gly Leu Val
    1430                1435                1440
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<210> 7704
<211> 1531
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1619; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P33527; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483316"

<400> 7704

```
Met Ala Leu Arg Gly Phe Cys Ser Ala Asp Gly Ser Asp Pro Leu Trp
1               5                  10                  15

Asp Trp Asn Val Thr Trp Asn Thr Ser Asn Pro Asp Phe Thr Lys Cys
            20                  25                  30
```

```
Phe Gln Asn Thr Val Leu Val Trp Val Pro Cys Phe Tyr Leu Trp Ala
        35                  40                  45

Cys Phe Pro Phe Tyr Phe Leu Tyr Leu Ser Arg His Asp Arg Gly Tyr
    50                  55                  60

Ile Gln Met Thr Pro Leu Asn Lys Thr Lys Thr Ala Leu Gly Phe Leu
65                  70                  75                  80

Leu Trp Ile Val Cys Trp Ala Asp Leu Phe Tyr Ser Phe Trp Glu Arg
                85                  90                  95

Ser Arg Gly Ile Phe Leu Ala Pro Val Phe Leu Val Ser Pro Thr Leu
            100                 105                 110

Leu Gly Ile Thr Met Leu Leu Ala Thr Phe Leu Ile Gln Leu Glu Arg
        115                 120                 125

Arg Lys Gly Val Gln Ser Ser Gly Ile Met Leu Thr Phe Trp Leu Val
    130                 135                 140

Ala Leu Val Cys Ala Leu Ala Ile Leu Arg Ser Lys Ile Met Thr Ala
145                 150                 155                 160

Leu Lys Glu Asp Ala Gln Val Asp Leu Phe Arg Asp Ile Thr Phe Tyr
                165                 170                 175

Val Tyr Phe Ser Leu Leu Leu Ile Gln Leu Val Leu Ser Cys Phe Ser
            180                 185                 190

Asp Arg Ser Pro Leu Phe Ser Glu Thr Ile His Asp Pro Asn Pro Cys
        195                 200                 205

Pro Glu Ser Ser Ala Ser Phe Leu Ser Arg Ile Thr Phe Trp Trp Ile
    210                 215                 220

Thr Gly Leu Ile Val Arg Gly Tyr Arg Gln Pro Leu Glu Gly Ser Asp
225                 230                 235                 240

Leu Trp Ser Leu Asn Lys Glu Asp Thr Ser Glu Gln Val Val Pro Val
                245                 250                 255
```

```
Leu Val Lys Asn Trp Lys Lys Glu Cys Ala Lys Thr Arg Lys Gln Pro
            260                 265                 270

Val Lys Val Val Tyr Ser Ser Lys Asp Pro Ala Gln Pro Lys Glu Ser
        275                 280                 285

Ser Lys Val Asp Ala Asn Glu Glu Val Glu Ala Leu Ile Val Lys Ser
    290                 295                 300

Pro Gln Lys Glu Trp Asn Pro Ser Leu Phe Lys Val Leu Tyr Lys Thr
305                 310                 315                 320

Phe Gly Pro Tyr Phe Leu Met Ser Phe Phe Phe Lys Ala Ile His Asp
                325                 330                 335

Leu Met Met Phe Ser Gly Pro Gln Ile Leu Lys Leu Leu Ile Lys Phe
            340                 345                 350

Val Asn Asp Thr Lys Ala Pro Asp Trp Gln Gly Tyr Phe Tyr Thr Val
        355                 360                 365

Leu Leu Phe Val Thr Ala Cys Leu Gln Thr Leu Val Leu His Gln Tyr
    370                 375                 380

Phe His Ile Cys Phe Val Ser Gly Met Arg Ile Lys Thr Ala Val Ile
385                 390                 395                 400

Gly Ala Val Tyr Arg Lys Ala Leu Val Ile Thr Asn Ser Ala Arg Lys
                405                 410                 415

Ser Ser Thr Val Gly Glu Ile Val Asn Leu Met Ser Val Asp Ala Gln
            420                 425                 430

Arg Phe Met Asp Leu Ala Thr Tyr Ile Asn Met Ile Trp Ser Ala Pro
        435                 440                 445

Leu Gln Val Ile Leu Ala Leu Tyr Leu Leu Trp Leu Asn Leu Gly Pro
    450                 455                 460

Ser Val Leu Ala Gly Val Ala Val Met Val Leu Met Val Pro Val Asn
465                 470                 475                 480

Ala Val Met Ala Met Lys Thr Lys Thr Tyr Gln Val Ala His Met Lys
```

485 490 495

Ser Lys Asp Asn Arg Ile Lys Leu Met Asn Glu Ile Leu Asn Gly Ile
500 505 510

Lys Val Leu Lys Leu Tyr Ala Trp Glu Leu Ala Phe Lys Asp Lys Val
515 520 525

Leu Ala Ile Arg Gln Glu Glu Leu Lys Val Leu Lys Lys Ser Ala Tyr
530 535 540

Leu Ser Ala Val Gly Thr Phe Thr Trp Val Cys Thr Pro Phe Leu Val
545 550 555 560

Ala Leu Cys Thr Phe Ala Val Tyr Val Thr Ile Asp Glu Asn Asn Ile
565 570 575

Leu Asp Ala Gln Thr Ala Phe Val Ser Leu Ala Leu Phe Asn Ile Leu
580 585 590

Arg Phe Pro Leu Asn Ile Leu Pro Met Val Ile Ser Ser Ile Val Gln
595 600 605

Ala Ser Val Ser Leu Lys Arg Leu Arg Ile Phe Leu Ser His Glu Glu
610 615 620

Leu Glu Pro Asp Ser Ile Glu Arg Arg Pro Val Lys Asp Gly Gly Gly
625 630 635 640

Thr Asn Ser Ile Thr Val Arg Asn Ala Thr Phe Thr Trp Ala Arg Ser
645 650 655

Asp Pro Pro Thr Leu Asn Gly Ile Thr Phe Ser Ile Pro Glu Gly Ala
660 665 670

Leu Val Ala Val Val Gly Gln Val Gly Cys Gly Lys Ser Ser Leu Leu
675 680 685

Ser Ala Leu Leu Ala Glu Met Asp Lys Val Glu Gly His Val Ala Ile
690 695 700

Lys Gly Ser Val Ala Tyr Val Pro Gln Gln Ala Trp Ile Gln Asn Asp
705 710 715 720

Ser Leu Arg Glu Asn Ile Leu Phe Gly Cys Gln Leu Glu Glu Pro Tyr
725 730 735

Tyr Arg Ser Val Ile Gln Ala Cys Ala Leu Leu Pro Asp Leu Glu Ile
740 745 750

Leu Pro Ser Gly Asp Arg Thr Glu Ile Gly Glu Lys Gly Val Asn Leu
755 760 765

Ser Gly Gly Gln Lys Gln Arg Val Ser Leu Ala Arg Ala Val Tyr Ser
770 775 780

Asn Ala Asp Ile Tyr Leu Phe Asp Asp Pro Leu Ser Ala Val Asp Ala
785 790 795 800

His Val Gly Lys His Ile Phe Glu Asn Val Ile Gly Pro Lys Gly Met
805 810 815

Leu Lys Asn Lys Thr Arg Ile Leu Val Thr His Ser Met Ser Tyr Leu
820 825 830

Pro Gln Val Asp Val Ile Ile Val Met Ser Gly Gly Lys Ile Ser Glu
835 840 845

Met Gly Ser Tyr Gln Glu Leu Leu Ala Arg Asp Gly Ala Phe Ala Glu
850 855 860

Phe Leu Arg Thr Tyr Ala Ser Thr Glu Gln Glu Gln Asp Ala Glu Glu
865 870 875 880

Asn Gly Val Thr Gly Val Ser Gly Pro Gly Lys Glu Ala Lys Gln Met
885 890 895

Glu Asn Gly Met Leu Val Thr Asp Ser Ala Gly Lys Gln Leu Gln Arg
900 905 910

Gln Leu Ser Ser Ser Ser Ser Tyr Ser Gly Asp Ile Ser Arg His His
915 920 925

Asn Ser Thr Ala Glu Leu Gln Lys Ala Glu Ala Lys Lys Glu Glu Thr
930 935 940

```
Trp Lys Leu Met Glu Ala Asp Lys Ala Gln Thr Gly Gln Val Lys Leu
945                 950                 955                 960

Ser Val Tyr Trp Asp Tyr Met Lys Ala Ile Gly Leu Phe Ile Ser Phe
                965                 970                 975

Leu Ser Ile Phe Leu Phe Met Cys Asn His Val Ser Ala Leu Ala Ser
            980                 985                 990

Asn Tyr Trp Leu Ser Leu Trp Thr  Asp Asp Pro Ile Val  Asn Gly
Thr
        995                 1000                1005

Gln Glu  His Thr Lys Val Arg  Leu Ser Val Tyr Gly  Ala Leu Gly
    1010                1015                1020

Ile Ser  Gln Gly Ile Ala Val  Phe Gly Tyr Ser Met  Ala Val Ser
    1025                1030                1035

Ile Gly  Gly Ile Leu Ala Ser  Arg Cys Leu His Val  Asp Leu Leu
    1040                1045                1050

His Ser  Ile Leu Arg Ser Pro  Met Ser Phe Phe Glu  Arg Thr Pro
    1055                1060                1065

Ser Gly  Asn Leu Val Asn Arg  Phe Ser Lys Glu Leu  Asp Thr Val
    1070                1075                1080

Asp Ser  Met Ile Pro Glu Val  Ile Lys Met Phe Met  Gly Ser Leu
    1085                1090                1095

Phe Asn  Val Ile Gly Ala Cys  Ile Val Ile Leu Leu  Ala Thr Pro
    1100                1105                1110

Ile Ala  Ala Ile Ile Ile Pro  Pro Leu Gly Leu Ile  Tyr Phe Phe
    1115                1120                1125

Val Gln  Arg Phe Tyr Val Ala  Ser Ser Arg Gln Leu  Lys Arg Leu
    1130                1135                1140

Glu Ser  Val Ser Arg Ser Pro  Val Tyr Ser His Phe  Asn Glu Thr
    1145                1150                1155
```

```
Leu Leu  Gly Val Ser Val Ile  Arg Ala Phe Glu Glu  Gln Glu Arg
    1160                1165                1170

Phe Ile  His Gln Ser Asp Leu  Lys Val Asp Glu Asn  Gln Lys Ala
    1175                1180                1185

Tyr Tyr  Pro Ser Ile Val Ala  Asn Arg Trp Leu Ala  Val Arg Leu
    1190                1195                1200

Glu Cys  Val Gly Asn Cys Ile  Val Leu Phe Ala Ala  Leu Phe Ala
    1205                1210                1215

Val Ile  Ser Arg His Ser Leu  Ser Ala Gly Leu Val  Gly Leu Ser
    1220                1225                1230

Val Ser  Tyr Ser Leu Gln Val  Thr Thr Tyr Leu Asn  Trp Leu Val
    1235                1240                1245

Arg Met  Ser Ser Glu Met Glu  Thr Asn Ile Val Ala  Val Glu Arg
    1250                1255                1260

Leu Lys  Glu Tyr Ser Glu Thr  Glu Lys Glu Ala Pro  Trp Gln Ile
    1265                1270                1275

Gln Glu  Thr Ala Pro Pro Ser  Ser Trp Pro Gln Val  Gly Arg Val
    1280                1285                1290

Glu Phe  Arg Asn Tyr Cys Leu  Arg Tyr Arg Glu Asp  Leu Asp Phe
    1295                1300                1305

Val Leu  Arg His Ile Asn Val  Thr Ile Asn Gly Gly  Glu Lys Val
    1310                1315                1320

Gly Ile  Val Gly Arg Thr Gly  Ala Gly Lys Ser Ser  Leu Thr Leu
    1325                1330                1335

Gly Leu  Phe Arg Ile Asn Glu  Ser Ala Glu Gly Glu  Ile Ile Ile
    1340                1345                1350

Asp Gly  Ile Asn Ile Ala Lys  Ile Gly Leu His Asp  Leu Arg Phe
    1355                1360                1365
```

```
Lys Ile  Thr Ile Ile Pro Gln  Asp Pro Val Leu Phe  Ser Gly Ser
    1370                1375                1380

Leu Arg  Met Asn Leu Asp Pro  Phe Ser Gln Tyr Ser  Asp Glu Glu
    1385                1390                1395

Val Trp  Thr Ser Leu Glu Leu  Ala His Leu Lys Asp  Phe Val Ser
    1400                1405                1410

Ala Leu  Pro Asp Lys Leu Asp  His Glu Cys Ala Glu  Gly Gly Glu
    1415                1420                1425

Asn Leu  Ser Val Gly Gln Arg  Gln Leu Val Cys Leu  Ala Arg Ala
    1430                1435                1440

Leu Leu  Arg Lys Thr Lys Ile  Leu Val Leu Asp Glu  Ala Thr Ala
    1445                1450                1455

Ala Val  Asp Leu Glu Thr Asp  Asp Leu Ile Gln Ser  Thr Ile Arg
    1460                1465                1470

Thr Gln  Phe Glu Asp Cys Thr  Val Leu Thr Ile Ala  His Arg Leu
    1475                1480                1485

Asn Thr  Ile Met Asp Tyr Thr  Arg Val Ile Val Leu  Asp Lys Gly
    1490                1495                1500

Glu Ile  Gln Glu Tyr Gly Ala  Pro Ser Asp Leu Leu  Gln Gln Arg
    1505                1510                1515

Gly Leu  Phe Tyr Ser Met Ala  Lys Asp Ala Gly Leu  Val
    1520                1525                1530


<210> 7705
<211> 1464
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1620; "

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<221> source
<223> /note="Gene Symbol: ABCC10; "
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 10; "

<220>
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<223> /note="Uniprot ID: Q5T3U5; "

<220>
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<400> 7705
Met Cys Leu Leu Val Phe Pro Leu Val Pro Arg Ser Pro Asp Tyr Ile
1   5   10   15

Leu Pro Cys Ser Pro Gly Trp Arg Leu Arg Leu Ala Ala Ser Phe Leu
            20   25   30

Leu Ser Val Phe Pro Leu Leu Asp Leu Leu Pro Val Ala Leu Pro Pro
        35   40   45

Gly Ala Gly Pro Gly Pro Ile Gly Leu Glu Val Leu Ala Gly Cys Val
    50   55   60

Ala Ala Val Ala Trp Ile Ser His Ser Leu Ala Leu Trp Val Leu Ala
65   70   75   80

His Ser Pro His Gly His Ser Arg Gly Pro Leu Ala Leu Ala Leu Val
                85   90   95

Ala Leu Leu Pro Ala Pro Ala Leu Val Leu Thr Val Leu Trp His Cys
            100   105   110

Gln Arg Gly Thr Leu Leu Pro Pro Leu Leu Pro Gly Pro Met Ala Arg
        115   120   125

Leu Cys Leu Leu Ile Leu Gln Leu Ala Ala Leu Leu Ala Tyr Ala Leu
    130   135   140

Gly Trp Ala Ala Pro Gly Gly Pro Arg Glu Pro Trp Ala Gln Glu Pro
145   150   155   160

Leu Leu Pro Glu Asp Gln Glu Pro Glu Val Ala Glu Asp Gly Glu Ser

```
                165                 170                 175

Trp Leu Ser Arg Phe Ser Tyr Ala Trp Leu Ala Pro Leu Leu Ala Arg
            180                 185                 190

Gly Ala Cys Gly Glu Leu Arg Gln Pro Gln Asp Ile Cys Arg Leu Pro
        195                 200                 205

His Arg Leu Gln Pro Thr Tyr Leu Ala Arg Val Phe Gln Ala His Trp
    210                 215                 220

Gln Glu Gly Ala Arg Leu Trp Arg Ala Leu Tyr Gly Ala Phe Gly Arg
225                 230                 235                 240

Cys Tyr Leu Ala Leu Gly Leu Leu Lys Leu Val Gly Thr Met Leu Gly
                245                 250                 255

Phe Ser Gly Pro Leu Leu Leu Ser Leu Leu Val Gly Phe Leu Glu Glu
            260                 265                 270

Gly Gln Glu Pro Leu Ser His Gly Leu Leu Tyr Ala Leu Gly Leu Ala
        275                 280                 285

Gly Gly Ala Val Leu Gly Ala Val Leu Gln Asn Gln Tyr Gly Tyr Glu
    290                 295                 300

Val Tyr Lys Val Thr Leu Gln Ala Arg Gly Ala Val Leu Asn Ile Leu
305                 310                 315                 320

Tyr Cys Lys Ala Leu Gln Leu Gly Pro Ser Arg Pro Pro Thr Gly Glu
                325                 330                 335

Ala Leu Asn Leu Leu Gly Thr Asp Ser Glu Arg Leu Leu Asn Phe Ala
            340                 345                 350

Gly Ser Phe His Glu Ala Trp Gly Leu Pro Leu Gln Leu Ala Ile Thr
        355                 360                 365

Leu Tyr Leu Leu Tyr Gln Gln Val Gly Val Ala Phe Val Gly Gly Leu
    370                 375                 380

Ile Leu Ala Leu Leu Leu Val Pro Val Asn Lys Val Ile Ala Thr Arg
385                 390                 395                 400
```

```
Ile Met Ala Ser Asn Gln Glu Met Leu Gln His Lys Asp Ala Arg Val
                405                 410                 415

Lys Leu Val Thr Glu Leu Leu Ser Gly Ile Arg Val Ile Lys Phe Cys
            420                 425                 430

Gly Trp Glu Gln Ala Leu Gly Ala Arg Val Glu Ala Cys Arg Ala Arg
        435                 440                 445

Glu Leu Gly Arg Leu Arg Val Ile Lys Tyr Leu Asp Ala Ala Cys Val
    450                 455                 460

Tyr Leu Trp Ala Ala Leu Pro Val Val Ile Ser Ile Val Ile Phe Ile
465                 470                 475                 480

Thr Tyr Val Leu Met Gly His Gln Leu Thr Ala Thr Lys Val Phe Thr
                485                 490                 495

Ala Leu Ala Leu Val Arg Met Leu Ile Leu Pro Leu Asn Asn Phe Pro
            500                 505                 510

Trp Val Ile Asn Gly Leu Leu Glu Ala Lys Val Ser Leu Asp Arg Ile
        515                 520                 525

Gln Leu Phe Leu Asp Leu Pro Asn His Asn Pro Gln Ala Tyr Tyr Ser
    530                 535                 540

Pro Asp Cys Gly Arg Leu Gly Ala Gln Ile Lys Trp Leu Leu Cys Ser
545                 550                 555                 560

Asp Pro Pro Ala Glu Pro Ser Thr Val Leu Glu Leu His Gly Ala Leu
                565                 570                 575

Phe Ser Trp Asp Pro Val Gly Thr Ser Leu Glu Thr Phe Ile Ser His
            580                 585                 590

Leu Glu Val Lys Lys Gly Met Leu Val Gly Ile Val Gly Lys Val Gly
        595                 600                 605

Cys Gly Lys Ser Ser Leu Leu Ala Ala Ile Ala Gly Glu Leu His Arg
    610                 615                 620
```

```
Leu Arg Gly His Val Ala Val Arg Gly Leu Ser Lys Gly Phe Gly Leu
625                 630                 635                 640

Ala Thr Gln Glu Pro Trp Ile Gln Phe Ala Thr Ile Arg Asp Asn Ile
                645                 650                 655

Leu Phe Gly Lys Thr Phe Asp Ala Gln Leu Tyr Lys Glu Val Leu Glu
            660                 665                 670

Ala Cys Ala Leu Asn Asp Asp Leu Ser Ile Leu Pro Ala Gly Asp Gln
        675                 680                 685

Thr Glu Val Gly Glu Lys Gly Val Thr Leu Ser Gly Gly Gln Arg Ala
    690                 695                 700

Arg Ile Ala Leu Ala Arg Ala Val Tyr Gln Glu Lys Glu Leu Tyr Leu
705                 710                 715                 720

Leu Asp Asp Pro Leu Ala Ala Val Asp Ala Asp Val Ala Asn His Leu
                725                 730                 735

Leu His Arg Cys Ile Leu Gly Met Leu Ser Tyr Thr Thr Arg Leu Leu
            740                 745                 750

Cys Thr His Arg Thr Glu Tyr Leu Glu Arg Ala Asp Ala Val Leu Leu
        755                 760                 765

Met Glu Ala Gly Arg Leu Ile Arg Ala Gly Pro Pro Ser Glu Ile Leu
    770                 775                 780

Pro Leu Val Gln Ala Val Pro Lys Ala Trp Ala Glu Asn Gly Gln Glu
785                 790                 795                 800

Ser Asp Ser Ala Thr Ala Gln Ser Val Gln Asn Pro Glu Lys Thr Lys
                805                 810                 815

Glu Gly Leu Glu Glu Glu Gln Ser Thr Ser Gly Arg Leu Leu Gln Glu
            820                 825                 830

Glu Ser Lys Lys Glu Gly Ala Val Ala Leu His Val Tyr Gln Ala Tyr
        835                 840                 845
```

```
Trp Lys Ala Val Gly Gln Gly Leu Ala Leu Ala Ile Leu Phe Ser Leu
    850                 855                 860

Leu Leu Met Gln Ala Thr Arg Asn Ala Ala Asp Trp Trp Leu Ser His
865                 870                 875                 880

Trp Ile Ser Gln Leu Lys Ala Glu Asn Ser Ser Gln Glu Ala Gln Pro
                885                 890                 895

Ser Thr Ser Pro Ala Ser Met Gly Leu Phe Ser Pro Gln Leu Leu Leu
            900                 905                 910

Phe Ser Pro Gly Asn Leu Tyr Ile Pro Val Phe Pro Leu Pro Lys Ala
        915                 920                 925

Ala Pro Asn Gly Ser Ser Asp Ile Arg Phe Tyr Leu Thr Val Tyr Ala
    930                 935                 940

Thr Ile Ala Gly Val Asn Ser Leu Cys Thr Leu Leu Arg Ala Val Leu
945                 950                 955                 960

Phe Ala Ala Gly Thr Leu Gln Ala Ala Ala Thr Leu His Arg Arg Leu
                965                 970                 975

Leu His Arg Val Leu Met Ala Pro Val Thr Phe Phe Asn Ala Thr Pro
            980                 985                 990

Thr Gly Arg Ile Leu Asn Arg Phe  Ser Ser Asp Val Ala  Cys Ala
Asp
        995                 1000                1005

Asp Ser  Leu Pro Phe Ile Leu  Asn Ile Leu Leu Ala  Asn Ala Ala
    1010                1015                1020

Gly Leu  Leu Gly Leu Leu Ala  Val Leu Gly Ser Gly  Leu Pro Trp
    1025                1030                1035

Leu Leu  Leu Leu Leu Pro Pro  Leu Ser Ile Met Tyr  Tyr His Val
    1040                1045                1050

Gln Arg  His Tyr Arg Ala Ser  Ser Arg Glu Leu Arg  Arg Leu Gly
    1055                1060                1065
```

```
Ser Leu  Thr Leu Ser Pro Leu  Tyr Ser His Leu Ala  Asp Thr Leu
    1070                1075                1080

Ala Gly  Leu Ser Val Leu Arg  Ala Thr Gly Ala Thr  Tyr Arg Phe
    1085                1090                1095

Glu Glu  Glu Asn Leu Arg Leu  Leu Glu Leu Asn Gln  Arg Cys Gln
    1100                1105                1110

Phe Ala  Thr Ser Ala Thr Met  Gln Trp Leu Asp Ile  Arg Leu Gln
    1115                1120                1125

Leu Met  Gly Ala Ala Val Val  Ser Ala Ile Ala Gly  Ile Ala Leu
    1130                1135                1140

Val Gln  His Gln Gln Gly Leu  Ala Asn Pro Gly Leu  Val Gly Leu
    1145                1150                1155

Ser Leu  Ser Tyr Ala Leu Ser  Leu Thr Gly Leu Leu  Ser Gly Leu
    1160                1165                1170

Val Ser  Ser Phe Thr Gln Thr  Glu Ala Met Leu Val  Ser Val Glu
    1175                1180                1185

Arg Leu  Glu Glu Tyr Thr Cys  Asp Leu Pro Gln Glu  Pro Gln Gly
    1190                1195                1200

Gln Pro  Leu Gln Leu Gly Thr  Gly Trp Leu Thr Gln  Gly Gly Val
    1205                1210                1215

Glu Phe  Gln Asp Val Val Leu  Ala Tyr Arg Pro Gly  Leu Pro Asn
    1220                1225                1230

Ala Leu  Asp Gly Val Thr Phe  Cys Val Gln Pro Gly  Glu Lys Leu
    1235                1240                1245

Gly Ile  Val Gly Arg Thr Gly  Ser Gly Lys Ser Ser  Leu Leu Leu
    1250                1255                1260

Val Leu  Phe Arg Leu Leu Glu  Pro Ser Ser Gly Arg  Val Leu Leu
    1265                1270                1275

Asp Gly  Val Asp Thr Ser Gln  Leu Glu Leu Ala Gln  Leu Arg Ser
```

1280 1285 1290

Gln Leu Ala Ile Ile Pro Gln Glu Pro Phe Leu Phe Ser Gly Thr
1295 1300 1305

Val Arg Glu Asn Leu Asp Pro Gln Gly Leu His Lys Asp Arg Ala
1310 1315 1320

Leu Trp Gln Ala Leu Lys Gln Cys His Leu Ser Glu Val Ile Thr
1325 1330 1335

Ser Met Gly Gly Leu Asp Gly Glu Leu Gly Glu Gly Gly Arg Ser
1340 1345 1350

Leu Ser Leu Gly Gln Arg Gln Leu Leu Cys Leu Ala Arg Ala Leu
1355 1360 1365

Leu Thr Asp Ala Lys Ile Leu Cys Ile Asp Glu Ala Thr Ala Ser
1370 1375 1380

Val Asp Gln Lys Thr Asp Gln Leu Leu Gln Gln Thr Ile Cys Lys
1385 1390 1395

Arg Phe Ala Asn Lys Thr Val Leu Thr Ile Ala His Arg Leu Asn
1400 1405 1410

Thr Ile Leu Asn Ser Asp Arg Val Leu Val Leu Gln Ala Gly Arg
1415 1420 1425

Val Val Glu Leu Asp Ser Pro Ala Thr Leu Arg Asn Gln Pro His
1430 1435 1440

Ser Leu Phe Gln Gln Leu Leu Gln Ser Ser Gln Gln Gly Val Pro
1445 1450 1455

Ala Ser Leu Gly Gly Pro
1460

<210> 7706
<211> 277
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1620; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361593"

<400> 7706
Met Ala Ser Asn Gln Glu Met Leu Gln His Lys Asp Ala Arg Val Lys
1 5 10 15

Leu Val Thr Glu Leu Leu Ser Gly Ile Arg Val Ile Lys Phe Cys Gly
20 25 30

Trp Glu Gln Ala Leu Gly Ala Arg Val Glu Ala Cys Arg Ala Arg Glu
35 40 45

Leu Gly Arg Leu Arg Val Ile Lys Tyr Leu Asp Ala Ala Cys Val Tyr
50 55 60

Leu Trp Ala Ala Leu Pro Val Val Ile Ser Ile Val Ile Phe Ile Thr
65 70 75 80

Tyr Val Leu Met Gly His Gln Leu Thr Ala Thr Lys Val Phe Thr Ala
85 90 95

Leu Ala Leu Val Arg Met Leu Ile Leu Pro Leu Asn Asn Phe Pro Trp
100 105 110

Val Ile Asn Gly Leu Leu Glu Ala Lys Val Ser Leu Asp Arg Ile Gln
115 120 125

Leu Phe Leu Asp Leu Pro Asn His Asn Pro Gln Ala Tyr Tyr Ser Pro
130 135 140

Asp Pro Pro Ala Glu Pro Ser Thr Val Leu Glu Leu His Gly Ala Leu
145 150 155 160

```
Phe Ser Trp Asp Pro Val Gly Thr Ser Leu Glu Thr Phe Ile Ser His
                165                 170                 175

Leu Glu Val Lys Lys Gly Met Leu Val Gly Ile Val Gly Lys Val Gly
            180                 185                 190

Cys Gly Lys Ser Ser Leu Leu Ala Ala Ile Ala Gly Glu Leu His Arg
        195                 200                 205

Leu Arg Gly His Val Ala Val Arg Gly Leu Ser Lys Gly Phe Gly Leu
    210                 215                 220

Ala Thr Gln Glu Pro Trp Ile Gln Phe Ala Thr Ile Arg Asp Asn Ile
225                 230                 235                 240

Leu Phe Gly Lys Thr Phe Asp Ala Gln Leu Tyr Lys Glu Val Leu Glu
                245                 250                 255

Ala Cys Ala Leu Asn Asp Asp Leu Ser Ile Leu Pro Ala Gly Asp Gln
            260                 265                 270

Thr Glu Val Gly Glu
        275


<210> 7707
<211> 1492
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1620; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC10; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5T3U5; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000361608"

<400> 7707
Met Glu Arg Leu Leu Ala Gln Leu Cys Gly Ser Ser Ala Ala Trp Pro
1   5   10   15

Leu Pro Leu Trp Glu Gly Asp Thr Thr Gly His Cys Phe Thr Gln Leu
            20   25   30

Val Leu Ser Ala Leu Pro His Ala Leu Leu Ala Val Leu Ser Ala Cys
        35   40   45

Tyr Leu Gly Thr Pro Arg Ser Pro Asp Tyr Ile Leu Pro Cys Ser Pro
    50   55   60

Gly Trp Arg Leu Arg Leu Ala Ala Ser Phe Leu Leu Ser Val Phe Pro
65   70   75   80

Leu Leu Asp Leu Leu Pro Val Ala Leu Pro Pro Gly Ala Gly Pro Gly
                85   90   95

Pro Ile Gly Leu Glu Val Leu Ala Gly Cys Val Ala Ala Val Ala Trp
            100   105   110

Ile Ser His Ser Leu Ala Leu Trp Val Leu Ala His Ser Pro His Gly
        115   120   125

His Ser Arg Gly Pro Leu Ala Leu Ala Leu Val Ala Leu Leu Pro Ala
    130   135   140

Pro Ala Leu Val Leu Thr Val Leu Trp His Cys Gln Arg Gly Thr Leu
145   150   155   160

Leu Pro Pro Leu Leu Pro Gly Pro Met Ala Arg Leu Cys Leu Leu Ile
                165   170   175

Leu Gln Leu Ala Ala Leu Leu Ala Tyr Ala Leu Gly Trp Ala Ala Pro
            180   185   190

Gly Gly Pro Arg Glu Pro Trp Ala Gln Glu Pro Leu Leu Pro Glu Asp
        195   200   205

```
Gln Glu Pro Glu Val Ala Glu Asp Gly Glu Ser Trp Leu Ser Arg Phe
    210                 215                 220

Ser Tyr Ala Trp Leu Ala Pro Leu Leu Ala Arg Gly Ala Cys Gly Glu
225                 230                 235                 240

Leu Arg Gln Pro Gln Asp Ile Cys Arg Leu Pro His Arg Leu Gln Pro
                245                 250                 255

Thr Tyr Leu Ala Arg Val Phe Gln Ala His Trp Gln Glu Gly Ala Arg
            260                 265                 270

Leu Trp Arg Ala Leu Tyr Gly Ala Phe Gly Arg Cys Tyr Leu Ala Leu
        275                 280                 285

Gly Leu Leu Lys Leu Val Gly Thr Met Leu Gly Phe Ser Gly Pro Leu
    290                 295                 300

Leu Leu Ser Leu Leu Val Gly Phe Leu Glu Glu Gly Gln Glu Pro Leu
305                 310                 315                 320

Ser His Gly Leu Leu Tyr Ala Leu Gly Leu Ala Gly Gly Ala Val Leu
                325                 330                 335

Gly Ala Val Leu Gln Asn Gln Tyr Gly Tyr Glu Val Tyr Lys Val Thr
            340                 345                 350

Leu Gln Ala Arg Gly Ala Val Leu Asn Ile Leu Tyr Cys Lys Ala Leu
        355                 360                 365

Gln Leu Gly Pro Ser Arg Pro Pro Thr Gly Glu Ala Leu Asn Leu Leu
    370                 375                 380

Gly Thr Asp Ser Glu Arg Leu Leu Asn Phe Ala Gly Ser Phe His Glu
385                 390                 395                 400

Ala Trp Gly Leu Pro Leu Gln Leu Ala Ile Thr Leu Tyr Leu Leu Tyr
                405                 410                 415

Gln Gln Val Gly Val Ala Phe Val Gly Gly Leu Ile Leu Ala Leu Leu
            420                 425                 430
```

```
Leu Val Pro Val Asn Lys Val Ile Ala Thr Arg Ile Met Ala Ser Asn
        435                 440                 445

Gln Glu Met Leu Gln His Lys Asp Ala Arg Val Lys Leu Val Thr Glu
    450                 455                 460

Leu Leu Ser Gly Ile Arg Val Ile Lys Phe Cys Gly Trp Glu Gln Ala
465                 470                 475                 480

Leu Gly Ala Arg Val Glu Ala Cys Arg Ala Arg Glu Leu Gly Arg Leu
                485                 490                 495

Arg Val Ile Lys Tyr Leu Asp Ala Ala Cys Val Tyr Leu Trp Ala Ala
            500                 505                 510

Leu Pro Val Val Ile Ser Ile Val Ile Phe Ile Thr Tyr Val Leu Met
        515                 520                 525

Gly His Gln Leu Thr Ala Thr Lys Val Phe Thr Ala Leu Ala Leu Val
    530                 535                 540

Arg Met Leu Ile Leu Pro Leu Asn Asn Phe Pro Trp Val Ile Asn Gly
545                 550                 555                 560

Leu Leu Glu Ala Lys Val Ser Leu Asp Arg Ile Gln Leu Phe Leu Asp
                565                 570                 575

Leu Pro Asn His Asn Pro Gln Ala Tyr Tyr Ser Pro Asp Pro Pro Ala
            580                 585                 590

Glu Pro Ser Thr Val Leu Glu Leu His Gly Ala Leu Phe Ser Trp Asp
        595                 600                 605

Pro Val Gly Thr Ser Leu Glu Thr Phe Ile Ser His Leu Glu Val Lys
    610                 615                 620

Lys Gly Met Leu Val Gly Ile Val Gly Lys Val Gly Cys Gly Lys Ser
625                 630                 635                 640

Ser Leu Leu Ala Ala Ile Ala Gly Glu Leu His Arg Leu Arg Gly His
                645                 650                 655

Val Ala Val Arg Gly Leu Ser Lys Gly Phe Gly Leu Ala Thr Gln Glu
```

660 665 670

Pro Trp Ile Gln Phe Ala Thr Ile Arg Asp Asn Ile Leu Phe Gly Lys
675 680 685

Thr Phe Asp Ala Gln Leu Tyr Lys Glu Val Leu Glu Ala Cys Ala Leu
690 695 700

Asn Asp Asp Leu Ser Ile Leu Pro Ala Gly Asp Gln Thr Glu Val Gly
705 710 715 720

Glu Lys Gly Val Thr Leu Ser Gly Gly Gln Arg Ala Arg Ile Ala Leu
725 730 735

Ala Arg Ala Val Tyr Gln Glu Lys Glu Leu Tyr Leu Leu Asp Asp Pro
740 745 750

Leu Ala Ala Val Asp Ala Asp Val Ala Asn His Leu Leu His Arg Cys
755 760 765

Ile Leu Gly Met Leu Ser Tyr Thr Thr Arg Leu Leu Cys Thr His Arg
770 775 780

Thr Glu Tyr Leu Glu Arg Ala Asp Ala Val Leu Leu Met Glu Ala Gly
785 790 795 800

Arg Leu Ile Arg Ala Gly Pro Pro Ser Glu Ile Leu Pro Leu Val Gln
805 810 815

Ala Val Pro Lys Ala Trp Ala Glu Asn Gly Gln Glu Ser Asp Ser Ala
820 825 830

Thr Ala Gln Ser Val Gln Asn Pro Glu Lys Thr Lys Glu Gly Leu Glu
835 840 845

Glu Glu Gln Ser Thr Ser Gly Arg Leu Leu Gln Glu Glu Ser Lys Lys
850 855 860

Glu Gly Ala Val Ala Leu His Val Tyr Gln Ala Tyr Trp Lys Ala Val
865 870 875 880

Gly Gln Gly Leu Ala Leu Ala Ile Leu Phe Ser Leu Leu Leu Met Gln
885 890 895

```
Ala Thr Arg Asn Ala Ala Asp Trp Trp Leu Ser His Trp Ile Ser Gln
            900                 905                 910

Leu Lys Ala Glu Asn Ser Ser Gln Glu Ala Gln Pro Ser Thr Ser Pro
        915                 920                 925

Ala Ser Met Gly Leu Phe Ser Pro Gln Leu Leu Leu Phe Ser Pro Gly
    930                 935                 940

Asn Leu Tyr Ile Pro Val Phe Pro Leu Pro Lys Ala Ala Pro Asn Gly
945                 950                 955                 960

Ser Ser Asp Ile Arg Phe Tyr Leu Thr Val Tyr Ala Thr Ile Ala Gly
                965                 970                 975

Val Asn Ser Leu Cys Thr Leu Leu Arg Ala Val Leu Phe Ala Ala Gly
            980                 985                 990

Thr Leu Gln Ala Ala Ala Thr Leu  His Arg Arg Leu Leu  His Arg
Val
        995                 1000                1005

Leu Met  Ala Pro Val Thr Phe  Phe Asn Ala Thr Pro  Thr Gly Arg
    1010                1015                1020

Ile Leu  Asn Arg Phe Ser Ser  Asp Val Ala Cys Ala  Asp Asp Ser
    1025                1030                1035

Leu Pro  Phe Ile Leu Asn Ile  Leu Leu Ala Asn Ala  Ala Gly Leu
    1040                1045                1050

Leu Gly  Leu Leu Ala Val Leu  Gly Ser Gly Leu Pro  Trp Leu Leu
    1055                1060                1065

Leu Leu  Leu Pro Pro Leu Ser  Ile Met Tyr Tyr His  Val Gln Arg
    1070                1075                1080

His Tyr  Arg Ala Ser Ser Arg  Glu Leu Arg Arg Leu  Gly Ser Leu
    1085                1090                1095

Thr Leu  Ser Pro Leu Tyr Ser  His Leu Ala Asp Thr  Leu Ala Gly
    1100                1105                1110
```

```
Leu Ser  Val Leu Arg Ala Thr  Gly Ala Thr Tyr Arg  Phe Glu Glu
    1115                1120                1125

Glu Asn  Leu Arg Leu Leu Glu  Leu Asn Gln Arg Cys  Gln Phe Ala
    1130                1135                1140

Thr Ser  Ala Thr Met Gln Trp  Leu Asp Ile Arg Leu  Gln Leu Met
    1145                1150                1155

Gly Ala  Ala Val Val Ser Ala  Ile Ala Gly Ile Ala  Leu Val Gln
    1160                1165                1170

His Gln  Gln Gly Leu Ala Asn  Pro Gly Leu Val Gly  Leu Ser Leu
    1175                1180                1185

Ser Tyr  Ala Leu Ser Leu Thr  Gly Leu Leu Ser Gly  Leu Val Ser
    1190                1195                1200

Ser Phe  Thr Gln Thr Glu Ala  Met Leu Val Ser Val  Glu Arg Leu
    1205                1210                1215

Glu Glu  Tyr Thr Cys Asp Leu  Pro Gln Glu Pro Gln  Gly Gln Pro
    1220                1225                1230

Leu Gln  Leu Gly Thr Gly Trp  Leu Thr Gln Gly Gly  Val Glu Phe
    1235                1240                1245

Gln Asp  Val Val Leu Ala Tyr  Arg Pro Gly Leu Pro  Asn Ala Leu
    1250                1255                1260

Asp Gly  Val Thr Phe Cys Val  Gln Pro Gly Glu Lys  Leu Gly Ile
    1265                1270                1275

Val Gly  Arg Thr Gly Ser Gly  Lys Ser Ser Leu Leu  Leu Val Leu
    1280                1285                1290

Phe Arg  Leu Leu Glu Pro Ser  Ser Gly Arg Val Leu  Leu Asp Gly
    1295                1300                1305

Val Asp  Thr Ser Gln Leu Glu  Leu Ala Gln Leu Arg  Ser Gln Leu
    1310                1315                1320
```

```
Ala Ile  Ile Pro Gln Glu Pro  Phe Leu Phe Ser Gly  Thr Val Arg
    1325                1330                1335

Glu Asn  Leu Asp Pro Gln Gly  Leu His Lys Asp Arg  Ala Leu Trp
    1340                1345                1350

Gln Ala  Leu Lys Gln Cys His  Leu Ser Glu Val Ile  Thr Ser Met
    1355                1360                1365

Gly Gly  Leu Asp Gly Glu Leu  Gly Glu Gly Gly Arg  Ser Leu Ser
    1370                1375                1380

Leu Gly  Gln Arg Gln Leu Leu  Cys Leu Ala Arg Ala  Leu Leu Thr
    1385                1390                1395

Asp Ala  Lys Ile Leu Cys Ile  Asp Glu Ala Thr Ala  Ser Val Asp
    1400                1405                1410

Gln Lys  Thr Asp Gln Leu Leu  Gln Gln Thr Ile Cys  Lys Arg Phe
    1415                1420                1425

Ala Asn  Lys Thr Val Leu Thr  Ile Ala His Arg Leu  Asn Thr Ile
    1430                1435                1440

Leu Asn  Ser Asp Arg Val Leu  Val Leu Gln Ala Gly  Arg Val Val
    1445                1450                1455

Glu Leu  Asp Ser Pro Ala Thr  Leu Arg Asn Gln Pro  His Ser Leu
    1460                1465                1470

Phe Gln  Gln Leu Leu Gln Ser  Ser Gln Gln Gly Val  Pro Ala Ser
    1475                1480                1485

Leu Gly  Gly Pro
    1490


<210> 7708
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1620; "
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<220>
<221> source
<223> /note="Gene Symbol: ABCC10; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422699"

<400> 7708
Glu Glu Gly Ile Ala Arg Lys Ala Leu Tyr Lys Leu Thr Ala Ala Arg
1 5 10 15

Ala Asp Gln Gly Ala Glu Met Glu Asp Arg Met Ser Arg Gln Gly Gln
20 25 30

Arg Thr Pro Ser Ala Gln Ile Leu Cys Ile Asp Glu Ala Thr Ala Ser
35 40 45

Val Asp Gln Lys Thr Asp Gln Leu Leu Gln Gln Thr Ile Cys Lys Arg
50 55 60

Phe Ala Asn Lys Thr Val Leu Thr Ile Ala His Arg Leu Asn Thr Ile
65 70 75 80

Leu Asn Ser Asp Arg Val Leu Val Leu Gln Ala Gly Arg Val Val Glu
85 90 95

Leu Asp Ser Pro Ala Thr Leu Arg Asn Gln Pro His Ser Leu Phe Gln
100 105 110

Gln Leu Leu Gln Ser Ser Gln Gln Gly Val Pro Ala Ser Leu Gly Gly
115 120 125

Pro

<210> 7709
<211> 1344
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1621; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC11; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 11; "

<220>
<221> source
<223> /note="Uniprot ID: Q96J66; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000311326"

<400> 7709

```
Met Thr Arg Lys Arg Thr Tyr Trp Val Pro Asn Ser Ser Gly Gly Leu
1               5                   10                  15


Val Asn Arg Gly Ile Asp Ile Gly Asp Asp Met Val Ser Gly Leu Ile
            20                  25                  30


Tyr Lys Thr Tyr Thr Leu Gln Asp Gly Pro Trp Ser Gln Gln Glu Arg
        35                  40                  45


Asn Pro Glu Ala Pro Gly Arg Ala Ala Val Pro Pro Trp Gly Lys Tyr
    50                  55                  60


Asp Ala Ala Leu Arg Thr Met Ile Pro Phe Arg Pro Lys Pro Arg Phe
65                  70                  75                  80


Pro Ala Pro Gln Pro Leu Asp Asn Ala Gly Leu Phe Ser Tyr Leu Thr
                85                  90                  95


Val Ser Trp Leu Thr Pro Leu Met Ile Gln Ser Leu Arg Ser Arg Leu
            100                 105                 110


Asp Glu Asn Thr Ile Pro Pro Leu Ser Val His Asp Ala Ser Asp Lys
        115                 120                 125
```

```
Asn Val Gln Arg Leu His Arg Leu Trp Glu Glu Glu Val Ser Arg Arg
    130                 135                 140

Gly Ile Glu Lys Ala Ser Val Leu Leu Val Met Leu Arg Phe Gln Arg
145                 150                 155                 160

Thr Arg Leu Ile Phe Asp Ala Leu Leu Gly Ile Cys Phe Cys Ile Ala
                165                 170                 175

Ser Val Leu Gly Pro Ile Leu Ile Ile Pro Lys Ile Leu Glu Tyr Ser
            180                 185                 190

Glu Glu Gln Leu Gly Asn Val Val His Gly Val Gly Leu Cys Phe Ala
        195                 200                 205

Leu Phe Leu Ser Glu Cys Val Lys Ser Leu Ser Phe Ser Ser Ser Trp
    210                 215                 220

Ile Ile Asn Gln Arg Thr Ala Ile Arg Phe Arg Ala Ala Val Ser Ser
225                 230                 235                 240

Phe Ala Phe Glu Lys Leu Ile Gln Phe Lys Ser Val Ile His Ile Thr
                245                 250                 255

Ser Gly Glu Ala Ile Ser Phe Phe Thr Gly Asp Val Asn Tyr Leu Phe
            260                 265                 270

Glu Gly Val Cys Tyr Gly Pro Leu Val Leu Ile Thr Cys Ala Ser Leu
        275                 280                 285

Val Ile Cys Ser Ile Ser Ser Tyr Phe Ile Ile Gly Tyr Thr Ala Phe
    290                 295                 300

Ile Ala Ile Leu Cys Tyr Leu Leu Val Phe Pro Leu Ala Val Phe Met
305                 310                 315                 320

Thr Arg Met Ala Val Lys Ala Gln His His Thr Ser Glu Val Ser Asp
                325                 330                 335

Gln Arg Ile Arg Val Thr Ser Glu Val Leu Thr Cys Ile Lys Leu Ile
            340                 345                 350

Lys Met Tyr Thr Trp Glu Lys Pro Phe Ala Lys Ile Ile Glu Asp Leu
```

```
        355                 360                 365

Arg Arg Lys Glu Arg Lys Leu Leu Glu Lys Cys Gly Leu Val Gln Ser
    370                 375                 380

Leu Thr Ser Ile Thr Leu Phe Ile Ile Pro Thr Val Ala Thr Ala Val
385                 390                 395                 400

Trp Val Leu Ile His Thr Ser Leu Lys Leu Lys Leu Thr Ala Ser Met
                405                 410                 415

Ala Phe Ser Met Leu Ala Ser Leu Asn Leu Leu Arg Leu Ser Val Phe
            420                 425                 430

Phe Val Pro Ile Ala Val Lys Gly Leu Thr Asn Ser Lys Ser Ala Val
        435                 440                 445

Met Arg Phe Lys Lys Phe Phe Leu Gln Glu Ser Pro Val Phe Tyr Val
    450                 455                 460

Gln Thr Leu Gln Asp Pro Ser Lys Ala Leu Val Phe Glu Glu Ala Thr
465                 470                 475                 480

Leu Ser Trp Gln Gln Thr Cys Pro Gly Ile Val Asn Gly Ala Leu Glu
                485                 490                 495

Leu Glu Arg Asn Gly His Ala Ser Glu Gly Met Thr Arg Pro Arg Asp
            500                 505                 510

Ala Leu Gly Pro Glu Glu Glu Gly Asn Ser Leu Gly Pro Glu Leu His
        515                 520                 525

Lys Ile Asn Leu Val Val Ser Lys Gly Met Met Leu Gly Val Cys Gly
    530                 535                 540

Asn Thr Gly Ser Gly Lys Ser Ser Leu Leu Ser Ala Ile Leu Glu Glu
545                 550                 555                 560

Met His Leu Leu Glu Gly Ser Val Gly Val Gln Gly Ser Leu Ala Tyr
                565                 570                 575

Val Pro Gln Gln Ala Trp Ile Val Ser Gly Asn Ile Arg Glu Asn Ile
            580                 585                 590
```

```
Leu Met Gly Gly Ala Tyr Asp Lys Ala Arg Tyr Leu Gln Val Leu His
        595                 600                 605

Cys Cys Ser Leu Asn Arg Asp Leu Glu Leu Leu Pro Phe Gly Asp Met
    610                 615                 620

Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Lys Gln
625                 630                 635                 640

Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Ile Tyr Leu
                645                 650                 655

Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile
            660                 665                 670

Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val Leu
        675                 680                 685

Val Thr His Gln Leu Gln Tyr Leu Glu Phe Cys Gly Gln Ile Ile Leu
    690                 695                 700

Leu Glu Asn Gly Lys Ile Cys Glu Asn Gly Thr His Ser Glu Leu Met
705                 710                 715                 720

Gln Lys Lys Gly Lys Tyr Ala Gln Leu Ile Gln Lys Met His Lys Glu
                725                 730                 735

Ala Thr Ser Asp Met Leu Gln Asp Thr Ala Lys Ile Ala Glu Lys Pro
            740                 745                 750

Lys Val Glu Ser Gln Ala Leu Ala Thr Ser Leu Glu Glu Ser Leu Asn
        755                 760                 765

Gly Asn Ala Val Pro Glu His Gln Leu Thr Gln Glu Glu Glu Met Glu
    770                 775                 780

Glu Gly Ser Leu Ser Trp Arg Val Tyr His His Tyr Ile Gln Ala Ala
785                 790                 795                 800

Gly Gly Tyr Met Val Ser Cys Ile Ile Phe Phe Phe Val Val Leu Ile
                805                 810                 815
```

```
Val Phe Leu Thr Ile Phe Ser Phe Trp Trp Leu Ser Tyr Trp Leu Glu
            820                 825                 830

Gln Gly Ser Gly Thr Asn Ser Ser Arg Glu Ser Asn Gly Thr Met Ala
        835                 840                 845

Asp Leu Gly Asn Ile Ala Asp Asn Pro Gln Leu Ser Phe Tyr Gln Leu
    850                 855                 860

Val Tyr Gly Leu Asn Ala Leu Leu Leu Ile Cys Val Gly Val Cys Ser
865                 870                 875                 880

Ser Gly Ile Phe Thr Lys Val Thr Arg Lys Ala Ser Thr Ala Leu His
                885                 890                 895

Asn Lys Leu Phe Asn Lys Val Phe Arg Cys Pro Met Ser Phe Phe Asp
            900                 905                 910

Thr Ile Pro Ile Gly Arg Leu Leu Asn Cys Phe Ala Gly Asp Leu Glu
        915                 920                 925

Gln Leu Asp Gln Leu Leu Pro Ile Phe Ser Glu Gln Phe Leu Val Leu
    930                 935                 940

Ser Leu Met Val Ile Ala Val Leu Leu Ile Val Ser Val Leu Ser Pro
945                 950                 955                 960

Tyr Ile Leu Leu Met Gly Ala Ile Ile Met Val Ile Cys Phe Ile Tyr
                965                 970                 975

Tyr Met Met Phe Lys Lys Ala Ile Gly Val Phe Lys Arg Leu Glu Asn
            980                 985                 990

Tyr Ser Arg Ser Pro Leu Phe Ser  His Ile Leu Asn Ser  Leu Gln
Gly
        995                 1000                1005

Leu Ser  Ser Ile His Val Tyr  Gly Lys Thr Glu Asp  Phe Ile Ser
    1010                1015                1020

Gln Phe  Lys Arg Leu Thr Asp  Ala Gln Asn Asn Tyr  Leu Leu Leu
    1025                1030                1035
```

```
Phe Leu  Ser Ser Thr Arg Trp  Met Ala Leu Arg Leu  Glu Ile Met
    1040                1045                1050

Thr Asn  Leu Val Thr Leu Ala  Val Ala Leu Phe Val  Ala Phe Gly
    1055                1060                1065

Ile Ser  Ser Thr Pro Tyr Ser  Phe Lys Val Met Ala  Val Asn Ile
    1070                1075                1080

Val Leu  Gln Leu Ala Ser Ser  Phe Gln Ala Thr Ala  Arg Ile Gly
    1085                1090                1095

Leu Glu  Thr Glu Ala Gln Phe  Thr Ala Val Glu Arg  Ile Leu Gln
    1100                1105                1110

Tyr Met  Lys Met Cys Val Ser  Glu Ala Pro Leu His  Met Glu Gly
    1115                1120                1125

Thr Ser  Cys Pro Gln Gly Trp  Pro Gln His Gly Glu  Ile Ile Phe
    1130                1135                1140

Gln Asp  Tyr His Met Lys Tyr  Arg Asp Asn Thr Pro  Thr Val Leu
    1145                1150                1155

His Gly  Ile Asn Leu Thr Ile  Arg Gly His Glu Val  Val Gly Ile
    1160                1165                1170

Val Gly  Arg Thr Gly Ser Gly  Lys Ser Ser Leu Gly  Met Ala Leu
    1175                1180                1185

Phe Arg  Leu Val Glu Pro Met  Ala Gly Arg Ile Leu  Ile Asp Gly
    1190                1195                1200

Val Asp  Ile Cys Ser Ile Gly  Leu Glu Asp Leu Arg  Ser Lys Leu
    1205                1210                1215

Ser Val  Ile Pro Gln Asp Pro  Val Leu Leu Ser Gly  Thr Ile Arg
    1220                1225                1230

Phe Asn  Leu Asp Pro Phe Asp  Arg His Thr Asp Gln  Gln Ile Trp
    1235                1240                1245
```

```
Asp Ala  Leu Glu Arg Thr Phe  Leu Thr Lys Ala Ile  Ile Leu Ile
    1250                1255                1260

Asp Glu  Ala Thr Ala Ser Ile  Asp Met Glu Thr Asp  Thr Leu Ile
    1265                1270                1275

Gln Arg  Thr Ile Arg Glu Ala  Phe Gln Gly Cys Thr  Val Leu Val
    1280                1285                1290

Ile Ala  His Arg Val Thr Thr  Val Leu Asn Cys Asp  His Ile Leu
    1295                1300                1305

Val Met  Gly Asn Gly Lys Val  Val Glu Phe Asp Arg  Pro Glu Val
    1310                1315                1320

Leu Arg  Lys Lys Pro Gly Ser  Leu Phe Ala Ala Leu  Met Ala Thr
    1325                1330                1335

Ala Thr  Ser Ser Leu Arg
    1340
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<210> 7710
<211> 1382
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ABCC11; "

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ATP-binding cassette, sub-family
C (CFTR/MRP),
member 11; "

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<400> 7710

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Met Thr Arg Lys Arg Thr Tyr Trp Val Pro Asn Ser Ser Gly Gly Leu
1               5                  10                  15

Val Asn Arg Gly Ile Asp Ile Gly Asp Asp Met Val Ser Gly Leu Ile
            20                  25                  30

Tyr Lys Thr Tyr Thr Leu Gln Asp Gly Pro Trp Ser Gln Gln Glu Arg
        35                  40                  45

Asn Pro Glu Ala Pro Gly Arg Ala Ala Val Pro Pro Trp Gly Lys Tyr
    50                  55                  60

Asp Ala Ala Leu Arg Thr Met Ile Pro Phe Arg Pro Lys Pro Arg Phe
65                  70                  75                  80

Pro Ala Pro Gln Pro Leu Asp Asn Ala Gly Leu Phe Ser Tyr Leu Thr
                85                  90                  95

Val Ser Trp Leu Thr Pro Leu Met Ile Gln Ser Leu Arg Ser Arg Leu
            100                 105                 110

Asp Glu Asn Thr Ile Pro Pro Leu Ser Val His Asp Ala Ser Asp Lys
        115                 120                 125

Asn Val Gln Arg Leu His Arg Leu Trp Glu Glu Glu Val Ser Arg Arg
    130                 135                 140

Gly Ile Glu Lys Ala Ser Val Leu Leu Val Met Leu Arg Phe Gln Arg
145                 150                 155                 160

Thr Arg Leu Ile Phe Asp Ala Leu Leu Gly Ile Cys Phe Cys Ile Ala
                165                 170                 175

Ser Val Leu Gly Pro Ile Leu Ile Ile Pro Lys Ile Leu Glu Tyr Ser
            180                 185                 190

Glu Glu Gln Leu Gly Asn Val Val His Gly Val Gly Leu Cys Phe Ala
        195                 200                 205

Leu Phe Leu Ser Glu Cys Val Lys Ser Leu Ser Phe Ser Ser Ser Trp
    210                 215                 220

Ile Ile Asn Gln Arg Thr Ala Ile Arg Phe Arg Ala Ala Val Ser Ser
```

225 230 235 240

Phe Ala Phe Glu Lys Leu Ile Gln Phe Lys Ser Val Ile His Ile Thr
245 250 255

Ser Gly Glu Ala Ile Ser Phe Phe Thr Gly Asp Val Asn Tyr Leu Phe
260 265 270

Glu Gly Val Cys Tyr Gly Pro Leu Val Leu Ile Thr Cys Ala Ser Leu
275 280 285

Val Ile Cys Ser Ile Ser Ser Tyr Phe Ile Ile Gly Tyr Thr Ala Phe
290 295 300

Ile Ala Ile Leu Cys Tyr Leu Leu Val Phe Pro Leu Ala Val Phe Met
305 310 315 320

Thr Arg Met Ala Val Lys Ala Gln His His Thr Ser Glu Val Ser Asp
325 330 335

Gln Arg Ile Arg Val Thr Ser Glu Val Leu Thr Cys Ile Lys Leu Ile
340 345 350

Lys Met Tyr Thr Trp Glu Lys Pro Phe Ala Lys Ile Ile Glu Asp Leu
355 360 365

Arg Arg Lys Glu Arg Lys Leu Leu Glu Lys Cys Gly Leu Val Gln Ser
370 375 380

Leu Thr Ser Ile Thr Leu Phe Ile Ile Pro Thr Val Ala Thr Ala Val
385 390 395 400

Trp Val Leu Ile His Thr Ser Leu Lys Leu Lys Leu Thr Ala Ser Met
405 410 415

Ala Phe Ser Met Leu Ala Ser Leu Asn Leu Leu Arg Leu Ser Val Phe
420 425 430

Phe Val Pro Ile Ala Val Lys Gly Leu Thr Asn Ser Lys Ser Ala Val
435 440 445

Met Arg Phe Lys Lys Phe Phe Leu Gln Glu Ser Pro Val Phe Tyr Val
450 455 460

```
Gln Thr Leu Gln Asp Pro Ser Lys Ala Leu Val Phe Glu Glu Ala Thr
465                 470                 475                 480

Leu Ser Trp Gln Gln Thr Cys Pro Gly Ile Val Asn Gly Ala Leu Glu
                485                 490                 495

Leu Glu Arg Asn Gly His Ala Ser Glu Gly Met Thr Arg Pro Arg Asp
            500                 505                 510

Ala Leu Gly Pro Glu Glu Glu Gly Asn Ser Leu Gly Pro Glu Leu His
        515                 520                 525

Lys Ile Asn Leu Val Val Ser Lys Gly Met Met Leu Gly Val Cys Gly
    530                 535                 540

Asn Thr Gly Ser Gly Lys Ser Ser Leu Leu Ser Ala Ile Leu Glu Glu
545                 550                 555                 560

Met His Leu Leu Glu Gly Ser Val Gly Val Gln Gly Ser Leu Ala Tyr
                565                 570                 575

Val Pro Gln Gln Ala Trp Ile Val Ser Gly Asn Ile Arg Glu Asn Ile
            580                 585                 590

Leu Met Gly Gly Ala Tyr Asp Lys Ala Arg Tyr Leu Gln Val Leu His
        595                 600                 605

Cys Cys Ser Leu Asn Arg Asp Leu Glu Leu Leu Pro Phe Gly Asp Met
    610                 615                 620

Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Lys Gln
625                 630                 635                 640

Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Ile Tyr Leu
                645                 650                 655

Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile
            660                 665                 670

Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val Leu
        675                 680                 685
```

```
Val Thr His Gln Leu Gln Tyr Leu Glu Phe Cys Gly Gln Ile Ile Leu
    690                 695                 700

Leu Glu Asn Gly Lys Ile Cys Glu Asn Gly Thr His Ser Glu Leu Met
705                 710                 715                 720

Gln Lys Lys Gly Lys Tyr Ala Gln Leu Ile Gln Lys Met His Lys Glu
                725                 730                 735

Ala Thr Ser Asp Met Leu Gln Asp Thr Ala Lys Ile Ala Glu Lys Pro
            740                 745                 750

Lys Val Glu Ser Gln Ala Leu Ala Thr Ser Leu Glu Glu Ser Leu Asn
        755                 760                 765

Gly Asn Ala Val Pro Glu His Gln Leu Thr Gln Glu Glu Glu Met Glu
    770                 775                 780

Glu Gly Ser Leu Ser Trp Arg Val Tyr His His Tyr Ile Gln Ala Ala
785                 790                 795                 800

Gly Gly Tyr Met Val Ser Cys Ile Ile Phe Phe Phe Val Val Leu Ile
                805                 810                 815

Val Phe Leu Thr Ile Phe Ser Phe Trp Trp Leu Ser Tyr Trp Leu Glu
            820                 825                 830

Gln Gly Ser Gly Thr Asn Ser Ser Arg Glu Ser Asn Gly Thr Met Ala
        835                 840                 845

Asp Leu Gly Asn Ile Ala Asp Asn Pro Gln Leu Ser Phe Tyr Gln Leu
    850                 855                 860

Val Tyr Gly Leu Asn Ala Leu Leu Leu Ile Cys Val Gly Val Cys Ser
865                 870                 875                 880

Ser Gly Ile Phe Thr Lys Val Thr Arg Lys Ala Ser Thr Ala Leu His
                885                 890                 895

Asn Lys Leu Phe Asn Lys Val Phe Arg Cys Pro Met Ser Phe Phe Asp
            900                 905                 910
```

```
Thr Ile Pro Ile Gly Arg Leu Leu Asn Cys Phe Ala Gly Asp Leu Glu
        915                 920                 925

Gln Leu Asp Gln Leu Leu Pro Ile Phe Ser Glu Gln Phe Leu Val Leu
    930                 935                 940

Ser Leu Met Val Ile Ala Val Leu Leu Ile Val Ser Val Leu Ser Pro
945                 950                 955                 960

Tyr Ile Leu Leu Met Gly Ala Ile Ile Met Val Ile Cys Phe Ile Tyr
                965                 970                 975

Tyr Met Met Phe Lys Lys Ala Ile Gly Val Phe Lys Arg Leu Glu Asn
            980                 985                 990

Tyr Ser Arg Ser Pro Leu Phe Ser  His Ile Leu Asn Ser  Leu Gln
Gly
        995                 1000                1005

Leu Ser  Ser Ile His Val Tyr  Gly Lys Thr Glu Asp  Phe Ile Ser
    1010                1015                1020

Gln Phe  Lys Arg Leu Thr Asp  Ala Gln Asn Asn Tyr  Leu Leu Leu
    1025                1030                1035

Phe Leu  Ser Ser Thr Arg Trp  Met Ala Leu Arg Leu  Glu Ile Met
    1040                1045                1050

Thr Asn  Leu Val Thr Leu Ala  Val Ala Leu Phe Val  Ala Phe Gly
    1055                1060                1065

Ile Ser  Ser Thr Pro Tyr Ser  Phe Lys Val Met Ala  Val Asn Ile
    1070                1075                1080

Val Leu  Gln Leu Ala Ser Ser  Phe Gln Ala Thr Ala  Arg Ile Gly
    1085                1090                1095

Leu Glu  Thr Glu Ala Gln Phe  Thr Ala Val Glu Arg  Ile Leu Gln
    1100                1105                1110

Tyr Met  Lys Met Cys Val Ser  Glu Ala Pro Leu His  Met Glu Gly
    1115                1120                1125
```

```
Thr Ser  Cys Pro Gln Gly Trp  Pro Gln His Gly Glu  Ile Ile Phe
    1130                1135                1140

Gln Asp  Tyr His Met Lys Tyr  Arg Asp Asn Thr Pro  Thr Val Leu
    1145                1150                1155

His Gly  Ile Asn Leu Thr Ile  Arg Gly His Glu Val  Val Gly Ile
    1160                1165                1170

Val Gly  Arg Thr Gly Ser Gly  Lys Ser Ser Leu Gly  Met Ala Leu
    1175                1180                1185

Phe Arg  Leu Val Glu Pro Met  Ala Gly Arg Ile Leu  Ile Asp Gly
    1190                1195                1200

Val Asp  Ile Cys Ser Ile Gly  Leu Glu Asp Leu Arg  Ser Lys Leu
    1205                1210                1215

Ser Val  Ile Pro Gln Asp Pro  Val Leu Leu Ser Gly  Thr Ile Arg
    1220                1225                1230

Phe Asn  Leu Asp Pro Phe Asp  Arg His Thr Asp Gln  Gln Ile Trp
    1235                1240                1245

Asp Ala  Leu Glu Arg Thr Phe  Leu Thr Lys Ala Ile  Ser Lys Phe
    1250                1255                1260

Pro Lys  Lys Leu His Thr Asp  Val Val Glu Asn Gly  Gly Asn Phe
    1265                1270                1275

Ser Val  Gly Glu Arg Gln Leu  Leu Cys Ile Ala Arg  Ala Val Leu
    1280                1285                1290

Arg Asn  Ser Lys Ile Ile Leu  Ile Asp Glu Ala Thr  Ala Ser Ile
    1295                1300                1305

Asp Met  Glu Thr Asp Thr Leu  Ile Gln Arg Thr Ile  Arg Glu Ala
    1310                1315                1320

Phe Gln  Gly Cys Thr Val Leu  Val Ile Ala His Arg  Val Thr Thr
    1325                1330                1335

Val Leu  Asn Cys Asp His Ile  Leu Val Met Gly Asn  Gly Lys Val
```

```
    1340                1345                1350

Val Glu  Phe Asp Arg Pro Glu  Val Leu Arg Lys Lys  Pro Gly Ser
    1355                1360                1365

Leu Phe  Ala Ala Leu Met Ala  Thr Ala Thr Ser Ser  Leu Arg
    1370                1375                1380


<210> 7711
<211> 1382
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ABCC11; "

<220>
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      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 11; "

<220>
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<223> /note="Uniprot ID:  Q96J66; "

<220>
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Met Thr Arg Lys Arg Thr Tyr Trp Val Pro Asn Ser Ser Gly Gly Leu
1               5                   10                  15

Val Asn Arg Gly Ile Asp Ile Gly Asp Asp Met Val Ser Gly Leu Ile
            20                  25                  30

Tyr Lys Thr Tyr Thr Leu Gln Asp Gly Pro Trp Ser Gln Gln Glu Arg
        35                  40                  45

Asn Pro Glu Ala Pro Gly Arg Ala Ala Val Pro Pro Trp Gly Lys Tyr
    50                  55                  60

Asp Ala Ala Leu Arg Thr Met Ile Pro Phe Arg Pro Lys Pro Arg Phe
```

65 70 75 80

Pro Ala Pro Gln Pro Leu Asp Asn Ala Gly Leu Phe Ser Tyr Leu Thr
85 90 95

Val Ser Trp Leu Thr Pro Leu Met Ile Gln Ser Leu Arg Ser Arg Leu
100 105 110

Asp Glu Asn Thr Ile Pro Pro Leu Ser Val His Asp Ala Ser Asp Lys
115 120 125

Asn Val Gln Arg Leu His Arg Leu Trp Glu Glu Glu Val Ser Arg Arg
130 135 140

Gly Ile Glu Lys Ala Ser Val Leu Leu Val Met Leu Arg Phe Gln Arg
145 150 155 160

Thr Arg Leu Ile Phe Asp Ala Leu Leu Gly Ile Cys Phe Cys Ile Ala
165 170 175

Ser Val Leu Gly Pro Ile Leu Ile Ile Pro Lys Ile Leu Glu Tyr Ser
180 185 190

Glu Glu Gln Leu Gly Asn Val Val His Gly Val Gly Leu Cys Phe Ala
195 200 205

Leu Phe Leu Ser Glu Cys Val Lys Ser Leu Ser Phe Ser Ser Ser Trp
210 215 220

Ile Ile Asn Gln Arg Thr Ala Ile Arg Phe Arg Ala Ala Val Ser Ser
225 230 235 240

Phe Ala Phe Glu Lys Leu Ile Gln Phe Lys Ser Val Ile His Ile Thr
245 250 255

Ser Gly Glu Ala Ile Ser Phe Phe Thr Gly Asp Val Asn Tyr Leu Phe
260 265 270

Glu Gly Val Cys Tyr Gly Pro Leu Val Leu Ile Thr Cys Ala Ser Leu
275 280 285

Val Ile Cys Ser Ile Ser Ser Tyr Phe Ile Ile Gly Tyr Thr Ala Phe
290 295 300

```
Ile Ala Ile Leu Cys Tyr Leu Leu Val Phe Pro Leu Ala Val Phe Met
305                 310                 315                 320

Thr Arg Met Ala Val Lys Ala Gln His His Thr Ser Glu Val Ser Asp
                325                 330                 335

Gln Arg Ile Arg Val Thr Ser Glu Val Leu Thr Cys Ile Lys Leu Ile
            340                 345                 350

Lys Met Tyr Thr Trp Glu Lys Pro Phe Ala Lys Ile Ile Glu Asp Leu
        355                 360                 365

Arg Arg Lys Glu Arg Lys Leu Leu Glu Lys Cys Gly Leu Val Gln Ser
    370                 375                 380

Leu Thr Ser Ile Thr Leu Phe Ile Ile Pro Thr Val Ala Thr Ala Val
385                 390                 395                 400

Trp Val Leu Ile His Thr Ser Leu Lys Leu Lys Leu Thr Ala Ser Met
                405                 410                 415

Ala Phe Ser Met Leu Ala Ser Leu Asn Leu Leu Arg Leu Ser Val Phe
            420                 425                 430

Phe Val Pro Ile Ala Val Lys Gly Leu Thr Asn Ser Lys Ser Ala Val
        435                 440                 445

Met Arg Phe Lys Lys Phe Phe Leu Gln Glu Ser Pro Val Phe Tyr Val
    450                 455                 460

Gln Thr Leu Gln Asp Pro Ser Lys Ala Leu Val Phe Glu Glu Ala Thr
465                 470                 475                 480

Leu Ser Trp Gln Gln Thr Cys Pro Gly Ile Val Asn Gly Ala Leu Glu
                485                 490                 495

Leu Glu Arg Asn Gly His Ala Ser Glu Gly Met Thr Arg Pro Arg Asp
            500                 505                 510

Ala Leu Gly Pro Glu Glu Glu Gly Asn Ser Leu Gly Pro Glu Leu His
        515                 520                 525
```

Lys Ile Asn Leu Val Val Ser Lys Gly Met Met Leu Gly Val Cys Gly
530 535 540

Asn Thr Gly Ser Gly Lys Ser Ser Leu Leu Ser Ala Ile Leu Glu Glu
545 550 555 560

Met His Leu Leu Glu Gly Ser Val Gly Val Gln Gly Ser Leu Ala Tyr
565 570 575

Val Pro Gln Gln Ala Trp Ile Val Ser Gly Asn Ile Arg Glu Asn Ile
580 585 590

Leu Met Gly Gly Ala Tyr Asp Lys Ala Arg Tyr Leu Gln Val Leu His
595 600 605

Cys Cys Ser Leu Asn Arg Asp Leu Glu Leu Leu Pro Phe Gly Asp Met
610 615 620

Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Lys Gln
625 630 635 640

Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Ile Tyr Leu
645 650 655

Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile
660 665 670

Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val Leu
675 680 685

Val Thr His Gln Leu Gln Tyr Leu Glu Phe Cys Gly Gln Ile Ile Leu
690 695 700

Leu Glu Asn Gly Lys Ile Cys Glu Asn Gly Thr His Ser Glu Leu Met
705 710 715 720

Gln Lys Lys Gly Lys Tyr Ala Gln Leu Ile Gln Lys Met His Lys Glu
725 730 735

Ala Thr Ser Asp Met Leu Gln Asp Thr Ala Lys Ile Ala Glu Lys Pro
740 745 750

```
Lys Val Glu Ser Gln Ala Leu Ala Thr Ser Leu Glu Glu Ser Leu Asn
        755                 760                 765

Gly Asn Ala Val Pro Glu His Gln Leu Thr Gln Glu Glu Glu Met Glu
    770                 775                 780

Glu Gly Ser Leu Ser Trp Arg Val Tyr His His Tyr Ile Gln Ala Ala
785                 790                 795                 800

Gly Gly Tyr Met Val Ser Cys Ile Ile Phe Phe Phe Val Val Leu Ile
                805                 810                 815

Val Phe Leu Thr Ile Phe Ser Phe Trp Trp Leu Ser Tyr Trp Leu Glu
            820                 825                 830

Gln Gly Ser Gly Thr Asn Ser Ser Arg Glu Ser Asn Gly Thr Met Ala
        835                 840                 845

Asp Leu Gly Asn Ile Ala Asp Asn Pro Gln Leu Ser Phe Tyr Gln Leu
    850                 855                 860

Val Tyr Gly Leu Asn Ala Leu Leu Leu Ile Cys Val Gly Val Cys Ser
865                 870                 875                 880

Ser Gly Ile Phe Thr Lys Val Thr Arg Lys Ala Ser Thr Ala Leu His
                885                 890                 895

Asn Lys Leu Phe Asn Lys Val Phe Arg Cys Pro Met Ser Phe Phe Asp
            900                 905                 910

Thr Ile Pro Ile Gly Arg Leu Leu Asn Cys Phe Ala Gly Asp Leu Glu
        915                 920                 925

Gln Leu Asp Gln Leu Leu Pro Ile Phe Ser Glu Gln Phe Leu Val Leu
    930                 935                 940

Ser Leu Met Val Ile Ala Val Leu Leu Ile Val Ser Val Leu Ser Pro
945                 950                 955                 960

Tyr Ile Leu Leu Met Gly Ala Ile Ile Met Val Ile Cys Phe Ile Tyr
                965                 970                 975

Tyr Met Met Phe Lys Lys Ala Ile Gly Val Phe Lys Arg Leu Glu Asn
```

980 985 990

Tyr Ser Arg Ser Pro Leu Phe Ser His Ile Leu Asn Ser Leu Gln Gly
995 1000 1005

Leu Ser Ser Ile His Val Tyr Gly Lys Thr Glu Asp Phe Ile Ser
1010 1015 1020

Gln Phe Lys Arg Leu Thr Asp Ala Gln Asn Asn Tyr Leu Leu Leu
1025 1030 1035

Phe Leu Ser Ser Thr Arg Trp Met Ala Leu Arg Leu Glu Ile Met
1040 1045 1050

Thr Asn Leu Val Thr Leu Ala Val Ala Leu Phe Val Ala Phe Gly
1055 1060 1065

Ile Ser Ser Thr Pro Tyr Ser Phe Lys Val Met Ala Val Asn Ile
1070 1075 1080

Val Leu Gln Leu Ala Ser Ser Phe Gln Ala Thr Ala Arg Ile Gly
1085 1090 1095

Leu Glu Thr Glu Ala Gln Phe Thr Ala Val Glu Arg Ile Leu Gln
1100 1105 1110

Tyr Met Lys Met Cys Val Ser Glu Ala Pro Leu His Met Glu Gly
1115 1120 1125

Thr Ser Cys Pro Gln Gly Trp Pro Gln His Gly Glu Ile Ile Phe
1130 1135 1140

Gln Asp Tyr His Met Lys Tyr Arg Asp Asn Thr Pro Thr Val Leu
1145 1150 1155

His Gly Ile Asn Leu Thr Ile Arg Gly His Glu Val Val Gly Ile
1160 1165 1170

Val Gly Arg Thr Gly Ser Gly Lys Ser Ser Leu Gly Met Ala Leu
1175 1180 1185

Phe Arg Leu Val Glu Pro Met Ala Gly Arg Ile Leu Ile Asp Gly

1190 1195 1200

Val Asp Ile Cys Ser Ile Gly Leu Glu Asp Leu Arg Ser Lys Leu
1205 1210 1215

Ser Val Ile Pro Gln Asp Pro Val Leu Leu Ser Gly Thr Ile Arg
1220 1225 1230

Phe Asn Leu Asp Pro Phe Asp Arg His Thr Asp Gln Gln Ile Trp
1235 1240 1245

Asp Ala Leu Glu Arg Thr Phe Leu Thr Lys Ala Ile Ser Lys Phe
1250 1255 1260

Pro Lys Lys Leu His Thr Asp Val Val Glu Asn Gly Gly Asn Phe
1265 1270 1275

Ser Val Gly Glu Arg Gln Leu Leu Cys Ile Ala Arg Ala Val Leu
1280 1285 1290

Arg Asn Ser Lys Ile Ile Leu Ile Asp Glu Ala Thr Ala Ser Ile
1295 1300 1305

Asp Met Glu Thr Asp Thr Leu Ile Gln Arg Thr Ile Arg Glu Ala
1310 1315 1320

Phe Gln Gly Cys Thr Val Leu Val Ile Ala His Arg Val Thr Thr
1325 1330 1335

Val Leu Asn Cys Asp His Ile Leu Val Met Gly Asn Gly Lys Val
1340 1345 1350

Val Glu Phe Asp Arg Pro Glu Val Leu Arg Lys Lys Pro Gly Ser
1355 1360 1365

Leu Phe Ala Ala Leu Met Ala Thr Ala Thr Ser Ser Leu Arg
1370 1375 1380

<210> 7712
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<212> PRT
<213> Homo sapiens

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ATP-binding cassette, sub-family
C (CFTR/MRP),
member 11; "

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<220>
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<223> /note="ENSP ID: ENSP00000378231"

<400> 7712

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Met Thr Arg Lys Arg Thr Tyr Trp Val Pro Asn Ser Ser Gly Gly Leu
1               5                   10                  15

Val Asn Arg Gly Ile Asp Ile Gly Asp Asp Met Val Ser Gly Leu Ile
            20                  25                  30

Tyr Lys Thr Tyr Thr Leu Gln Asp Gly Pro Trp Ser Gln Gln Glu Arg
        35                  40                  45

Asn Pro Glu Ala Pro Gly Arg Ala Ala Val Pro Pro Trp Gly Lys Tyr
    50                  55                  60

Asp Ala Ala Leu Arg Thr Met Ile Pro Phe Arg Pro Lys Pro Arg Phe
65                  70                  75                  80

Pro Ala Pro Gln Pro Leu Asp Asn Ala Gly Leu Phe Ser Tyr Leu Thr
                85                  90                  95

Val Ser Trp Leu Thr Pro Leu Met Ile Gln Ser Leu Arg Ser Arg Leu
            100                 105                 110

Asp Glu Asn Thr Ile Pro Pro Leu Ser Val His Asp Ala Ser Asp Lys
        115                 120                 125

Asn Val Gln Arg Leu His Arg Leu Trp Glu Glu Glu Val Ser Arg Arg
    130                 135                 140
```

```
Gly Ile Glu Lys Ala Ser Val Leu Leu Val Met Leu Arg Phe Gln Arg
145                 150                 155                 160

Thr Arg Leu Ile Phe Asp Ala Leu Leu Gly Ile Cys Phe Cys Ile Ala
                165                 170                 175

Ser Val Leu Gly Pro Ile Leu Ile Ile Pro Lys Ile Leu Glu Tyr Ser
            180                 185                 190

Glu Glu Gln Leu Gly Asn Val Val His Gly Val Gly Leu Cys Phe Ala
        195                 200                 205

Leu Phe Leu Ser Glu Cys Val Lys Ser Leu Ser Phe Ser Ser Ser Trp
    210                 215                 220

Ile Ile Asn Gln Arg Thr Ala Ile Arg Phe Arg Ala Ala Val Ser Ser
225                 230                 235                 240

Phe Ala Phe Glu Lys Leu Ile Gln Phe Lys Ser Val Ile His Ile Thr
                245                 250                 255

Ser Gly Glu Ala Ile Ser Phe Phe Thr Gly Asp Val Asn Tyr Leu Phe
            260                 265                 270

Glu Gly Val Cys Tyr Gly Pro Leu Val Leu Ile Thr Cys Ala Ser Leu
        275                 280                 285

Val Ile Cys Ser Ile Ser Ser Tyr Phe Ile Ile Gly Tyr Thr Ala Phe
    290                 295                 300

Ile Ala Ile Leu Cys Tyr Leu Leu Val Phe Pro Leu Ala Val Phe Met
305                 310                 315                 320

Thr Arg Met Ala Val Lys Ala Gln His His Thr Ser Glu Val Ser Asp
                325                 330                 335

Gln Arg Ile Arg Val Thr Ser Glu Val Leu Thr Cys Ile Lys Leu Ile
            340                 345                 350

Lys Met Tyr Thr Trp Glu Lys Pro Phe Ala Lys Ile Ile Glu Asp Leu
        355                 360                 365
```

```
Arg Arg Lys Glu Arg Lys Leu Leu Glu Lys Cys Gly Leu Val Gln Ser
    370                 375                 380

Leu Thr Ser Ile Thr Leu Phe Ile Ile Pro Thr Val Ala Thr Ala Val
385                 390                 395                 400

Trp Val Leu Ile His Thr Ser Leu Lys Leu Lys Leu Thr Ala Ser Met
                405                 410                 415

Ala Phe Ser Met Leu Ala Ser Leu Asn Leu Leu Arg Leu Ser Val Phe
            420                 425                 430

Phe Val Pro Ile Ala Val Lys Gly Leu Thr Asn Ser Lys Ser Ala Val
        435                 440                 445

Met Arg Phe Lys Lys Phe Phe Leu Gln Glu Ser Pro Val Phe Tyr Val
    450                 455                 460

Gln Thr Leu Gln Asp Pro Ser Lys Ala Leu Val Phe Glu Glu Ala Thr
465                 470                 475                 480

Leu Ser Trp Gln Gln Thr Cys Pro Gly Ile Val Asn Gly Ala Leu Glu
                485                 490                 495

Leu Glu Arg Asn Gly His Ala Ser Glu Gly Met Thr Arg Pro Arg Asp
            500                 505                 510

Ala Leu Gly Pro Glu Glu Glu Gly Asn Ser Leu Gly Pro Glu Leu His
        515                 520                 525

Lys Ile Asn Leu Val Val Ser Lys Gly Met Met Leu Gly Val Cys Gly
    530                 535                 540

Asn Thr Gly Ser Gly Lys Ser Ser Leu Leu Ser Ala Ile Leu Glu Glu
545                 550                 555                 560

Met His Leu Leu Glu Gly Ser Val Gly Val Gln Gly Ser Leu Ala Tyr
                565                 570                 575

Val Pro Gln Gln Ala Trp Ile Val Ser Gly Asn Ile Arg Glu Asn Ile
            580                 585                 590
```

```
Leu Met Gly Gly Ala Tyr Asp Lys Ala Arg Tyr Leu Gln Val Leu His
        595                 600                 605

Cys Cys Ser Leu Asn Arg Asp Leu Glu Leu Leu Pro Phe Gly Asp Met
    610                 615                 620

Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Lys Gln
625                 630                 635                 640

Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Ile Tyr Leu
                645                 650                 655

Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile
            660                 665                 670

Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val Leu
        675                 680                 685

Val Thr His Gln Leu Gln Tyr Leu Glu Phe Cys Gly Gln Ile Ile Leu
    690                 695                 700

Leu Glu Asn Gly Lys Ile Cys Glu Asn Gly Thr His Ser Glu Leu Met
705                 710                 715                 720

Gln Lys Lys Gly Lys Tyr Ala Gln Leu Ile Gln Lys Met His Lys Glu
                725                 730                 735

Ala Thr Ser Asp Met Leu Gln Asp Thr Ala Lys Ile Ala Glu Lys Pro
            740                 745                 750

Lys Val Glu Ser Gln Ala Leu Ala Thr Ser Leu Glu Glu Ser Leu Asn
        755                 760                 765

Gly Asn Ala Val Pro Glu His Gln Leu Thr Gln Glu Glu Glu Met Glu
    770                 775                 780

Glu Gly Ser Leu Ser Trp Arg Val Tyr His His Tyr Ile Gln Ala Ala
785                 790                 795                 800

Gly Gly Tyr Met Val Ser Cys Ile Ile Phe Phe Phe Val Val Leu Ile
                805                 810                 815

Val Phe Leu Thr Ile Phe Ser Phe Trp Trp Leu Ser Tyr Trp Leu Glu
```

```
            820                 825                 830

Gln Gly Ser Gly Thr Asn Ser Ser Arg Glu Ser Asn Gly Thr Met Ala
        835                 840                 845

Asp Leu Gly Asn Ile Ala Asp Asn Pro Gln Leu Ser Phe Tyr Gln Leu
    850                 855                 860

Val Tyr Gly Leu Asn Ala Leu Leu Leu Ile Cys Val Gly Val Cys Ser
865                 870                 875                 880

Ser Gly Ile Phe Thr Lys Val Thr Arg Lys Ala Ser Thr Ala Leu His
                885                 890                 895

Asn Lys Leu Phe Asn Lys Val Phe Arg Cys Pro Met Ser Phe Phe Asp
            900                 905                 910

Thr Ile Pro Ile Gly Arg Leu Leu Asn Cys Phe Ala Gly Asp Leu Glu
        915                 920                 925

Gln Leu Asp Gln Leu Leu Pro Ile Phe Ser Glu Gln Phe Leu Val Leu
    930                 935                 940

Ser Leu Met Val Ile Ala Val Leu Leu Ile Val Ser Val Leu Ser Pro
945                 950                 955                 960

Tyr Ile Leu Leu Met Gly Ala Ile Ile Met Val Ile Cys Phe Ile Tyr
                965                 970                 975

Tyr Met Met Phe Lys Lys Ala Ile Gly Val Phe Lys Arg Leu Glu Asn
            980                 985                 990

Tyr Ser Arg Ser Pro Leu Phe Ser  His Ile Leu Asn Ser  Leu Gln
Gly
        995                 1000                1005

Leu Ser  Ser Ile His Val Tyr  Gly Lys Thr Glu Asp  Phe Ile Ser
    1010                1015                1020

Gln Phe  Lys Arg Leu Thr Asp  Ala Gln Asn Asn Tyr  Leu Leu Leu
    1025                1030                1035

Phe Leu  Ser Ser Thr Arg Trp  Met Ala Leu Arg Leu  Glu Ile Met
```

```
    1040                1045                1050

Thr Asn  Leu Val Thr Leu Ala  Val Ala Leu Phe Val  Ala Phe Gly
    1055                1060                1065

Ile Ser  Ser Thr Pro Tyr Ser  Phe Lys Val Met Ala  Val Asn Ile
    1070                1075                1080

Val Leu  Gln Leu Ala Ser Ser  Phe Gln Ala Thr Ala  Arg Ile Gly
    1085                1090                1095

Leu Glu  Thr Glu Ala Gln Phe  Thr Ala Val Glu Arg  Ile Leu Gln
    1100                1105                1110

Tyr Met  Lys Met Cys Val Ser  Glu Ala Pro Leu His  Met Glu Gly
    1115                1120                1125

Thr Ser  Cys Pro Gln Gly Trp  Pro Gln His Gly Glu  Ile Ile Phe
    1130                1135                1140

Gln Asp  Tyr His Met Lys Tyr  Arg Asp Asn Thr Pro  Thr Val Leu
    1145                1150                1155

His Gly  Ile Asn Leu Thr Ile  Arg Gly His Glu Val  Val Gly Ile
    1160                1165                1170

Val Gly  Arg Thr Gly Ser Gly  Lys Ser Ser Leu Gly  Met Ala Leu
    1175                1180                1185

Phe Arg  Leu Val Glu Pro Met  Ala Gly Arg Ile Leu  Ile Asp Gly
    1190                1195                1200

Val Asp  Ile Cys Ser Ile Gly  Leu Glu Asp Leu Arg  Ser Lys Leu
    1205                1210                1215

Ser Val  Ile Pro Gln Asp Pro  Val Leu Leu Ser Gly  Thr Ile Arg
    1220                1225                1230

Phe Asn  Leu Asp Pro Phe Asp  Arg His Thr Asp Gln  Gln Ile Trp
    1235                1240                1245

Asp Ala  Leu Glu Arg Thr Phe  Leu Thr Lys Ala Ile  Ser Lys Phe
    1250                1255                1260
```

```
Pro Lys  Lys Leu His Thr Asp  Val Val Glu Asn Gly  Gly Asn Phe
    1265                1270                1275

Ser Val  Gly Glu Arg Gln Leu  Leu Cys Ile Ala Arg  Ala Val Leu
    1280                1285                1290

Arg Asn  Ser Lys Ile Ile Leu  Ile Asp Glu Ala Thr  Ala Ser Ile
    1295                1300                1305

Asp Met  Glu Thr Asp Thr Leu  Ile Gln Arg Thr Ile  Arg Glu Ala
    1310                1315                1320

Phe Gln  Gly Cys Thr Val Leu  Val Ile Ala His Arg  Val Thr Thr
    1325                1330                1335

Val Leu  Asn Cys Asp His Ile  Leu Val Met Gly Asn  Gly Lys Val
    1340                1345                1350

Val Glu  Phe Asp Arg Pro Glu  Val Leu Arg Lys Lys  Pro Gly Ser
    1355                1360                1365

Leu Phe  Ala Ala Leu Met Ala  Thr Ala Thr Ser Ser  Leu Arg
    1370                1375                1380


<210> 7713
<211> 159
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1621; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC11; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456268"
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<400> 7713
Met Thr Arg Lys Arg Thr Tyr Trp Val Pro Asn Ser Ser Gly Gly Leu
1 5 10 15

Val Asn Arg Gly Ile Asp Ile Gly Asp Asp Met Val Ser Gly Leu Ile
20 25 30

Tyr Lys Thr Tyr Thr Leu Gln Asp Gly Pro Trp Ser Gln Gln Glu Arg
35 40 45

Asn Pro Glu Ala Pro Gly Arg Ala Ala Val Pro Pro Trp Gly Lys Tyr
50 55 60

Asp Ala Ala Leu Arg Thr Met Ile Pro Phe Arg Pro Lys Pro Arg Phe
65 70 75 80

Pro Ala Pro Gln Pro Leu Asp Asn Ala Gly Leu Phe Ser Tyr Leu Thr
85 90 95

Val Ser Trp Leu Thr Pro Leu Met Ile Gln Ser Leu Arg Ser Arg Leu
100 105 110

Asp Glu Asn Thr Ile Pro Pro Leu Ser Val His Asp Ala Ser Asp Lys
115 120 125

Asn Val Gln Arg Leu His Arg Leu Trp Glu Glu Glu Val Ser Arg Arg
130 135 140

Gly Ile Glu Lys Ala Ser Val Leu Leu Val Met Leu Arg Phe Gln
145 150 155

<210> 7714
<211> 1359
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source

<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q96J65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000311030"

<400> 7714

```
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1               5                  10                  15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20                  25                  30

Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35                  40                  45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50                  55                  60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65                  70                  75                  80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85                  90                  95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100                 105                 110

His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115                 120                 125

Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Val Ile Leu
    130                 135                 140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145                 150                 155                 160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165                 170                 175
```

```
Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180                 185                 190

Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Val Leu Asn Ile Leu
    210                 215                 220

Ser Ser Asp Ser Tyr Ser Leu Phe Glu Ala Ala Leu Phe Cys Pro Leu
225                 230                 235                 240

Pro Ala Thr Ile Pro Ile Leu Met Val Phe Cys Ala Ala Tyr Ala Phe
                245                 250                 255

Phe Ile Leu Gly Pro Thr Ala Leu Ile Gly Ile Ser Val Tyr Val Ile
            260                 265                 270

Phe Ile Pro Val Gln Met Phe Met Ala Lys Leu Asn Ser Ala Phe Arg
        275                 280                 285

Arg Ser Ala Ile Leu Val Thr Asp Lys Arg Val Gln Thr Met Asn Glu
    290                 295                 300

Phe Leu Thr Cys Ile Arg Leu Ile Lys Met Tyr Ala Trp Glu Lys Ser
305                 310                 315                 320

Phe Thr Asn Thr Ile Gln Asp Ile Arg Arg Arg Glu Arg Lys Leu Leu
                325                 330                 335

Glu Lys Ala Gly Phe Val Gln Ser Gly Asn Ser Ala Leu Ala Pro Ile
            340                 345                 350

Val Ser Thr Ile Ala Ile Val Leu Thr Leu Ser Cys His Ile Leu Leu
        355                 360                 365

Arg Arg Lys Leu Thr Ala Pro Val Ala Phe Ser Val Ile Ala Met Phe
    370                 375                 380

Asn Val Met Lys Phe Ser Ile Ala Ile Leu Pro Phe Ser Ile Lys Ala
385                 390                 395                 400
```

```
Met Ala Glu Ala Asn Val Ser Leu Arg Arg Met Lys Lys Ile Leu Ile
                405                 410                 415

Asp Lys Ser Pro Pro Ser Tyr Ile Thr Gln Pro Glu Asp Pro Asp Thr
            420                 425                 430

Val Leu Leu Leu Ala Asn Ala Thr Leu Thr Trp Glu His Glu Ala Ser
        435                 440                 445

Arg Lys Ser Thr Pro Lys Lys Leu Gln Asn Gln Lys Arg His Leu Cys
    450                 455                 460

Lys Lys Gln Arg Ser Glu Ala Tyr Ser Glu Arg Ser Pro Pro Ala Lys
465                 470                 475                 480

Gly Ala Thr Gly Pro Glu Glu Gln Ser Asp Ser Leu Lys Ser Val Leu
                485                 490                 495

His Ser Ile Ser Phe Val Val Arg Lys Gly Lys Ile Leu Gly Ile Cys
            500                 505                 510

Gly Asn Val Gly Ser Gly Lys Ser Ser Leu Leu Ala Ala Leu Leu Gly
        515                 520                 525

Gln Met Gln Leu Gln Lys Gly Val Val Ala Val Asn Gly Thr Leu Ala
    530                 535                 540

Tyr Val Ser Gln Gln Ala Trp Ile Phe His Gly Asn Val Arg Glu Asn
545                 550                 555                 560

Ile Leu Phe Gly Glu Lys Tyr Asp His Gln Arg Tyr Gln His Thr Val
                565                 570                 575

Arg Val Cys Gly Leu Gln Lys Asp Leu Ser Asn Leu Pro Tyr Gly Asp
            580                 585                 590

Leu Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Arg
        595                 600                 605

Gln Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Leu Tyr
    610                 615                 620

Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His
```

625 630 635 640

Val Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val
645 650 655

Leu Val Thr His Gln Leu Gln Phe Leu Glu Ser Cys Asp Glu Val Ile
660 665 670

Leu Leu Glu Asp Gly Glu Ile Cys Glu Lys Gly Thr His Lys Glu Leu
675 680 685

Met Glu Glu Arg Gly Arg Tyr Ala Lys Leu Ile His Asn Leu Arg Gly
690 695 700

Leu Gln Phe Lys Asp Pro Glu His Leu Tyr Asn Ala Ala Met Val Glu
705 710 715 720

Ala Phe Lys Glu Ser Pro Ala Glu Arg Glu Glu Asp Ala Gly Ile Ile
725 730 735

Val Leu Ala Pro Gly Asn Glu Lys Asp Glu Gly Lys Glu Ser Glu Thr
740 745 750

Gly Ser Glu Phe Val Asp Thr Lys Val Pro Glu His Gln Leu Ile Gln
755 760 765

Thr Glu Ser Pro Gln Glu Gly Thr Val Thr Trp Lys Thr Tyr His Thr
770 775 780

Tyr Ile Lys Ala Ser Gly Gly Tyr Leu Leu Ser Leu Phe Thr Val Phe
785 790 795 800

Leu Phe Leu Leu Met Ile Gly Ser Ala Ala Phe Ser Asn Trp Trp Leu
805 810 815

Gly Leu Trp Leu Asp Lys Gly Ser Arg Met Thr Cys Gly Pro Gln Gly
820 825 830

Asn Arg Thr Met Cys Glu Val Gly Ala Val Leu Ala Asp Ile Gly Gln
835 840 845

His Val Tyr Gln Trp Val Tyr Thr Ala Ser Met Val Phe Met Leu Val
850 855 860

```
Phe Gly Val Thr Lys Gly Phe Val Phe Thr Lys Thr Thr Leu Met Ala
865                 870                 875                 880

Ser Ser Ser Leu His Asp Thr Val Phe Asp Lys Ile Leu Lys Ser Pro
                885                 890                 895

Met Ser Phe Phe Asp Thr Thr Pro Thr Gly Arg Leu Met Asn Arg Phe
            900                 905                 910

Ser Lys Asp Met Asp Glu Leu Asp Val Arg Leu Pro Phe His Ala Glu
        915                 920                 925

Asn Phe Leu Gln Gln Phe Phe Met Val Val Phe Ile Leu Val Ile Leu
    930                 935                 940

Ala Ala Val Phe Pro Ala Val Leu Leu Val Val Ala Ser Leu Ala Val
945                 950                 955                 960

Gly Phe Phe Ile Leu Leu Arg Ile Phe His Arg Gly Val Gln Glu Leu
                965                 970                 975

Lys Lys Val Glu Asn Val Ser Arg Ser Pro Trp Phe Thr His Ile Thr
            980                 985                 990

Ser Ser Met Gln Gly Leu Gly Ile  Ile His Ala Tyr Gly  Lys Lys
Glu
        995                 1000                1005

Ser Cys  Ile Thr Tyr His Leu  Leu Tyr Phe Asn Cys  Ala Leu Arg
    1010                1015                1020

Trp Phe  Ala Leu Arg Met Asp  Val Leu Met Asn Ile  Leu Thr Phe
    1025                1030                1035

Thr Val  Ala Leu Leu Val Thr  Leu Ser Phe Ser Ser  Ile Ser Thr
    1040                1045                1050

Ser Ser  Lys Gly Leu Ser Leu  Ser Tyr Ile Ile Gln  Leu Ser Gly
    1055                1060                1065

Leu Leu  Gln Val Cys Val Arg  Thr Gly Thr Glu Thr  Gln Ala Lys
    1070                1075                1080
```

```
Phe Thr  Ser Val Glu Leu Leu  Arg Glu Tyr Ile Ser  Thr Cys Val
    1085                1090                1095

Pro Glu  Cys Thr His Pro Leu  Lys Val Gly Thr Cys  Pro Lys Asp
    1100                1105                1110

Trp Pro  Ser Arg Gly Glu Ile  Thr Phe Arg Asp Tyr  Gln Met Arg
    1115                1120                1125

Tyr Arg  Asp Asn Thr Pro Leu  Val Leu Asp Ser Leu  Asn Leu Asn
    1130                1135                1140

Ile Gln  Ser Gly Gln Thr Val  Gly Ile Val Gly Arg  Thr Gly Ser
    1145                1150                1155

Gly Lys  Ser Ser Leu Gly Met  Ala Leu Phe Arg Leu  Val Glu Pro
    1160                1165                1170

Ala Ser  Gly Thr Ile Phe Ile  Asp Glu Val Asp Ile  Cys Ile Leu
    1175                1180                1185

Ser Leu  Glu Asp Leu Arg Thr  Lys Leu Thr Val Ile  Pro Gln Asp
    1190                1195                1200

Pro Val  Leu Phe Val Gly Thr  Val Arg Tyr Asn Leu  Asp Pro Phe
    1205                1210                1215

Glu Ser  His Thr Asp Glu Met  Leu Trp Gln Val Leu  Glu Arg Thr
    1220                1225                1230

Phe Met  Arg Asp Thr Ile Met  Lys Leu Pro Glu Lys  Leu Gln Ala
    1235                1240                1245

Glu Val  Thr Glu Asn Gly Glu  Asn Phe Ser Val Gly  Glu Arg Gln
    1250                1255                1260

Leu Leu  Cys Val Ala Arg Ala  Leu Leu Arg Asn Ser  Lys Ile Ile
    1265                1270                1275

Leu Leu  Asp Glu Ala Thr Ala  Ser Met Asp Ser Lys  Thr Asp Thr
    1280                1285                1290
```

```
Leu Val  Gln Asn Thr Ile Lys  Asp Ala Phe Lys Gly  Cys Thr Val
    1295                1300                1305

Leu Thr  Ile Ala His Arg Leu  Asn Thr Val Leu Asn  Cys Asp His
    1310                1315                1320

Val Leu  Val Met Glu Asn Gly  Lys Val Ile Glu Phe  Asp Lys Pro
    1325                1330                1335

Glu Val  Leu Ala Glu Lys Pro  Asp Ser Ala Phe Ala  Met Leu Leu
    1340                1345                1350

Ala Ala  Glu Val Arg Leu
    1355
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<210> 7715
<211> 1009
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q96J65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431232"

<400> 7715

```
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1               5                  10                  15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20                  25                  30
```

```
Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35                  40                  45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50                  55                  60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65                  70                  75                  80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85                  90                  95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100                 105                 110

His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115                 120                 125

Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Thr Val Leu
    130                 135                 140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145                 150                 155                 160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165                 170                 175

Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180                 185                 190

Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Val Leu Asn Ile Leu
    210                 215                 220

Ser Ser Asp Ser Tyr Ser Leu Phe Glu Ala Ala Leu Phe Cys Pro Leu
225                 230                 235                 240

Pro Ala Thr Ile Pro Ile Leu Met Val Phe Cys Ala Ala Tyr Ala Phe
                245                 250                 255
```

```
Phe Ile Leu Gly Pro Thr Ala Leu Ile Gly Ile Ser Val Tyr Val Ile
            260                 265                 270

Phe Ile Pro Val Gln Met Phe Met Ala Lys Leu Asn Ser Ala Phe Arg
        275                 280                 285

Arg Ser Ala Ile Leu Val Thr Asp Lys Arg Val Gln Thr Met Asn Glu
    290                 295                 300

Phe Leu Thr Cys Ile Arg Leu Ile Lys Met Tyr Ala Trp Glu Lys Ser
305                 310                 315                 320

Phe Thr Asn Thr Ile Gln Asp Ile Arg Arg Arg Glu Arg Lys Leu Leu
                325                 330                 335

Glu Lys Ala Gly Phe Val Gln Ser Gly Asn Ser Ala Leu Ala Pro Ile
            340                 345                 350

Val Ser Thr Ile Ala Ile Val Leu Thr Leu Ser Cys His Ile Leu Leu
        355                 360                 365

Arg Arg Lys Leu Thr Ala Pro Val Ala Phe Ser Val Ile Ala Met Phe
    370                 375                 380

Asn Val Met Lys Phe Ser Ile Ala Ile Leu Pro Phe Ser Ile Lys Ala
385                 390                 395                 400

Met Ala Glu Ala Asn Val Ser Leu Arg Arg Met Lys Lys Ile Leu Ile
                405                 410                 415

Asp Lys Ser Pro Pro Ser Tyr Ile Thr Gln Pro Glu Asp Pro Asp Thr
            420                 425                 430

Val Leu Leu Leu Ala Asn Ala Thr Leu Thr Trp Glu His Glu Ala Ser
        435                 440                 445

Arg Lys Ser Thr Pro Lys Lys Leu Gln Asn Gln Lys Arg His Leu Cys
    450                 455                 460

Lys Lys Gln Arg Ser Glu Ala Tyr Ser Glu Arg Ser Pro Pro Ala Lys
465                 470                 475                 480

Gly Ala Thr Gly Pro Glu Glu Gln Ser Asp Ser Leu Lys Ser Val Leu
```

485 490 495

His Ser Ile Ser Phe Val Val Arg Lys Gly Lys Ile Leu Gly Ile Cys
500 505 510

Gly Asn Val Gly Ser Gly Lys Ser Ser Leu Leu Ala Ala Leu Leu Gly
515 520 525

Gln Met Gln Leu Gln Lys Gly Val Val Ala Val Asn Gly Thr Leu Ala
530 535 540

Tyr Val Ser Gln Gln Ala Trp Ile Phe His Gly Asn Val Arg Glu Asn
545 550 555 560

Ile Leu Phe Gly Glu Lys Tyr Asp His Gln Arg Tyr Gln His Thr Val
565 570 575

Arg Val Cys Gly Leu Gln Lys Asp Leu Ser Asn Leu Pro Tyr Gly Asp
580 585 590

Leu Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Arg
595 600 605

Gln Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Leu Tyr
610 615 620

Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His
625 630 635 640

Val Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val
645 650 655

Leu Val Thr His Gln Leu Gln Phe Leu Glu Ser Cys Asp Glu Val Ile
660 665 670

Leu Leu Glu Asp Gly Glu Ile Cys Glu Lys Gly Thr His Lys Glu Leu
675 680 685

Met Glu Glu Arg Gly Arg Tyr Ala Lys Leu Ile His Asn Leu Arg Gly
690 695 700

Leu Gln Phe Lys Asp Pro Glu His Leu Tyr Asn Ala Ala Met Val Glu
705 710 715 720

Ala Phe Lys Glu Ser Pro Ala Glu Arg Glu Glu Asp Ala Val Leu Ala
725 730 735

Pro Gly Asn Glu Lys Asp Glu Gly Lys Glu Ser Glu Thr Gly Ser Glu
740 745 750

Phe Val Asp Thr Lys Val Pro Glu His Gln Leu Ile Gln Thr Glu Ser
755 760 765

Pro Gln Glu Gly Thr Val Thr Trp Lys Thr Tyr His Thr Tyr Ile Lys
770 775 780

Ala Ser Gly Gly Tyr Leu Leu Ser Leu Phe Thr Val Phe Leu Phe Leu
785 790 795 800

Leu Met Ile Gly Ser Ala Ala Phe Ser Asn Trp Trp Leu Gly Leu Trp
805 810 815

Leu Asp Lys Gly Ser Arg Met Thr Cys Gly Pro Gln Gly Asn Arg Thr
820 825 830

Met Cys Glu Val Gly Ala Val Leu Ala Asp Ile Gly Gln His Val Tyr
835 840 845

Gln Trp Val Tyr Thr Ala Ser Met Val Phe Met Leu Val Phe Gly Val
850 855 860

Thr Lys Gly Phe Val Phe Thr Lys Thr Thr Leu Met Ala Ser Ser Ser
865 870 875 880

Leu His Asp Thr Val Phe Asp Lys Ile Leu Lys Ser Pro Met Ser Phe
885 890 895

Phe Asp Thr Thr Pro Thr Gly Arg Leu Met Asn Arg Phe Ser Lys Asp
900 905 910

Met Asp Glu Leu Asp Val Arg Leu Pro Phe His Ala Glu Asn Phe Leu
915 920 925

Gln Gln Phe Phe Met Val Val Phe Ile Leu Val Ile Leu Ala Ala Val
930 935 940

```
Phe Pro Ala Val Leu Leu Val Val Ala Ser Leu Ala Val Gly Phe Phe
945                 950                 955                 960


Ile Leu Leu Arg Ile Phe His Arg Gly Val Gln Glu Leu Lys Lys Val
                965                 970                 975


Glu Asn Val Ser Arg Ser Pro Trp Phe Thr His Ile Thr Ser Ser Met
            980                 985                 990


Gln Gly Leu Gly Ile Ile His Ala  Tyr Gly Lys Lys Glu  Ser Cys
Ile
        995                 1000                1005


Thr
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<210> 7716
<211> 930
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q96J65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431354"

<400> 7716

```
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1               5                   10                  15


Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20                  25                  30
```

```
Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35                  40                  45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50                  55                  60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65                  70                  75                  80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85                  90                  95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100                 105                 110

His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115                 120                 125

Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Thr Val Leu
    130                 135                 140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145                 150                 155                 160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165                 170                 175

Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180                 185                 190

Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Met Phe Met Ala Lys
    210                 215                 220

Leu Asn Ser Ala Phe Arg Arg Ser Ala Ile Leu Val Thr Asp Lys Arg
225                 230                 235                 240

Val Gln Thr Met Asn Glu Phe Leu Thr Cys Ile Arg Leu Ile Lys Met
                245                 250                 255
```

```
Tyr Ala Trp Glu Lys Ser Phe Thr Asn Thr Ile Gln Asp Ile Arg Arg
            260                 265                 270

Arg Glu Arg Lys Leu Leu Glu Lys Ala Gly Phe Val Gln Ser Gly Asn
        275                 280                 285

Ser Ala Leu Ala Pro Ile Val Ser Thr Ile Ala Ile Val Leu Thr Leu
    290                 295                 300

Ser Cys His Ile Leu Leu Arg Arg Lys Leu Thr Ala Pro Val Ala Phe
305                 310                 315                 320

Ser Val Ile Ala Met Phe Asn Val Met Lys Phe Ser Ile Ala Ile Leu
                325                 330                 335

Pro Phe Ser Ile Lys Ala Met Ala Glu Ala Asn Val Ser Leu Arg Arg
            340                 345                 350

Met Lys Lys Ile Leu Ile Asp Lys Ser Pro Pro Ser Tyr Ile Thr Gln
        355                 360                 365

Pro Glu Asp Pro Asp Thr Val Leu Leu Leu Ala Asn Ala Thr Leu Thr
    370                 375                 380

Trp Glu His Glu Ala Ser Arg Lys Ser Thr Pro Lys Lys Leu Gln Asn
385                 390                 395                 400

Gln Lys Arg His Leu Cys Lys Lys Gln Arg Ser Glu Ala Tyr Ser Glu
                405                 410                 415

Arg Ser Pro Pro Ala Lys Gly Ala Thr Gly Pro Glu Glu Gln Ser Asp
            420                 425                 430

Ser Leu Lys Ser Val Leu His Ser Ile Ser Phe Val Val Arg Lys Gly
        435                 440                 445

Lys Ile Leu Gly Ile Cys Gly Asn Val Gly Ser Gly Lys Ser Ser Leu
    450                 455                 460

Leu Ala Ala Leu Leu Gly Gln Met Gln Leu Gln Lys Gly Val Val Ala
465                 470                 475                 480
```

```
Val Asn Gly Thr Leu Ala Tyr Val Ser Gln Gln Ala Trp Ile Phe His
                485                 490                 495

Gly Asn Val Arg Glu Asn Ile Leu Phe Gly Glu Lys Tyr Asp His Gln
            500                 505                 510

Arg Tyr Gln His Thr Val Arg Val Cys Gly Leu Gln Lys Asp Leu Ser
        515                 520                 525

Asn Leu Pro Tyr Gly Asp Leu Thr Glu Ile Gly Glu Arg Gly Leu Asn
    530                 535                 540

Leu Ser Gly Gly Gln Arg Gln Arg Ile Ser Leu Ala Arg Ala Val Tyr
545                 550                 555                 560

Ser Asp Arg Gln Leu Tyr Leu Leu Asp Asp Pro Leu Ser Ala Val Asp
                565                 570                 575

Ala His Val Gly Lys His Val Phe Glu Glu Cys Ile Lys Lys Thr Leu
            580                 585                 590

Arg Gly Lys Thr Val Val Leu Val Thr His Gln Leu Gln Phe Leu Glu
        595                 600                 605

Ser Cys Asp Glu Val Ile Leu Leu Glu Asp Gly Glu Ile Cys Glu Lys
    610                 615                 620

Gly Thr His Lys Glu Leu Met Glu Glu Arg Gly Arg Tyr Ala Lys Leu
625                 630                 635                 640

Ile His Asn Leu Arg Gly Leu Gln Phe Lys Asp Pro Glu His Leu Tyr
                645                 650                 655

Asn Ala Ala Met Val Glu Ala Phe Lys Glu Ser Pro Ala Glu Arg Glu
            660                 665                 670

Glu Asp Ala Gly Ile Ile Val Pro Glu His Gln Leu Ile Gln Thr Glu
        675                 680                 685

Ser Pro Gln Glu Gly Thr Val Thr Trp Lys Thr Tyr His Thr Tyr Ile
    690                 695                 700

Lys Ala Ser Gly Gly Tyr Leu Leu Ser Leu Phe Thr Val Phe Leu Phe
```

705 710 715 720

Leu Leu Met Ile Gly Ser Ala Ala Phe Ser Asn Trp Trp Leu Gly Leu
725 730 735

Trp Leu Asp Lys Gly Ser Arg Met Thr Cys Gly Pro Gln Gly Asn Arg
740 745 750

Thr Met Cys Glu Val Gly Ala Val Leu Ala Asp Ile Gly Gln His Val
755 760 765

Tyr Gln Trp Val Tyr Thr Ala Ser Met Val Phe Met Leu Val Phe Gly
770 775 780

Val Thr Lys Gly Phe Val Phe Thr Lys Thr Thr Leu Met Ala Ser Ser
785 790 795 800

Ser Leu His Asp Thr Val Phe Asp Lys Ile Leu Lys Ser Pro Met Ser
805 810 815

Phe Phe Asp Thr Thr Pro Thr Gly Arg Leu Met Asn Arg Phe Ser Lys
820 825 830

Asp Met Asp Glu Leu Asp Val Arg Leu Pro Phe His Ala Glu Asn Phe
835 840 845

Leu Gln Gln Phe Phe Met Val Val Phe Ile Leu Val Ile Leu Ala Ala
850 855 860

Val Phe Pro Ala Val Leu Leu Val Val Ala Ser Leu Ala Val Gly Phe
865 870 875 880

Phe Ile Leu Leu Arg Ile Phe His Arg Gly Val Gln Glu Leu Lys Lys
885 890 895

Val Glu Asn Val Ser Arg Ser Pro Trp Phe Thr His Ile Thr Ser Ser
900 905 910

Met Gln Gly Leu Gly Ile Ile His Ala Tyr Gly Lys Lys Glu Ser Cys
915 920 925

Ile Thr
930

<210> 7717
<211> 935
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q96J65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433333"

<400> 7717

```
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1               5                  10                  15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20                  25                  30

Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35                  40                  45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50                  55                  60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65                  70                  75                  80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85                  90                  95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100                 105                 110
```

```
His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115                 120                 125

Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Thr Val Leu
    130                 135                 140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145                 150                 155                 160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165                 170                 175

Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180                 185                 190

Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Val Leu Asn Ile Leu
    210                 215                 220

Ser Ser Asp Ser Tyr Ser Leu Phe Glu Ala Ala Leu Phe Cys Pro Leu
225                 230                 235                 240

Pro Ala Thr Ile Pro Ile Leu Met Val Phe Cys Ala Ala Tyr Ala Phe
                245                 250                 255

Phe Ile Leu Gly Pro Thr Ala Leu Ile Gly Ile Ser Val Tyr Val Ile
            260                 265                 270

Phe Ile Pro Val Gln Met Phe Met Ala Lys Leu Asn Ser Ala Phe Arg
        275                 280                 285

Arg Ser Ala Ile Leu Val Thr Asp Lys Arg Val Gln Thr Met Asn Glu
    290                 295                 300

Phe Leu Thr Cys Ile Arg Leu Ile Lys Met Tyr Ala Trp Glu Lys Ser
305                 310                 315                 320

Phe Thr Asn Thr Ile Gln Asp Ile Arg Arg Arg Glu Arg Lys Leu Leu
                325                 330                 335
```

```
Glu Lys Ala Gly Phe Val Gln Ser Gly Asn Ser Ala Leu Ala Pro Ile
            340                 345                 350

Val Ser Thr Ile Ala Ile Val Leu Thr Leu Ser Cys His Ile Leu Leu
        355                 360                 365

Arg Arg Lys Leu Thr Ala Pro Val Ala Phe Ser Val Ile Ala Met Phe
    370                 375                 380

Asn Val Met Lys Phe Ser Ile Ala Ile Leu Pro Phe Ser Ile Lys Ala
385                 390                 395                 400

Met Ala Glu Ala Asn Val Ser Leu Arg Arg Met Lys Lys Ile Leu Ile
                405                 410                 415

Asp Lys Ser Pro Pro Ser Tyr Ile Thr Gln Pro Glu Asp Pro Asp Thr
            420                 425                 430

Val Leu Leu Leu Ala Asn Ala Thr Leu Thr Trp Glu His Glu Ala Ser
        435                 440                 445

Arg Lys Ser Thr Pro Lys Lys Leu Gln Asn Gln Lys Arg His Leu Cys
    450                 455                 460

Lys Lys Gln Arg Ser Glu Ala Tyr Ser Glu Arg Ser Pro Pro Ala Lys
465                 470                 475                 480

Gly Ala Thr Gly Pro Glu Glu Gln Ser Asp Ser Leu Lys Ser Val Leu
                485                 490                 495

His Ser Ile Ser Phe Val Val Arg Lys Gly Lys Ile Leu Gly Ile Cys
            500                 505                 510

Gly Asn Val Gly Ser Gly Lys Ser Ser Leu Leu Ala Ala Leu Leu Gly
        515                 520                 525

Gln Met Gln Leu Gln Lys Gly Val Val Ala Val Asn Gly Thr Leu Ala
    530                 535                 540

Tyr Val Ser Gln Gln Ala Trp Ile Phe His Gly Asn Val Arg Glu Asn
545                 550                 555                 560
```

```
Ile Leu Phe Gly Glu Lys Tyr Asp His Gln Arg Tyr Gln His Thr Val
                565                 570                 575

Arg Val Cys Gly Leu Gln Lys Asp Leu Ser Asn Leu Pro Tyr Gly Asp
            580                 585                 590

Leu Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Arg
        595                 600                 605

Gln Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Leu Tyr
    610                 615                 620

Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His
625                 630                 635                 640

Val Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val
                645                 650                 655

Leu Val Thr His Gln Leu Gln Phe Leu Glu Ser Cys Asp Glu Val Ile
            660                 665                 670

Leu Leu Glu Asp Gly Glu Ile Cys Glu Lys Gly Thr His Lys Glu Leu
        675                 680                 685

Met Glu Glu Arg Gly Arg Tyr Ala Lys Leu Ile His Asn Leu Arg Gly
    690                 695                 700

Leu Gln Phe Lys Asp Pro Glu His Leu Tyr Asn Ala Ala Met Val Glu
705                 710                 715                 720

Ala Phe Lys Glu Ser Pro Ala Glu Arg Glu Glu Asp Ala Val Leu Ala
                725                 730                 735

Pro Gly Asn Glu Lys Asp Glu Gly Lys Glu Ser Glu Thr Gly Ser Glu
            740                 745                 750

Phe Val Asp Thr Lys Val Pro Glu His Gln Leu Ile Gln Thr Glu Ser
        755                 760                 765

Pro Gln Glu Gly Thr Val Thr Trp Lys Thr Tyr His Thr Tyr Ile Lys
    770                 775                 780

Ala Ser Gly Gly Tyr Leu Leu Ser Leu Phe Thr Val Phe Leu Phe Leu
```

785 790 795 800

Leu Met Ile Gly Ser Ala Ala Phe Ser Asn Trp Trp Leu Gly Leu Trp
805 810 815

Leu Asp Lys Gly Ser Arg Met Thr Cys Gly Pro Gln Gly Asn Arg Thr
820 825 830

Met Cys Glu Val Gly Ala Val Leu Ala Asp Ile Gly Gln His Val Tyr
835 840 845

Gln Trp Val Tyr Thr Ala Ser Met Val Phe Met Leu Val Phe Gly Val
850 855 860

Thr Lys Gly Phe Val Phe Thr Lys Thr Thr Leu Met Ala Ser Ser Ser
865 870 875 880

Leu His Asp Thr Val Phe Asp Lys His Phe Pro Gln Arg Ser Pro Gly
885 890 895

Ala Gln Glu Gly Gly Glu Cys Gln Pro Val Thr Leu Val His Pro His
900 905 910

His Leu Leu His Ala Gly Pro Gly His His Ser Arg Leu Trp Gln Glu
915 920 925

Gly Glu Leu His His Leu Val
930 935

<210> 7718
<211> 633
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),

member 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q96J65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434510"

<400> 7718
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1   5   10   15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20   25   30

Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35   40   45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50   55   60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65   70   75   80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85   90   95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100   105   110

His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115   120   125

Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Thr Val Leu
    130   135   140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145   150   155   160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165   170   175

Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180   185   190

```
Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Val Leu Asn Ile Leu
    210                 215                 220

Ser Ser Asp Ser Tyr Ser Leu Phe Glu Ala Ala Leu Phe Cys Pro Leu
225                 230                 235                 240

Pro Ala Thr Ile Pro Ile Leu Met Val Phe Cys Ala Ala Tyr Ala Phe
                245                 250                 255

Phe Ile Leu Gly Pro Thr Ala Leu Ile Gly Ile Ser Val Tyr Val Ile
            260                 265                 270

Phe Ile Pro Val Gln Met Phe Met Ala Lys Leu Asn Ser Ala Phe Arg
        275                 280                 285

Arg Ser Ala Ile Leu Val Thr Asp Lys Arg Val Gln Thr Met Asn Glu
    290                 295                 300

Phe Leu Thr Cys Ile Arg Leu Ile Lys Met Tyr Ala Trp Glu Lys Ser
305                 310                 315                 320

Phe Thr Asn Thr Ile Gln Asp Ile Arg Arg Arg Glu Arg Lys Leu Leu
                325                 330                 335

Glu Lys Ala Gly Phe Val Gln Ser Gly Asn Ser Ala Leu Ala Pro Ile
            340                 345                 350

Val Ser Thr Ile Ala Ile Val Leu Thr Leu Ser Cys His Ile Leu Leu
        355                 360                 365

Arg Arg Lys Leu Thr Ala Pro Val Ala Phe Ser Val Ile Ala Met Phe
    370                 375                 380

Asn Val Met Lys Phe Ser Ile Ala Ile Leu Pro Phe Ser Ile Lys Ala
385                 390                 395                 400

Met Ala Glu Ala Asn Val Ser Leu Arg Arg Met Lys Lys Ile Leu Ile
                405                 410                 415
```

```
Asp Lys Ser Pro Pro Ser Tyr Ile Thr Gln Pro Glu Asp Pro Asp Thr
            420                 425                 430

Val Leu Leu Leu Ala Asn Ala Thr Leu Thr Trp Glu His Glu Ala Ser
        435                 440                 445

Arg Lys Ser Thr Pro Lys Lys Leu Gln Asn Gln Lys Arg His Leu Cys
    450                 455                 460

Lys Lys Gln Arg Ser Glu Ala Tyr Ser Glu Arg Ser Pro Pro Ala Lys
465                 470                 475                 480

Gly Ala Thr Gly Pro Glu Glu Gln Ser Asp Ser Leu Lys Ser Val Leu
                485                 490                 495

His Ser Ile Ser Phe Val Val Arg Lys Gly Lys Ile Leu Gly Ile Cys
            500                 505                 510

Gly Asn Val Gly Ser Gly Lys Ser Ser Leu Leu Ala Ala Leu Leu Gly
        515                 520                 525

Gln Met Gln Leu Gln Lys Gly Val Val Ala Val Asn Gly Thr Leu Ala
    530                 535                 540

Tyr Val Ser Gln Gln Ala Trp Ile Phe His Gly Asn Val Arg Glu Asn
545                 550                 555                 560

Ile Leu Phe Gly Glu Lys Tyr Asp His Gln Arg Leu Gly Ser Gly Ala
                565                 570                 575

Ser Thr Ser Leu Gly Gly Arg Gly Arg Gly Leu Ala Trp Pro Ala Leu
            580                 585                 590

Ser Thr Pro Thr Val Ser Ser Thr Cys Trp Thr Thr Pro Cys Arg Pro
        595                 600                 605

Trp Thr Pro Thr Trp Gly Ser Thr Ser Leu Arg Ser Ala Leu Arg Arg
    610                 615                 620

Arg Ser Gly Glu Arg Gln Ser Ser Trp
625                 630
```

<210> 7719
<211> 285
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435715"

<400> 7719

```
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1               5                  10                  15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20                  25                  30

Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35                  40                  45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50                  55                  60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65                  70                  75                  80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85                  90                  95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100                 105                 110

His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115                 120                 125
```

```
Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Thr Val Leu
    130                 135                 140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145                 150                 155                 160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165                 170                 175

Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180                 185                 190

Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Val Leu Asn Ile Leu
    210                 215                 220

Ser Ser Asp Ser Tyr Ser Leu Phe Glu Ala Ala Leu Phe Cys Pro Leu
225                 230                 235                 240

Pro Ala Thr Ile Pro Ile Leu Met Val Phe Cys Ala Ala Tyr Ala Phe
                245                 250                 255

Phe Ile Leu Gly Pro Thr Ala Leu Ile Gly Ile Ser Val Cys Leu Trp
            260                 265                 270

Pro Ser Ser Ile Gln Leu Ser Glu Gly Gln Gln Phe Trp
        275                 280                 285


<210> 7720
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
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C (CFTR/MRP),
member 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436647"

<400> 7720
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1 5 10 15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
20 25 30

Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
35 40 45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
50 55 60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65 70 75 80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
85 90 95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro
100 105

<210> 7721
<211> 1009
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1622; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC12; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 12; "

<220>

<221> source
<223> /note="Uniprot ID: Q96J65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437047"

<400> 7721
Met Val Gly Glu Gly Pro Tyr Leu Ile Ser Asp Leu Asp Gln Arg Gly
1   5   10   15

Arg Arg Arg Ser Phe Ala Glu Arg Tyr Asp Pro Ser Leu Lys Thr Met
            20   25   30

Ile Pro Val Arg Pro Cys Ala Arg Leu Ala Pro Asn Pro Val Asp Asp
        35   40   45

Ala Gly Leu Leu Ser Phe Ala Thr Phe Ser Trp Leu Thr Pro Val Met
    50   55   60

Val Lys Gly Tyr Arg Gln Arg Leu Thr Val Asp Thr Leu Pro Pro Leu
65   70   75   80

Ser Thr Tyr Asp Ser Ser Asp Thr Asn Ala Lys Arg Phe Arg Val Leu
                85   90   95

Trp Asp Glu Glu Val Ala Arg Val Gly Pro Glu Lys Ala Ser Leu Ser
            100   105   110

His Val Val Trp Lys Phe Gln Arg Thr Arg Val Leu Met Asp Ile Val
        115   120   125

Ala Asn Ile Leu Cys Ile Ile Met Ala Ala Ile Gly Pro Thr Val Leu
    130   135   140

Ile His Gln Ile Leu Gln Gln Thr Glu Arg Thr Ser Gly Lys Val Trp
145   150   155   160

Val Gly Ile Gly Leu Cys Ile Ala Leu Phe Ala Thr Glu Phe Thr Lys
                165   170   175

Val Phe Phe Trp Ala Leu Ala Trp Ala Ile Asn Tyr Arg Thr Ala Ile
            180   185   190

Arg Leu Lys Val Ala Leu Ser Thr Leu Val Phe Glu Asn Leu Val Ser

```
        195                 200                 205

Phe Lys Thr Leu Thr His Ile Ser Val Gly Glu Val Leu Asn Ile Leu
    210                 215                 220

Ser Ser Asp Ser Tyr Ser Leu Phe Glu Ala Ala Leu Phe Cys Pro Leu
225                 230                 235                 240

Pro Ala Thr Ile Pro Ile Leu Met Val Phe Cys Ala Ala Tyr Ala Phe
                245                 250                 255

Phe Ile Leu Gly Pro Thr Ala Leu Ile Gly Ile Ser Val Tyr Val Ile
            260                 265                 270

Phe Ile Pro Val Gln Met Phe Met Ala Lys Leu Asn Ser Ala Phe Arg
        275                 280                 285

Arg Ser Ala Ile Leu Val Thr Asp Lys Arg Val Gln Thr Met Asn Glu
    290                 295                 300

Phe Leu Thr Cys Ile Arg Leu Ile Lys Met Tyr Ala Trp Glu Lys Ser
305                 310                 315                 320

Phe Thr Asn Thr Ile Gln Asp Ile Arg Arg Arg Glu Arg Lys Leu Leu
                325                 330                 335

Glu Lys Ala Gly Phe Val Gln Ser Gly Asn Ser Ala Leu Ala Pro Ile
            340                 345                 350

Val Ser Thr Ile Ala Ile Val Leu Thr Leu Ser Cys His Ile Leu Leu
        355                 360                 365

Arg Arg Lys Leu Thr Ala Pro Val Ala Phe Ser Val Ile Ala Met Phe
    370                 375                 380

Asn Val Met Lys Phe Ser Ile Ala Ile Leu Pro Phe Ser Ile Lys Ala
385                 390                 395                 400

Met Ala Glu Ala Asn Val Ser Leu Arg Arg Met Lys Lys Ile Leu Ile
                405                 410                 415

Asp Lys Ser Pro Pro Ser Tyr Ile Thr Gln Pro Glu Asp Pro Asp Thr
            420                 425                 430
```

```
Val Leu Leu Leu Ala Asn Ala Thr Leu Thr Trp Glu His Glu Ala Ser
        435                 440                 445

Arg Lys Ser Thr Pro Lys Lys Leu Gln Asn Gln Lys Arg His Leu Cys
    450                 455                 460

Lys Lys Gln Arg Ser Glu Ala Tyr Ser Glu Arg Ser Pro Pro Ala Lys
465                 470                 475                 480

Gly Ala Thr Gly Pro Glu Glu Gln Ser Asp Ser Leu Lys Ser Val Leu
                485                 490                 495

His Ser Ile Ser Phe Val Val Arg Lys Gly Lys Ile Leu Gly Ile Cys
            500                 505                 510

Gly Asn Val Gly Ser Gly Lys Ser Ser Leu Leu Ala Ala Leu Leu Gly
        515                 520                 525

Gln Met Gln Leu Gln Lys Gly Val Val Ala Val Asn Gly Thr Leu Ala
    530                 535                 540

Tyr Val Ser Gln Gln Ala Trp Ile Phe His Gly Asn Val Arg Glu Asn
545                 550                 555                 560

Ile Leu Phe Gly Glu Lys Tyr Asp His Gln Arg Tyr Gln His Thr Val
                565                 570                 575

Arg Val Cys Gly Leu Gln Lys Asp Leu Ser Asn Leu Pro Tyr Gly Asp
            580                 585                 590

Leu Thr Glu Ile Gly Glu Arg Gly Leu Asn Leu Ser Gly Gly Gln Arg
        595                 600                 605

Gln Arg Ile Ser Leu Ala Arg Ala Val Tyr Ser Asp Arg Gln Leu Tyr
    610                 615                 620

Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His
625                 630                 635                 640

Val Phe Glu Glu Cys Ile Lys Lys Thr Leu Arg Gly Lys Thr Val Val
                645                 650                 655
```

```
Leu Val Thr His Gln Leu Gln Phe Leu Glu Ser Cys Asp Glu Val Ile
            660                 665                 670

Leu Leu Glu Asp Gly Glu Ile Cys Glu Lys Gly Thr His Lys Glu Leu
        675                 680                 685

Met Glu Glu Arg Gly Arg Tyr Ala Lys Leu Ile His Asn Leu Arg Gly
    690                 695                 700

Leu Gln Phe Lys Asp Pro Glu His Leu Tyr Asn Ala Ala Met Val Glu
705                 710                 715                 720

Ala Phe Lys Glu Ser Pro Ala Glu Arg Glu Glu Asp Ala Val Leu Ala
                725                 730                 735

Pro Gly Asn Glu Lys Asp Glu Gly Lys Glu Ser Glu Thr Gly Ser Glu
            740                 745                 750

Phe Val Asp Thr Lys Val Pro Glu His Gln Leu Ile Gln Thr Glu Ser
        755                 760                 765

Pro Gln Glu Gly Thr Val Thr Trp Lys Thr Tyr His Thr Tyr Ile Lys
    770                 775                 780

Ala Ser Gly Gly Tyr Leu Leu Ser Leu Phe Thr Val Phe Leu Phe Leu
785                 790                 795                 800

Leu Met Ile Gly Ser Ala Ala Phe Ser Asn Trp Trp Leu Gly Leu Trp
                805                 810                 815

Leu Asp Lys Gly Ser Arg Met Thr Cys Gly Pro Gln Gly Asn Arg Thr
            820                 825                 830

Met Cys Glu Val Gly Ala Val Leu Ala Asp Ile Gly Gln His Val Tyr
        835                 840                 845

Gln Trp Val Tyr Thr Ala Ser Met Val Phe Met Leu Val Phe Gly Val
    850                 855                 860

Thr Lys Gly Phe Val Phe Thr Lys Thr Thr Leu Met Ala Ser Ser Ser
865                 870                 875                 880
```

```
Leu His Asp Thr Val Phe Asp Lys Ile Leu Lys Ser Pro Met Ser Phe
                885                 890                 895

Phe Asp Thr Thr Pro Thr Gly Arg Leu Met Asn Arg Phe Ser Lys Asp
            900                 905                 910

Met Asp Glu Leu Asp Val Arg Leu Pro Phe His Ala Glu Asn Phe Leu
        915                 920                 925

Gln Gln Phe Phe Met Val Val Phe Ile Leu Val Ile Leu Ala Ala Val
    930                 935                 940

Phe Pro Ala Val Leu Leu Val Val Ala Ser Leu Ala Val Gly Phe Phe
945                 950                 955                 960

Ile Leu Leu Arg Ile Phe His Arg Gly Val Gln Glu Leu Lys Lys Val
                965                 970                 975

Glu Asn Val Ser Arg Ser Pro Trp Phe Thr His Ile Thr Ser Ser Met
            980                 985                 990

Gln Gly Leu Gly Ile Ile His Ala  Tyr Gly Lys Lys Glu  Ser Cys
Ile
        995                 1000                1005

Thr
```

<210> 7722
<211> 293
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1623; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359463"

<400> 7722
Met Leu Glu Lys Phe Cys Asn Ser Thr Phe Trp Asn Ser Ser Phe Leu
1   5   10   15

Asp Ser Pro Glu Ala Asp Leu Pro Leu Cys Phe Glu Gln Thr Val Leu
            20   25   30

Val Trp Ile Pro Leu Gly Tyr Leu Trp Leu Leu Ala Pro Trp Gln Leu
        35   40   45

Leu His Val Tyr Lys Ser Arg Thr Lys Arg Ser Ser Thr Thr Lys Leu
    50   55   60

Tyr Leu Ala Lys Gln Val Phe Val Gly Phe Leu Leu Ile Leu Ala Ala
65   70   75   80

Ile Glu Leu Ala Leu Val Leu Thr Glu Asp Ser Gly Gln Ala Thr Val
                85   90   95

Pro Ala Val Arg Tyr Thr Asn Pro Ser Leu Tyr Leu Gly Thr Trp Leu
            100   105   110

Leu Val Leu Leu Ile Gln Tyr Ser Arg Gln Trp Cys Val Gln Lys Asn
        115   120   125

Ser Trp Phe Leu Ser Leu Phe Trp Ile Leu Ser Ile Leu Cys Gly Thr
    130   135   140

Phe Gln Phe Gln Thr Leu Ile Arg Thr Leu Leu Gln Gly Asp Asn Ser
145   150   155   160

Asn Leu Ala Tyr Ser Cys Leu Phe Phe Ile Ser Tyr Gly Phe Gln Ile
                165   170   175

Leu Ile Leu Ile Phe Ser Ala Phe Ser Glu Asn Asn Glu Ser Ser Asn
            180   185   190

Asn Pro Ser Ser Ile Ala Ser Phe Leu Ser Ser Ile Thr Tyr Ser Trp
        195   200   205

```
Tyr Asp Ser Ile Ile Leu Lys Gly Tyr Lys Arg Pro Leu Thr Leu Glu
    210                 215                 220

Asp Val Trp Glu Val Asp Glu Glu Met Lys Thr Lys Thr Leu Val Ser
225                 230                 235                 240

Lys Phe Glu Thr His Met Lys Arg Glu Leu Gln Lys Ala Arg Arg Ala
                245                 250                 255

Leu Gln Arg Arg Gln Glu Lys Ser Ser Gln Gln Asn Ser Gly Ala Arg
            260                 265                 270

Leu Pro Gly Leu Asn Lys Asn Gln Ser Gln Ser Gln Asp Ala Leu Val
        275                 280                 285

Leu Val Thr Phe Pro
    290


<210> 7723
<211> 1545
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1623; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC2; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 2; "

<220>
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<223> /note="Uniprot ID:  Q92887; "

<220>
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<400> 7723
Met Leu Glu Lys Phe Cys Asn Ser Thr Phe Trp Asn Ser Ser Phe Leu
1               5                   10                  15
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```
Asp Ser Pro Glu Ala Asp Leu Pro Leu Cys Phe Glu Gln Thr Val Leu
            20                  25                  30

Val Trp Ile Pro Leu Gly Tyr Leu Trp Leu Leu Ala Pro Trp Gln Leu
        35                  40                  45

Leu His Val Tyr Lys Ser Arg Thr Lys Arg Ser Ser Thr Thr Lys Leu
    50                  55                  60

Tyr Leu Ala Lys Gln Val Phe Val Gly Phe Leu Leu Ile Leu Ala Ala
65                  70                  75                  80

Ile Glu Leu Ala Leu Val Leu Thr Glu Asp Ser Gly Gln Ala Thr Val
                85                  90                  95

Pro Ala Val Arg Tyr Thr Asn Pro Ser Leu Tyr Leu Gly Thr Trp Leu
            100                 105                 110

Leu Val Leu Leu Ile Gln Tyr Ser Arg Gln Trp Cys Val Gln Lys Asn
        115                 120                 125

Ser Trp Phe Leu Ser Leu Phe Trp Ile Leu Ser Ile Leu Cys Gly Thr
    130                 135                 140

Phe Gln Phe Gln Thr Leu Ile Arg Thr Leu Leu Gln Gly Asp Asn Ser
145                 150                 155                 160

Asn Leu Ala Tyr Ser Cys Leu Phe Phe Ile Ser Tyr Gly Phe Gln Ile
                165                 170                 175

Leu Ile Leu Ile Phe Ser Ala Phe Ser Glu Asn Asn Glu Ser Ser Asn
            180                 185                 190

Asn Pro Ser Ser Ile Ala Ser Phe Leu Ser Ser Ile Thr Tyr Ser Trp
        195                 200                 205

Tyr Asp Ser Ile Ile Leu Lys Gly Tyr Lys Arg Pro Leu Thr Leu Glu
    210                 215                 220

Asp Val Trp Glu Val Asp Glu Glu Met Lys Thr Lys Thr Leu Val Ser
225                 230                 235                 240

Lys Phe Glu Thr His Met Lys Arg Glu Leu Gln Lys Ala Arg Arg Ala
```

```
                245                 250                 255

Leu Gln Arg Arg Gln Glu Lys Ser Ser Gln Gln Asn Ser Gly Ala Arg
            260                 265                 270

Leu Pro Gly Leu Asn Lys Asn Gln Ser Gln Ser Gln Asp Ala Leu Val
        275                 280                 285

Leu Glu Asp Val Glu Lys Lys Lys Lys Lys Ser Gly Thr Lys Lys Asp
    290                 295                 300

Val Pro Lys Ser Trp Leu Met Lys Ala Leu Phe Lys Thr Phe Tyr Met
305                 310                 315                 320

Val Leu Leu Lys Ser Phe Leu Leu Lys Leu Val Asn Asp Ile Phe Thr
                325                 330                 335

Phe Val Ser Pro Gln Leu Leu Lys Leu Leu Ile Ser Phe Ala Ser Asp
            340                 345                 350

Arg Asp Thr Tyr Leu Trp Ile Gly Tyr Leu Cys Ala Ile Leu Leu Phe
        355                 360                 365

Thr Ala Ala Leu Ile Gln Ser Phe Cys Leu Gln Cys Tyr Phe Gln Leu
    370                 375                 380

Cys Phe Lys Leu Gly Val Lys Val Arg Thr Ala Ile Met Ala Ser Val
385                 390                 395                 400

Tyr Lys Lys Ala Leu Thr Leu Ser Asn Leu Ala Arg Lys Glu Tyr Thr
                405                 410                 415

Val Gly Glu Thr Val Asn Leu Met Ser Val Asp Ala Gln Lys Leu Met
            420                 425                 430

Asp Val Thr Asn Phe Met His Met Leu Trp Ser Ser Val Leu Gln Ile
        435                 440                 445

Val Leu Ser Ile Phe Phe Leu Trp Arg Glu Leu Gly Pro Ser Val Leu
    450                 455                 460

Ala Gly Val Gly Val Met Val Leu Val Ile Pro Ile Asn Ala Ile Leu
465                 470                 475                 480
```

Ser Thr Lys Ser Lys Thr Ile Gln Val Lys Asn Met Lys Asn Lys Asp
485 490 495

Lys Arg Leu Lys Ile Met Asn Glu Ile Leu Ser Gly Ile Lys Ile Leu
500 505 510

Lys Tyr Phe Ala Trp Glu Pro Ser Phe Arg Asp Gln Val Gln Asn Leu
515 520 525

Arg Lys Lys Glu Leu Lys Asn Leu Leu Ala Phe Ser Gln Leu Gln Cys
530 535 540

Val Val Ile Phe Val Phe Gln Leu Thr Pro Val Leu Val Ser Val Val
545 550 555 560

Thr Phe Ser Val Tyr Val Leu Val Asp Ser Asn Asn Ile Leu Asp Ala
565 570 575

Gln Lys Ala Phe Thr Ser Ile Thr Leu Phe Asn Ile Leu Arg Phe Pro
580 585 590

Leu Ser Met Leu Pro Met Met Ile Ser Ser Met Leu Gln Ala Ser Val
595 600 605

Ser Thr Glu Arg Leu Glu Lys Tyr Leu Gly Gly Asp Asp Leu Asp Thr
610 615 620

Ser Ala Ile Arg His Asp Cys Asn Phe Asp Lys Ala Met Gln Phe Ser
625 630 635 640

Glu Ala Ser Phe Thr Trp Glu His Asp Ser Glu Ala Thr Val Arg Asp
645 650 655

Val Asn Leu Asp Ile Met Ala Gly Gln Leu Val Ala Val Ile Gly Pro
660 665 670

Val Gly Ser Gly Lys Ser Ser Leu Ile Ser Ala Met Leu Gly Glu Met
675 680 685

Glu Asn Val His Gly His Ile Thr Ile Lys Gly Thr Thr Ala Tyr Val
690 695 700

```
Pro Gln Gln Ser Trp Ile Gln Asn Gly Thr Ile Lys Asp Asn Ile Leu
705                 710                 715                 720

Phe Gly Thr Glu Phe Asn Glu Lys Arg Tyr Gln Gln Val Leu Glu Ala
                725                 730                 735

Cys Ala Leu Leu Pro Asp Leu Glu Met Leu Pro Gly Gly Asp Leu Ala
            740                 745                 750

Glu Ile Gly Glu Lys Gly Ile Asn Leu Ser Gly Gly Gln Lys Gln Arg
        755                 760                 765

Ile Ser Leu Ala Arg Ala Thr Tyr Gln Asn Leu Asp Ile Tyr Leu Leu
    770                 775                 780

Asp Asp Pro Leu Ser Ala Val Asp Ala His Val Gly Lys His Ile Phe
785                 790                 795                 800

Asn Lys Val Leu Gly Pro Asn Gly Leu Leu Lys Gly Lys Thr Arg Leu
                805                 810                 815

Leu Val Thr His Ser Met His Phe Leu Pro Gln Val Asp Glu Ile Val
            820                 825                 830

Val Leu Gly Asn Gly Thr Ile Val Glu Lys Gly Ser Tyr Ser Ala Leu
        835                 840                 845

Leu Ala Lys Lys Gly Glu Phe Ala Lys Asn Leu Lys Thr Phe Leu Arg
    850                 855                 860

His Thr Gly Pro Glu Glu Glu Ala Thr Val His Asp Gly Ser Glu Glu
865                 870                 875                 880

Glu Asp Asp Asp Tyr Gly Leu Ile Ser Ser Val Glu Glu Ile Pro Glu
                885                 890                 895

Asp Ala Ala Ser Ile Thr Met Arg Arg Glu Asn Ser Phe Arg Arg Thr
            900                 905                 910

Leu Ser Arg Ser Ser Arg Ser Asn Gly Arg His Leu Lys Ser Leu Arg
        915                 920                 925
```

```
Asn Ser Leu Lys Thr Arg Asn Val Asn Ser Leu Lys Glu Asp Glu Glu
    930                 935                 940

Leu Val Lys Gly Gln Lys Leu Ile Lys Lys Glu Phe Ile Glu Thr Gly
945                 950                 955                 960

Lys Val Lys Phe Ser Ile Tyr Leu Glu Tyr Leu Gln Ala Ile Gly Leu
                965                 970                 975

Phe Ser Ile Phe Phe Ile Ile Leu Ala Phe Val Met Asn Ser Val Ala
            980                 985                 990

Phe Ile Gly Ser Asn Leu Trp Leu  Ser Ala Trp Thr Ser  Asp Ser
Lys
        995                 1000                1005

Ile Phe  Asn Ser Thr Asp Tyr  Pro Ala Ser Gln Arg  Asp Met Arg
    1010                1015                1020

Val Gly  Val Tyr Gly Ala Leu  Gly Leu Ala Gln Gly  Ile Phe Val
    1025                1030                1035

Phe Ile  Ala His Phe Trp Ser  Ala Phe Gly Phe Val  His Ala Ser
    1040                1045                1050

Asn Ile  Leu His Lys Gln Leu  Leu Asn Asn Ile Leu  Arg Ala Pro
    1055                1060                1065

Met Arg  Phe Phe Asp Thr Thr  Pro Thr Gly Arg Ile  Val Asn Arg
    1070                1075                1080

Phe Ala  Gly Asp Ile Ser Thr  Val Asp Asp Thr Leu  Pro Gln Ser
    1085                1090                1095

Leu Arg  Ser Trp Ile Thr Cys  Phe Leu Gly Ile Ile  Ser Thr Leu
    1100                1105                1110

Val Met  Ile Cys Met Ala Thr  Pro Val Phe Thr Ile  Ile Val Ile
    1115                1120                1125

Pro Leu  Gly Ile Ile Tyr Val  Ser Val Gln Met Phe  Tyr Val Ser
    1130                1135                1140
```

```
Thr Ser  Arg Gln Leu Arg Arg  Leu Asp Ser Val Thr  Arg Ser Pro
    1145                1150                1155

Ile Tyr  Ser His Phe Ser Glu  Thr Val Ser Gly Leu  Pro Val Ile
    1160                1165                1170

Arg Ala  Phe Glu His Gln Gln  Arg Phe Leu Lys His  Asn Glu Val
    1175                1180                1185

Arg Ile  Asp Thr Asn Gln Lys  Cys Val Phe Ser Trp  Ile Thr Ser
    1190                1195                1200

Asn Arg  Trp Leu Ala Ile Arg  Leu Glu Leu Val Gly  Asn Leu Thr
    1205                1210                1215

Val Phe  Phe Ser Ala Leu Met  Met Val Ile Tyr Arg  Asp Thr Leu
    1220                1225                1230

Ser Gly  Asp Thr Val Gly Phe  Val Leu Ser Asn Ala  Leu Asn Ile
    1235                1240                1245

Thr Gln  Thr Leu Asn Trp Leu  Val Arg Met Thr Ser  Glu Ile Glu
    1250                1255                1260

Thr Asn  Ile Val Ala Val Glu  Arg Ile Thr Glu Tyr  Thr Lys Val
    1265                1270                1275

Glu Asn  Glu Ala Pro Trp Val  Thr Asp Lys Arg Pro  Pro Pro Asp
    1280                1285                1290

Trp Pro  Ser Lys Gly Lys Ile  Gln Phe Asn Asn Tyr  Gln Val Arg
    1295                1300                1305

Tyr Arg  Pro Glu Leu Asp Leu  Val Leu Arg Gly Ile  Thr Cys Asp
    1310                1315                1320

Ile Gly  Ser Met Glu Lys Ile  Gly Val Val Gly Arg  Thr Gly Ala
    1325                1330                1335

Gly Lys  Ser Ser Leu Thr Asn  Cys Leu Phe Arg Ile  Leu Glu Ala
    1340                1345                1350

Ala Gly  Gly Gln Ile Ile Ile  Asp Gly Val Asp Ile  Ala Ser Ile
```

1355 1360 1365

Gly Leu His Asp Leu Arg Glu Lys Leu Thr Ile Ile Pro Gln Asp
1370 1375 1380

Pro Ile Leu Phe Ser Gly Ser Leu Arg Met Asn Leu Asp Pro Phe
1385 1390 1395

Asn Asn Tyr Ser Asp Glu Glu Ile Trp Lys Ala Leu Glu Leu Ala
1400 1405 1410

His Leu Lys Ser Phe Val Ala Ser Leu Gln Leu Gly Leu Ser His
1415 1420 1425

Glu Val Thr Glu Ala Gly Gly Asn Leu Ser Ile Gly Gln Arg Gln
1430 1435 1440

Leu Leu Cys Leu Gly Arg Ala Leu Leu Arg Lys Ser Lys Ile Leu
1445 1450 1455

Val Leu Asp Glu Ala Thr Ala Ala Val Asp Leu Glu Thr Asp Asn
1460 1465 1470

Leu Ile Gln Thr Thr Ile Gln Asn Glu Phe Ala His Cys Thr Val
1475 1480 1485

Ile Thr Ile Ala His Arg Leu His Thr Ile Met Asp Ser Asp Lys
1490 1495 1500

Val Met Val Leu Asp Asn Gly Lys Ile Ile Glu Cys Gly Ser Pro
1505 1510 1515

Glu Glu Leu Leu Gln Ile Pro Gly Pro Phe Tyr Phe Met Ala Lys
1520 1525 1530

Glu Ala Gly Ile Glu Asn Val Asn Ser Thr Lys Phe
1535 1540 1545

<210> 7724
<211> 1527
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ABCC3; "

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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 3; "

<220>
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<220>
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<400> 7724

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Met Asp Ala Leu Cys Gly Ser Gly Glu Leu Gly Ser Lys Phe Trp Asp
1               5                  10                  15

Ser Asn Leu Ser Val His Thr Glu Asn Pro Asp Leu Thr Pro Cys Phe
            20                  25                  30

Gln Asn Ser Leu Leu Ala Trp Val Pro Cys Ile Tyr Leu Trp Val Ala
        35                  40                  45

Leu Pro Cys Tyr Leu Leu Tyr Leu Arg His His Cys Arg Gly Tyr Ile
    50                  55                  60

Ile Leu Ser His Leu Ser Lys Leu Lys Met Val Leu Gly Val Leu Leu
65                  70                  75                  80

Trp Cys Val Ser Trp Ala Asp Leu Phe Tyr Ser Phe His Gly Leu Val
                85                  90                  95

His Gly Arg Ala Pro Ala Pro Val Phe Phe Val Thr Pro Leu Val Val
            100                 105                 110

Gly Val Thr Met Leu Leu Ala Thr Leu Leu Ile Gln Tyr Glu Arg Leu
        115                 120                 125

Gln Gly Val Gln Ser Ser Gly Val Leu Ile Ile Phe Trp Phe Leu Cys
    130                 135                 140
```

```
Val Val Cys Ala Ile Val Pro Phe Arg Ser Lys Ile Leu Leu Ala Lys
145                 150                 155                 160

Ala Glu Gly Glu Ile Ser Asp Pro Phe Arg Phe Thr Thr Phe Tyr Ile
                165                 170                 175

His Phe Ala Leu Val Leu Ser Ala Leu Ile Leu Ala Cys Phe Arg Glu
            180                 185                 190

Lys Pro Pro Phe Phe Ser Ala Lys Asn Val Asp Pro Asn Pro Tyr Pro
        195                 200                 205

Glu Thr Ser Ala Gly Phe Leu Ser Arg Leu Phe Phe Trp Trp Phe Thr
    210                 215                 220

Lys Met Ala Ile Tyr Gly Tyr Arg His Pro Leu Glu Glu Lys Asp Leu
225                 230                 235                 240

Trp Ser Leu Lys Glu Glu Asp Arg Ser Gln Met Val Val Gln Gln Leu
                245                 250                 255

Leu Glu Ala Trp Arg Lys Gln Glu Lys Gln Thr Ala Arg His Lys Ala
            260                 265                 270

Ser Ala Ala Pro Gly Lys Asn Ala Ser Gly Glu Asp Glu Val Leu Leu
        275                 280                 285

Gly Ala Arg Pro Arg Pro Arg Lys Pro Ser Phe Leu Lys Ala Leu Leu
    290                 295                 300

Ala Thr Phe Gly Ser Ser Phe Leu Ile Ser Ala Cys Phe Lys Leu Ile
305                 310                 315                 320

Gln Asp Leu Leu Ser Phe Ile Asn Pro Gln Leu Leu Ser Ile Leu Ile
                325                 330                 335

Arg Phe Ile Ser Asn Pro Met Ala Pro Ser Trp Trp Gly Phe Leu Val
            340                 345                 350

Ala Gly Leu Met Phe Leu Cys Ser Met Met Gln Ser Leu Ile Leu Gln
        355                 360                 365
```

```
His Tyr Tyr His Tyr Ile Phe Val Thr Gly Val Lys Phe Arg Thr Gly
    370                 375                 380

Ile Met Gly Val Ile Tyr Arg Lys Ala Leu Val Ile Thr Asn Ser Val
385                 390                 395                 400

Lys Arg Ala Ser Thr Val Gly Glu Ile Val Asn Leu Met Ser Val Asp
                405                 410                 415

Ala Gln Arg Phe Met Asp Leu Ala Pro Phe Leu Asn Leu Leu Trp Ser
            420                 425                 430

Ala Pro Leu Gln Ile Ile Leu Ala Ile Tyr Phe Leu Trp Gln Asn Leu
        435                 440                 445

Gly Pro Ser Val Leu Ala Gly Val Ala Phe Met Val Leu Leu Ile Pro
    450                 455                 460

Leu Asn Gly Ala Val Ala Val Lys Met Arg Ala Phe Gln Val Lys Gln
465                 470                 475                 480

Met Lys Leu Lys Asp Ser Arg Ile Lys Leu Met Ser Glu Ile Leu Asn
                485                 490                 495

Gly Ile Lys Val Leu Lys Leu Tyr Ala Trp Glu Pro Ser Phe Leu Lys
            500                 505                 510

Gln Val Glu Gly Ile Arg Gln Gly Glu Leu Gln Leu Leu Arg Thr Ala
        515                 520                 525

Ala Tyr Leu His Thr Thr Thr Thr Phe Thr Trp Met Cys Ser Pro Phe
    530                 535                 540

Leu Val Thr Leu Ile Thr Leu Trp Val Tyr Val Tyr Val Asp Pro Asn
545                 550                 555                 560

Asn Val Leu Asp Ala Glu Lys Ala Phe Val Ser Val Ser Leu Phe Asn
                565                 570                 575

Ile Leu Arg Leu Pro Leu Asn Met Leu Pro Gln Leu Ile Ser Asn Leu
            580                 585                 590
```

```
Thr Gln Ala Ser Val Ser Leu Lys Arg Ile Gln Gln Phe Leu Ser Gln
        595                 600                 605

Glu Glu Leu Asp Pro Gln Ser Val Glu Arg Lys Thr Ile Ser Pro Gly
    610                 615                 620

Tyr Ala Ile Thr Ile His Ser Gly Thr Phe Thr Trp Ala Gln Asp Leu
625                 630                 635                 640

Pro Pro Thr Leu His Ser Leu Asp Ile Gln Val Pro Lys Gly Ala Leu
                645                 650                 655

Val Ala Val Val Gly Pro Val Gly Cys Gly Lys Ser Ser Leu Val Ser
            660                 665                 670

Ala Leu Leu Gly Glu Met Glu Lys Leu Glu Gly Lys Val His Met Lys
        675                 680                 685

Gly Ser Val Ala Tyr Val Pro Gln Gln Ala Trp Ile Gln Asn Cys Thr
    690                 695                 700

Leu Gln Glu Asn Val Leu Phe Gly Lys Ala Leu Asn Pro Lys Arg Tyr
705                 710                 715                 720

Gln Gln Thr Leu Glu Ala Cys Ala Leu Leu Ala Asp Leu Glu Met Leu
                725                 730                 735

Pro Gly Gly Asp Gln Thr Glu Ile Gly Glu Lys Gly Ile Asn Leu Ser
            740                 745                 750

Gly Gly Gln Arg Gln Arg Val Ser Leu Ala Arg Ala Val Tyr Ser Asp
        755                 760                 765

Ala Asp Ile Phe Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ser His
    770                 775                 780

Val Ala Lys His Ile Phe Asp His Val Ile Gly Pro Glu Gly Val Leu
785                 790                 795                 800

Ala Gly Lys Thr Arg Val Leu Val Thr His Gly Ile Ser Phe Leu Pro
                805                 810                 815

Gln Thr Asp Phe Ile Ile Val Leu Ala Asp Gly Gln Val Ser Glu Met
```

```
            820                 825                 830

Gly Pro Tyr Pro Ala Leu Leu Gln Arg Asn Gly Ser Phe Ala Asn Phe
        835                 840                 845

Leu Cys Asn Tyr Ala Pro Asp Glu Asp Gln Gly His Leu Glu Asp Ser
    850                 855                 860

Trp Thr Ala Leu Glu Gly Ala Glu Asp Lys Glu Ala Leu Leu Ile Glu
865                 870                 875                 880

Asp Thr Leu Ser Asn His Thr Asp Leu Thr Asp Asn Asp Pro Val Thr
                885                 890                 895

Tyr Val Val Gln Lys Gln Phe Met Arg Gln Leu Ser Ala Leu Ser Ser
            900                 905                 910

Asp Gly Glu Gly Gln Gly Arg Pro Val Pro Arg Arg His Leu Gly Pro
        915                 920                 925

Ser Glu Lys Val Gln Val Thr Glu Ala Lys Ala Asp Gly Ala Leu Thr
    930                 935                 940

Gln Glu Glu Lys Ala Ala Ile Gly Thr Val Glu Leu Ser Val Phe Trp
945                 950                 955                 960

Asp Tyr Ala Lys Ala Val Gly Leu Cys Thr Thr Leu Ala Ile Cys Leu
                965                 970                 975

Leu Tyr Val Gly Gln Ser Ala Ala Ala Ile Gly Ala Asn Val Trp Leu
            980                 985                 990

Ser Ala Trp Thr Asn Asp Ala Met  Ala Asp Ser Arg Gln  Asn Asn
Thr
        995                 1000                1005

Ser Leu  Arg Leu Gly Val Tyr  Ala Ala Leu Gly Ile  Leu Gln Gly
    1010                1015                1020

Phe Leu  Val Met Leu Ala Ala  Met Ala Met Ala Ala  Gly Gly Ile
    1025                1030                1035

Gln Ala  Ala Arg Val Leu His  Gln Ala Leu Leu His  Asn Lys Ile
```

```
    1040                1045                1050

Arg Ser  Pro Gln Ser Phe Phe  Asp Thr Thr Pro Ser  Gly Arg Ile
    1055                1060                1065

Leu Asn  Cys Phe Ser Lys Asp  Ile Tyr Val Val Asp  Glu Val Leu
    1070                1075                1080

Ala Pro  Val Ile Leu Met Leu  Leu Asn Ser Phe Phe  Asn Ala Ile
    1085                1090                1095

Ser Thr  Leu Val Val Ile Met  Ala Ser Thr Pro Leu  Phe Thr Val
    1100                1105                1110

Val Ile  Leu Pro Leu Ala Val  Leu Tyr Thr Leu Val  Gln Arg Phe
    1115                1120                1125

Tyr Ala  Ala Thr Ser Arg Gln  Leu Lys Arg Leu Glu  Ser Val Ser
    1130                1135                1140

Arg Ser  Pro Ile Tyr Ser His  Phe Ser Glu Thr Val  Thr Gly Ala
    1145                1150                1155

Ser Val  Ile Arg Ala Tyr Asn  Arg Ser Arg Asp Phe  Glu Ile Ile
    1160                1165                1170

Ser Asp  Thr Lys Val Asp Ala  Asn Gln Arg Ser Cys  Tyr Pro Tyr
    1175                1180                1185

Ile Ile  Ser Asn Arg Trp Leu  Ser Ile Gly Val Glu  Phe Val Gly
    1190                1195                1200

Asn Cys  Val Val Leu Phe Ala  Ala Leu Phe Ala Val  Ile Gly Arg
    1205                1210                1215

Ser Ser  Leu Asn Pro Gly Leu  Val Gly Leu Ser Val  Ser Tyr Ser
    1220                1225                1230

Leu Gln  Val Thr Phe Ala Leu  Asn Trp Met Ile Arg  Met Met Ser
    1235                1240                1245

Asp Leu  Glu Ser Asn Ile Val  Ala Val Glu Arg Val  Lys Glu Tyr
    1250                1255                1260
```

```
Ser Lys  Thr Glu Thr Glu Ala  Pro Trp Val Val Glu  Gly Ser Arg
    1265                1270                1275

Pro Pro  Glu Gly Trp Pro Pro  Arg Gly Glu Val Glu  Phe Arg Asn
    1280                1285                1290

Tyr Ser  Val Arg Tyr Arg Pro  Gly Leu Asp Leu Val  Leu Arg Asp
    1295                1300                1305

Leu Ser  Leu His Val His Gly  Gly Glu Lys Val Gly  Ile Val Gly
    1310                1315                1320

Arg Thr  Gly Ala Gly Lys Ser  Ser Met Thr Leu Cys  Leu Phe Arg
    1325                1330                1335

Ile Leu  Glu Ala Ala Lys Gly  Glu Ile Arg Ile Asp  Gly Leu Asn
    1340                1345                1350

Val Ala  Asp Ile Gly Leu His  Asp Leu Arg Ser Gln  Leu Thr Ile
    1355                1360                1365

Ile Pro  Gln Asp Pro Ile Leu  Phe Ser Gly Thr Leu  Arg Met Asn
    1370                1375                1380

Leu Asp  Pro Phe Gly Ser Tyr  Ser Glu Glu Asp Ile  Trp Trp Ala
    1385                1390                1395

Leu Glu  Leu Ser His Leu His  Thr Phe Val Ser Ser  Gln Pro Ala
    1400                1405                1410

Gly Leu  Asp Phe Gln Cys Ser  Glu Gly Gly Glu Asn  Leu Ser Val
    1415                1420                1425

Gly Gln  Arg Gln Leu Val Cys  Leu Ala Arg Ala Leu  Leu Arg Lys
    1430                1435                1440

Ser Arg  Ile Leu Val Leu Asp  Glu Ala Thr Ala Ala  Ile Asp Leu
    1445                1450                1455

Glu Thr  Asp Asn Leu Ile Gln  Ala Thr Ile Arg Thr  Gln Phe Asp
    1460                1465                1470
```

```
Thr Cys  Thr Val Leu Thr Ile  Ala His Arg Leu Asn  Thr Ile Met
    1475                1480                1485


Asp Tyr  Thr Arg Val Leu Val  Leu Asp Lys Gly Val  Val Ala Glu
    1490                1495                1500


Phe Asp  Ser Pro Ala Asn Leu  Ile Ala Ala Arg Gly  Ile Phe Tyr
    1505                1510                1515


Gly Met  Ala Arg Asp Ala Gly  Leu Ala
    1520                1525


<210> 7725
<211> 572
<212> PRT
<213> Homo sapiens

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<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
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      C (CFTR/MRP),
      member 3; "

<220>
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<223> /note="Uniprot ID:  O15438; "

<220>
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Met Asp Ala Leu Cys Gly Ser Gly Glu Leu Gly Ser Lys Phe Trp Asp
1               5                  10                  15


Ser Asn Leu Ser Val His Thr Glu Asn Pro Asp Leu Thr Pro Cys Phe
            20                  25                  30


Gln Asn Ser Leu Leu Ala Trp Val Pro Cys Ile Tyr Leu Trp Val Ala
        35                  40                  45
```

```
Leu Pro Cys Tyr Leu Leu Tyr Leu Arg His His Cys Arg Gly Tyr Ile
    50                  55                  60

Ile Leu Ser His Leu Ser Lys Leu Lys Met Val Leu Gly Val Leu Leu
65                  70                  75                  80

Trp Cys Val Ser Trp Ala Asp Leu Phe Tyr Ser Phe His Gly Leu Val
                85                  90                  95

His Gly Arg Ala Pro Ala Pro Val Phe Phe Val Thr Pro Leu Val Val
            100                 105                 110

Gly Val Thr Met Leu Leu Ala Thr Leu Leu Ile Gln Tyr Glu Arg Leu
        115                 120                 125

Gln Gly Val Gln Ser Ser Gly Val Leu Ile Ile Phe Trp Phe Leu Cys
    130                 135                 140

Val Val Cys Ala Ile Val Pro Phe Arg Ser Lys Ile Leu Leu Ala Lys
145                 150                 155                 160

Ala Glu Gly Glu Ile Ser Asp Pro Phe Arg Phe Thr Thr Phe Tyr Ile
                165                 170                 175

His Phe Ala Leu Val Leu Ser Ala Leu Ile Leu Ala Cys Phe Arg Glu
            180                 185                 190

Lys Pro Pro Phe Phe Ser Ala Lys Asn Val Asp Pro Asn Pro Tyr Pro
        195                 200                 205

Glu Thr Ser Ala Gly Phe Leu Ser Arg Leu Phe Phe Trp Trp Phe Thr
    210                 215                 220

Lys Met Ala Ile Tyr Gly Tyr Arg His Pro Leu Glu Glu Lys Asp Leu
225                 230                 235                 240

Trp Ser Leu Lys Glu Glu Asp Arg Ser Gln Met Val Val Gln Gln Leu
                245                 250                 255

Leu Glu Ala Trp Arg Lys Gln Glu Lys Gln Thr Ala Arg His Lys Ala
            260                 265                 270
```

```
Ser Ala Ala Pro Gly Lys Asn Ala Ser Gly Glu Asp Glu Val Leu Leu
        275                 280                 285

Gly Ala Arg Pro Arg Pro Arg Lys Pro Ser Phe Leu Lys Ala Leu Leu
    290                 295                 300

Ala Thr Phe Gly Ser Ser Phe Leu Ile Ser Ala Cys Phe Lys Leu Ile
305                 310                 315                 320

Gln Asp Leu Leu Ser Phe Ile Asn Pro Gln Leu Leu Ser Ile Leu Ile
                325                 330                 335

Arg Phe Ile Ser Asn Pro Met Ala Pro Ser Trp Trp Gly Phe Leu Val
            340                 345                 350

Ala Gly Leu Met Phe Leu Cys Ser Met Met Gln Ser Leu Ile Leu Gln
        355                 360                 365

His Tyr Tyr His Tyr Ile Phe Val Thr Gly Val Lys Phe Arg Thr Gly
    370                 375                 380

Ile Met Gly Val Ile Tyr Arg Lys Ala Leu Val Ile Thr Asn Ser Val
385                 390                 395                 400

Lys Arg Ala Ser Thr Val Gly Glu Ile Val Asn Leu Met Ser Val Asp
                405                 410                 415

Ala Gln Arg Phe Met Asp Leu Ala Pro Phe Leu Asn Leu Leu Trp Ser
            420                 425                 430

Ala Pro Leu Gln Ile Ile Leu Ala Ile Tyr Phe Leu Trp Gln Asn Leu
        435                 440                 445

Gly Pro Ser Val Leu Ala Gly Val Ala Phe Met Val Leu Leu Ile Pro
    450                 455                 460

Leu Asn Gly Ala Val Ala Val Lys Met Arg Ala Phe Gln Val Lys Gln
465                 470                 475                 480

Met Lys Leu Lys Asp Ser Arg Ile Lys Leu Met Ser Glu Ile Leu Asn
                485                 490                 495

Gly Ile Lys Val Leu Lys Leu Tyr Ala Trp Glu Pro Ser Phe Leu Lys
```

```
            500                 505                 510

Gln Val Glu Gly Ile Arg Gln Gly Glu Leu Gln Leu Leu Arg Thr Ala
        515                 520                 525

Ala Tyr Leu His Thr Thr Thr Thr Phe Thr Trp Met Cys Ser Pro Phe
    530                 535                 540

Leu Val Arg Leu Gly Thr Gly Leu Gly Pro Cys Leu Gln Gly Ser Gly
545                 550                 555                 560

Cys Pro Gly Met Ala Arg Ala His Trp Thr Leu Pro
                565                 570


<210> 7726
<211> 300
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421755"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7726
Xaa Ala Pro Asp Glu Asp Gln Gly His Leu Glu Asp Ser Trp Thr Ala
1               5                   10                  15

Leu Glu Gly Ala Glu Asp Lys Glu Ala Leu Leu Ile Glu Asp Thr Leu
            20                  25                  30
```

```
Ser Asn His Thr Asp Leu Thr Asp Asn Asp Pro Val Thr Tyr Val Val
        35                  40                  45

Gln Lys Gln Phe Met Arg Gln Leu Ser Ala Leu Ser Ser Asp Gly Glu
    50                  55                  60

Gly Gln Gly Arg Pro Val Pro Arg Arg His Leu Gly Pro Ser Glu Lys
65                  70                  75                  80

Val Gln Val Thr Glu Ala Lys Ala Asp Gly Ala Leu Thr Gln Glu Glu
                85                  90                  95

Lys Ala Ala Ile Gly Thr Val Glu Leu Ser Val Phe Trp Asp Tyr Ala
            100                 105                 110

Lys Ala Val Gly Leu Cys Thr Thr Leu Ala Ile Cys Leu Leu Tyr Val
        115                 120                 125

Gly Gln Ser Ala Ala Ala Ile Gly Ala Asn Val Trp Leu Ser Ala Trp
    130                 135                 140

Thr Asn Asp Ala Met Ala Asp Ser Arg Gln Asn Asn Thr Ser Leu Arg
145                 150                 155                 160

Leu Gly Val Tyr Ala Ala Leu Gly Ile Leu Gln Gly Phe Leu Val Met
                165                 170                 175

Leu Ala Ala Met Ala Met Ala Ala Gly Gly Ile Gln Ala Ala Arg Val
            180                 185                 190

Leu His Gln Ala Leu Leu His Asn Lys Ile Arg Ser Pro Gln Ser Phe
        195                 200                 205

Phe Asp Thr Thr Pro Ser Gly Arg Ile Leu Asn Cys Phe Ser Lys Asp
    210                 215                 220

Ile Tyr Val Val Asp Glu Arg Phe Tyr Ala Ala Thr Ser Arg Gln Leu
225                 230                 235                 240

Lys Arg Leu Glu Ser Val Ser Arg Ser Pro Ile Tyr Ser His Phe Ser
                245                 250                 255
```

```
Glu Thr Val Thr Gly Ala Ser Val Ile Arg Ala Tyr Asn Arg Ser Arg
            260                 265                 270


Asp Phe Glu Ile Ile Ser Asp Thr Lys Val Asp Ala Asn Gln Arg Ser
        275                 280                 285


Cys Tyr Pro Tyr Ile Ile Ser Asn Arg Trp Leu Ser
    290                 295                 300


<210> 7727
<211> 56
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422058"

<400> 7727
Ala Leu Thr Cys Leu Gly Ala Ser Gly Ser Gly Ser Val Trp Leu Glu
1               5                   10                  15


Leu Phe Thr Val Met Pro Ile Phe Ser Cys Trp Met Thr His Cys Pro
            20                  25                  30


Arg Trp Thr Leu Met Trp Pro Ser Thr Ser Leu Thr Thr Ser Ser Gly
        35                  40                  45


Gln Lys Ala Cys Trp Gln Ala Arg
    50                  55


<210> 7728
<211> 76
<212> PRT
<213> Homo sapiens
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<220>
<221> source
<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422786"

<400> 7728
Met Asp Ala Leu Cys Gly Ser Gly Glu Leu Gly Ser Lys Phe Trp His
1 5 10 15

Trp Gly Ala Arg Glu Ser Glu Glu Glu Cys Ala Ala Gly Ala Gln Arg
20 25 30

His Ser Ala Trp Leu Gly Glu Ser Ala Pro Ser Gln Pro Leu Arg Arg
35 40 45

Val Arg Lys Gly Arg Phe Ala Ile Ser Arg Gly Phe Leu Met Glu Gly
50 55 60

Leu Pro Ser Ala Ser Ala Ser Gly Lys Thr Glu Val
65 70 75

<210> 7729
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:

ATP-binding cassette, sub-family
C (CFTR/MRP),
member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424981"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7729
Xaa Ala Leu Ile Leu Ala Cys Phe Arg Glu Lys Pro Pro Phe Phe Ser
1 5 10 15

Ala Lys Asn Val Asp Pro Asn Pro Tyr Pro Glu Thr Ser Ala Gly Phe
20 25 30

Leu Ser Arg Leu Phe Phe Trp Trp Phe Thr Lys
35 40

<210> 7730
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425697"

<400> 7730
Met Asp Ala Leu Cys Gly Ser Gly Glu Leu Gly Ser Lys Phe Trp Asn
1 5 10 15

Pro Ala His Cys Leu Thr His Gln Gly Pro His Gln Thr Leu Ser Arg

```
            20                  25                  30

Pro Arg Val Thr Leu Gln Gly Arg Gly Ser Leu
        35                  40


<210> 7731
<211> 510
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 3; "

<220>
<221> source
<223> /note="Uniprot ID:  O15438; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427073"

<400> 7731
Met Asp Ala Leu Cys Gly Ser Gly Glu Leu Gly Ser Lys Phe Trp Asp
1               5                   10                  15


Ser Asn Leu Ser Val His Thr Glu Asn Pro Asp Leu Thr Pro Cys Phe
            20                  25                  30


Gln Asn Ser Leu Leu Ala Trp Val Pro Cys Ile Tyr Leu Trp Val Ala
        35                  40                  45


Leu Pro Cys Tyr Leu Leu Tyr Leu Arg His His Cys Arg Gly Tyr Ile
    50                  55                  60


Ile Leu Ser His Leu Ser Lys Leu Lys Met Val Leu Gly Val Leu Leu
65                  70                  75                  80


Trp Cys Val Ser Trp Ala Asp Leu Phe Tyr Ser Phe His Gly Leu Val
```

```
                85                  90                  95

His Gly Arg Ala Pro Ala Pro Val Phe Phe Val Thr Pro Leu Val Val
            100                 105                 110

Gly Val Thr Met Leu Leu Ala Thr Leu Leu Ile Gln Tyr Glu Arg Leu
        115                 120                 125

Gln Gly Val Gln Ser Ser Gly Val Leu Ile Ile Phe Trp Phe Leu Cys
    130                 135                 140

Val Val Cys Ala Ile Val Pro Phe Arg Ser Lys Ile Leu Leu Ala Lys
145                 150                 155                 160

Ala Glu Gly Glu Ile Ser Asp Pro Phe Arg Phe Thr Thr Phe Tyr Ile
                165                 170                 175

His Phe Ala Leu Val Leu Ser Ala Leu Ile Leu Ala Cys Phe Arg Glu
            180                 185                 190

Lys Pro Pro Phe Phe Ser Ala Lys Asn Val Asp Pro Asn Pro Tyr Pro
        195                 200                 205

Glu Thr Ser Ala Gly Phe Leu Ser Arg Leu Phe Phe Trp Trp Phe Thr
    210                 215                 220

Lys Leu Leu Asn Pro Asp Pro Leu Arg Gly Cys Leu Pro Gly Phe Thr
225                 230                 235                 240

Ser Pro Gln Asp Gly His Leu Trp Leu Pro Ala Ser Pro Gly Gly Glu
                245                 250                 255

Gly Pro Leu Val Pro Lys Gly Arg Gly Gln Ile Pro Asp Gly Gly Ala
            260                 265                 270

Ala Ala Ala Gly Gly Met Glu Glu Ala Gly Lys Ala Asp Gly Thr Thr
        275                 280                 285

Gln Gly Phe Ser Ser Thr Trp Glu Lys Cys Leu Arg Arg Gly Arg Gly
    290                 295                 300

Ala Ala Gly Cys Pro Ala Gln Ala Pro Glu Ala Leu Leu Pro Glu Gly
305                 310                 315                 320
```

```
Pro Ala Gly His Leu Arg Leu Gln Leu Pro His Gln Cys Leu Leu Gln
                325                 330                 335

Ala Tyr Pro Gly Pro Ala Leu Leu His Gln Ser Thr Ala Ala Gln His
            340                 345                 350

Pro Asp Gln Val Tyr Leu Gln Pro His Gly Pro Leu Leu Val Gly Leu
        355                 360                 365

Pro Gly Gly Trp Ala Asp Val Pro Val Leu His Asp Ala Val Ala Asp
    370                 375                 380

Leu Thr Thr Leu Leu Pro Leu His Leu Cys Asp Trp Gly Glu Val Ser
385                 390                 395                 400

Tyr Trp Asp His Gly Cys His Leu Gln Glu Gly Ser Gly Tyr His Gln
                405                 410                 415

Leu Ser Gln Thr Cys Val His Cys Gly Gly Asn Cys Gln Pro His Val
            420                 425                 430

Ser Gly Cys Pro Ala Leu His Gly Pro Cys Pro Leu Pro Gln Ser Ala
        435                 440                 445

Val Val Ser Thr Pro Ala Asp His Pro Gly Asp Leu Leu Pro Leu Ala
    450                 455                 460

Glu Pro Arg Ser Leu Cys Pro Gly Trp Ser Arg Phe His Gly Leu Ala
465                 470                 475                 480

Asp Ser Thr Gln Arg Ser Cys Gly Arg Glu Asp Ala Arg Leu Pro Gly
                485                 490                 495

Lys Ala Asn Glu Ile Glu Gly Leu Ala His Gln Ala Asp Glu
            500                 505                 510
```

<210> 7732
<211> 1238
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1624; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 3; "

<220>
<221> source
<223> /note="Uniprot ID: O15438; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427521"

<400> 7732

```
Met Asp Ala Leu Cys Gly Ser Gly Glu Leu Gly Ser Lys Phe Trp Asp
1               5                  10                  15

Ser Asn Leu Ser Val His Thr Glu Asn Pro Asp Leu Thr Pro Cys Phe
            20                  25                  30

Gln Asn Ser Leu Leu Ala Trp Val Pro Cys Ile Tyr Leu Trp Val Ala
        35                  40                  45

Leu Pro Cys Tyr Leu Leu Tyr Leu Arg His His Cys Arg Gly Tyr Ile
    50                  55                  60

Ile Leu Ser His Leu Ser Lys Leu Lys Met Val Leu Gly Val Leu Leu
65                  70                  75                  80

Trp Cys Val Ser Trp Ala Asp Leu Phe Tyr Ser Phe His Gly Leu Val
                85                  90                  95

His Gly Arg Ala Pro Ala Pro Val Phe Phe Val Thr Pro Leu Val Val
            100                 105                 110

Gly Val Thr Met Leu Leu Ala Thr Leu Leu Ile Gln Tyr Glu Arg Leu
        115                 120                 125

Gln Gly Val Gln Ser Ser Gly Val Leu Ile Ile Phe Trp Phe Leu Cys
    130                 135                 140
```

```
Val Val Cys Ala Ile Val Pro Phe Arg Ser Lys Ile Leu Leu Ala Lys
145                 150                 155                 160

Ala Glu Gly Glu Ile Ser Asp Pro Phe Arg Phe Thr Thr Phe Tyr Ile
                165                 170                 175

His Phe Ala Leu Val Leu Ser Ala Leu Ile Leu Ala Cys Phe Arg Glu
            180                 185                 190

Lys Pro Pro Phe Phe Ser Ala Lys Asn Val Asp Pro Asn Pro Tyr Pro
        195                 200                 205

Glu Thr Ser Ala Gly Phe Leu Ser Arg Leu Phe Phe Trp Trp Phe Thr
    210                 215                 220

Lys Met Ala Ile Tyr Gly Tyr Arg His Pro Leu Glu Glu Lys Asp Leu
225                 230                 235                 240

Trp Ser Leu Lys Glu Glu Asp Arg Ser Gln Met Val Val Gln Gln Leu
                245                 250                 255

Leu Glu Ala Trp Arg Lys Gln Glu Lys Gln Thr Ala Arg His Lys Ala
            260                 265                 270

Ser Ala Ala Pro Gly Lys Asn Ala Ser Gly Glu Asp Glu Val Leu Leu
        275                 280                 285

Gly Ala Arg Pro Arg Pro Arg Lys Pro Ser Phe Leu Lys Ala Leu Leu
    290                 295                 300

Ala Thr Phe Gly Ser Ser Phe Leu Ile Ser Ala Cys Phe Lys Leu Ile
305                 310                 315                 320

Gln Asp Leu Leu Ser Phe Ile Asn Pro Gln Leu Leu Ser Ile Leu Ile
                325                 330                 335

Arg Phe Ile Ser Asn Pro Met Ala Pro Ser Trp Trp Gly Phe Leu Val
            340                 345                 350

Ala Gly Leu Met Phe Leu Cys Ser Met Met Gln Ser Leu Ile Leu Gln
        355                 360                 365
```

```
His Tyr Tyr His Tyr Ile Phe Val Thr Gly Val Lys Phe Arg Thr Gly
    370                 375                 380

Ile Met Gly Val Ile Tyr Arg Lys Ala Leu Val Ile Thr Asn Ser Val
385                 390                 395                 400

Lys Arg Ala Ser Thr Val Gly Glu Ile Val Asn Leu Met Ser Val Asp
                405                 410                 415

Ala Gln Arg Phe Met Asp Leu Ala Pro Phe Leu Asn Leu Leu Trp Ser
            420                 425                 430

Ala Pro Leu Gln Ile Ile Leu Ala Ile Tyr Phe Leu Trp Gln Asn Leu
        435                 440                 445

Gly Pro Ser Val Leu Ala Gly Val Ala Phe Met Val Leu Leu Ile Pro
    450                 455                 460

Leu Asn Gly Ala Val Ala Val Lys Met Arg Ala Phe Gln Val Lys Gln
465                 470                 475                 480

Met Lys Leu Lys Asp Ser Arg Ile Lys Leu Met Ser Glu Ile Leu Asn
                485                 490                 495

Gly Ile Lys Val Leu Lys Leu Tyr Ala Trp Glu Pro Ser Phe Leu Lys
            500                 505                 510

Gln Val Glu Gly Ile Arg Gln Gly Glu Leu Gln Leu Leu Arg Thr Ala
        515                 520                 525

Ala Tyr Leu His Thr Thr Thr Thr Phe Thr Trp Met Cys Ser Pro Phe
    530                 535                 540

Leu Val Thr Leu Ile Thr Leu Trp Val Tyr Val Tyr Val Asp Pro Asn
545                 550                 555                 560

Asn Val Leu Asp Ala Glu Lys Ala Phe Val Ser Val Ser Leu Phe Asn
                565                 570                 575

Ile Leu Arg Leu Pro Leu Asn Met Leu Pro Gln Leu Ile Ser Asn Leu
            580                 585                 590

Thr Gln Ala Ser Val Ser Leu Lys Arg Ile Gln Gln Phe Leu Ser Gln
```

595 600 605

Glu Glu Leu Asp Pro Gln Ser Val Glu Arg Lys Thr Ile Ser Pro Gly
610 615 620

Tyr Ala Ile Thr Ile His Ser Gly Thr Phe Thr Trp Ala Gln Asp Leu
625 630 635 640

Pro Pro Thr Leu His Ser Leu Asp Ile Gln Val Pro Lys Gly Ala Leu
645 650 655

Val Ala Val Val Gly Pro Val Gly Cys Gly Lys Ser Ser Leu Val Ser
660 665 670

Ala Leu Leu Gly Glu Met Glu Lys Leu Glu Gly Lys Val His Met Lys
675 680 685

Gly Ser Val Ala Tyr Val Pro Gln Gln Ala Trp Ile Gln Asn Cys Thr
690 695 700

Leu Gln Glu Asn Val Leu Phe Gly Lys Ala Leu Asn Pro Lys Arg Tyr
705 710 715 720

Gln Gln Thr Leu Glu Ala Cys Ala Leu Leu Ala Asp Leu Glu Met Leu
725 730 735

Pro Gly Gly Asp Gln Thr Glu Ile Gly Glu Lys Gly Ile Asn Leu Ser
740 745 750

Gly Gly Gln Arg Gln Arg Val Ser Leu Ala Arg Ala Val Tyr Ser Asp
755 760 765

Ala Asp Ile Phe Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ser His
770 775 780

Val Ala Lys His Ile Phe Asp His Val Ile Gly Pro Glu Gly Val Leu
785 790 795 800

Ala Gly Lys Thr Arg Val Leu Val Thr His Gly Ile Ser Phe Leu Pro
805 810 815

Gln Thr Asp Phe Ile Ile Val Leu Ala Asp Gly Gln Val Ser Glu Met
820 825 830

```
Gly Pro Tyr Pro Ala Leu Leu Gln Arg Asn Gly Ser Phe Ala Asn Phe
        835                 840                 845

Leu Cys Asn Tyr Ala Pro Asp Glu Asp Gln Gly His Leu Glu Asp Ser
    850                 855                 860

Trp Thr Ala Leu Glu Gly Ala Glu Asp Lys Glu Ala Leu Leu Ile Glu
865                 870                 875                 880

Asp Thr Leu Ser Asn His Thr Asp Leu Thr Asp Asn Asp Pro Val Thr
                885                 890                 895

Tyr Val Val Gln Lys Gln Phe Met Arg Gln Leu Ser Ala Leu Ser Ser
            900                 905                 910

Asp Gly Glu Gly Gln Gly Arg Pro Val Pro Arg Arg His Leu Gly Pro
        915                 920                 925

Ser Glu Lys Val Gln Val Thr Glu Ala Lys Ala Asp Gly Ala Leu Thr
    930                 935                 940

Gln Glu Glu Lys Ala Ala Ile Gly Thr Val Glu Leu Ser Val Phe Trp
945                 950                 955                 960

Asp Tyr Ala Lys Ala Val Gly Leu Cys Thr Thr Leu Ala Ile Cys Leu
                965                 970                 975

Leu Tyr Val Gly Gln Ser Ala Ala Ala Ile Gly Ala Asn Val Trp Leu
            980                 985                 990

Ser Ala Trp Thr Asn Asp Ala Met  Ala Asp Ser Arg Gln  Asn Asn
Thr
        995                 1000                1005

Ser Leu  Arg Leu Gly Val Tyr  Ala Ala Leu Gly Ile  Leu Gln Gly
    1010                1015                1020

Phe Leu  Val Met Leu Ala Ala  Met Ala Met Ala Ala  Gly Gly Ile
    1025                1030                1035

Gln Ala  Ala Arg Val Leu His  Gln Ala Leu Leu His  Asn Lys Ile
    1040                1045                1050
```

```
Arg Ser  Pro Gln Ser Phe Phe  Asp Thr Thr Pro Ser  Gly Arg Ile
    1055                1060                1065

Leu Asn  Cys Phe Ser Lys Asp  Ile Tyr Val Val Asp  Glu Val Leu
    1070                1075                1080

Ala Pro  Val Ile Leu Met Leu  Leu Asn Ser Phe Phe  Asn Ala Ile
    1085                1090                1095

Ser Thr  Leu Val Val Ile Met  Ala Ser Thr Pro Leu  Phe Thr Val
    1100                1105                1110

Val Ile  Leu Pro Leu Ala Val  Leu Tyr Thr Leu Val  Gln Arg Phe
    1115                1120                1125

Tyr Ala  Ala Thr Ser Arg Gln  Leu Lys Arg Leu Glu  Ser Val Ser
    1130                1135                1140

Arg Ser  Pro Ile Tyr Ser His  Phe Ser Glu Thr Val  Thr Gly Ala
    1145                1150                1155

Ser Val  Ile Arg Ala Tyr Asn  Arg Ser Arg Asp Phe  Glu Ile Ile
    1160                1165                1170

Ser Asp  Thr Lys Val Asp Ala  Asn Gln Arg Ser Cys  Tyr Pro Tyr
    1175                1180                1185

Ile Ile  Ser Asn Arg Ser Glu  Ala Ala Ser Leu Ala  Pro Cys Ser
    1190                1195                1200

Ser Arg  Asn Ser Gln Gln Ala  Leu Trp Cys Ser Gly  Ser Leu Ser
    1205                1210                1215

Leu Leu  Ser Pro Lys Gln Lys  Thr Gly Pro Ala Leu  Pro Leu Pro
    1220                1225                1230

His Phe  Leu Leu Ile
    1235
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<210> 7733
<211> 1325
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1625; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 4; "

<220>
<221> source
<223> /note="Uniprot ID: O15439; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366084"

<400> 7733

```
Met Leu Pro Val Tyr Gln Glu Val Lys Pro Asn Pro Leu Gln Asp Ala
1               5                  10                  15

Asn Leu Cys Ser Arg Val Phe Phe Trp Trp Leu Asn Pro Leu Phe Lys
            20                  25                  30

Ile Gly His Lys Arg Arg Leu Glu Glu Asp Asp Met Tyr Ser Val Leu
        35                  40                  45

Pro Glu Asp Arg Ser Gln His Leu Gly Glu Glu Leu Gln Gly Phe Trp
    50                  55                  60

Asp Lys Glu Val Leu Arg Ala Glu Asn Asp Ala Gln Lys Pro Ser Leu
65                  70                  75                  80

Thr Arg Ala Ile Ile Lys Cys Tyr Trp Lys Ser Tyr Leu Val Leu Gly
                85                  90                  95

Ile Phe Thr Leu Ile Glu Glu Ser Ala Lys Val Ile Gln Pro Ile Phe
            100                 105                 110

Leu Gly Lys Ile Ile Asn Tyr Phe Glu Asn Tyr Asp Pro Met Asp Ser
        115                 120                 125
```

```
Val Ala Leu Asn Thr Ala Tyr Ala Tyr Ala Thr Val Leu Thr Phe Cys
    130                 135                 140

Thr Leu Ile Leu Ala Ile Leu His His Leu Tyr Phe Tyr His Val Gln
145                 150                 155                 160

Cys Ala Gly Met Arg Leu Arg Val Ala Met Cys His Met Ile Tyr Arg
                165                 170                 175

Lys Ala Leu Arg Leu Ser Asn Met Ala Met Gly Lys Thr Thr Thr Gly
            180                 185                 190

Gln Ile Val Asn Leu Leu Ser Asn Asp Val Asn Lys Phe Asp Gln Val
        195                 200                 205

Thr Val Phe Leu His Phe Leu Trp Ala Gly Pro Leu Gln Ala Ile Ala
    210                 215                 220

Val Thr Ala Leu Leu Trp Met Glu Ile Gly Ile Ser Cys Leu Ala Gly
225                 230                 235                 240

Met Ala Val Leu Ile Ile Leu Leu Pro Leu Gln Ser Cys Phe Gly Lys
                245                 250                 255

Leu Phe Ser Ser Leu Arg Ser Lys Thr Ala Thr Phe Thr Asp Ala Arg
            260                 265                 270

Ile Arg Thr Met Asn Glu Val Ile Thr Gly Ile Arg Ile Ile Lys Met
        275                 280                 285

Tyr Ala Trp Glu Lys Ser Phe Ser Asn Leu Ile Thr Asn Leu Arg Lys
    290                 295                 300

Lys Glu Ile Ser Lys Ile Leu Arg Ser Ser Cys Leu Arg Gly Met Asn
305                 310                 315                 320

Leu Ala Ser Phe Phe Ser Ala Ser Lys Ile Ile Val Phe Val Thr Phe
                325                 330                 335

Thr Thr Tyr Val Leu Leu Gly Ser Val Ile Thr Ala Ser Arg Val Phe
            340                 345                 350
```

```
Val Ala Val Thr Leu Tyr Gly Ala Val Arg Leu Thr Val Thr Leu Phe
        355                 360                 365

Phe Pro Ser Ala Ile Glu Arg Val Ser Glu Ala Ile Val Ser Ile Arg
    370                 375                 380

Arg Ile Gln Thr Phe Leu Leu Leu Asp Glu Ile Ser Gln Arg Asn Arg
385                 390                 395                 400

Gln Leu Pro Ser Asp Gly Lys Lys Met Val His Val Gln Asp Phe Thr
                405                 410                 415

Ala Phe Trp Asp Lys Ala Ser Glu Thr Pro Thr Leu Gln Gly Leu Ser
            420                 425                 430

Phe Thr Val Arg Pro Gly Glu Leu Leu Ala Val Val Gly Pro Val Gly
        435                 440                 445

Ala Gly Lys Ser Ser Leu Leu Ser Ala Val Leu Gly Glu Leu Ala Pro
    450                 455                 460

Ser His Gly Leu Val Ser Val His Gly Arg Ile Ala Tyr Val Ser Gln
465                 470                 475                 480

Gln Pro Trp Val Phe Ser Gly Thr Leu Arg Ser Asn Ile Leu Phe Gly
                485                 490                 495

Lys Lys Tyr Glu Lys Glu Arg Tyr Glu Lys Val Ile Lys Ala Cys Ala
            500                 505                 510

Leu Lys Lys Asp Leu Gln Leu Leu Glu Asp Gly Asp Leu Thr Val Ile
        515                 520                 525

Gly Asp Arg Gly Thr Thr Leu Ser Gly Gly Gln Lys Ala Arg Val Asn
    530                 535                 540

Leu Ala Arg Ala Val Tyr Gln Asp Ala Asp Ile Tyr Leu Leu Asp Asp
545                 550                 555                 560

Pro Leu Ser Ala Val Asp Ala Glu Val Ser Arg His Leu Phe Glu Leu
                565                 570                 575

Cys Ile Cys Gln Ile Leu His Glu Lys Ile Thr Ile Leu Val Thr His
```

```
            580                 585                 590

Gln Leu Gln Tyr Leu Lys Ala Ala Ser Gln Ile Leu Ile Leu Lys Asp
        595                 600                 605

Gly Lys Met Val Gln Lys Gly Thr Tyr Thr Glu Phe Leu Lys Ser Gly
    610                 615                 620

Ile Asp Phe Gly Ser Leu Leu Lys Lys Asp Asn Glu Glu Ser Glu Gln
625                 630                 635                 640

Pro Pro Val Pro Gly Thr Pro Thr Leu Arg Asn Arg Thr Phe Ser Glu
                645                 650                 655

Ser Ser Val Trp Ser Gln Gln Ser Ser Arg Pro Ser Leu Lys Asp Gly
            660                 665                 670

Ala Leu Glu Ser Gln Asp Thr Glu Asn Val Pro Val Thr Leu Ser Glu
        675                 680                 685

Glu Asn Arg Ser Glu Gly Lys Val Gly Phe Gln Ala Tyr Lys Asn Tyr
    690                 695                 700

Phe Arg Ala Gly Ala His Trp Ile Val Phe Ile Phe Leu Ile Leu Leu
705                 710                 715                 720

Asn Thr Ala Ala Gln Val Ala Tyr Val Leu Gln Asp Trp Trp Leu Ser
                725                 730                 735

Tyr Trp Ala Asn Lys Gln Ser Met Leu Asn Val Thr Val Asn Gly Gly
            740                 745                 750

Gly Asn Val Thr Glu Lys Leu Asp Leu Asn Trp Tyr Leu Gly Ile Tyr
        755                 760                 765

Ser Gly Leu Thr Val Ala Thr Val Leu Phe Gly Ile Ala Arg Ser Leu
    770                 775                 780

Leu Val Phe Tyr Val Leu Val Asn Ser Ser Gln Thr Leu His Asn Lys
785                 790                 795                 800

Met Phe Glu Ser Ile Leu Lys Ala Pro Val Leu Phe Phe Asp Arg Asn
                805                 810                 815
```

```
Pro Ile Gly Arg Ile Leu Asn Arg Phe Ser Lys Asp Ile Gly His Leu
            820                 825                 830

Asp Asp Leu Leu Pro Leu Thr Phe Leu Asp Phe Ile Gln Thr Leu Leu
        835                 840                 845

Gln Val Val Gly Val Val Ser Val Ala Val Ala Val Ile Pro Trp Ile
    850                 855                 860

Ala Ile Pro Leu Val Pro Leu Gly Ile Ile Phe Ile Phe Leu Arg Arg
865                 870                 875                 880

Tyr Phe Leu Glu Thr Ser Arg Asp Val Lys Arg Leu Glu Ser Thr Thr
                885                 890                 895

Arg Ser Pro Val Phe Ser His Leu Ser Ser Ser Leu Gln Gly Leu Trp
            900                 905                 910

Thr Ile Arg Ala Tyr Lys Ala Glu Glu Arg Cys Gln Glu Leu Phe Asp
        915                 920                 925

Ala His Gln Asp Leu His Ser Glu Ala Trp Phe Leu Phe Leu Thr Thr
    930                 935                 940

Ser Arg Trp Phe Ala Val Arg Leu Asp Ala Ile Cys Ala Met Phe Val
945                 950                 955                 960

Ile Ile Val Ala Phe Gly Ser Leu Ile Leu Ala Lys Thr Leu Asp Ala
                965                 970                 975

Gly Gln Val Gly Leu Ala Leu Ser Tyr Ala Leu Thr Leu Met Gly Met
            980                 985                 990

Phe Gln Trp Cys Val Arg Gln Ser  Ala Glu Val Glu Asn  Met Met
Ile
        995                 1000                1005

Ser Val  Glu Arg Val Ile Glu  Tyr Thr Asp Leu Glu  Lys Glu Ala
    1010                1015                1020

Pro Trp  Glu Tyr Gln Lys Arg  Pro Pro Pro Ala Trp  Pro His Glu
    1025                1030                1035
```

```
Gly Val  Ile Ile Phe Asp Asn  Val Asn Phe Met Tyr  Ser Pro Gly
    1040                1045                1050

Gly Pro  Leu Val Leu Lys His  Leu Thr Ala Leu Ile  Lys Ser Gln
    1055                1060                1065

Glu Lys  Val Gly Ile Val Gly  Arg Thr Gly Ala Gly  Lys Ser Ser
    1070                1075                1080

Leu Ile  Ser Ala Leu Phe Arg  Leu Ser Glu Pro Glu  Gly Lys Ile
    1085                1090                1095

Trp Ile  Asp Lys Ile Leu Thr  Thr Glu Ile Gly Leu  His Asp Leu
    1100                1105                1110

Arg Lys  Lys Met Ser Ile Ile  Pro Gln Glu Pro Val  Leu Phe Thr
    1115                1120                1125

Gly Thr  Met Arg Lys Asn Leu  Asp Pro Phe Asn Glu  His Thr Asp
    1130                1135                1140

Glu Glu  Leu Trp Asn Ala Leu  Gln Glu Val Gln Leu  Lys Glu Thr
    1145                1150                1155

Ile Glu  Asp Leu Pro Gly Lys  Met Asp Thr Glu Leu  Ala Glu Ser
    1160                1165                1170

Gly Ser  Asn Phe Ser Val Gly  Gln Arg Gln Leu Val  Cys Leu Ala
    1175                1180                1185

Arg Ala  Ile Leu Arg Lys Asn  Gln Ile Leu Ile Ile  Asp Glu Ala
    1190                1195                1200

Thr Ala  Asn Val Asp Pro Arg  Thr Asp Glu Leu Ile  Gln Lys Lys
    1205                1210                1215

Ile Arg  Glu Lys Phe Ala His  Cys Thr Val Leu Thr  Ile Ala His
    1220                1225                1230

Arg Leu  Asn Thr Ile Ile Asp  Ser Asp Lys Ile Met  Val Leu Asp
    1235                1240                1245
```

```
Ser Gly  Arg Leu Lys Glu Tyr  Asp Glu Pro Tyr Val  Leu Leu Gln
    1250                1255                1260

Asn Lys  Glu Ser Leu Phe Tyr  Lys Met Val Gln Gln  Leu Gly Lys
    1265                1270                1275

Ala Glu  Ala Ala Ala Leu Thr  Glu Thr Ala Lys Gln  Val Tyr Phe
    1280                1285                1290

Lys Arg  Asn Tyr Pro His Ile  Gly His Thr Asp His  Met Val Thr
    1295                1300                1305

Asn Thr  Ser Asn Gly Gln Pro  Ser Thr Leu Thr Ile  Phe Glu Thr
    1310                1315                1320

Ala Leu
    1325


<210> 7734
<211> 784
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1625; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 4; "

<220>
<221> source
<223> /note="Uniprot ID:  O15439; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442024"

<400> 7734
Met Leu Pro Val Tyr Gln Glu Val Lys Pro Asn Pro Leu Gln Asp Ala
1               5                  10                  15
```

```
Asn Leu Cys Ser Arg Val Phe Phe Trp Trp Leu Asn Pro Leu Phe Lys
            20                  25                  30

Ile Gly His Lys Arg Arg Leu Glu Glu Asp Asp Met Tyr Ser Val Leu
        35                  40                  45

Pro Glu Asp Arg Ser Gln His Leu Gly Glu Glu Leu Gln Gly Phe Trp
    50                  55                  60

Asp Lys Glu Val Leu Arg Ala Glu Asn Asp Ala Gln Lys Pro Ser Leu
65                  70                  75                  80

Thr Arg Ala Ile Ile Lys Cys Tyr Trp Lys Ser Tyr Leu Val Leu Gly
                85                  90                  95

Ile Phe Thr Leu Ile Glu Ala Leu Arg Leu Ser Asn Met Ala Met Gly
            100                 105                 110

Lys Thr Thr Thr Gly Gln Ile Val Asn Leu Leu Ser Asn Asp Val Asn
        115                 120                 125

Lys Phe Asp Gln Val Thr Val Phe Leu His Phe Leu Trp Ala Gly Pro
    130                 135                 140

Leu Gln Ala Ile Ala Val Thr Ala Leu Leu Trp Met Glu Ile Gly Ile
145                 150                 155                 160

Ser Cys Leu Ala Gly Met Ala Val Leu Ile Ile Leu Leu Pro Leu Gln
                165                 170                 175

Ser Cys Phe Gly Lys Leu Phe Ser Ser Leu Arg Ser Lys Thr Ala Thr
            180                 185                 190

Phe Thr Asp Ala Arg Ile Arg Thr Met Asn Glu Val Ile Thr Gly Ile
        195                 200                 205

Arg Ile Ile Lys Met Tyr Ala Trp Glu Lys Ser Phe Ser Asn Leu Ile
    210                 215                 220

Thr Asn Leu Arg Lys Lys Glu Ile Ser Lys Ile Leu Arg Ser Ser Cys
225                 230                 235                 240
```

```
Leu Arg Gly Met Asn Leu Ala Ser Phe Phe Ser Ala Ser Lys Ile Ile
                245                 250                 255

Val Phe Val Thr Phe Thr Thr Tyr Val Leu Leu Gly Ser Val Ile Thr
            260                 265                 270

Ala Ser Arg Val Phe Val Ala Val Thr Leu Tyr Gly Ala Val Arg Leu
        275                 280                 285

Thr Val Thr Leu Phe Phe Pro Ser Ala Ile Glu Arg Val Ser Glu Ala
    290                 295                 300

Ile Val Ser Ile Arg Arg Ile Gln Thr Phe Leu Leu Leu Asp Glu Ile
305                 310                 315                 320

Ser Gln Arg Asn Arg Gln Leu Pro Ser Asp Gly Lys Lys Met Val His
                325                 330                 335

Val Gln Asp Phe Thr Ala Phe Trp Asp Lys Ala Ser Glu Thr Pro Thr
            340                 345                 350

Leu Gln Gly Leu Ser Phe Thr Val Arg Pro Gly Glu Leu Leu Ala Val
        355                 360                 365

Val Gly Pro Val Gly Ala Gly Lys Ser Ser Leu Leu Ser Ala Val Leu
    370                 375                 380

Gly Glu Leu Ala Pro Ser His Gly Leu Val Ser Val His Gly Arg Ile
385                 390                 395                 400

Ala Tyr Val Ser Gln Gln Pro Trp Val Phe Ser Gly Thr Leu Arg Ser
                405                 410                 415

Asn Ile Leu Phe Gly Lys Lys Tyr Glu Lys Glu Arg Tyr Glu Lys Val
            420                 425                 430

Ile Lys Ala Cys Ala Leu Lys Lys Asp Leu Gln Leu Leu Glu Asp Gly
        435                 440                 445

Asp Leu Thr Val Ile Gly Asp Arg Gly Thr Thr Leu Ser Gly Gly Gln
    450                 455                 460

Lys Ala Arg Val Asn Leu Ala Arg Ala Val Tyr Gln Asp Ala Asp Ile
```

```
465                 470                 475                 480

Tyr Leu Leu Asp Asp Pro Leu Ser Ala Val Asp Ala Glu Val Ser Arg
                485                 490                 495

His Leu Phe Glu Leu Cys Ile Cys Gln Ile Leu His Glu Lys Ile Thr
            500                 505                 510

Ile Leu Val Thr His Gln Leu Gln Tyr Leu Lys Ala Ala Ser Gln Ile
        515                 520                 525

Leu Ile Leu Lys Asp Gly Lys Met Val Gln Lys Gly Thr Tyr Thr Glu
    530                 535                 540

Phe Leu Lys Ser Gly Ile Asp Phe Gly Ser Leu Leu Lys Lys Asp Asn
545                 550                 555                 560

Glu Glu Ser Glu Gln Pro Pro Val Pro Gly Thr Pro Thr Leu Arg Asn
                565                 570                 575

Arg Thr Phe Ser Glu Ser Ser Val Trp Ser Gln Gln Ser Ser Arg Pro
            580                 585                 590

Ser Leu Lys Asp Gly Ala Leu Glu Ser Gln Asp Thr Glu Asn Val Pro
        595                 600                 605

Val Thr Leu Ser Glu Glu Asn Arg Ser Glu Gly Lys Val Gly Phe Gln
    610                 615                 620

Ala Tyr Lys Asn Tyr Phe Arg Ala Gly Ala His Trp Ile Val Phe Ile
625                 630                 635                 640

Phe Leu Ile Leu Leu Asn Thr Ala Ala Gln Val Ala Tyr Val Leu Gln
                645                 650                 655

Asp Trp Trp Leu Ser Tyr Trp Ala Asn Lys Gln Ser Met Leu Asn Val
            660                 665                 670

Thr Val Asn Gly Gly Gly Asn Val Thr Glu Lys Leu Asp Leu Asn Trp
        675                 680                 685

Tyr Leu Gly Ile Tyr Ser Gly Leu Thr Val Ala Thr Val Leu Phe Gly
    690                 695                 700
```

```
Ile Ala Arg Ser Leu Leu Val Phe Tyr Val Leu Val Asn Ser Ser Gln
705                 710                 715                 720


Thr Leu His Asn Lys Met Phe Glu Ser Ile Leu Lys Ala Pro Val Leu
                725                 730                 735


Phe Phe Asp Arg Asn Pro Ile Gly Arg Ile Leu Asn Arg Phe Ser Lys
            740                 745                 750


Asp Ile Gly His Leu Asp Asp Leu Leu Pro Leu Thr Phe Leu Asp Phe
        755                 760                 765


Ile Gln Arg Trp Asp Leu Ala Val Leu Ser Trp Leu Val Ser Asn Ser
    770                 775                 780


<210> 7735
<211> 859
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1625; "

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<223> /note="Gene Symbol: ABCC4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 4; "

<220>
<221> source
<223> /note="Uniprot ID:  O15439; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487081"

<400> 7735
Met Leu Pro Val Tyr Gln Glu Val Lys Pro Asn Pro Leu Gln Asp Ala
1               5                   10                  15


Asn Leu Cys Ser Arg Val Phe Phe Trp Trp Leu Asn Pro Leu Phe Lys
            20                  25                  30
```

```
Ile Gly His Lys Arg Arg Leu Glu Glu Asp Asp Met Tyr Ser Val Leu
        35                  40                  45

Pro Glu Asp Arg Ser Gln His Leu Gly Glu Glu Leu Gln Gly Phe Trp
    50                  55                  60

Asp Lys Glu Val Leu Arg Ala Glu Asn Asp Ala Gln Lys Pro Ser Leu
65                  70                  75                  80

Thr Arg Ala Ile Ile Lys Cys Tyr Trp Lys Ser Tyr Leu Val Leu Gly
                85                  90                  95

Ile Phe Thr Leu Ile Glu Glu Ser Ala Lys Val Ile Gln Pro Ile Phe
            100                 105                 110

Leu Gly Lys Ile Ile Asn Tyr Phe Glu Asn Tyr Asp Pro Met Asp Ser
        115                 120                 125

Val Ala Leu Asn Thr Ala Tyr Ala Tyr Ala Thr Val Leu Thr Phe Cys
    130                 135                 140

Thr Leu Ile Leu Ala Ile Leu His His Leu Tyr Phe Tyr His Val Gln
145                 150                 155                 160

Cys Ala Gly Met Arg Leu Arg Val Ala Met Cys His Met Ile Tyr Arg
                165                 170                 175

Lys Ala Leu Arg Leu Ser Asn Met Ala Met Gly Lys Thr Thr Thr Gly
            180                 185                 190

Gln Ile Val Asn Leu Leu Ser Asn Asp Val Asn Lys Phe Asp Gln Val
        195                 200                 205

Thr Val Phe Leu His Phe Leu Trp Ala Gly Pro Leu Gln Ala Ile Ala
    210                 215                 220

Val Thr Ala Leu Leu Trp Met Glu Ile Gly Ile Ser Cys Leu Ala Gly
225                 230                 235                 240

Met Ala Val Leu Ile Ile Leu Leu Pro Leu Gln Ser Cys Phe Gly Lys
                245                 250                 255
```

```
Leu Phe Ser Ser Leu Arg Ser Lys Thr Ala Thr Phe Thr Asp Ala Arg
            260                 265                 270

Ile Arg Thr Met Asn Glu Val Ile Thr Gly Ile Arg Ile Ile Lys Met
        275                 280                 285

Tyr Ala Trp Glu Lys Ser Phe Ser Asn Leu Ile Thr Asn Leu Arg Lys
    290                 295                 300

Lys Glu Ile Ser Lys Ile Leu Arg Ser Ser Cys Leu Arg Gly Met Asn
305                 310                 315                 320

Leu Ala Ser Phe Phe Ser Ala Ser Lys Ile Ile Val Phe Val Thr Phe
                325                 330                 335

Thr Thr Tyr Val Leu Leu Gly Ser Val Ile Thr Ala Ser Arg Val Phe
            340                 345                 350

Val Ala Val Thr Leu Tyr Gly Ala Val Arg Leu Thr Val Thr Leu Phe
        355                 360                 365

Phe Pro Ser Ala Ile Glu Arg Val Ser Glu Ala Ile Val Ser Ile Arg
    370                 375                 380

Arg Ile Gln Thr Phe Leu Leu Leu Asp Glu Ile Ser Gln Arg Asn Arg
385                 390                 395                 400

Gln Leu Pro Ser Asp Gly Lys Lys Met Val His Val Gln Asp Phe Thr
                405                 410                 415

Ala Phe Trp Asp Lys Ala Ser Glu Thr Pro Thr Leu Gln Gly Leu Ser
            420                 425                 430

Phe Thr Val Arg Pro Gly Glu Leu Leu Ala Val Val Gly Pro Val Gly
        435                 440                 445

Ala Gly Lys Ser Ser Leu Leu Ser Ala Val Leu Gly Glu Leu Ala Pro
    450                 455                 460

Ser His Gly Leu Val Ser Val His Gly Arg Ile Ala Tyr Val Ser Gln
465                 470                 475                 480
```

```
Gln Pro Trp Val Phe Ser Gly Thr Leu Arg Ser Asn Ile Leu Phe Gly
                485                 490                 495

Lys Lys Tyr Glu Lys Glu Arg Tyr Glu Lys Val Ile Lys Ala Cys Ala
            500                 505                 510

Leu Lys Lys Asp Leu Gln Leu Leu Glu Asp Gly Asp Leu Thr Val Ile
        515                 520                 525

Gly Asp Arg Gly Thr Thr Leu Ser Gly Gly Gln Lys Ala Arg Val Asn
    530                 535                 540

Leu Ala Arg Ala Val Tyr Gln Asp Ala Asp Ile Tyr Leu Leu Asp Asp
545                 550                 555                 560

Pro Leu Ser Ala Val Asp Ala Glu Val Ser Arg His Leu Phe Glu Leu
                565                 570                 575

Cys Ile Cys Gln Ile Leu His Glu Lys Ile Thr Ile Leu Val Thr His
            580                 585                 590

Gln Leu Gln Tyr Leu Lys Ala Ala Ser Gln Ile Leu Ile Leu Lys Asp
        595                 600                 605

Gly Lys Met Val Gln Lys Gly Thr Tyr Thr Glu Phe Leu Lys Ser Gly
    610                 615                 620

Ile Asp Phe Gly Ser Leu Leu Lys Lys Asp Asn Glu Glu Ser Glu Gln
625                 630                 635                 640

Pro Pro Val Pro Gly Thr Pro Thr Leu Arg Asn Arg Thr Phe Ser Glu
                645                 650                 655

Ser Ser Val Trp Ser Gln Gln Ser Ser Arg Pro Ser Leu Lys Asp Gly
            660                 665                 670

Ala Leu Glu Ser Gln Asp Thr Glu Asn Val Pro Val Thr Leu Ser Glu
        675                 680                 685

Glu Asn Arg Ser Glu Gly Lys Val Gly Phe Gln Ala Tyr Lys Asn Tyr
    690                 695                 700

Phe Arg Ala Gly Ala His Trp Ile Val Phe Ile Phe Leu Ile Leu Leu
```

```
705                 710                 715                 720

Asn Thr Ala Ala Gln Val Ala Tyr Val Leu Gln Asp Trp Trp Leu Ser
                725                 730                 735

Tyr Trp Ala Asn Lys Gln Ser Met Leu Asn Val Thr Val Asn Gly Gly
            740                 745                 750

Gly Asn Val Thr Glu Lys Leu Asp Leu Asn Trp Tyr Leu Gly Ile Tyr
        755                 760                 765

Ser Gly Leu Thr Val Ala Thr Val Leu Phe Gly Ile Ala Arg Ser Leu
    770                 775                 780

Leu Val Phe Tyr Val Leu Val Asn Ser Ser Gln Thr Leu His Asn Lys
785                 790                 795                 800

Met Phe Glu Ser Ile Leu Lys Ala Pro Val Leu Phe Phe Asp Arg Asn
                805                 810                 815

Pro Ile Gly Arg Ile Leu Asn Arg Phe Ser Lys Asp Ile Gly His Leu
            820                 825                 830

Asp Asp Leu Leu Pro Leu Thr Phe Leu Asp Phe Ile Gln Arg Trp Asp
        835                 840                 845

Leu Ala Val Leu Ser Trp Leu Val Ser Asn Ser
    850                 855


<210> 7736
<211> 1394
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1626; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
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member 5; "

<220>
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<223> /note="Uniprot ID: O15440; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265586"

<400> 7736
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1   5   10   15

Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20   25   30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35   40   45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50   55   60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65   70   75   80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85   90   95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100   105   110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115   120   125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130   135   140

Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145   150   155   160

Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165   170   175

Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180   185   190

```
Gly Phe Ser Gly Pro Ala Phe Met Val Lys His Leu Leu Glu Tyr Thr
        195                 200                 205

Gln Ala Thr Glu Ser Asn Leu Gln Tyr Ser Leu Leu Leu Val Leu Gly
    210                 215                 220

Leu Leu Leu Thr Glu Ile Val Arg Ser Trp Ser Leu Ala Leu Thr Trp
225                 230                 235                 240

Ala Leu Asn Tyr Arg Thr Gly Val Arg Leu Arg Gly Ala Ile Leu Thr
                245                 250                 255

Met Ala Phe Lys Lys Ile Leu Lys Leu Lys Asn Ile Lys Glu Lys Ser
            260                 265                 270

Leu Gly Glu Leu Ile Asn Ile Cys Ser Asn Asp Gly Gln Arg Met Phe
        275                 280                 285

Glu Ala Ala Ala Val Gly Ser Leu Leu Ala Gly Gly Pro Val Val Ala
    290                 295                 300

Ile Leu Gly Met Ile Tyr Asn Val Ile Ile Leu Gly Pro Thr Gly Phe
305                 310                 315                 320

Leu Gly Ser Ala Val Phe Ile Leu Phe Tyr Pro Ala Met Met Phe Ala
                325                 330                 335

Ser Arg Leu Thr Ala Tyr Phe Arg Arg Lys Cys Val Ala Ala Thr Asp
            340                 345                 350

Glu Arg Val Gln Lys Met Asn Glu Val Leu Thr Tyr Ile Lys Phe Ile
        355                 360                 365

Lys Met Tyr Ala Trp Val Lys Ala Phe Ser Gln Ser Val Gln Lys Ile
    370                 375                 380

Arg Glu Glu Glu Arg Arg Ile Leu Glu Lys Ala Gly Tyr Phe Gln Ser
385                 390                 395                 400

Ile Thr Val Gly Val Ala Pro Ile Val Val Val Ile Ala Ser Val Val
                405                 410                 415
```

```
Thr Phe Ser Val His Met Thr Leu Gly Phe Asp Leu Thr Ala Ala Gln
            420                 425                 430

Ala Phe Thr Val Val Thr Val Phe Asn Ser Met Thr Phe Ala Leu Lys
        435                 440                 445

Val Thr Pro Phe Ser Val Lys Ser Leu Ser Glu Ala Ser Val Ala Val
    450                 455                 460

Asp Arg Phe Lys Ser Leu Phe Leu Met Glu Glu Val His Met Ile Lys
465                 470                 475                 480

Asn Lys Pro Ala Ser Pro His Ile Lys Ile Glu Met Lys Asn Ala Thr
                485                 490                 495

Leu Ala Trp Asp Ser Ser His Ser Ser Ile Gln Asn Ser Pro Lys Leu
            500                 505                 510

Thr Pro Lys Met Lys Lys Asp Lys Arg Ala Ser Arg Gly Lys Lys Glu
        515                 520                 525

Lys Val Arg Gln Leu Gln Arg Thr Glu His Gln Ala Val Leu Ala Glu
    530                 535                 540

Gln Lys Gly His Leu Leu Leu Asp Ser Asp Glu Arg Pro Ser Pro Glu
545                 550                 555                 560

Glu Glu Glu Gly Lys His Ile His Leu Gly His Leu Arg Leu Gln Arg
                565                 570                 575

Thr Leu His Ser Ile Asp Leu Glu Ile Gln Glu Gly Lys Leu Val Gly
            580                 585                 590

Ile Cys Gly Ser Val Gly Ser Gly Lys Thr Ser Leu Ile Ser Ala Ile
        595                 600                 605

Leu Gly Gln Met Thr Leu Leu Glu Gly Ser Ile Ala Ile Ser Gly Thr
    610                 615                 620

Phe Ala Tyr Val Ala Gln Gln Ala Trp Ile Leu Asn Ala Thr Leu Arg
625                 630                 635                 640
```

```
Asp Asn Ile Leu Phe Gly Lys Glu Tyr Asp Glu Glu Arg Tyr Asn Ser
                645                 650                 655

Val Leu Asn Ser Cys Cys Leu Arg Pro Asp Leu Ala Ile Leu Pro Ser
            660                 665                 670

Ser Asp Leu Thr Glu Ile Gly Glu Arg Gly Ala Asn Leu Ser Gly Gly
        675                 680                 685

Gln Arg Gln Arg Ile Ser Leu Ala Arg Ala Leu Tyr Ser Asp Arg Ser
    690                 695                 700

Ile Tyr Ile Leu Asp Asp Pro Leu Ser Ala Leu Asp Ala His Val Gly
705                 710                 715                 720

Asn His Ile Phe Asn Ser Ala Ile Arg Lys His Leu Lys Ser Lys Thr
                725                 730                 735

Val Leu Phe Val Thr His Gln Leu Gln Tyr Leu Val Asp Cys Asp Glu
            740                 745                 750

Val Ile Phe Met Lys Glu Gly Cys Ile Thr Glu Arg Gly Thr His Glu
        755                 760                 765

Glu Leu Met Asn Leu Asn Gly Asp Tyr Ala Thr Ile Phe Asn Asn Leu
    770                 775                 780

Leu Leu Gly Glu Thr Pro Pro Val Glu Ile Asn Ser Lys Lys Glu Thr
785                 790                 795                 800

Ser Gly Ser Gln Lys Lys Ser Gln Asp Lys Gly Pro Lys Thr Gly Ser
                805                 810                 815

Val Lys Lys Glu Lys Ala Val Lys Pro Glu Glu Gly Gln Leu Val Gln
            820                 825                 830

Leu Glu Glu Lys Gly Gln Gly Ser Val Pro Trp Ser Val Tyr Gly Val
        835                 840                 845

Tyr Ile Gln Ala Ala Gly Gly Pro Leu Ala Phe Leu Val Ile Met Ala
    850                 855                 860

Leu Phe Met Leu Asn Val Gly Ser Thr Ala Phe Ser Thr Trp Trp Leu
```

865 870 875 880

Ser Tyr Trp Ile Lys Gln Gly Ser Gly Asn Thr Thr Val Thr Arg Gly
885 890 895

Asn Glu Thr Ser Val Ser Asp Ser Met Lys Asp Asn Pro His Met Gln
900 905 910

Tyr Tyr Ala Ser Ile Tyr Ala Leu Ser Met Ala Val Met Leu Ile Leu
915 920 925

Lys Ala Ile Arg Gly Val Val Phe Val Lys Gly Thr Leu Arg Ala Ser
930 935 940

Ser Arg Leu His Asp Glu Leu Phe Arg Arg Ile Leu Arg Ser Pro Met
945 950 955 960

Lys Phe Phe Asp Thr Thr Pro Thr Gly Arg Ile Leu Asn Arg Phe Ser
965 970 975

Lys Asp Met Asp Glu Val Asp Val Arg Leu Pro Phe Gln Ala Glu Met
980 985 990

Phe Ile Gln Asn Val Ile Leu Val Phe Phe Cys Val Gly Met Ile
Ala
995 1000 1005

Gly Val Phe Pro Trp Phe Leu Val Ala Val Gly Pro Leu Val Ile
1010 1015 1020

Leu Phe Ser Val Leu His Ile Val Ser Arg Tyr Gln Glu Leu Leu
1025 1030 1035

Asp Asp Asn Gln Ala Pro Phe Phe Leu Phe Thr Cys Ala Met Arg
1040 1045 1050

Trp Leu Ala Val Arg Leu Asp Leu Ile Ser Ile Ala Leu Ile Thr
1055 1060 1065

Thr Thr Gly Leu Met Ile Val Leu Met His Gly Gln Ile Pro Pro
1070 1075 1080

Ala Tyr Ala Gly Leu Ala Ile Ser Tyr Ala Val Gln Leu Thr Gly

1085 1090 1095

Leu Phe Gln Phe Thr Val Arg Leu Ala Ser Glu Thr Glu Ala Arg
1100 1105 1110

Phe Thr Ser Val Glu Arg Ile Asn His Tyr Ile Lys Thr Leu Ser
1115 1120 1125

Leu Glu Ala Pro Ala Arg Ile Lys Asn Lys Ala Pro Ser Pro Asp
1130 1135 1140

Trp Pro Gln Glu Gly Glu Val Thr Phe Glu Asn Ala Glu Met Arg
1145 1150 1155

Tyr Arg Glu Asn Leu Pro Leu Val Leu Lys Lys Val Ser Phe Thr
1160 1165 1170

Ile Lys Pro Lys Glu Lys Ile Gly Ile Val Gly Arg Thr Gly Ser
1175 1180 1185

Gly Lys Ser Ser Leu Gly Met Ala Leu Phe Arg Leu Val Glu Leu
1190 1195 1200

Ser Gly Gly Cys Ile Lys Ile Asp Gly Val Arg Ile Ser Asp Ile
1205 1210 1215

Gly Leu Ala Asp Leu Arg Ser Lys Leu Ser Ile Ile Pro Gln Glu
1220 1225 1230

Pro Val Leu Phe Ser Gly Thr Val Arg Ser Asn Leu Asp Pro Phe
1235 1240 1245

Asn Gln Tyr Thr Glu Asp Gln Ile Trp Asp Ala Leu Glu Arg Thr
1250 1255 1260

His Met Lys Glu Cys Ile Ala Gln Leu Pro Leu Lys Leu Glu Ser
1265 1270 1275

Glu Val Met Glu Asn Gly Asp Asn Phe Ser Val Gly Glu Arg Gln
1280 1285 1290

Leu Leu Cys Ile Ala Arg Ala Leu Leu Arg His Cys Lys Ile Leu
1295 1300 1305

```
Ile Leu  Asp Glu Ala Thr Ala  Ala Met Asp Thr Glu  Thr Asp Leu
    1310                1315                1320

Leu Ile  Gln Glu Thr Ile Arg  Glu Ala Phe Ala Asp  Cys Thr Met
    1325                1330                1335

Leu Thr  Ile Ala His Arg Leu  His Thr Val Leu Gly  Ser Asp Arg
    1340                1345                1350

Ile Met  Val Leu Ala Gln Gly  Gln Val Val Glu Phe  Asp Thr Pro
    1355                1360                1365

Ser Val  Leu Leu Ser Asn Asp  Ser Ser Arg Phe Tyr  Ala Met Phe
    1370                1375                1380

Ala Ala  Ala Glu Asn Lys Val  Ala Val Lys Gly
    1385                1390


<210> 7737
<211> 1437
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1626; "

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<223> /note="Gene Symbol: ABCC5; "

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<223> /note="Gene Name:
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      C (CFTR/MRP),
      member 5; "

<220>
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<223> /note="Uniprot ID:  O15440; "

<220>
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<400> 7737
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                  10                  15
```

```
Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35                  40                  45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50                  55                  60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65                  70                  75                  80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85                  90                  95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100                 105                 110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115                 120                 125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130                 135                 140

Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145                 150                 155                 160

Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165                 170                 175

Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180                 185                 190

Gly Phe Ser Gly Pro Ala Phe Met Val Lys His Leu Leu Glu Tyr Thr
        195                 200                 205

Gln Ala Thr Glu Ser Asn Leu Gln Tyr Ser Leu Leu Leu Val Leu Gly
    210                 215                 220

Leu Leu Leu Thr Glu Ile Val Arg Ser Trp Ser Leu Ala Leu Thr Trp
225                 230                 235                 240
```

```
Ala Leu Asn Tyr Arg Thr Gly Val Arg Leu Arg Gly Ala Ile Leu Thr
                245                 250                 255

Met Ala Phe Lys Lys Ile Leu Lys Leu Lys Asn Ile Lys Glu Lys Ser
            260                 265                 270

Leu Gly Glu Leu Ile Asn Ile Cys Ser Asn Asp Gly Gln Arg Met Phe
        275                 280                 285

Glu Ala Ala Ala Val Gly Ser Leu Leu Ala Gly Gly Pro Val Val Ala
    290                 295                 300

Ile Leu Gly Met Ile Tyr Asn Val Ile Ile Leu Gly Pro Thr Gly Phe
305                 310                 315                 320

Leu Gly Ser Ala Val Phe Ile Leu Phe Tyr Pro Ala Met Met Phe Ala
                325                 330                 335

Ser Arg Leu Thr Ala Tyr Phe Arg Arg Lys Cys Val Ala Ala Thr Asp
            340                 345                 350

Glu Arg Val Gln Lys Met Asn Glu Val Leu Thr Tyr Ile Lys Phe Ile
        355                 360                 365

Lys Met Tyr Ala Trp Val Lys Ala Phe Ser Gln Ser Val Gln Lys Ile
    370                 375                 380

Arg Glu Glu Glu Arg Arg Ile Leu Glu Lys Ala Gly Tyr Phe Gln Ser
385                 390                 395                 400

Ile Thr Val Gly Val Ala Pro Ile Val Val Val Ile Ala Ser Val Val
                405                 410                 415

Thr Phe Ser Val His Met Thr Leu Gly Phe Asp Leu Thr Ala Ala Gln
            420                 425                 430

Ala Phe Thr Val Val Thr Val Phe Asn Ser Met Thr Phe Ala Leu Lys
        435                 440                 445

Val Thr Pro Phe Ser Val Lys Ser Leu Ser Glu Ala Ser Val Ala Val
    450                 455                 460
```

```
Asp Arg Phe Lys Ser Leu Phe Leu Met Glu Glu Val His Met Ile Lys
465                 470                 475                 480

Asn Lys Pro Ala Ser Pro His Ile Lys Ile Glu Met Lys Asn Ala Thr
                485                 490                 495

Leu Ala Trp Asp Ser Ser His Ser Ser Ile Gln Asn Ser Pro Lys Leu
            500                 505                 510

Thr Pro Lys Met Lys Lys Asp Lys Arg Ala Ser Arg Gly Lys Lys Glu
        515                 520                 525

Lys Val Arg Gln Leu Gln Arg Thr Glu His Gln Ala Val Leu Ala Glu
    530                 535                 540

Gln Lys Gly His Leu Leu Leu Asp Ser Asp Glu Arg Pro Ser Pro Glu
545                 550                 555                 560

Glu Glu Glu Gly Lys His Ile His Leu Gly His Leu Arg Leu Gln Arg
                565                 570                 575

Thr Leu His Ser Ile Asp Leu Glu Ile Gln Glu Gly Lys Leu Val Gly
            580                 585                 590

Ile Cys Gly Ser Val Gly Ser Gly Lys Thr Ser Leu Ile Ser Ala Ile
        595                 600                 605

Leu Gly Gln Met Thr Leu Leu Glu Gly Ser Ile Ala Ile Ser Gly Thr
    610                 615                 620

Phe Ala Tyr Val Ala Gln Gln Ala Trp Ile Leu Asn Ala Thr Leu Arg
625                 630                 635                 640

Asp Asn Ile Leu Phe Gly Lys Glu Tyr Asp Glu Glu Arg Tyr Asn Ser
                645                 650                 655

Val Leu Asn Ser Cys Cys Leu Arg Pro Asp Leu Ala Ile Leu Pro Ser
            660                 665                 670

Ser Asp Leu Thr Glu Ile Gly Glu Arg Gly Ala Asn Leu Ser Gly Gly
        675                 680                 685

Gln Arg Gln Arg Ile Ser Leu Ala Arg Ala Leu Tyr Ser Asp Arg Ser
```

690 695 700

Ile Tyr Ile Leu Asp Asp Pro Leu Ser Ala Leu Asp Ala His Val Gly
705 710 715 720

Asn His Ile Phe Asn Ser Ala Ile Arg Lys His Leu Lys Ser Lys Thr
725 730 735

Val Leu Phe Val Thr His Gln Leu Gln Tyr Leu Val Asp Cys Asp Glu
740 745 750

Val Ile Phe Met Lys Glu Gly Cys Ile Thr Glu Arg Gly Thr His Glu
755 760 765

Glu Leu Met Asn Leu Asn Gly Asp Tyr Ala Thr Ile Phe Asn Asn Leu
770 775 780

Leu Leu Gly Glu Thr Pro Pro Val Glu Ile Asn Ser Lys Lys Glu Thr
785 790 795 800

Ser Gly Ser Gln Lys Lys Ser Gln Asp Lys Gly Pro Lys Thr Gly Ser
805 810 815

Val Lys Lys Glu Lys Ala Val Lys Pro Glu Glu Gly Gln Leu Val Gln
820 825 830

Leu Glu Glu Lys Gly Gln Gly Ser Val Pro Trp Ser Val Tyr Gly Val
835 840 845

Tyr Ile Gln Ala Ala Gly Gly Pro Leu Ala Phe Leu Val Ile Met Ala
850 855 860

Leu Phe Met Leu Asn Val Gly Ser Thr Ala Phe Ser Thr Trp Trp Leu
865 870 875 880

Ser Tyr Trp Ile Lys Gln Gly Ser Gly Asn Thr Thr Val Thr Arg Gly
885 890 895

Asn Glu Thr Ser Val Ser Asp Ser Met Lys Asp Asn Pro His Met Gln
900 905 910

Tyr Tyr Ala Ser Ile Tyr Ala Leu Ser Met Ala Val Met Leu Ile Leu
915 920 925

Lys Ala Ile Arg Gly Val Val Phe Val Lys Gly Thr Leu Arg Ala Ser
930 935 940

Ser Arg Leu His Asp Glu Leu Phe Arg Arg Ile Leu Arg Ser Pro Met
945 950 955 960

Lys Phe Phe Asp Thr Thr Pro Thr Gly Arg Ile Leu Asn Arg Phe Ser
965 970 975

Lys Asp Met Asp Glu Val Asp Val Arg Leu Pro Phe Gln Ala Glu Met
980 985 990

Phe Ile Gln Asn Val Ile Leu Val Phe Phe Cys Val Gly Met Ile
Ala
995 1000 1005

Gly Val Phe Pro Trp Phe Leu Val Ala Val Gly Pro Leu Val Ile
1010 1015 1020

Leu Phe Ser Val Leu His Ile Val Ser Arg Val Leu Ile Arg Glu
1025 1030 1035

Leu Lys Arg Leu Asp Asn Ile Thr Gln Ser Pro Phe Leu Ser His
1040 1045 1050

Ile Thr Ser Ser Ile Gln Gly Leu Ala Thr Ile His Ala Tyr Asn
1055 1060 1065

Lys Gly Gln Glu Phe Leu His Arg Tyr Gln Glu Leu Leu Asp Asp
1070 1075 1080

Asn Gln Ala Pro Phe Phe Leu Phe Thr Cys Ala Met Arg Trp Leu
1085 1090 1095

Ala Val Arg Leu Asp Leu Ile Ser Ile Ala Leu Ile Thr Thr Thr
1100 1105 1110

Gly Leu Met Ile Val Leu Met His Gly Gln Ile Pro Pro Ala Tyr
1115 1120 1125

Ala Gly Leu Ala Ile Ser Tyr Ala Val Gln Leu Thr Gly Leu Phe
1130 1135 1140

```
Gln Phe  Thr Val Arg Leu Ala  Ser Glu Thr Glu Ala  Arg Phe Thr
    1145                1150                1155

Ser Val  Glu Arg Ile Asn His  Tyr Ile Lys Thr Leu  Ser Leu Glu
    1160                1165                1170

Ala Pro  Ala Arg Ile Lys Asn  Lys Ala Pro Ser Pro  Asp Trp Pro
    1175                1180                1185

Gln Glu  Gly Glu Val Thr Phe  Glu Asn Ala Glu Met  Arg Tyr Arg
    1190                1195                1200

Glu Asn  Leu Pro Leu Val Leu  Lys Lys Val Ser Phe  Thr Ile Lys
    1205                1210                1215

Pro Lys  Glu Lys Ile Gly Ile  Val Gly Arg Thr Gly  Ser Gly Lys
    1220                1225                1230

Ser Ser  Leu Gly Met Ala Leu  Phe Arg Leu Val Glu  Leu Ser Gly
    1235                1240                1245

Gly Cys  Ile Lys Ile Asp Gly  Val Arg Ile Ser Asp  Ile Gly Leu
    1250                1255                1260

Ala Asp  Leu Arg Ser Lys Leu  Ser Ile Ile Pro Gln  Glu Pro Val
    1265                1270                1275

Leu Phe  Ser Gly Thr Val Arg  Ser Asn Leu Asp Pro  Phe Asn Gln
    1280                1285                1290

Tyr Thr  Glu Asp Gln Ile Trp  Asp Ala Leu Glu Arg  Thr His Met
    1295                1300                1305

Lys Glu  Cys Ile Ala Gln Leu  Pro Leu Lys Leu Glu  Ser Glu Val
    1310                1315                1320

Met Glu  Asn Gly Asp Asn Phe  Ser Val Gly Glu Arg  Gln Leu Leu
    1325                1330                1335

Cys Ile  Ala Arg Ala Leu Leu  Arg His Cys Lys Ile  Leu Ile Leu
    1340                1345                1350
```

```
Asp Glu  Ala Thr Ala Ala Met  Asp Thr Glu Thr Asp  Leu Leu Ile
    1355                1360                1365

Gln Glu  Thr Ile Arg Glu Ala  Phe Ala Asp Cys Thr  Met Leu Thr
    1370                1375                1380

Ile Ala  His Arg Leu His Thr  Val Leu Gly Ser Asp  Arg Ile Met
    1385                1390                1395

Val Leu  Ala Gln Gly Gln Val  Val Glu Phe Asp Thr  Pro Ser Val
    1400                1405                1410

Leu Leu  Ser Asn Asp Ser Ser  Arg Phe Tyr Ala Met  Phe Ala Ala
    1415                1420                1425

Ala Glu  Asn Lys Val Ala Val  Lys Gly
    1430                1435
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<210> 7738
<211> 208
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1626; "

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<221> source
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15440; "

<220>
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<223> /note="ENSP ID: ENSP00000371934"

<400> 7738

```
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                  10                  15
```

```
Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35                  40                  45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50                  55                  60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65                  70                  75                  80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85                  90                  95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100                 105                 110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115                 120                 125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130                 135                 140

Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145                 150                 155                 160

Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165                 170                 175

Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180                 185                 190

Gly Phe Ser Gly Pro Asn Phe Gln Asp Gly Cys Ile Leu Arg Ser Glu
        195                 200                 205


<210> 7739
<211> 225
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1626; "
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<220>
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ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15440; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376358"

<400> 7739
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1   5   10   15

Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20   25   30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35   40   45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50   55   60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65   70   75   80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85   90   95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100   105   110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115   120   125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130   135   140

```
Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145                 150                 155                 160


Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165                 170                 175


Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180                 185                 190


Gly Phe Ser Gly Pro Pro Ser Phe Gly Asp Cys Ser Ile Ser Ala Glu
        195                 200                 205


Val Cys Gly Asn Arg Leu His Cys Thr Ala Ile Leu Leu Ser Cys Phe
    210                 215                 220


Thr
225


<210> 7740
<211> 53
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      C (CFTR/MRP),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390911"

<400> 7740
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                   10                  15


Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30
```

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Ser Gln Ser Leu Thr
35 40 45

Leu Ser Pro Arg Leu
50

<210> 7741
<211> 147
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1626; "

<220>
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<223> /note="Gene Symbol: ABCC5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399726"

<400> 7741
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1 5 10 15

Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
20 25 30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
35 40 45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
50 55 60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65 70 75 80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
85 90 95

```
His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100                 105                 110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115                 120                 125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130                 135                 140

Asn Cys Arg
145
```

<210> 7742
<211> 473
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1626; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC5; "

<220>
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ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403510"

<400> 7742

```
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                   10                  15

Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35                  40                  45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50                  55                  60
```

```
Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65                  70                  75                  80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85                  90                  95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100                 105                 110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115                 120                 125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130                 135                 140

Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145                 150                 155                 160

Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165                 170                 175

Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180                 185                 190

Gly Phe Ser Gly Pro Ala Phe Met Val Lys His Leu Leu Glu Tyr Thr
        195                 200                 205

Gln Ala Thr Glu Ser Asn Leu Gln Tyr Ser Leu Leu Leu Val Leu Gly
    210                 215                 220

Leu Leu Leu Thr Glu Ile Val Arg Ser Trp Ser Leu Ala Leu Thr Trp
225                 230                 235                 240

Ala Leu Asn Tyr Arg Thr Gly Val Arg Leu Arg Gly Ala Ile Leu Thr
                245                 250                 255

Met Ala Phe Lys Lys Ile Leu Lys Leu Lys Asn Ile Lys Glu Lys Ser
            260                 265                 270

Leu Gly Glu Leu Ile Asn Ile Cys Ser Asn Asp Gly Gln Arg Met Phe
        275                 280                 285

Glu Ala Ala Ala Val Gly Ser Leu Leu Ala Gly Gly Pro Val Val Ala
```

```
    290                 295                 300

Ile Leu Gly Met Ile Tyr Asn Val Ile Ile Leu Gly Pro Thr Gly Phe
305                 310                 315                 320

Leu Gly Ser Ala Val Phe Ile Leu Phe Tyr Pro Ala Met Met Phe Ala
                325                 330                 335

Ser Arg Leu Thr Ala Tyr Phe Arg Arg Lys Cys Val Ala Ala Thr Asp
            340                 345                 350

Glu Arg Val Gln Lys Met Asn Glu Val Leu Thr Tyr Ile Lys Phe Ile
        355                 360                 365

Lys Met Tyr Ala Trp Val Lys Ala Phe Ser Gln Ser Val Gln Lys Ile
    370                 375                 380

Arg Glu Glu Glu Arg Arg Ile Leu Glu Lys Ala Gly Tyr Phe Gln Ser
385                 390                 395                 400

Ile Thr Val Gly Val Ala Pro Ile Val Val Val Ile Ala Ser Val Val
                405                 410                 415

Thr Phe Ser Val His Met Thr Leu Gly Phe Asp Leu Thr Ala Ala Gln
            420                 425                 430

Ala Phe Thr Val Val Thr Val Phe Asn Ser Met Thr Phe Ala Leu Lys
        435                 440                 445

Val Thr Pro Phe Ser Val Lys Ser Leu Ser Glu Ala Ser Val Ala Val
    450                 455                 460

Asp Arg Phe Lys Leu Pro Ser Thr Val
465                 470


<210> 7743
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1626; "

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<221> source
<223> /note="Gene Symbol: ABCC5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404302"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7743
Xaa Phe Thr Ile Lys Pro Lys Glu Lys Ile Gly Ile Val Gly Arg Thr
1 5 10 15

Gly Ser Glu His Trp Gly Thr Gln Pro Ser Thr Lys Glu Glu Gln His
20 25 30

Pro Gln Leu Cys Tyr Pro Glu Arg Ser Thr Gly Asn Ile Leu Gly Ser
35 40 45

Pro Arg Trp Gly Trp Pro Ser Ser Val Trp Trp Ser Tyr Leu Glu Ala
50 55 60

Ala Ser Arg Leu Met Glu
65 70

<210> 7744
<211> 231
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1626; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC5; "

<220>
<221> source
<223> /note="Gene Name:

ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404809"

<400> 7744

```
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                  10                  15

Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35                  40                  45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50                  55                  60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65                  70                  75                  80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85                  90                  95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100                 105                 110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115                 120                 125

Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130                 135                 140

Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145                 150                 155                 160

Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165                 170                 175

Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180                 185                 190
```

```
Gly Phe Ser Gly Pro Val Ser Ser Asn His Pro Phe Arg Gln Ser Pro
        195                 200                 205


Gly Ala Arg Pro Arg Pro Ala Leu Thr Leu Leu Phe Cys Cys Arg Gly
    210                 215                 220


Cys Ala Gln Leu Trp Ala Arg
225                 230


<210> 7745
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1626; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409913"

<400> 7745
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                   10                  15


Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30


Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Arg His Ser His Cys
        35                  40                  45


Trp Pro Gly Cys Cys
    50


<210> 7746
<211> 212
<212> PRT
<213> Homo sapiens
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<220>
<221> source
<223> /note="Payload ID: 1626; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC5; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15440; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416840"

<400> 7746

```
Met Lys Asp Ile Asp Ile Gly Lys Glu Tyr Ile Ile Pro Ser Pro Gly
1               5                  10                  15

Tyr Arg Ser Val Arg Glu Arg Thr Ser Thr Ser Gly Thr His Arg Asp
            20                  25                  30

Arg Glu Asp Ser Lys Phe Arg Arg Thr Arg Pro Leu Glu Cys Gln Asp
        35                  40                  45

Ala Leu Glu Thr Ala Ala Arg Ala Glu Gly Leu Ser Leu Asp Ala Ser
    50                  55                  60

Met His Ser Gln Leu Arg Ile Leu Asp Glu Glu His Pro Lys Gly Lys
65                  70                  75                  80

Tyr His His Gly Leu Ser Ala Leu Lys Pro Ile Arg Thr Thr Ser Lys
                85                  90                  95

His Gln His Pro Val Asp Asn Ala Gly Leu Phe Ser Cys Met Thr Phe
            100                 105                 110

Ser Trp Leu Ser Ser Leu Ala Arg Val Ala His Lys Lys Gly Glu Leu
        115                 120                 125
```

```
Ser Met Glu Asp Val Trp Ser Leu Ser Lys His Glu Ser Ser Asp Val
    130                 135                 140

Asn Cys Arg Arg Leu Glu Arg Leu Trp Gln Glu Glu Leu Asn Glu Val
145                 150                 155                 160

Gly Pro Asp Ala Ala Ser Leu Arg Arg Val Val Trp Ile Phe Cys Arg
                165                 170                 175

Thr Arg Leu Ile Leu Ser Ile Val Cys Leu Met Ile Thr Gln Leu Ala
            180                 185                 190

Gly Phe Ser Gly Pro Leu Ala Trp Cys Cys Gln Asp Leu Asp Leu Gly
        195                 200                 205

Gly Val Ser Leu
    210
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<210> 7747
<211> 1503
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 6; "

<220>
<221> source
<223> /note="Uniprot ID: O95255; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000205557"

<400> 7747

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Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1               5                   10                  15
```

```
Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
            20                  25                  30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
        35                  40                  45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
    50                  55                  60

Met Ser Pro Leu Phe Lys Ala Lys Met Val Leu Gly Phe Ala Leu Ile
65                  70                  75                  80

Val Leu Cys Thr Ser Ser Val Ala Val Ala Leu Trp Lys Ile Gln Gln
                85                  90                  95

Gly Thr Pro Glu Ala Pro Glu Phe Leu Ile His Pro Thr Val Trp Leu
            100                 105                 110

Thr Thr Met Ser Phe Ala Val Phe Leu Ile His Thr Glu Arg Lys Lys
        115                 120                 125

Gly Val Gln Ser Ser Gly Val Leu Phe Gly Tyr Trp Leu Leu Cys Phe
    130                 135                 140

Val Leu Pro Ala Thr Asn Ala Ala Gln Gln Ala Ser Gly Ala Gly Phe
145                 150                 155                 160

Gln Ser Asp Pro Val Arg His Leu Ser Thr Tyr Leu Cys Leu Ser Leu
                165                 170                 175

Val Val Ala Gln Phe Val Leu Ser Cys Leu Ala Asp Gln Pro Pro Phe
            180                 185                 190

Phe Pro Glu Asp Pro Gln Gln Ser Asn Pro Cys Pro Glu Thr Gly Ala
        195                 200                 205

Ala Phe Pro Ser Lys Ala Thr Phe Trp Trp Val Ser Gly Leu Val Trp
    210                 215                 220

Arg Gly Tyr Arg Arg Pro Leu Arg Pro Lys Asp Leu Trp Ser Leu Gly
225                 230                 235                 240

Arg Glu Asn Ser Ser Glu Glu Leu Val Ser Arg Leu Glu Lys Glu Trp
```

```
                245                 250                 255

Met Arg Asn Arg Ser Ala Ala Arg Arg His Asn Lys Ala Ile Ala Phe
            260                 265                 270

Lys Arg Lys Gly Gly Ser Gly Met Lys Ala Pro Glu Thr Glu Pro Phe
        275                 280                 285

Leu Arg Gln Glu Gly Ser Gln Trp Arg Pro Leu Leu Lys Ala Ile Trp
    290                 295                 300

Gln Val Phe His Ser Thr Phe Leu Leu Gly Thr Leu Ser Leu Ile Ile
305                 310                 315                 320

Ser Asp Val Phe Arg Phe Thr Val Pro Lys Leu Leu Ser Leu Phe Leu
                325                 330                 335

Glu Phe Ile Gly Asp Pro Lys Pro Pro Ala Trp Lys Gly Tyr Leu Leu
            340                 345                 350

Ala Val Leu Met Phe Leu Ser Ala Cys Leu Gln Thr Leu Phe Glu Gln
        355                 360                 365

Gln Asn Met Tyr Arg Leu Lys Val Leu Gln Met Arg Leu Arg Ser Ala
    370                 375                 380

Ile Thr Gly Leu Val Tyr Arg Lys Val Leu Ala Leu Ser Ser Gly Ser
385                 390                 395                 400

Arg Lys Ala Ser Ala Val Gly Asp Val Val Asn Leu Val Ser Val Asp
                405                 410                 415

Val Gln Arg Leu Thr Glu Ser Val Leu Tyr Leu Asn Gly Leu Trp Leu
            420                 425                 430

Pro Leu Val Trp Ile Val Val Cys Phe Val Tyr Leu Trp Gln Leu Leu
        435                 440                 445

Gly Pro Ser Ala Leu Thr Ala Ile Ala Val Phe Leu Ser Leu Leu Pro
    450                 455                 460

Leu Asn Phe Phe Ile Ser Lys Lys Arg Asn His His Gln Glu Glu Gln
465                 470                 475                 480
```

```
Met Arg Gln Lys Asp Ser Arg Ala Arg Leu Thr Ser Ser Ile Leu Arg
                485                 490                 495

Asn Ser Lys Thr Ile Lys Phe His Gly Trp Glu Gly Ala Phe Leu Asp
            500                 505                 510

Arg Val Leu Gly Ile Arg Gly Gln Glu Leu Gly Ala Leu Arg Thr Ser
        515                 520                 525

Gly Leu Leu Phe Ser Val Ser Leu Val Ser Phe Gln Val Ser Thr Phe
    530                 535                 540

Leu Val Ala Leu Val Val Phe Ala Val His Thr Leu Val Ala Glu Asn
545                 550                 555                 560

Ala Met Asn Ala Glu Lys Ala Phe Val Thr Leu Thr Val Leu Asn Ile
                565                 570                 575

Leu Asn Lys Ala Gln Ala Phe Leu Pro Phe Ser Ile His Ser Leu Val
            580                 585                 590

Gln Ala Arg Val Ser Phe Asp Arg Leu Val Thr Phe Leu Cys Leu Glu
        595                 600                 605

Glu Val Asp Pro Gly Val Val Asp Ser Ser Ser Ser Gly Ser Ala Ala
    610                 615                 620

Gly Lys Asp Cys Ile Thr Ile His Ser Ala Thr Phe Ala Trp Ser Gln
625                 630                 635                 640

Glu Ser Pro Pro Cys Leu His Arg Ile Asn Leu Thr Val Pro Gln Gly
                645                 650                 655

Cys Leu Leu Ala Val Val Gly Pro Val Gly Ala Gly Lys Ser Ser Leu
            660                 665                 670

Leu Ser Ala Leu Leu Gly Glu Leu Ser Lys Val Glu Gly Phe Val Ser
        675                 680                 685

Ile Glu Gly Ala Val Ala Tyr Val Pro Gln Glu Ala Trp Val Gln Asn
    690                 695                 700
```

```
Thr Ser Val Val Glu Asn Val Cys Phe Gly Gln Glu Leu Asp Pro Pro
705                 710                 715                 720

Trp Leu Glu Arg Val Leu Glu Ala Cys Ala Leu Gln Pro Asp Val Asp
                725                 730                 735

Ser Phe Pro Glu Gly Ile His Thr Ser Ile Gly Glu Gln Gly Met Asn
            740                 745                 750

Leu Ser Gly Gly Gln Lys Gln Arg Leu Ser Leu Ala Arg Ala Val Tyr
        755                 760                 765

Arg Lys Ala Ala Val Tyr Leu Leu Asp Asp Pro Leu Ala Ala Leu Asp
    770                 775                 780

Ala His Val Gly Gln His Val Phe Asn Gln Val Ile Gly Pro Gly Gly
785                 790                 795                 800

Leu Leu Gln Gly Thr Thr Arg Ile Leu Val Thr His Ala Leu His Ile
                805                 810                 815

Leu Pro Gln Ala Asp Trp Ile Ile Val Leu Ala Asn Gly Ala Ile Ala
            820                 825                 830

Glu Met Gly Ser Tyr Gln Glu Leu Leu Gln Arg Lys Gly Ala Leu Met
        835                 840                 845

Cys Leu Leu Asp Gln Ala Arg Gln Pro Gly Asp Arg Gly Glu Gly Glu
    850                 855                 860

Thr Glu Pro Gly Thr Ser Thr Lys Asp Pro Arg Gly Thr Ser Ala Gly
865                 870                 875                 880

Arg Arg Pro Glu Leu Arg Arg Glu Arg Ser Ile Lys Ser Val Pro Glu
                885                 890                 895

Lys Asp Arg Thr Thr Ser Glu Ala Gln Thr Glu Val Pro Leu Asp Asp
            900                 905                 910

Pro Asp Arg Ala Gly Trp Pro Ala Gly Lys Asp Ser Ile Gln Tyr Gly
        915                 920                 925
```

```
Arg Val Lys Ala Thr Val His Leu Ala Tyr Leu Arg Ala Val Gly Thr
    930                 935                 940

Pro Leu Cys Leu Tyr Ala Leu Phe Leu Phe Leu Cys Gln Gln Val Ala
945                 950                 955                 960

Ser Phe Cys Arg Gly Tyr Trp Leu Ser Leu Trp Ala Asp Asp Pro Ala
                965                 970                 975

Val Gly Gly Gln Gln Thr Gln Ala Ala Leu Arg Gly Gly Ile Phe Gly
            980                 985                 990

Leu Leu Gly Cys Leu Gln Ala Ile  Gly Leu Phe Ala Ser  Met Ala
Ala
        995                 1000                1005

Val Leu  Leu Gly Gly Ala Arg  Ala Ser Arg Leu Leu  Phe Gln Arg
    1010                1015                1020

Leu Leu  Trp Asp Val Val Arg  Ser Pro Ile Ser Phe  Phe Glu Arg
    1025                1030                1035

Thr Pro  Ile Gly His Leu Leu  Asn Arg Phe Ser Lys  Glu Thr Asp
    1040                1045                1050

Thr Val  Asp Val Asp Ile Pro  Asp Lys Leu Arg Ser  Leu Leu Met
    1055                1060                1065

Tyr Ala  Phe Gly Leu Leu Glu  Val Ser Leu Val Val  Ala Val Ala
    1070                1075                1080

Thr Pro  Leu Ala Thr Val Ala  Ile Leu Pro Leu Phe  Leu Leu Tyr
    1085                1090                1095

Ala Gly  Phe Gln Ser Leu Tyr  Val Val Ser Ser Cys  Gln Leu Arg
    1100                1105                1110

Arg Leu  Glu Ser Ala Ser Tyr  Ser Ser Val Cys Ser  His Met Ala
    1115                1120                1125

Glu Thr  Phe Gln Gly Ser Thr  Val Val Arg Ala Phe  Arg Thr Gln
    1130                1135                1140
```

```
Ala Pro  Phe Val Ala Gln Asn  Asn Ala Arg Val Asp  Glu Ser Gln
    1145                1150                1155

Arg Ile  Ser Phe Pro Arg Leu  Val Ala Asp Arg Trp  Leu Ala Ala
    1160                1165                1170

Asn Val  Glu Leu Leu Gly Asn  Gly Leu Val Phe Ala  Ala Ala Thr
    1175                1180                1185

Cys Ala  Val Leu Ser Lys Ala  His Leu Ser Ala Gly  Leu Val Gly
    1190                1195                1200

Phe Ser  Val Ser Ala Ala Leu  Gln Val Thr Gln Thr  Leu Gln Trp
    1205                1210                1215

Val Val  Arg Asn Trp Thr Asp  Leu Glu Asn Ser Ile  Val Ser Val
    1220                1225                1230

Glu Arg  Met Gln Asp Tyr Ala  Trp Thr Pro Lys Glu  Ala Pro Trp
    1235                1240                1245

Arg Leu  Pro Thr Cys Ala Ala  Gln Pro Pro Trp Pro  Gln Gly Gly
    1250                1255                1260

Gln Ile  Glu Phe Arg Asp Phe  Gly Leu Arg Tyr Arg  Pro Glu Leu
    1265                1270                1275

Pro Leu  Ala Val Gln Gly Val  Ser Phe Lys Ile His  Ala Gly Glu
    1280                1285                1290

Lys Val  Gly Ile Val Gly Arg  Thr Gly Ala Gly Lys  Ser Ser Leu
    1295                1300                1305

Ala Ser  Gly Leu Leu Arg Leu  Gln Glu Ala Ala Glu  Gly Gly Ile
    1310                1315                1320

Trp Ile  Asp Gly Val Pro Ile  Ala His Val Gly Leu  His Thr Leu
    1325                1330                1335

Arg Ser  Arg Ile Ser Ile Ile  Pro Gln Asp Pro Ile  Leu Phe Pro
    1340                1345                1350

Gly Ser  Leu Arg Met Asn Leu  Asp Leu Leu Gln Glu  His Ser Asp
```

```
    1355                1360                1365

Glu Ala  Ile Trp Ala Ala Leu  Glu Thr Val Gln Leu  Lys Ala Leu
    1370                1375                1380

Val Ala  Ser Leu Pro Gly Gln  Leu Gln Tyr Lys Cys  Ala Asp Arg
    1385                1390                1395

Gly Glu  Asp Leu Ser Val Gly  Gln Lys Gln Leu Leu  Cys Leu Ala
    1400                1405                1410

Arg Ala  Leu Leu Arg Lys Thr  Gln Ile Leu Ile Leu  Asp Glu Ala
    1415                1420                1425

Thr Ala  Ala Val Asp Pro Gly  Thr Glu Leu Gln Met  Gln Ala Met
    1430                1435                1440

Leu Gly  Ser Trp Phe Ala Gln  Cys Thr Val Leu Leu  Ile Ala His
    1445                1450                1455

Arg Leu  Arg Ser Val Met Asp  Cys Ala Arg Val Leu  Val Met Asp
    1460                1465                1470

Lys Gly  Gln Val Ala Glu Ser  Gly Ser Pro Ala Gln  Leu Leu Ala
    1475                1480                1485

Gln Lys  Gly Leu Phe Tyr Arg  Leu Ala Gln Glu Ser  Gly Leu Val
    1490                1495                1500


<210> 7748
<211> 871
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
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member 6; "

<220>
<221> source
<223> /note="Uniprot ID: O95255; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405002"

<400> 7748
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1   5   10   15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
            20   25   30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
        35   40   45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
    50   55   60

Met Ser Pro Leu Phe Lys Ala Lys Met Val Leu Gly Phe Ala Leu Ile
65   70   75   80

Val Leu Cys Thr Ser Ser Val Ala Val Ala Leu Trp Lys Ile Gln Gln
                85   90   95

Gly Thr Pro Glu Ala Pro Glu Phe Leu Ile His Pro Thr Val Trp Leu
            100   105   110

Thr Thr Met Ser Phe Ala Val Phe Leu Ile His Thr Glu Arg Lys Lys
        115   120   125

Gly Val Gln Ser Ser Gly Val Leu Phe Gly Tyr Trp Leu Leu Cys Phe
    130   135   140

Val Leu Pro Ala Thr Asn Ala Ala Gln Gln Ala Ser Gly Ala Gly Phe
145   150   155   160

Gln Ser Asp Pro Val Arg His Leu Ser Thr Tyr Leu Cys Leu Ser Leu
                165   170   175

Val Val Ala Gln Phe Val Leu Ser Cys Leu Ala Asp Gln Pro Pro Phe
            180   185   190

```
Phe Pro Glu Asp Pro Gln Gln Ser Asn Pro Cys Pro Glu Thr Gly Ala
        195                 200                 205

Ala Phe Pro Ser Lys Ala Thr Phe Trp Trp Val Ser Gly Leu Val Trp
    210                 215                 220

Arg Gly Tyr Arg Arg Pro Leu Arg Pro Lys Asp Leu Trp Ser Leu Gly
225                 230                 235                 240

Arg Glu Asn Ser Ser Glu Glu Leu Val Ser Arg Leu Glu Lys Glu Trp
                245                 250                 255

Met Arg Asn Arg Ser Ala Ala Arg Arg His Asn Lys Ala Ile Ala Phe
            260                 265                 270

Lys Arg Lys Gly Gly Ser Gly Met Lys Ala Pro Glu Thr Glu Pro Phe
        275                 280                 285

Leu Arg Gln Glu Gly Ser Gln Trp Arg Pro Leu Leu Lys Ala Ile Trp
    290                 295                 300

Gln Val Phe His Ser Thr Phe Leu Leu Gly Thr Leu Ser Leu Ile Ile
305                 310                 315                 320

Ser Asp Val Phe Arg Phe Thr Val Pro Lys Leu Leu Ser Leu Phe Leu
                325                 330                 335

Glu Phe Ile Gly Asp Pro Lys Pro Pro Ala Trp Lys Gly Tyr Leu Leu
            340                 345                 350

Ala Val Leu Met Phe Leu Ser Ala Cys Leu Gln Thr Leu Phe Glu Gln
        355                 360                 365

Gln Asn Met Tyr Arg Leu Lys Val Leu Gln Met Arg Leu Arg Ser Ala
    370                 375                 380

Ile Thr Gly Leu Val Tyr Arg Lys Val Leu Ala Leu Ser Ser Gly Ser
385                 390                 395                 400

Arg Lys Ala Ser Ala Val Gly Asp Val Val Asn Leu Val Ser Val Asp
                405                 410                 415
```

```
Val Gln Arg Leu Thr Glu Ser Val Leu Tyr Leu Asn Gly Leu Trp Leu
            420                 425                 430

Pro Leu Val Trp Ile Val Val Cys Phe Val Tyr Leu Trp Gln Leu Leu
        435                 440                 445

Gly Pro Ser Ala Leu Thr Ala Ile Ala Val Phe Leu Ser Leu Leu Pro
    450                 455                 460

Leu Asn Phe Phe Ile Ser Lys Lys Arg Asn His His Gln Glu Glu Gln
465                 470                 475                 480

Met Arg Gln Lys Asp Ser Arg Ala Arg Leu Thr Ser Ser Ile Leu Arg
                485                 490                 495

Asn Ser Lys Thr Ile Lys Phe His Gly Trp Glu Gly Ala Phe Leu Asp
            500                 505                 510

Arg Val Leu Gly Ile Arg Gly Gln Glu Leu Gly Ala Leu Arg Thr Ser
        515                 520                 525

Gly Leu Leu Phe Ser Val Ser Leu Val Ser Phe Gln Val Ser Thr Phe
    530                 535                 540

Leu Val Ala Leu Val Val Phe Ala Val His Thr Leu Val Ala Glu Asn
545                 550                 555                 560

Ala Met Asn Ala Glu Lys Ala Phe Val Thr Leu Thr Val Leu Asn Ile
                565                 570                 575

Leu Asn Lys Ala Gln Ala Phe Leu Pro Phe Ser Ile His Ser Leu Val
            580                 585                 590

Gln Ala Arg Val Ser Phe Asp Arg Leu Val Thr Phe Leu Cys Leu Glu
        595                 600                 605

Glu Val Asp Pro Gly Val Val Asp Ser Ser Ser Ser Gly Ser Ala Ala
    610                 615                 620

Gly Lys Asp Cys Ile Thr Ile His Ser Ala Thr Phe Ala Trp Ser Gln
625                 630                 635                 640
```

```
Glu Ser Pro Pro Cys Leu His Arg Ile Asn Leu Thr Val Pro Gln Gly
                645                 650                 655

Cys Leu Leu Ala Val Val Gly Pro Val Gly Ala Gly Lys Ser Ser Leu
            660                 665                 670

Leu Ser Ala Leu Leu Gly Glu Leu Ser Lys Val Glu Gly Phe Val Ser
        675                 680                 685

Ile Glu Gly Ala Val Ala Tyr Val Pro Gln Glu Ala Trp Val Gln Asn
    690                 695                 700

Thr Ser Val Val Glu Asn Val Cys Phe Gly Gln Glu Leu Asp Pro Pro
705                 710                 715                 720

Trp Leu Glu Arg Val Leu Glu Ala Cys Ala Leu Gln Pro Asp Val Asp
                725                 730                 735

Ser Phe Pro Glu Gly Ile His Thr Ser Ile Gly Glu Gln Gly Met Asn
            740                 745                 750

Leu Ser Gly Gly Gln Lys Gln Arg Leu Ser Leu Ala Arg Ala Val Tyr
        755                 760                 765

Arg Lys Ala Ala Val Tyr Leu Leu Asp Asp Pro Leu Ala Ala Leu Asp
    770                 775                 780

Ala His Val Gly Gln His Val Phe Asn Gln Val Ile Gly Pro Gly Gly
785                 790                 795                 800

Leu Leu Gln Gly Thr Lys Gln Asn Leu Gly Pro Ala Pro Arg Thr Pro
                805                 810                 815

Glu Ala Pro Leu Gln Ala Gly Gly Pro Ser Leu Asp Ala Arg Gly Pro
            820                 825                 830

Ser Ser Gln Ser Leu Arg Arg Thr Val Pro Leu Gln Lys Pro Arg Gln
        835                 840                 845

Arg Phe Leu Trp Met Thr Leu Thr Gly Gln Asp Gly Gln Gln Glu Arg
    850                 855                 860

Thr Ala Ser Asn Thr Ala Gly
```

865 870

<210> 7749
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459243"

<400> 7749
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1 5 10 15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
20 25 30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
35 40 45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
50 55 60

Met Ser Pro Leu Phe Lys Ala Lys Met Arg Asn Gln Asn Ile Leu Glu
65 70 75 80

Arg Pro

<210> 7750
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 6; "

<220>
<221> source
<223> /note="Uniprot ID: O95255; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461686"

<400> 7750
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1   5   10   15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
            20   25   30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
        35   40   45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
    50   55   60

Met Ser Pro Leu Phe Lys Ala Lys Met Val Ala Ala Ile Pro Gly Ser
65   70   75   80

Leu Glu Pro Gly Asn Val Arg Gly Arg Gln Gly Thr Gly Trp Asn Leu
                85   90   95

Val Lys Ser

<210> 7751
<211> 1503
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479163"

<400> 7751
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1 5 10 15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
20 25 30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
35 40 45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
50 55 60

Met Ser Pro Leu Phe Lys Ala Lys Met Val Leu Gly Phe Ala Leu Ile
65 70 75 80

Val Leu Cys Thr Ser Ser Val Ala Val Ala Leu Trp Lys Ile Gln Gln
85 90 95

Gly Thr Pro Glu Ala Pro Glu Phe Leu Ile His Pro Thr Val Trp Leu
100 105 110

Thr Thr Met Ser Phe Ala Val Phe Leu Ile His Thr Glu Arg Lys Lys
115 120 125

Gly Val Gln Ser Ser Gly Val Leu Phe Gly Tyr Trp Leu Leu Cys Phe
130 135 140

Val Leu Pro Ala Thr Asn Ala Ala Gln Gln Ala Ser Gly Ala Gly Phe

145 150 155 160

Gln Ser Asp Pro Val Arg His Leu Ser Thr Tyr Leu Cys Leu Ser Leu
165 170 175

Val Val Ala Gln Phe Val Leu Ser Cys Leu Ala Asp Gln Pro Pro Phe
180 185 190

Phe Pro Glu Asp Pro Gln Gln Ser Asn Pro Cys Pro Glu Thr Gly Ala
195 200 205

Ala Phe Pro Ser Lys Ala Thr Phe Trp Trp Val Ser Gly Leu Val Trp
210 215 220

Arg Gly Tyr Arg Arg Pro Leu Arg Pro Lys Asp Leu Trp Ser Leu Gly
225 230 235 240

Arg Glu Asn Ser Ser Glu Glu Leu Val Ser Arg Leu Glu Lys Glu Trp
245 250 255

Met Arg Asn Arg Ser Ala Ala Arg Arg His Asn Lys Ala Ile Ala Phe
260 265 270

Lys Arg Lys Gly Gly Ser Gly Met Lys Ala Pro Glu Thr Glu Pro Phe
275 280 285

Leu Arg Gln Glu Gly Ser Gln Trp Arg Pro Leu Leu Lys Ala Ile Trp
290 295 300

Gln Val Phe His Ser Thr Phe Leu Leu Gly Thr Leu Ser Leu Ile Ile
305 310 315 320

Ser Asp Val Phe Arg Phe Thr Val Pro Lys Leu Leu Ser Leu Phe Leu
325 330 335

Glu Phe Ile Gly Asp Pro Lys Pro Pro Ala Trp Lys Gly Tyr Leu Leu
340 345 350

Ala Val Leu Met Phe Leu Ser Ala Cys Leu Gln Thr Leu Phe Glu Gln
355 360 365

Gln Asn Met Tyr Arg Leu Lys Val Leu Gln Met Arg Leu Arg Ser Ala
370 375 380

```
Ile Thr Gly Leu Val Tyr Arg Lys Val Leu Ala Leu Ser Ser Gly Ser
385                 390                 395                 400

Arg Lys Ala Ser Ala Val Gly Asp Val Val Asn Leu Val Ser Val Asp
                405                 410                 415

Val Gln Arg Leu Thr Glu Ser Val Leu Tyr Leu Asn Gly Leu Trp Leu
            420                 425                 430

Pro Leu Val Trp Ile Val Val Cys Phe Val Tyr Leu Trp Gln Leu Leu
        435                 440                 445

Gly Pro Ser Ala Leu Thr Ala Ile Ala Val Phe Leu Ser Leu Leu Pro
    450                 455                 460

Leu Asn Phe Phe Ile Ser Lys Lys Arg Asn His His Gln Glu Glu Gln
465                 470                 475                 480

Met Arg Gln Lys Asp Ser Arg Ala Arg Leu Thr Ser Ser Ile Leu Arg
                485                 490                 495

Asn Ser Lys Thr Ile Lys Phe His Gly Trp Glu Gly Ala Phe Leu Asp
            500                 505                 510

Arg Val Leu Gly Ile Arg Gly Gln Glu Leu Gly Ala Leu Arg Thr Ser
        515                 520                 525

Gly Leu Leu Phe Ser Val Ser Leu Val Ser Phe Gln Val Ser Thr Phe
    530                 535                 540

Leu Val Ala Leu Val Val Phe Ala Val His Thr Leu Val Ala Glu Asn
545                 550                 555                 560

Ala Met Asn Ala Glu Lys Ala Phe Val Thr Leu Thr Val Leu Asn Ile
                565                 570                 575

Leu Asn Lys Ala Gln Ala Phe Leu Pro Phe Ser Ile His Ser Leu Val
            580                 585                 590

Gln Ala Arg Val Ser Phe Asp Arg Leu Val Thr Phe Leu Cys Leu Glu
        595                 600                 605
```

```
Glu Val Asp Pro Gly Ala Val Asp Ser Ser Ser Ser Gly Ser Ala Ala
    610                 615                 620

Gly Lys Asp Cys Ile Thr Ile Gln Ser Ala Thr Phe Ala Trp Ser Gln
625                 630                 635                 640

Glu Ser Pro Pro Cys Leu His Arg Ile Asn Leu Thr Val Pro Gln Gly
                645                 650                 655

Cys Leu Leu Ala Val Val Gly Pro Val Gly Ala Gly Lys Ser Ser Leu
            660                 665                 670

Leu Ser Ala Leu Leu Gly Glu Leu Ser Lys Val Glu Gly Phe Val Ser
        675                 680                 685

Ile Glu Gly Ala Val Ala Tyr Val Pro Gln Glu Ala Trp Val Gln Asn
    690                 695                 700

Thr Ser Val Val Glu Asn Val Cys Phe Gly Gln Glu Leu Asp Pro Pro
705                 710                 715                 720

Trp Leu Glu Arg Val Leu Glu Ala Cys Ala Leu Gln Pro Asp Val Asp
                725                 730                 735

Ser Phe Pro Glu Gly Ile His Thr Ser Ile Gly Glu Gln Gly Met Asn
            740                 745                 750

Leu Ser Gly Gly Gln Lys Gln Arg Leu Ser Leu Ala Arg Ala Val Tyr
        755                 760                 765

Arg Lys Ala Ala Val Tyr Leu Leu Asp Asp Pro Leu Ala Ala Leu Asp
    770                 775                 780

Ala His Val Gly Gln His Val Phe Asn Gln Val Ile Gly Pro Gly Gly
785                 790                 795                 800

Leu Leu Gln Gly Thr Thr Arg Ile Leu Val Thr His Ala Leu His Ile
                805                 810                 815

Leu Pro Gln Ala Asp Trp Ile Ile Val Leu Ala Asn Gly Ala Ile Ala
            820                 825                 830
```

```
Glu Met Gly Ser Tyr Gln Glu Leu Leu Gln Arg Lys Gly Ala Leu Val
        835                 840                 845

Cys Leu Leu Asp Gln Ala Arg Gln Pro Gly Asp Arg Gly Glu Gly Glu
    850                 855                 860

Thr Glu Pro Gly Thr Ser Thr Lys Asp Pro Arg Gly Thr Ser Ala Gly
865                 870                 875                 880

Arg Arg Pro Glu Leu Arg Arg Glu Arg Ser Ile Lys Ser Val Pro Glu
                885                 890                 895

Lys Asp Arg Thr Thr Ser Glu Ala Gln Thr Glu Val Pro Leu Asp Asp
            900                 905                 910

Pro Asp Arg Ala Gly Trp Pro Ala Gly Lys Asp Ser Ile Gln Tyr Gly
        915                 920                 925

Arg Val Lys Ala Thr Val His Leu Ala Tyr Leu Arg Ala Val Gly Thr
    930                 935                 940

Pro Leu Cys Leu Tyr Ala Leu Phe Leu Phe Leu Cys Gln Gln Val Ala
945                 950                 955                 960

Ser Phe Cys Arg Gly Tyr Trp Leu Ser Leu Trp Ala Asp Asp Pro Ala
                965                 970                 975

Val Gly Gly Gln Gln Thr Gln Ala Ala Leu Arg Gly Gly Ile Phe Gly
            980                 985                 990

Leu Leu Gly Cys Leu Gln Ala Ile  Gly Leu Phe Ala Ser  Met Ala
Ala
        995                 1000                1005

Val Leu  Leu Gly Gly Ala Arg  Ala Ser Arg Leu Leu  Phe Gln Arg
    1010                1015                1020

Leu Leu  Trp Asp Val Val Arg  Ser Pro Ile Ser Phe  Phe Glu Arg
    1025                1030                1035

Thr Pro  Ile Gly His Leu Leu  Asn Arg Phe Ser Lys  Glu Thr Asp
    1040                1045                1050
```

```
Thr Val  Asp Val Asp Ile Pro  Asp Lys Leu Arg Ser  Leu Leu Met
    1055                1060                1065

Tyr Ala  Phe Gly Leu Leu Glu  Val Ser Leu Val Val  Ala Val Ala
    1070                1075                1080

Thr Pro  Leu Ala Thr Val Ala  Ile Leu Pro Leu Phe  Leu Leu Tyr
    1085                1090                1095

Ala Gly  Phe Gln Ser Leu Tyr  Val Val Ser Ser Cys  Gln Leu Arg
    1100                1105                1110

Arg Leu  Glu Ser Ala Ser Tyr  Ser Ser Val Cys Ser  His Met Ala
    1115                1120                1125

Glu Thr  Phe Gln Gly Ser Thr  Val Val Arg Ala Phe  Arg Thr Gln
    1130                1135                1140

Ala Pro  Phe Val Ala Gln Asn  Asn Ala Arg Val Asp  Glu Ser Gln
    1145                1150                1155

Arg Ile  Ser Phe Pro Arg Leu  Val Ala Asp Arg Trp  Leu Ala Ala
    1160                1165                1170

Asn Val  Glu Leu Leu Gly Asn  Gly Leu Val Phe Ala  Ala Ala Thr
    1175                1180                1185

Cys Ala  Val Leu Ser Lys Ala  His Leu Ser Ala Gly  Leu Val Gly
    1190                1195                1200

Phe Ser  Val Ser Ala Ala Leu  Gln Val Thr Gln Thr  Leu Gln Trp
    1205                1210                1215

Val Val  Arg Asn Trp Thr Asp  Leu Glu Asn Ser Ile  Val Ser Val
    1220                1225                1230

Glu Arg  Met Gln Asp Tyr Ala  Trp Thr Pro Lys Glu  Ala Pro Trp
    1235                1240                1245

Arg Leu  Pro Thr Cys Ala Ala  Gln Pro Pro Trp Pro  Gln Gly Gly
    1250                1255                1260

Gln Ile  Glu Phe Gln Asp Phe  Gly Leu Arg Tyr Arg  Pro Glu Leu
```

1265 1270 1275

Pro Leu Ala Val Gln Gly Val Ser Phe Lys Ile His Ala Gly Glu
1280 1285 1290

Lys Val Gly Ile Val Gly Arg Thr Gly Ala Gly Lys Ser Ser Leu
1295 1300 1305

Ala Ser Gly Leu Leu Arg Leu Gln Glu Ala Ala Glu Gly Gly Ile
1310 1315 1320

Trp Ile Asp Gly Val Pro Ile Ala His Val Gly Leu His Thr Leu
1325 1330 1335

Arg Ser Arg Ile Ser Ile Ile Pro Gln Asp Pro Ile Leu Phe Pro
1340 1345 1350

Gly Ser Leu Arg Met Asn Leu Asp Leu Leu Gln Glu His Ser Asp
1355 1360 1365

Glu Ala Ile Trp Ala Ala Leu Glu Thr Val Gln Leu Lys Ala Leu
1370 1375 1380

Val Ala Ser Leu Pro Gly Gln Leu Gln Tyr Lys Cys Ala Asp Arg
1385 1390 1395

Gly Glu Asp Leu Ser Val Gly Gln Lys Gln Leu Leu Cys Leu Ala
1400 1405 1410

Arg Ala Leu Leu Arg Lys Thr Gln Ile Leu Ile Leu Asp Glu Ala
1415 1420 1425

Thr Ala Ala Val Asp Pro Gly Thr Glu Leu Gln Met Gln Ala Met
1430 1435 1440

Leu Gly Ser Trp Phe Ala Gln Cys Thr Val Leu Leu Ile Ala His
1445 1450 1455

Arg Leu Arg Ser Val Met Asp Cys Ala Arg Val Leu Val Met Asp
1460 1465 1470

Lys Gly Gln Val Ala Glu Ser Gly Ser Pro Ala Gln Leu Leu Ala
1475 1480 1485

```
Gln Lys  Gly Leu Phe Tyr Arg  Leu Ala Gln Glu Ser  Gly Leu Val
    1490                 1495                 1500


<210> 7752
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
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      C (CFTR/MRP),
      member 6; "

<220>
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<223> /note="Uniprot ID:  O95255; "

<220>
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<223> /note="ENSP ID: ENSP00000481979"

<400> 7752
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1               5                  10                  15


Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
            20                  25                  30


Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
        35                  40                  45


Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
    50                  55                  60


Met Ser Pro Leu Phe Lys Ala Lys Met Val Ala Ala Ile Pro Gly Ser
65                  70                  75                  80


Leu Glu Pro Gly Asn Val Arg Gly Arg Gln Gly Thr Gly Trp Asn Leu
                85                  90                  95
```

Val Lys Ser

<210> 7753
<211> 871
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ATP-binding cassette, sub-family
C (CFTR/MRP),
member 6; "

<220>
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<223> /note="Uniprot ID: O95255; "

<220>
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<400> 7753
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1   5   10   15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
            20   25   30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
        35   40   45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
    50   55   60

Met Ser Pro Leu Phe Lys Ala Lys Met Val Leu Gly Phe Ala Leu Ile
65   70   75   80

Val Leu Cys Thr Ser Ser Val Ala Val Ala Leu Trp Lys Ile Gln Gln
                85   90   95

```
Gly Thr Pro Glu Ala Pro Glu Phe Leu Ile His Pro Thr Val Trp Leu
            100                 105                 110

Thr Thr Met Ser Phe Ala Val Phe Leu Ile His Thr Glu Arg Lys Lys
        115                 120                 125

Gly Val Gln Ser Ser Gly Val Leu Phe Gly Tyr Trp Leu Leu Cys Phe
    130                 135                 140

Val Leu Pro Ala Thr Asn Ala Ala Gln Gln Ala Ser Gly Ala Gly Phe
145                 150                 155                 160

Gln Ser Asp Pro Val Arg His Leu Ser Thr Tyr Leu Cys Leu Ser Leu
                165                 170                 175

Val Val Ala Gln Phe Val Leu Ser Cys Leu Ala Asp Gln Pro Pro Phe
            180                 185                 190

Phe Pro Glu Asp Pro Gln Gln Ser Asn Pro Cys Pro Glu Thr Gly Ala
        195                 200                 205

Ala Phe Pro Ser Lys Ala Thr Phe Trp Trp Val Ser Gly Leu Val Trp
    210                 215                 220

Arg Gly Tyr Arg Arg Pro Leu Arg Pro Lys Asp Leu Trp Ser Leu Gly
225                 230                 235                 240

Arg Glu Asn Ser Ser Glu Glu Leu Val Ser Arg Leu Glu Lys Glu Trp
                245                 250                 255

Met Arg Asn Arg Ser Ala Ala Arg Arg His Asn Lys Ala Ile Ala Phe
            260                 265                 270

Lys Arg Lys Gly Gly Ser Gly Met Lys Ala Pro Glu Thr Glu Pro Phe
        275                 280                 285

Leu Arg Gln Glu Gly Ser Gln Trp Arg Pro Leu Leu Lys Ala Ile Trp
    290                 295                 300

Gln Val Phe His Ser Thr Phe Leu Leu Gly Thr Leu Ser Leu Ile Ile
305                 310                 315                 320
```

Ser Asp Val Phe Arg Phe Thr Val Pro Lys Leu Leu Ser Leu Phe Leu
325 330 335

Glu Phe Ile Gly Asp Pro Lys Pro Pro Ala Trp Lys Gly Tyr Leu Leu
340 345 350

Ala Val Leu Met Phe Leu Ser Ala Cys Leu Gln Thr Leu Phe Glu Gln
355 360 365

Gln Asn Met Tyr Arg Leu Lys Val Leu Gln Met Arg Leu Arg Ser Ala
370 375 380

Ile Thr Gly Leu Val Tyr Arg Lys Val Leu Ala Leu Ser Ser Gly Ser
385 390 395 400

Arg Lys Ala Ser Ala Val Gly Asp Val Val Asn Leu Val Ser Val Asp
405 410 415

Val Gln Arg Leu Thr Glu Ser Val Leu Tyr Leu Asn Gly Leu Trp Leu
420 425 430

Pro Leu Val Trp Ile Val Val Cys Phe Val Tyr Leu Trp Gln Leu Leu
435 440 445

Gly Pro Ser Ala Leu Thr Ala Ile Ala Val Phe Leu Ser Leu Leu Pro
450 455 460

Leu Asn Phe Phe Ile Ser Lys Lys Arg Asn His His Gln Glu Glu Gln
465 470 475 480

Met Arg Gln Lys Asp Ser Arg Ala Arg Leu Thr Ser Ser Ile Leu Arg
485 490 495

Asn Ser Lys Thr Ile Lys Phe His Gly Trp Glu Gly Ala Phe Leu Asp
500 505 510

Arg Val Leu Gly Ile Arg Gly Gln Glu Leu Gly Ala Leu Arg Thr Ser
515 520 525

Gly Leu Leu Phe Ser Val Ser Leu Val Ser Phe Gln Val Ser Thr Phe
530 535 540

```
Leu Val Ala Leu Val Val Phe Ala Val His Thr Leu Val Ala Glu Asn
545                 550                 555                 560

Ala Met Asn Ala Glu Lys Ala Phe Val Thr Leu Thr Val Leu Asn Ile
                565                 570                 575

Leu Asn Lys Ala Gln Ala Phe Leu Pro Phe Ser Ile His Ser Leu Val
            580                 585                 590

Gln Ala Arg Val Ser Phe Asp Arg Leu Val Thr Phe Leu Cys Leu Glu
        595                 600                 605

Glu Val Asp Pro Gly Val Val Asp Ser Ser Ser Ser Gly Ser Ala Ala
    610                 615                 620

Gly Lys Asp Cys Ile Thr Ile His Ser Ala Thr Phe Ala Trp Ser Gln
625                 630                 635                 640

Glu Ser Pro Pro Cys Leu His Arg Ile Asn Leu Thr Val Pro Gln Gly
                645                 650                 655

Cys Leu Leu Ala Val Val Gly Pro Val Gly Ala Gly Lys Ser Ser Leu
            660                 665                 670

Leu Ser Ala Leu Leu Gly Glu Leu Ser Lys Val Glu Gly Phe Val Ser
        675                 680                 685

Ile Glu Gly Ala Val Ala Tyr Val Pro Gln Glu Ala Trp Val Gln Asn
    690                 695                 700

Thr Ser Val Val Glu Asn Val Cys Phe Gly Gln Glu Leu Asp Pro Pro
705                 710                 715                 720

Trp Leu Glu Arg Val Leu Glu Ala Cys Ala Leu Gln Pro Asp Val Asp
                725                 730                 735

Ser Phe Pro Glu Gly Ile His Thr Ser Ile Gly Glu Gln Gly Met Asn
            740                 745                 750

Leu Ser Gly Gly Gln Lys Gln Arg Leu Ser Leu Ala Arg Ala Val Tyr
        755                 760                 765

Arg Lys Ala Ala Val Tyr Leu Leu Asp Asp Pro Leu Ala Ala Leu Asp
```

```
    770                 775                 780

Ala His Val Gly Gln His Val Phe Asn Gln Val Ile Gly Pro Gly Gly
785                 790                 795                 800

Leu Leu Gln Gly Thr Lys Gln Asn Leu Gly Pro Ala Pro Arg Thr Pro
                805                 810                 815

Glu Ala Pro Leu Gln Ala Gly Gly Pro Ser Leu Asp Ala Arg Gly Pro
            820                 825                 830

Ser Ser Gln Ser Leu Arg Arg Thr Val Pro Leu Gln Lys Pro Arg Gln
        835                 840                 845

Arg Phe Leu Trp Met Thr Leu Thr Gly Gln Asp Gly Gln Gln Glu Arg
    850                 855                 860

Thr Ala Ser Asn Thr Ala Gly
865                 870


<210> 7754
<211> 871
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487705"

<400> 7754
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1               5                   10                  15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
```

```
            20                  25                  30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
        35                  40                  45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
    50                  55                  60

Met Ser Pro Leu Phe Lys Ala Lys Met Val Leu Gly Phe Ala Leu Ile
65                  70                  75                  80

Val Leu Cys Thr Ser Ser Val Ala Val Ala Leu Trp Lys Ile Gln Gln
                85                  90                  95

Gly Thr Pro Glu Ala Pro Glu Phe Leu Ile His Pro Thr Val Trp Leu
            100                 105                 110

Thr Thr Met Ser Phe Ala Val Phe Leu Ile His Thr Glu Arg Lys Lys
        115                 120                 125

Gly Val Gln Ser Ser Gly Val Leu Phe Gly Tyr Trp Leu Leu Cys Phe
    130                 135                 140

Val Leu Pro Ala Thr Asn Ala Ala Gln Gln Ala Ser Gly Ala Gly Phe
145                 150                 155                 160

Gln Ser Asp Pro Val Arg His Leu Ser Thr Tyr Leu Cys Leu Ser Leu
                165                 170                 175

Val Val Ala Gln Phe Val Leu Ser Cys Leu Ala Asp Gln Pro Pro Phe
            180                 185                 190

Phe Pro Glu Asp Pro Gln Gln Ser Asn Pro Cys Pro Glu Thr Gly Ala
        195                 200                 205

Ala Phe Pro Ser Lys Ala Thr Phe Trp Trp Val Ser Gly Leu Val Trp
    210                 215                 220

Arg Gly Tyr Arg Arg Pro Leu Arg Pro Lys Asp Leu Trp Ser Leu Gly
225                 230                 235                 240

Arg Glu Asn Ser Ser Glu Glu Leu Val Ser Arg Leu Glu Lys Glu Trp
                245                 250                 255
```

```
Met Arg Asn Arg Ser Ala Ala Arg Arg His Asn Lys Ala Ile Ala Phe
            260                 265                 270

Lys Arg Lys Gly Gly Ser Gly Met Lys Ala Pro Glu Thr Glu Pro Phe
        275                 280                 285

Leu Arg Gln Glu Gly Ser Gln Trp Arg Pro Leu Leu Lys Ala Ile Trp
    290                 295                 300

Gln Val Phe His Ser Thr Phe Leu Leu Gly Thr Leu Ser Leu Ile Ile
305                 310                 315                 320

Ser Asp Val Phe Arg Phe Thr Val Pro Lys Leu Leu Ser Leu Phe Leu
                325                 330                 335

Glu Phe Ile Gly Asp Pro Lys Pro Pro Ala Trp Lys Gly Tyr Leu Leu
            340                 345                 350

Ala Val Leu Met Phe Leu Ser Ala Cys Leu Gln Thr Leu Phe Glu Gln
        355                 360                 365

Gln Asn Met Tyr Arg Leu Lys Val Leu Gln Met Arg Leu Arg Ser Ala
    370                 375                 380

Ile Thr Gly Leu Val Tyr Arg Lys Val Leu Ala Leu Ser Ser Gly Ser
385                 390                 395                 400

Arg Lys Ala Ser Ala Val Gly Asp Val Val Asn Leu Val Ser Val Asp
                405                 410                 415

Val Gln Arg Leu Thr Glu Ser Val Leu Tyr Leu Asn Gly Leu Trp Leu
            420                 425                 430

Pro Leu Val Trp Ile Val Val Cys Phe Val Tyr Leu Trp Gln Leu Leu
        435                 440                 445

Gly Pro Ser Ala Leu Thr Ala Ile Ala Val Phe Leu Ser Leu Leu Pro
    450                 455                 460

Leu Asn Phe Phe Ile Ser Lys Lys Arg Asn His His Gln Glu Glu Gln
465                 470                 475                 480
```

Met Arg Gln Lys Asp Ser Arg Ala Arg Leu Thr Ser Ser Ile Leu Arg
485 490 495

Asn Ser Lys Thr Ile Lys Phe His Gly Trp Glu Gly Ala Phe Leu Asp
500 505 510

Arg Val Leu Gly Ile Arg Gly Gln Glu Leu Gly Ala Leu Arg Thr Ser
515 520 525

Gly Leu Leu Phe Ser Val Ser Leu Val Ser Phe Gln Val Ser Thr Phe
530 535 540

Leu Val Ala Leu Val Val Phe Ala Val His Thr Leu Val Ala Glu Asn
545 550 555 560

Ala Met Asn Ala Glu Lys Ala Phe Val Thr Leu Thr Val Leu Asn Ile
565 570 575

Leu Asn Lys Ala Gln Ala Phe Leu Pro Phe Ser Ile His Ser Leu Val
580 585 590

Gln Ala Arg Val Ser Phe Asp Arg Leu Val Thr Phe Leu Cys Leu Glu
595 600 605

Glu Val Asp Pro Gly Ala Val Asp Ser Ser Ser Ser Gly Ser Ala Ala
610 615 620

Gly Lys Asp Cys Ile Thr Ile Gln Ser Ala Thr Phe Ala Trp Ser Gln
625 630 635 640

Glu Ser Pro Pro Cys Leu His Arg Ile Asn Leu Thr Val Pro Gln Gly
645 650 655

Cys Leu Leu Ala Val Val Gly Pro Val Gly Ala Gly Lys Ser Ser Leu
660 665 670

Leu Ser Ala Leu Leu Gly Glu Leu Ser Lys Val Glu Gly Phe Val Ser
675 680 685

Ile Glu Gly Ala Val Ala Tyr Val Pro Gln Glu Ala Trp Val Gln Asn
690 695 700

```
Thr Ser Val Val Glu Asn Val Cys Phe Gly Gln Glu Leu Asp Pro Pro
705                 710                 715                 720

Trp Leu Glu Arg Val Leu Glu Ala Cys Ala Leu Gln Pro Asp Val Asp
                725                 730                 735

Ser Phe Pro Glu Gly Ile His Thr Ser Ile Gly Glu Gln Gly Met Asn
            740                 745                 750

Leu Ser Gly Gly Gln Lys Gln Arg Leu Ser Leu Ala Arg Ala Val Tyr
        755                 760                 765

Arg Lys Ala Ala Val Tyr Leu Leu Asp Asp Pro Leu Ala Ala Leu Asp
    770                 775                 780

Ala His Val Gly Gln His Val Phe Asn Gln Val Ile Gly Pro Gly Gly
785                 790                 795                 800

Leu Leu Gln Gly Thr Lys Gln Asn Leu Gly Pro Ala Pro Arg Thr Pro
                805                 810                 815

Glu Ala Pro Leu Gln Ala Gly Gly Pro Ser Leu Asp Ala Arg Gly Pro
            820                 825                 830

Ser Ser Gln Ser Leu Arg Arg Thr Val Pro Leu Gln Lys Pro Arg Gln
        835                 840                 845

Arg Phe Leu Trp Met Thr Leu Thr Gly Gln Asp Gly Gln Gln Glu Arg
    850                 855                 860

Thr Ala Ser Asn Thr Ala Gly
865                 870


<210> 7755
<211> 82
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1627; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC6; "
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488537"

<400> 7755
Met Ala Ala Pro Ala Glu Pro Cys Ala Gly Gln Gly Val Trp Asn Gln
1 5 10 15

Thr Glu Pro Glu Pro Ala Ala Thr Ser Leu Leu Ser Leu Cys Phe Leu
20 25 30

Arg Thr Ala Gly Val Trp Val Pro Pro Met Tyr Leu Trp Val Leu Gly
35 40 45

Pro Ile Tyr Leu Leu Phe Ile His His His Gly Arg Gly Tyr Leu Arg
50 55 60

Met Ser Pro Leu Phe Lys Ala Lys Met Arg Asn Gln Asn Ile Leu Glu
65 70 75 80

Arg Pro

<210> 7756
<211> 1582
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1628; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 8; "

<220>

<221> source
<223> /note="Uniprot ID: Q09428; "

<220>
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<223> /note="ENSP ID: ENSP00000303960"

<400> 7756

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Met Pro Leu Ala Phe Cys Gly Ser Glu Asn His Ser Ala Ala Tyr Arg
1               5                  10                  15

Val Asp Gln Gly Val Leu Asn Asn Gly Cys Phe Val Asp Ala Leu Asn
            20                  25                  30

Val Val Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe
        35                  40                  45

Ile Gly Trp Gly Ser Gln Ser Ser Lys Val His Ile His His Ser Thr
    50                  55                  60

Trp Leu His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Met
65                  70                  75                  80

Leu Leu Phe Val Leu Val Cys Glu Ile Ala Glu Gly Ile Leu Ser Asp
                85                  90                  95

Gly Val Thr Glu Ser His His Leu His Leu Tyr Met Pro Ala Gly Met
            100                 105                 110

Ala Phe Met Ala Ala Val Thr Ser Val Val Tyr Tyr His Asn Ile Glu
        115                 120                 125

Thr Ser Asn Phe Pro Lys Leu Leu Ile Ala Leu Leu Val Tyr Trp Thr
    130                 135                 140

Leu Ala Phe Ile Thr Lys Thr Ile Lys Phe Val Lys Phe Leu Asp His
145                 150                 155                 160

Ala Ile Gly Phe Ser Gln Leu Arg Phe Cys Leu Thr Gly Leu Leu Val
                165                 170                 175

Ile Leu Tyr Gly Met Leu Leu Leu Val Glu Val Asn Val Ile Arg Val
            180                 185                 190

Arg Arg Tyr Ile Phe Phe Lys Thr Pro Arg Glu Val Lys Pro Pro Glu
```

```
        195                 200                 205

Asp Leu Gln Asp Leu Gly Val Arg Phe Leu Gln Pro Phe Val Asn Leu
    210                 215                 220

Leu Ser Lys Gly Thr Tyr Trp Trp Met Asn Ala Phe Ile Lys Thr Ala
225                 230                 235                 240

His Lys Lys Pro Ile Asp Leu Arg Ala Ile Gly Lys Leu Pro Ile Ala
                245                 250                 255

Met Arg Ala Leu Thr Asn Tyr Gln Arg Leu Cys Glu Ala Phe Asp Ala
            260                 265                 270

Gln Val Arg Lys Asp Ile Gln Gly Thr Gln Gly Ala Arg Ala Ile Trp
        275                 280                 285

Gln Ala Leu Ser His Ala Phe Gly Arg Arg Leu Val Leu Ser Ser Thr
    290                 295                 300

Phe Arg Ile Leu Ala Asp Leu Leu Gly Phe Ala Gly Pro Leu Cys Ile
305                 310                 315                 320

Phe Gly Ile Val Asp His Leu Gly Lys Glu Asn Asp Val Phe Gln Pro
                325                 330                 335

Lys Thr Gln Phe Leu Gly Val Tyr Phe Val Ser Ser Gln Glu Phe Leu
            340                 345                 350

Ala Asn Ala Tyr Val Leu Ala Val Leu Leu Phe Leu Ala Leu Leu Leu
        355                 360                 365

Gln Arg Thr Phe Leu Gln Ala Ser Tyr Tyr Val Ala Ile Glu Thr Gly
    370                 375                 380

Ile Asn Leu Arg Gly Ala Ile Gln Thr Lys Ile Tyr Asn Lys Ile Met
385                 390                 395                 400

His Leu Ser Thr Ser Asn Leu Ser Met Gly Glu Met Thr Ala Gly Gln
                405                 410                 415

Ile Cys Asn Leu Val Ala Ile Asp Thr Asn Gln Leu Met Trp Phe Phe
            420                 425                 430
```

```
Phe Leu Cys Pro Asn Leu Trp Ala Met Pro Val Gln Ile Ile Val Gly
        435                 440                 445

Val Ile Leu Leu Tyr Tyr Ile Leu Gly Val Ser Ala Leu Ile Gly Ala
    450                 455                 460

Ala Val Ile Ile Leu Leu Ala Pro Val Gln Tyr Phe Val Ala Thr Lys
465                 470                 475                 480

Leu Ser Gln Ala Gln Arg Ser Thr Leu Glu Tyr Ser Asn Glu Arg Leu
                485                 490                 495

Lys Gln Thr Asn Glu Met Leu Arg Gly Ile Lys Leu Leu Lys Leu Tyr
            500                 505                 510

Ala Trp Glu Asn Ile Phe Arg Thr Arg Val Glu Thr Thr Arg Arg Lys
        515                 520                 525

Glu Met Thr Ser Leu Arg Ala Phe Ala Ile Tyr Thr Ser Ile Ser Ile
    530                 535                 540

Phe Met Asn Thr Ala Ile Pro Ile Ala Ala Val Leu Ile Thr Phe Val
545                 550                 555                 560

Gly His Val Ser Phe Phe Lys Glu Ala Asp Phe Ser Pro Ser Val Ala
                565                 570                 575

Phe Ala Ser Leu Ser Leu Phe His Ile Leu Val Thr Pro Leu Phe Leu
            580                 585                 590

Leu Ser Ser Val Val Arg Ser Thr Val Lys Ala Leu Val Ser Val Gln
        595                 600                 605

Lys Leu Ser Glu Phe Leu Ser Ser Ala Glu Ile Arg Glu Glu Gln Cys
    610                 615                 620

Ala Pro His Glu Pro Thr Pro Gln Gly Pro Ala Ser Lys Tyr Gln Ala
625                 630                 635                 640

Val Pro Leu Arg Val Val Asn Arg Lys Arg Pro Ala Arg Glu Asp Cys
                645                 650                 655
```

```
Arg Gly Leu Thr Gly Pro Leu Gln Ser Leu Val Pro Ser Ala Asp Gly
            660                 665                 670

Asp Ala Asp Asn Cys Cys Val Gln Ile Met Gly Gly Tyr Phe Thr Trp
        675                 680                 685

Thr Pro Asp Gly Ile Pro Thr Leu Ser Asn Ile Thr Ile Arg Ile Pro
    690                 695                 700

Arg Gly Gln Leu Thr Met Ile Val Gly Gln Val Gly Cys Gly Lys Ser
705                 710                 715                 720

Ser Leu Leu Leu Ala Ala Leu Gly Glu Met Gln Lys Val Ser Gly Ala
                725                 730                 735

Val Phe Trp Ser Ser Ser Leu Pro Asp Ser Glu Ile Gly Glu Asp Pro
            740                 745                 750

Ser Pro Glu Arg Glu Thr Ala Thr Asp Leu Asp Ile Arg Lys Arg Gly
        755                 760                 765

Pro Val Ala Tyr Ala Ser Gln Lys Pro Trp Leu Leu Asn Ala Thr Val
    770                 775                 780

Glu Glu Asn Ile Ile Phe Glu Ser Pro Phe Asn Lys Gln Arg Tyr Lys
785                 790                 795                 800

Met Val Ile Glu Ala Cys Ser Leu Gln Pro Asp Ile Asp Ile Leu Pro
                805                 810                 815

His Gly Asp Gln Thr Gln Ile Gly Glu Arg Gly Ile Asn Leu Ser Gly
            820                 825                 830

Gly Gln Arg Gln Arg Ile Ser Val Ala Arg Ala Leu Tyr Gln His Ala
        835                 840                 845

Asn Val Val Phe Leu Asp Asp Pro Phe Ser Ala Leu Asp Ile His Leu
    850                 855                 860

Ser Asp His Leu Met Gln Ala Gly Ile Leu Glu Leu Leu Arg Asp Asp
865                 870                 875                 880
```

```
Lys Arg Thr Val Val Leu Val Thr His Lys Leu Gln Tyr Leu Pro His
                885                 890                 895

Ala Asp Trp Ile Ile Ala Met Lys Asp Gly Thr Ile Gln Arg Glu Gly
            900                 905                 910

Thr Leu Lys Asp Phe Gln Arg Ser Glu Cys Gln Leu Phe Glu His Trp
        915                 920                 925

Lys Thr Leu Met Asn Arg Gln Asp Gln Glu Leu Glu Lys Glu Thr Val
    930                 935                 940

Thr Glu Arg Lys Ala Thr Glu Pro Pro Gln Gly Leu Ser Arg Ala Met
945                 950                 955                 960

Ser Ser Arg Asp Gly Leu Leu Gln Asp Glu Glu Glu Glu Glu Glu Glu
                965                 970                 975

Ala Ala Glu Ser Glu Glu Asp Asp Asn Leu Ser Ser Met Leu His Gln
            980                 985                 990

Arg Ala Glu Ile Pro Trp Arg Ala  Cys Ala Lys Tyr Leu  Ser Ser
Ala
        995                 1000                1005

Gly Ile  Leu Leu Leu Ser Leu  Leu Val Phe Ser Gln  Leu Leu Lys
    1010                1015                1020

His Met  Val Leu Val Ala Ile  Asp Tyr Trp Leu Ala  Lys Trp Thr
    1025                1030                1035

Asp Ser  Ala Leu Thr Leu Thr  Pro Ala Ala Arg Asn  Cys Ser Leu
    1040                1045                1050

Ser Gln  Glu Cys Thr Leu Asp  Gln Thr Val Tyr Ala  Met Val Phe
    1055                1060                1065

Thr Val  Leu Cys Ser Leu Gly  Ile Val Leu Cys Leu  Val Thr Ser
    1070                1075                1080

Val Thr  Val Glu Trp Thr Gly  Leu Lys Val Ala Lys  Arg Leu His
    1085                1090                1095
```

```
Arg Ser  Leu Leu Asn Arg Ile  Ile Leu Ala Pro Met  Arg Phe Phe
    1100                1105                1110

Glu Thr  Thr Pro Leu Gly Ser  Ile Leu Asn Arg Phe  Ser Ser Asp
    1115                1120                1125

Cys Asn  Thr Ile Asp Gln His  Ile Pro Ser Thr Leu  Glu Cys Leu
    1130                1135                1140

Ser Arg  Ser Thr Leu Leu Cys  Val Ser Ala Leu Ala  Val Ile Ser
    1145                1150                1155

Tyr Val  Thr Pro Val Phe Leu  Val Ala Leu Leu Pro  Leu Ala Ile
    1160                1165                1170

Val Cys  Tyr Phe Ile Gln Lys  Tyr Phe Arg Val Ala  Ser Arg Asp
    1175                1180                1185

Leu Gln  Gln Leu Asp Asp Thr  Thr Gln Leu Pro Leu  Leu Ser His
    1190                1195                1200

Phe Ala  Glu Thr Val Glu Gly  Leu Thr Thr Ile Arg  Ala Phe Arg
    1205                1210                1215

Tyr Glu  Ala Arg Phe Gln Gln  Lys Leu Leu Glu Tyr  Thr Asp Ser
    1220                1225                1230

Asn Asn  Ile Ala Ser Leu Phe  Leu Thr Ala Ala Asn  Arg Trp Leu
    1235                1240                1245

Glu Val  Arg Met Glu Tyr Ile  Gly Ala Cys Val Val  Leu Ile Ala
    1250                1255                1260

Ala Val  Thr Ser Ile Ser Asn  Ser Leu His Arg Glu  Leu Ser Ala
    1265                1270                1275

Gly Leu  Val Gly Leu Gly Leu  Thr Tyr Ala Leu Met  Val Ser Asn
    1280                1285                1290

Tyr Leu  Asn Trp Met Val Arg  Asn Leu Ala Asp Met  Glu Leu Gln
    1295                1300                1305

Leu Gly  Ala Val Lys Arg Ile  His Gly Leu Leu Lys  Thr Glu Ala
```

1310 1315 1320

Glu Ser Tyr Glu Gly Leu Leu Ala Pro Ser Leu Ile Pro Lys Asn
1325 1330 1335

Trp Pro Asp Gln Gly Lys Ile Gln Ile Gln Asn Leu Ser Val Arg
1340 1345 1350

Tyr Asp Ser Ser Leu Lys Pro Val Leu Lys His Val Asn Ala Leu
1355 1360 1365

Ile Ala Pro Gly Gln Lys Ile Gly Ile Cys Gly Arg Thr Gly Ser
1370 1375 1380

Gly Lys Ser Ser Phe Ser Leu Ala Phe Phe Arg Met Val Asp Thr
1385 1390 1395

Phe Glu Gly His Ile Ile Ile Asp Gly Ile Asp Ile Ala Lys Leu
1400 1405 1410

Pro Leu His Thr Leu Arg Ser Arg Leu Ser Ile Ile Leu Gln Asp
1415 1420 1425

Pro Val Leu Phe Ser Gly Thr Ile Arg Phe Asn Leu Asp Pro Glu
1430 1435 1440

Arg Lys Cys Ser Asp Ser Thr Leu Trp Glu Ala Leu Glu Ile Ala
1445 1450 1455

Gln Leu Lys Leu Val Val Lys Ala Leu Pro Gly Gly Leu Asp Ala
1460 1465 1470

Ile Ile Thr Glu Gly Gly Glu Asn Phe Ser Gln Gly Gln Arg Gln
1475 1480 1485

Leu Phe Cys Leu Ala Arg Ala Phe Val Arg Lys Thr Ser Ile Phe
1490 1495 1500

Ile Met Asp Glu Ala Thr Ala Ser Ile Asp Met Ala Thr Glu Asn
1505 1510 1515

Ile Leu Gln Lys Val Val Met Thr Ala Phe Ala Asp Arg Thr Val
1520 1525 1530

```
Val Thr  Ile Ala His Arg Val  His Thr Ile Leu Ser  Ala Asp Leu
    1535                1540                1545


Val Ile  Val Leu Lys Arg Gly  Ala Ile Leu Glu Phe  Asp Lys Pro
    1550                1555                1560


Glu Lys  Leu Leu Ser Arg Lys  Asp Ser Val Phe Ala  Ser Phe Val
    1565                1570                1575


Arg Ala  Asp Lys
    1580


<210> 7757
<211> 1581
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 8; "

<220>
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<223> /note="Uniprot ID:  Q09428; "

<220>
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<400> 7757
Met Pro Leu Ala Phe Cys Gly Ser Glu Asn His Ser Ala Ala Tyr Arg
1               5                  10                  15


Val Asp Gln Gly Val Leu Asn Asn Gly Cys Phe Val Asp Ala Leu Asn
            20                  25                  30


Val Val Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe
        35                  40                  45
```

```
Ile Gly Trp Gly Ser Gln Ser Ser Lys Val His Ile His His Ser Thr
    50                  55                  60

Trp Leu His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Met
65                  70                  75                  80

Leu Leu Phe Val Leu Val Cys Glu Ile Ala Glu Gly Ile Leu Ser Asp
                85                  90                  95

Gly Val Thr Glu Ser His His Leu His Leu Tyr Met Pro Ala Gly Met
            100                 105                 110

Ala Phe Met Ala Ala Val Thr Ser Val Val Tyr Tyr His Asn Ile Glu
        115                 120                 125

Thr Ser Asn Phe Pro Lys Leu Leu Ile Ala Leu Leu Val Tyr Trp Thr
    130                 135                 140

Leu Ala Phe Ile Thr Lys Thr Ile Lys Phe Val Lys Phe Leu Asp His
145                 150                 155                 160

Ala Ile Gly Phe Ser Gln Leu Arg Phe Cys Leu Thr Gly Leu Leu Val
                165                 170                 175

Ile Leu Tyr Gly Met Leu Leu Leu Val Glu Val Asn Val Ile Arg Val
            180                 185                 190

Arg Arg Tyr Ile Phe Phe Lys Thr Pro Arg Glu Val Lys Pro Pro Glu
        195                 200                 205

Asp Leu Gln Asp Leu Gly Val Arg Phe Leu Gln Pro Phe Val Asn Leu
    210                 215                 220

Leu Ser Lys Gly Thr Tyr Trp Trp Met Asn Ala Phe Ile Lys Thr Ala
225                 230                 235                 240

His Lys Lys Pro Ile Asp Leu Arg Ala Ile Gly Lys Leu Pro Ile Ala
                245                 250                 255

Met Arg Ala Leu Thr Asn Tyr Gln Arg Leu Cys Glu Ala Phe Asp Ala
            260                 265                 270
```

```
Gln Val Arg Lys Asp Ile Gln Gly Thr Gln Gly Ala Arg Ala Ile Trp
        275                 280                 285

Gln Ala Leu Ser His Ala Phe Gly Arg Arg Leu Val Leu Ser Ser Thr
    290                 295                 300

Phe Arg Ile Leu Ala Asp Leu Leu Gly Phe Ala Gly Pro Leu Cys Ile
305                 310                 315                 320

Phe Gly Ile Val Asp His Leu Gly Lys Glu Asn Asp Val Phe Gln Pro
                325                 330                 335

Lys Thr Gln Phe Leu Gly Val Tyr Phe Val Ser Ser Gln Glu Phe Leu
            340                 345                 350

Ala Asn Ala Tyr Val Leu Ala Val Leu Leu Phe Leu Ala Leu Leu Leu
        355                 360                 365

Gln Arg Thr Phe Leu Gln Ala Ser Tyr Tyr Val Ala Ile Glu Thr Gly
    370                 375                 380

Ile Asn Leu Arg Gly Ala Ile Gln Thr Lys Ile Tyr Asn Lys Ile Met
385                 390                 395                 400

His Leu Ser Thr Ser Asn Leu Ser Met Gly Glu Met Thr Ala Gly Gln
                405                 410                 415

Ile Cys Asn Leu Val Ala Ile Asp Thr Asn Gln Leu Met Trp Phe Phe
            420                 425                 430

Phe Leu Cys Pro Asn Leu Trp Ala Met Pro Val Gln Ile Ile Val Gly
        435                 440                 445

Val Ile Leu Leu Tyr Tyr Ile Leu Gly Val Ser Ala Leu Ile Gly Ala
    450                 455                 460

Ala Val Ile Ile Leu Leu Ala Pro Val Gln Tyr Phe Val Ala Thr Lys
465                 470                 475                 480

Leu Ser Gln Ala Gln Arg Ser Thr Leu Glu Tyr Ser Asn Glu Arg Leu
                485                 490                 495
```

```
Lys Gln Thr Asn Glu Met Leu Arg Gly Ile Lys Leu Leu Lys Leu Tyr
            500                 505                 510

Ala Trp Glu Asn Ile Phe Arg Thr Arg Val Glu Thr Thr Arg Arg Lys
        515                 520                 525

Glu Met Thr Ser Leu Arg Ala Phe Ala Ile Tyr Thr Ser Ile Ser Ile
    530                 535                 540

Phe Met Asn Thr Ala Ile Pro Ile Ala Ala Val Leu Ile Thr Phe Val
545                 550                 555                 560

Gly His Val Ser Phe Phe Lys Glu Ala Asp Phe Ser Pro Ser Val Ala
                565                 570                 575

Phe Ala Ser Leu Ser Leu Phe His Ile Leu Val Thr Pro Leu Phe Leu
            580                 585                 590

Leu Ser Ser Val Val Arg Ser Thr Val Lys Ala Leu Val Ser Val Gln
        595                 600                 605

Lys Leu Ser Glu Phe Leu Ser Ser Ala Glu Ile Arg Glu Glu Gln Cys
    610                 615                 620

Ala Pro His Glu Pro Thr Pro Gln Gly Pro Ala Ser Lys Tyr Gln Ala
625                 630                 635                 640

Val Pro Leu Arg Val Val Asn Arg Lys Arg Pro Ala Arg Glu Asp Cys
                645                 650                 655

Arg Gly Leu Thr Gly Pro Leu Gln Ser Leu Val Pro Ser Ala Asp Gly
            660                 665                 670

Asp Ala Asp Asn Cys Cys Val Gln Ile Met Gly Gly Tyr Phe Thr Trp
        675                 680                 685

Thr Pro Asp Gly Ile Pro Thr Leu Ser Asn Ile Thr Ile Arg Ile Pro
    690                 695                 700

Arg Gly Gln Leu Thr Met Ile Val Gly Gln Val Gly Cys Gly Lys Ser
705                 710                 715                 720

Ser Leu Leu Leu Ala Ala Leu Gly Glu Met Gln Lys Val Ser Gly Ala
```

```
                725                 730                 735

Val Phe Trp Ser Ser Leu Pro Asp Ser Glu Ile Gly Glu Asp Pro Ser
            740                 745                 750

Pro Glu Arg Glu Thr Ala Thr Asp Leu Asp Ile Arg Lys Arg Gly Pro
        755                 760                 765

Val Ala Tyr Ala Ser Gln Lys Pro Trp Leu Leu Asn Ala Thr Val Glu
    770                 775                 780

Glu Asn Ile Ile Phe Glu Ser Pro Phe Asn Lys Gln Arg Tyr Lys Met
785                 790                 795                 800

Val Ile Glu Ala Cys Ser Leu Gln Pro Asp Ile Asp Ile Leu Pro His
                805                 810                 815

Gly Asp Gln Thr Gln Ile Gly Glu Arg Gly Ile Asn Leu Ser Gly Gly
            820                 825                 830

Gln Arg Gln Arg Ile Ser Val Ala Arg Ala Leu Tyr Gln His Ala Asn
        835                 840                 845

Val Val Phe Leu Asp Asp Pro Phe Ser Ala Leu Asp Ile His Leu Ser
    850                 855                 860

Asp His Leu Met Gln Ala Gly Ile Leu Glu Leu Leu Arg Asp Asp Lys
865                 870                 875                 880

Arg Thr Val Val Leu Val Thr His Lys Leu Gln Tyr Leu Pro His Ala
                885                 890                 895

Asp Trp Ile Ile Ala Met Lys Asp Gly Thr Ile Gln Arg Glu Gly Thr
            900                 905                 910

Leu Lys Asp Phe Gln Arg Ser Glu Cys Gln Leu Phe Glu His Trp Lys
        915                 920                 925

Thr Leu Met Asn Arg Gln Asp Gln Glu Leu Glu Lys Glu Thr Val Thr
    930                 935                 940

Glu Arg Lys Ala Thr Glu Pro Pro Gln Gly Leu Ser Arg Ala Met Ser
945                 950                 955                 960
```

```
Ser Arg Asp Gly Leu Leu Gln Asp Glu Glu Glu Glu Glu Glu Glu Ala
               965                 970                 975

Ala Glu Ser Glu Glu Asp Asp Asn Leu Ser Ser Met Leu His Gln Arg
           980                 985                 990

Ala Glu Ile Pro Trp Arg Ala Cys  Ala Lys Tyr Leu Ser  Ser Ala
Gly
        995                1000                1005

Ile Leu  Leu Leu Ser Leu Leu  Val Phe Ser Gln Leu  Leu Lys His
    1010                1015                1020

Met Val  Leu Val Ala Ile Asp  Tyr Trp Leu Ala Lys  Trp Thr Asp
    1025                1030                1035

Ser Ala  Leu Thr Leu Thr Pro  Ala Ala Arg Asn Cys  Ser Leu Ser
    1040                1045                1050

Gln Glu  Cys Thr Leu Asp Gln  Thr Val Tyr Ala Met  Val Phe Thr
    1055                1060                1065

Val Leu  Cys Ser Leu Gly Ile  Val Leu Cys Leu Val  Thr Ser Val
    1070                1075                1080

Thr Val  Glu Trp Thr Gly Leu  Lys Val Ala Lys Arg  Leu His Arg
    1085                1090                1095

Ser Leu  Leu Asn Arg Ile Ile  Leu Ala Pro Met Arg  Phe Phe Glu
    1100                1105                1110

Thr Thr  Pro Leu Gly Ser Ile  Leu Asn Arg Phe Ser  Ser Asp Cys
    1115                1120                1125

Asn Thr  Ile Asp Gln His Ile  Pro Ser Thr Leu Glu  Cys Leu Ser
    1130                1135                1140

Arg Ser  Thr Leu Leu Cys Val  Ser Ala Leu Ala Val  Ile Ser Tyr
    1145                1150                1155

Val Thr  Pro Val Phe Leu Val  Ala Leu Leu Pro Leu  Ala Ile Val
    1160                1165                1170
```

```
Cys Tyr  Phe Ile Gln Lys Tyr  Phe Arg Val Ala Ser  Arg Asp Leu
    1175                1180                1185

Gln Gln  Leu Asp Asp Thr Thr  Gln Leu Pro Leu Leu  Ser His Phe
    1190                1195                1200

Ala Glu  Thr Val Glu Gly Leu  Thr Thr Ile Arg Ala  Phe Arg Tyr
    1205                1210                1215

Glu Ala  Arg Phe Gln Gln Lys  Leu Leu Glu Tyr Thr  Asp Ser Asn
    1220                1225                1230

Asn Ile  Ala Ser Leu Phe Leu  Thr Ala Ala Asn Arg  Trp Leu Glu
    1235                1240                1245

Val Arg  Met Glu Tyr Ile Gly  Ala Cys Val Val Leu  Ile Ala Ala
    1250                1255                1260

Val Thr  Ser Ile Ser Asn Ser  Leu His Arg Glu Leu  Ser Ala Gly
    1265                1270                1275

Leu Val  Gly Leu Gly Leu Thr  Tyr Ala Leu Met Val  Ser Asn Tyr
    1280                1285                1290

Leu Asn  Trp Met Val Arg Asn  Leu Ala Asp Met Glu  Leu Gln Leu
    1295                1300                1305

Gly Ala  Val Lys Arg Ile His  Gly Leu Leu Lys Thr  Glu Ala Glu
    1310                1315                1320

Ser Tyr  Glu Gly Leu Leu Ala  Pro Ser Leu Ile Pro  Lys Asn Trp
    1325                1330                1335

Pro Asp  Gln Gly Lys Ile Gln  Ile Gln Asn Leu Ser  Val Arg Tyr
    1340                1345                1350

Asp Ser  Ser Leu Lys Pro Val  Leu Lys His Val Asn  Ala Leu Ile
    1355                1360                1365

Ala Pro  Gly Gln Lys Ile Gly  Ile Cys Gly Arg Thr  Gly Ser Gly
    1370                1375                1380
```

```
Lys Ser  Ser Phe Ser Leu Ala  Phe Phe Arg Met Val  Asp Thr Phe
    1385                1390                1395

Glu Gly  His Ile Ile Ile Asp  Gly Ile Asp Ile Ala  Lys Leu Pro
    1400                1405                1410

Leu His  Thr Leu Arg Ser Arg  Leu Ser Ile Ile Leu  Gln Asp Pro
    1415                1420                1425

Val Leu  Phe Ser Gly Thr Ile  Arg Phe Asn Leu Asp  Pro Glu Arg
    1430                1435                1440

Lys Cys  Ser Asp Ser Thr Leu  Trp Glu Ala Leu Glu  Ile Ala Gln
    1445                1450                1455

Leu Lys  Leu Val Val Lys Ala  Leu Pro Gly Gly Leu  Asp Ala Ile
    1460                1465                1470

Ile Thr  Glu Gly Gly Glu Asn  Phe Ser Gln Gly Gln  Arg Gln Leu
    1475                1480                1485

Phe Cys  Leu Ala Arg Ala Phe  Val Arg Lys Thr Ser  Ile Phe Ile
    1490                1495                1500

Met Asp  Glu Ala Thr Ala Ser  Ile Asp Met Ala Thr  Glu Asn Ile
    1505                1510                1515

Leu Gln  Lys Val Val Met Thr  Ala Phe Ala Asp Arg  Thr Val Val
    1520                1525                1530

Thr Ile  Ala His Arg Val His  Thr Ile Leu Ser Ala  Asp Leu Val
    1535                1540                1545

Ile Val  Leu Lys Arg Gly Ala  Ile Leu Glu Phe Asp  Lys Pro Glu
    1550                1555                1560

Lys Leu  Leu Ser Arg Lys Asp  Ser Val Phe Ala Ser  Phe Val Arg
    1565                1570                1575

Ala Asp  Lys
    1580
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<210> 7758
<211> 997
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ABCC8; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431653"

<400> 7758

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Met Pro Leu Ala Phe Cys Gly Ser Glu Asn His Ser Ala Ala Tyr Arg
1               5                  10                  15

Val Asp Gln Gly Val Leu Asn Asn Gly Cys Phe Val Asp Ala Leu Asn
            20                  25                  30

Val Val Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe
        35                  40                  45

Ile Gly Trp Gly Ser Gln Ser Ser Lys Val His Ile His His Ser Thr
    50                  55                  60

Trp Leu His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Met
65                  70                  75                  80

Leu Leu Phe Val Leu Val Cys Glu Ile Ala Glu Gly Ile Leu Ser Asp
                85                  90                  95

Gly Val Thr Glu Ser His His Leu His Leu Tyr Met Pro Ala Gly Met
            100                 105                 110

Ala Phe Met Ala Ala Val Thr Ser Val Val Tyr Tyr His Asn Ile Glu
        115                 120                 125
```

```
Thr Ser Asn Phe Pro Lys Leu Leu Ile Ala Leu Leu Val Tyr Trp Thr
    130                 135                 140

Leu Ala Phe Ile Thr Lys Thr Ile Lys Phe Val Lys Phe Leu Asp His
145                 150                 155                 160

Ala Ile Gly Phe Ser Gln Leu Arg Phe Cys Leu Thr Gly Leu Leu Val
                165                 170                 175

Ile Leu Tyr Gly Met Leu Leu Leu Val Glu Val Asn Val Ile Arg Val
            180                 185                 190

Arg Arg Tyr Ile Phe Phe Lys Thr Pro Arg Glu Val Lys Pro Pro Glu
        195                 200                 205

Asp Leu Gln Asp Leu Gly Val Arg Phe Leu Gln Pro Phe Val Asn Leu
    210                 215                 220

Leu Ser Lys Gly Thr Tyr Trp Trp Met Asn Ala Phe Ile Lys Thr Ala
225                 230                 235                 240

His Lys Lys Pro Ile Asp Leu Arg Ala Ile Gly Lys Leu Pro Ile Ala
                245                 250                 255

Met Arg Ala Leu Thr Asn Tyr Gln Arg Leu Cys Glu Ala Phe Asp Ala
            260                 265                 270

Gln Val Arg Lys Asp Ile Gln Gly Thr Gln Gly Ala Arg Ala Ile Trp
        275                 280                 285

Gln Ala Leu Ser His Ala Phe Gly Arg Arg Leu Val Leu Ser Ser Thr
    290                 295                 300

Phe Arg Ile Leu Ala Asp Leu Leu Gly Phe Ala Gly Pro Leu Cys Ile
305                 310                 315                 320

Phe Gly Ile Val Asp His Leu Gly Lys Glu Asn Asp Val Phe Gln Pro
                325                 330                 335

Lys Thr Gln Phe Leu Gly Val Tyr Phe Val Ser Ser Gln Glu Phe Leu
            340                 345                 350

Ala Asn Ala Tyr Val Leu Ala Val Leu Leu Phe Leu Ala Leu Leu Leu
```

```
        355                 360                 365

Gln Arg Thr Phe Leu Gln Ala Ser Tyr Tyr Val Ala Ile Glu Thr Gly
    370                 375                 380

Ile Asn Leu Arg Gly Ala Ile Gln Thr Lys Ile Tyr Asn Lys Ile Met
385                 390                 395                 400

His Leu Ser Thr Ser Asn Leu Ser Met Gly Glu Met Thr Ala Gly Gln
                405                 410                 415

Ile Cys Asn Leu Val Ala Ile Asp Thr Asn Gln Leu Met Trp Phe Phe
            420                 425                 430

Phe Leu Cys Pro Asn Leu Trp Ala Met Pro Val Gln Ile Ile Val Gly
        435                 440                 445

Val Ile Leu Leu Tyr Tyr Ile Leu Gly Val Ser Ala Leu Ile Gly Ala
    450                 455                 460

Ala Val Ile Ile Leu Leu Ala Pro Val Gln Tyr Phe Val Ala Thr Lys
465                 470                 475                 480

Leu Ser Gln Ala Gln Arg Ser Thr Leu Glu Tyr Ser Asn Glu Arg Leu
                485                 490                 495

Lys Gln Thr Asn Glu Met Leu Arg Gly Ile Lys Leu Leu Lys Leu Tyr
            500                 505                 510

Ala Trp Glu Asn Ile Phe Arg Thr Arg Val Glu Thr Thr Arg Arg Lys
        515                 520                 525

Glu Met Thr Ser Leu Arg Ala Phe Ala Ile Tyr Thr Ser Ile Ser Ile
    530                 535                 540

Phe Met Asn Thr Ala Ile Pro Ile Ala Ala Val Leu Ile Thr Phe Val
545                 550                 555                 560

Gly His Val Ser Phe Phe Lys Glu Ala Asp Phe Ser Pro Ser Val Ala
                565                 570                 575

Phe Ala Ser Leu Ser Leu Phe His Ile Leu Val Thr Pro Leu Phe Leu
            580                 585                 590
```

```
Leu Ser Ser Val Val Arg Ser Thr Val Lys Ala Leu Val Ser Ala Glu
        595                 600                 605

Ile Arg Glu Glu Gln Cys Ala Pro His Glu Pro Thr Pro Gln Gly Pro
    610                 615                 620

Ala Ser Lys Tyr Gln Ala Val Pro Leu Arg Val Val Asn Arg Lys Arg
625                 630                 635                 640

Pro Ala Arg Glu Asp Cys Arg Gly Leu Thr Gly Pro Leu Gln Ser Leu
                645                 650                 655

Val Pro Ser Ala Asp Gly Asp Ala Asp Asn Cys Cys Val Gln Ile Met
            660                 665                 670

Gly Gly Tyr Phe Thr Trp Thr Pro Asp Gly Ile Pro Thr Leu Ser Asn
        675                 680                 685

Ile Thr Ile Arg Ile Pro Arg Gly Gln Leu Thr Met Ile Val Gly Gln
    690                 695                 700

Val Gly Cys Gly Lys Ser Ser Leu Leu Leu Ala Ala Leu Gly Glu Met
705                 710                 715                 720

Gln Lys Val Ser Gly Ala Val Phe Trp Ser Ser Leu Pro Asp Ser Glu
                725                 730                 735

Ile Gly Glu Asp Pro Ser Pro Glu Arg Glu Thr Ala Thr Asp Leu Asp
            740                 745                 750

Ile Arg Lys Arg Gly Pro Val Ala Tyr Ala Ser Gln Lys Pro Trp Leu
        755                 760                 765

Leu Asn Ala Thr Val Glu Glu Asn Ile Ile Phe Glu Ser Pro Phe Asn
    770                 775                 780

Lys Gln Arg Tyr Lys Met Val Ile Glu Ala Cys Ser Leu Gln Pro Asp
785                 790                 795                 800

Ile Asp Ile Leu Pro His Gly Asp Gln Thr Gln Ile Gly Glu Arg Gly
                805                 810                 815
```

```
Ile Asn Leu Ser Gly Gly Gln Arg Gln Arg Ile Ser Val Ala Arg Ala
            820                 825                 830

Leu Tyr Gln His Ala Asn Val Val Phe Leu Asp Asp Pro Phe Ser Ala
        835                 840                 845

Leu Asp Ile His Leu Ser Asp His Leu Met Gln Ala Gly Ile Leu Glu
    850                 855                 860

Leu Leu Arg Asp Asp Lys Arg Thr Val Val Leu Val Thr His Lys Leu
865                 870                 875                 880

Gln Tyr Leu Pro His Ala Asp Trp Ile Ile Ala Met Lys Asp Gly Thr
                885                 890                 895

Ile Gln Arg Glu Gly Thr Leu Lys Asp Phe Gln Arg Ser Glu Cys Gln
            900                 905                 910

Leu Phe Glu His Trp Lys Thr Leu Met Asn Arg Gln Asp Gln Glu Leu
        915                 920                 925

Glu Lys Arg Arg Gln Leu Arg Ala Arg Arg Met Thr Thr Cys Arg Pro
    930                 935                 940

Cys Cys Thr Ser Val Leu Arg Ser His Gly Glu Pro Ala Pro Ser Thr
945                 950                 955                 960

Cys Pro Pro Pro Ala Ser Cys Ser Cys Arg Cys Trp Ser Ser His Ser
                965                 970                 975

Cys Ser Ser Thr Trp Ser Trp Trp Pro Ser Thr Thr Gly Trp Pro Ser
            980                 985                 990

Gly Pro Thr Ala Pro
        995


<210> 7759
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1628; "
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<220>
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<223> /note="Gene Symbol: ABCC8; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433638"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7759

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Xaa Gln Lys Tyr Phe Arg Val Ala Ser Arg Asp Leu Gln Gln Leu Asp
1               5                   10                  15

Asp Thr Thr Gln Leu Pro Leu Leu Ser His Phe Ala Glu Thr Val Glu
            20                  25                  30

Gly Leu Thr Thr Ile Arg Ala Phe Arg Tyr Glu Ala Arg Phe Gln Gln
        35                  40                  45

Lys Leu Leu Glu Tyr Thr Asp Ser Asn Asn Ile Ala Ser Leu Phe Leu
    50                  55                  60

Thr Ala Ala Asn Arg Trp Leu Glu Val Arg Met Glu Tyr Ile Gly Ala
65                  70                  75                  80

Cys Val Val Leu Ile Ala Ala Val Thr Ser Ile Ser Asn Ser Leu His
                85                  90                  95

Arg Glu Leu Ser Ala Gly Leu Val Gly Leu Gly Leu Thr Tyr Ala Leu
            100                 105                 110

Met Val Ser Asn Tyr Leu Asn Trp Met Val Arg Asn Leu Ala Asp Met
        115                 120                 125

Glu Leu Gln Leu Gly Ala Val Lys Arg Ile His Gly Leu Leu Lys Thr
    130                 135                 140
```

```
Glu Ala Glu Ser Tyr Glu Gly Leu Leu Ala Arg Pro Pro Ala Pro Ser
145                 150                 155                 160


Leu Ile Pro Lys Asn Trp Pro Asp Gln Gly Lys Ile Gln Ile Gln Asn
                165                 170                 175


Leu Ser Val Arg Tyr Asp Ser Ser Leu Lys Pro Val Leu Lys His Val
            180                 185                 190


Asn Ala Leu Ile Ala Pro Gly Gln Lys Ile Gly Ile
        195                 200


<210> 7760
<211> 53
<212> PRT
<213> Homo sapiens

<220>
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      C (CFTR/MRP),
      member 8; "

<220>
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<223> /note="ENSP ID: ENSP00000434893"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7760
Xaa Pro Ser Gly Pro Ser Gly Met Arg Pro Gly Ser Ser Arg Ser Phe
1               5                   10                  15


Ser Asn Thr Gln Thr Pro Thr Thr Leu Leu Pro Ser Ser Ser Gln Leu
            20                  25                  30
```

Pro Thr Asp Gly Trp Lys Ser Glu Trp Ser Thr Ser Val His Val Trp
        35   40   45

Cys Ser Ser Gln Arg
    50

<210> 7761
<211> 62
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      member 8; "

<220>
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<223> /note="ENSP ID: ENSP00000435378"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7761
Xaa Leu Pro Ser Ser Ala Trp Trp Thr Arg Ser Lys Gly Thr Ser Ser
1   5   10   15

Leu Met Ala Leu Thr Ser Pro Asn Cys Arg Cys Thr Pro Cys Ala His
            20   25   30

Ala Ser Pro Ser Ser Cys Arg Thr Pro Ser Ser Ser Ala Ala Pro Ser
        35   40   45

Gly Pro Gly Ser Leu Trp Lys Gly Ile Pro His Pro Trp Val
    50   55   60

<210> 7762
<211> 33

<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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ATP-binding cassette, sub-family
C (CFTR/MRP),
member 8; "

<220>
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<223> /note="ENSP ID: ENSP00000437233"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7762
Xaa Arg Thr Gly Ser Gly Lys Ser Ser Phe Ser Leu Ala Phe Phe Arg
1 5 10 15

Met Val Asp Thr Phe Glu Gly Pro Arg Pro Leu Gln Arg His His Pro
20 25 30

Ile

<210> 7763
<211> 50
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1628; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC8; "

<220>
<221> source
<223> /note="Gene Name:

ATP-binding cassette, sub-family
C (CFTR/MRP),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q09428; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483031"

<400> 7763
Met Pro Leu Ala Phe Cys Gly Ser Glu Asn His Ser Ala Ala Tyr Arg
1   5   10   15

Val Asp Gln Gly Val Leu Asn Asn Gly Cys Phe Val Asp Ala Leu Asn
            20   25   30

Val Val Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe
        35   40   45

Ile Gly
    50

<210> 7764
<211> 1549
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1629; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: O60706; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261200"

<400> 7764
Met Ser Leu Ser Phe Cys Gly Asn Asn Ile Ser Ser Tyr Asn Ile Asn
1 5 10 15

Asp Gly Val Leu Gln Asn Ser Cys Phe Val Asp Ala Leu Asn Leu Val
20 25 30

Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe Ile Gly
35 40 45

Trp Gly Ser Gln Ser Ser Lys Val Gln Ile His His Asn Thr Trp Leu
50 55 60

His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Ala Leu Leu
65 70 75 80

Phe Val His Val Cys Glu Ile Ala Glu Gly Ile Val Ser Asp Ser Arg
85 90 95

Arg Glu Ser Arg His Leu His Leu Phe Met Pro Ala Val Met Gly Phe
100 105 110

Val Ala Thr Thr Thr Ser Ile Val Tyr Tyr His Asn Ile Glu Thr Ser
115 120 125

Asn Phe Pro Lys Leu Leu Leu Ala Leu Phe Leu Tyr Trp Val Met Ala
130 135 140

Phe Ile Thr Lys Thr Ile Lys Leu Val Lys Tyr Cys Gln Ser Gly Leu
145 150 155 160

Asp Ile Ser Asn Leu Arg Phe Cys Ile Thr Gly Met Met Val Ile Leu
165 170 175

Asn Gly Leu Leu Met Ala Val Glu Ile Asn Val Ile Arg Val Arg Arg
180 185 190

Tyr Val Phe Phe Met Asn Pro Gln Lys Val Lys Pro Pro Glu Asp Leu
195 200 205

Gln Asp Leu Gly Val Arg Phe Leu Gln Pro Phe Val Asn Leu Leu Ser
210 215 220

```
Lys Ala Thr Tyr Trp Trp Met Asn Thr Leu Ile Ile Ser Ala His Lys
225                 230                 235                 240

Lys Pro Ile Asp Leu Lys Ala Ile Gly Lys Leu Pro Ile Ala Met Arg
                245                 250                 255

Ala Val Thr Asn Tyr Val Cys Leu Lys Asp Ala Tyr Glu Glu Gln Lys
            260                 265                 270

Lys Lys Val Ala Asp His Pro Asn Arg Thr Pro Ser Ile Trp Leu Ala
        275                 280                 285

Met Tyr Arg Ala Phe Gly Arg Pro Ile Leu Leu Ser Ser Thr Phe Arg
    290                 295                 300

Tyr Leu Ala Asp Leu Leu Gly Phe Ala Gly Pro Leu Cys Ile Ser Gly
305                 310                 315                 320

Ile Val Gln Arg Val Asn Glu Thr Gln Asn Gly Thr Asn Asn Thr Thr
                325                 330                 335

Gly Ile Ser Glu Thr Leu Ser Ser Lys Glu Phe Leu Glu Asn Ala Tyr
            340                 345                 350

Val Leu Ala Val Leu Leu Phe Leu Ala Leu Ile Leu Gln Arg Thr Phe
        355                 360                 365

Leu Gln Ala Ser Tyr Tyr Val Thr Ile Glu Thr Gly Ile Asn Leu Arg
    370                 375                 380

Gly Ala Leu Leu Ala Met Ile Tyr Asn Lys Ile Leu Arg Leu Ser Thr
385                 390                 395                 400

Ser Asn Leu Ser Met Gly Glu Met Thr Leu Gly Gln Ile Asn Asn Leu
                405                 410                 415

Val Ala Ile Glu Thr Asn Gln Leu Met Trp Phe Leu Phe Leu Cys Pro
            420                 425                 430

Asn Leu Trp Ala Met Pro Val Gln Ile Ile Met Gly Val Ile Leu Leu
        435                 440                 445

Tyr Asn Leu Leu Gly Ser Ser Ala Leu Val Gly Ala Ala Val Ile Val
```

```
    450                 455                 460

Leu Leu Ala Pro Ile Gln Tyr Phe Ile Ala Thr Lys Leu Ala Glu Ala
465                 470                 475                 480

Gln Lys Ser Thr Leu Asp Tyr Ser Thr Glu Arg Leu Lys Lys Thr Asn
                485                 490                 495

Glu Ile Leu Lys Gly Ile Lys Leu Leu Lys Leu Tyr Ala Trp Glu His
            500                 505                 510

Ile Phe Cys Lys Ser Val Glu Glu Thr Arg Met Lys Glu Leu Ser Ser
        515                 520                 525

Leu Lys Thr Phe Ala Leu Tyr Thr Ser Leu Ser Ile Phe Met Asn Ala
    530                 535                 540

Ala Ile Pro Ile Ala Ala Val Leu Ala Thr Phe Val Thr His Ala Tyr
545                 550                 555                 560

Ala Ser Gly Asn Asn Leu Lys Pro Ala Glu Ala Phe Ala Ser Leu Ser
                565                 570                 575

Leu Phe His Ile Leu Val Thr Pro Leu Phe Leu Leu Ser Thr Val Val
            580                 585                 590

Arg Phe Ala Val Lys Ala Ile Ile Ser Val Gln Lys Leu Asn Glu Phe
        595                 600                 605

Leu Leu Ser Asp Glu Ile Gly Asp Asp Ser Trp Arg Thr Gly Glu Ser
    610                 615                 620

Ser Leu Pro Phe Glu Ser Cys Lys Lys His Thr Gly Val Gln Pro Lys
625                 630                 635                 640

Thr Ile Asn Arg Lys Gln Pro Gly Arg Tyr His Leu Asp Ser Tyr Glu
                645                 650                 655

Gln Ser Thr Arg Arg Leu Arg Pro Ala Glu Thr Glu Asp Ile Ala Ile
            660                 665                 670

Lys Val Thr Asn Gly Tyr Phe Ser Trp Gly Ser Gly Leu Ala Thr Leu
        675                 680                 685
```

```
Ser Asn Ile Asp Ile Arg Ile Pro Thr Gly Gln Leu Thr Met Ile Val
    690                 695                 700

Gly Gln Val Gly Cys Gly Lys Ser Ser Leu Leu Leu Ala Ile Leu Gly
705                 710                 715                 720

Glu Met Gln Thr Leu Glu Gly Lys Val His Trp Ser Asn Val Asn Glu
                725                 730                 735

Ser Glu Pro Ser Phe Glu Ala Thr Arg Ser Arg Asn Arg Tyr Ser Val
            740                 745                 750

Ala Tyr Ala Ala Gln Lys Pro Trp Leu Leu Asn Ala Thr Val Glu Glu
        755                 760                 765

Asn Ile Thr Phe Gly Ser Pro Phe Asn Lys Gln Arg Tyr Lys Ala Val
    770                 775                 780

Thr Asp Ala Cys Ser Leu Gln Pro Asp Ile Asp Leu Leu Pro Phe Gly
785                 790                 795                 800

Asp Gln Thr Glu Ile Gly Glu Arg Gly Ile Asn Leu Ser Gly Gly Gln
                805                 810                 815

Arg Gln Arg Ile Cys Val Ala Arg Ala Leu Tyr Gln Asn Thr Asn Ile
            820                 825                 830

Val Phe Leu Asp Asp Pro Phe Ser Ala Leu Asp Ile His Leu Ser Asp
        835                 840                 845

His Leu Met Gln Glu Gly Ile Leu Lys Phe Leu Gln Asp Asp Lys Arg
    850                 855                 860

Thr Leu Val Leu Val Thr His Lys Leu Gln Tyr Leu Thr His Ala Asp
865                 870                 875                 880

Trp Ile Ile Ala Met Lys Asp Gly Ser Val Leu Arg Glu Gly Thr Leu
                885                 890                 895

Lys Asp Ile Gln Thr Lys Asp Val Glu Leu Tyr Glu His Trp Lys Thr
            900                 905                 910
```

```
Leu Met Asn Arg Gln Asp Gln Glu Leu Glu Lys Asp Met Glu Ala Asp
        915                 920                 925

Gln Thr Thr Leu Glu Arg Lys Thr Leu Arg Arg Ala Met Tyr Ser Arg
    930                 935                 940

Glu Ala Lys Ala Gln Met Glu Asp Glu Asp Glu Glu Glu Glu Glu Glu
945                 950                 955                 960

Glu Asp Glu Asp Asp Asn Met Ser Thr Val Met Arg Leu Arg Thr Lys
                965                 970                 975

Met Pro Trp Lys Thr Cys Trp Arg Tyr Leu Thr Ser Gly Gly Phe Phe
            980                 985                 990

Leu Leu Ile Leu Met Ile Phe Ser  Lys Leu Leu Lys His  Ser Val
Ile
        995                 1000                1005

Val Ala  Ile Asp Tyr Trp Leu  Ala Thr Trp Thr Ser  Glu Tyr Ser
    1010                1015                1020

Ile Asn  Asn Thr Gly Lys Ala  Asp Gln Thr Tyr Tyr  Val Ala Gly
    1025                1030                1035

Phe Ser  Ile Leu Cys Gly Ala  Gly Ile Phe Leu Cys  Leu Val Thr
    1040                1045                1050

Ser Leu  Thr Val Glu Trp Met  Gly Leu Thr Ala Ala  Lys Asn Leu
    1055                1060                1065

His His  Asn Leu Leu Asn Lys  Ile Ile Leu Gly Pro  Ile Arg Phe
    1070                1075                1080

Phe Asp  Thr Thr Pro Leu Gly  Leu Ile Leu Asn Arg  Phe Ser Ala
    1085                1090                1095

Asp Thr  Asn Ile Ile Asp Gln  His Ile Pro Pro Thr  Leu Glu Ser
    1100                1105                1110

Leu Thr  Arg Ser Thr Leu Leu  Cys Leu Ser Ala Ile  Gly Met Ile
    1115                1120                1125
```

```
Ser Tyr  Ala Thr Pro Val Phe  Leu Val Ala Leu Leu  Pro Leu Gly
    1130                1135                1140

Val Ala  Phe Tyr Phe Ile Gln  Lys Tyr Phe Arg Val  Ala Ser Lys
    1145                1150                1155

Asp Leu  Gln Glu Leu Asp Asp  Ser Thr Gln Leu Pro  Leu Leu Cys
    1160                1165                1170

His Phe  Ser Glu Thr Ala Glu  Gly Leu Thr Thr Ile  Arg Ala Phe
    1175                1180                1185

Arg His  Glu Thr Arg Phe Lys  Gln Arg Met Leu Glu  Leu Thr Asp
    1190                1195                1200

Thr Asn  Asn Ile Ala Tyr Leu  Phe Leu Ser Ala Ala  Asn Arg Trp
    1205                1210                1215

Leu Glu  Val Arg Thr Asp Tyr  Leu Gly Ala Cys Ile  Val Leu Thr
    1220                1225                1230

Ala Ser  Ile Ala Ser Ile Ser  Gly Ser Ser Asn Ser  Gly Leu Val
    1235                1240                1245

Gly Leu  Gly Leu Leu Tyr Ala  Leu Thr Ile Thr Asn  Tyr Leu Asn
    1250                1255                1260

Trp Val  Val Arg Asn Leu Ala  Asp Leu Glu Val Gln  Met Gly Ala
    1265                1270                1275

Val Lys  Lys Val Asn Ser Phe  Leu Thr Met Glu Ser  Glu Asn Tyr
    1280                1285                1290

Glu Gly  Thr Met Asp Pro Ser  Gln Val Pro Glu His  Trp Pro Gln
    1295                1300                1305

Glu Gly  Glu Ile Lys Ile His  Asp Leu Cys Val Arg  Tyr Glu Asn
    1310                1315                1320

Asn Leu  Lys Pro Val Leu Lys  His Val Lys Ala Tyr  Ile Lys Pro
    1325                1330                1335
```

Gly Gln Lys Val Gly Ile Cys Gly Arg Thr Gly Ser Gly Lys Ser
1340 1345 1350

Ser Leu Ser Leu Ala Phe Phe Arg Met Val Asp Ile Phe Asp Gly
1355 1360 1365

Lys Ile Val Ile Asp Gly Ile Asp Ile Ser Lys Leu Pro Leu His
1370 1375 1380

Thr Leu Arg Ser Arg Leu Ser Ile Ile Leu Gln Asp Pro Ile Leu
1385 1390 1395

Phe Ser Gly Ser Ile Arg Phe Asn Leu Asp Pro Glu Cys Lys Cys
1400 1405 1410

Thr Asp Asp Arg Leu Trp Glu Ala Leu Glu Ile Ala Gln Leu Lys
1415 1420 1425

Asn Met Val Lys Ser Leu Pro Gly Gly Leu Asp Ala Val Val Thr
1430 1435 1440

Glu Gly Gly Glu Asn Phe Ser Val Gly Gln Arg Gln Leu Phe Cys
1445 1450 1455

Leu Ala Arg Ala Phe Val Arg Lys Ser Ser Ile Leu Ile Met Asp
1460 1465 1470

Glu Ala Thr Ala Ser Ile Asp Met Ala Thr Glu Asn Ile Leu Gln
1475 1480 1485

Lys Val Val Met Thr Ala Phe Ala Asp Arg Thr Val Val Thr Ile
1490 1495 1500

Ala His Arg Val His Thr Ile Leu Thr Ala Asp Leu Val Ile Val
1505 1510 1515

Met Lys Arg Gly Asn Ile Leu Glu Tyr Asp Thr Pro Glu Ser Leu
1520 1525 1530

Leu Ala Gln Glu Asn Gly Val Phe Ala Ser Phe Val Arg Ala Asp
1535 1540 1545

Met

<210> 7765
<211> 1549
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1629; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 9; "

<220>
<221> source
<223> /note="Uniprot ID: O60706; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261201"

<400> 7765
Met Ser Leu Ser Phe Cys Gly Asn Asn Ile Ser Ser Tyr Asn Ile Asn
1   5   10   15

Asp Gly Val Leu Gln Asn Ser Cys Phe Val Asp Ala Leu Asn Leu Val
            20   25   30

Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe Ile Gly
        35   40   45

Trp Gly Ser Gln Ser Ser Lys Val Gln Ile His His Asn Thr Trp Leu
    50   55   60

His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Ala Leu Leu
65   70   75   80

Phe Val His Val Cys Glu Ile Ala Glu Gly Ile Val Ser Asp Ser Arg
                85   90   95

Arg Glu Ser Arg His Leu His Leu Phe Met Pro Ala Val Met Gly Phe

```
            100                 105                 110

Val Ala Thr Thr Thr Ser Ile Val Tyr Tyr His Asn Ile Glu Thr Ser
        115                 120                 125

Asn Phe Pro Lys Leu Leu Leu Ala Leu Phe Leu Tyr Trp Val Met Ala
    130                 135                 140

Phe Ile Thr Lys Thr Ile Lys Leu Val Lys Tyr Cys Gln Ser Gly Leu
145                 150                 155                 160

Asp Ile Ser Asn Leu Arg Phe Cys Ile Thr Gly Met Met Val Ile Leu
                165                 170                 175

Asn Gly Leu Leu Met Ala Val Glu Ile Asn Val Ile Arg Val Arg Arg
            180                 185                 190

Tyr Val Phe Phe Met Asn Pro Gln Lys Val Lys Pro Pro Glu Asp Leu
        195                 200                 205

Gln Asp Leu Gly Val Arg Phe Leu Gln Pro Phe Val Asn Leu Leu Ser
    210                 215                 220

Lys Ala Thr Tyr Trp Trp Met Asn Thr Leu Ile Ile Ser Ala His Lys
225                 230                 235                 240

Lys Pro Ile Asp Leu Lys Ala Ile Gly Lys Leu Pro Ile Ala Met Arg
                245                 250                 255

Ala Val Thr Asn Tyr Val Cys Leu Lys Asp Ala Tyr Glu Glu Gln Lys
            260                 265                 270

Lys Lys Val Ala Asp His Pro Asn Arg Thr Pro Ser Ile Trp Leu Ala
        275                 280                 285

Met Tyr Arg Ala Phe Gly Arg Pro Ile Leu Leu Ser Ser Thr Phe Arg
    290                 295                 300

Tyr Leu Ala Asp Leu Leu Gly Phe Ala Gly Pro Leu Cys Ile Ser Gly
305                 310                 315                 320

Ile Val Gln Arg Val Asn Glu Thr Gln Asn Gly Thr Asn Asn Thr Thr
                325                 330                 335
```

```
Gly Ile Ser Glu Thr Leu Ser Ser Lys Glu Phe Leu Glu Asn Ala Tyr
            340                 345                 350

Val Leu Ala Val Leu Leu Phe Leu Ala Leu Ile Leu Gln Arg Thr Phe
        355                 360                 365

Leu Gln Ala Ser Tyr Tyr Val Thr Ile Glu Thr Gly Ile Asn Leu Arg
    370                 375                 380

Gly Ala Leu Leu Ala Met Ile Tyr Asn Lys Ile Leu Arg Leu Ser Thr
385                 390                 395                 400

Ser Asn Leu Ser Met Gly Glu Met Thr Leu Gly Gln Ile Asn Asn Leu
                405                 410                 415

Val Ala Ile Glu Thr Asn Gln Leu Met Trp Phe Leu Phe Leu Cys Pro
            420                 425                 430

Asn Leu Trp Ala Met Pro Val Gln Ile Ile Met Gly Val Ile Leu Leu
        435                 440                 445

Tyr Asn Leu Leu Gly Ser Ser Ala Leu Val Gly Ala Ala Val Ile Val
    450                 455                 460

Leu Leu Ala Pro Ile Gln Tyr Phe Ile Ala Thr Lys Leu Ala Glu Ala
465                 470                 475                 480

Gln Lys Ser Thr Leu Asp Tyr Ser Thr Glu Arg Leu Lys Lys Thr Asn
                485                 490                 495

Glu Ile Leu Lys Gly Ile Lys Leu Leu Lys Leu Tyr Ala Trp Glu His
            500                 505                 510

Ile Phe Cys Lys Ser Val Glu Glu Thr Arg Met Lys Glu Leu Ser Ser
        515                 520                 525

Leu Lys Thr Phe Ala Leu Tyr Thr Ser Leu Ser Ile Phe Met Asn Ala
    530                 535                 540

Ala Ile Pro Ile Ala Ala Val Leu Ala Thr Phe Val Thr His Ala Tyr
545                 550                 555                 560
```

```
Ala Ser Gly Asn Asn Leu Lys Pro Ala Glu Ala Phe Ala Ser Leu Ser
                565                 570                 575

Leu Phe His Ile Leu Val Thr Pro Leu Phe Leu Leu Ser Thr Val Val
            580                 585                 590

Arg Phe Ala Val Lys Ala Ile Ile Ser Val Gln Lys Leu Asn Glu Phe
        595                 600                 605

Leu Leu Ser Asp Glu Ile Gly Asp Asp Ser Trp Arg Thr Gly Glu Ser
    610                 615                 620

Ser Leu Pro Phe Glu Ser Cys Lys Lys His Thr Gly Val Gln Pro Lys
625                 630                 635                 640

Thr Ile Asn Arg Lys Gln Pro Gly Arg Tyr His Leu Asp Ser Tyr Glu
                645                 650                 655

Gln Ser Thr Arg Arg Leu Arg Pro Ala Glu Thr Glu Asp Ile Ala Ile
            660                 665                 670

Lys Val Thr Asn Gly Tyr Phe Ser Trp Gly Ser Gly Leu Ala Thr Leu
        675                 680                 685

Ser Asn Ile Asp Ile Arg Ile Pro Thr Gly Gln Leu Thr Met Ile Val
    690                 695                 700

Gly Gln Val Gly Cys Gly Lys Ser Ser Leu Leu Leu Ala Ile Leu Gly
705                 710                 715                 720

Glu Met Gln Thr Leu Glu Gly Lys Val His Trp Ser Asn Val Asn Glu
                725                 730                 735

Ser Glu Pro Ser Phe Glu Ala Thr Arg Ser Arg Asn Arg Tyr Ser Val
            740                 745                 750

Ala Tyr Ala Ala Gln Lys Pro Trp Leu Leu Asn Ala Thr Val Glu Glu
        755                 760                 765

Asn Ile Thr Phe Gly Ser Pro Phe Asn Lys Gln Arg Tyr Lys Ala Val
    770                 775                 780
```

```
Thr Asp Ala Cys Ser Leu Gln Pro Asp Ile Asp Leu Leu Pro Phe Gly
785                 790                 795                 800

Asp Gln Thr Glu Ile Gly Glu Arg Gly Ile Asn Leu Ser Gly Gly Gln
                805                 810                 815

Arg Gln Arg Ile Cys Val Ala Arg Ala Leu Tyr Gln Asn Thr Asn Ile
            820                 825                 830

Val Phe Leu Asp Asp Pro Phe Ser Ala Leu Asp Ile His Leu Ser Asp
        835                 840                 845

His Leu Met Gln Glu Gly Ile Leu Lys Phe Leu Gln Asp Asp Lys Arg
    850                 855                 860

Thr Leu Val Leu Val Thr His Lys Leu Gln Tyr Leu Thr His Ala Asp
865                 870                 875                 880

Trp Ile Ile Ala Met Lys Asp Gly Ser Val Leu Arg Glu Gly Thr Leu
                885                 890                 895

Lys Asp Ile Gln Thr Lys Asp Val Glu Leu Tyr Glu His Trp Lys Thr
            900                 905                 910

Leu Met Asn Arg Gln Asp Gln Glu Leu Glu Lys Asp Met Glu Ala Asp
        915                 920                 925

Gln Thr Thr Leu Glu Arg Lys Thr Leu Arg Arg Ala Met Tyr Ser Arg
    930                 935                 940

Glu Ala Lys Ala Gln Met Glu Asp Glu Asp Glu Glu Glu Glu Glu Glu
945                 950                 955                 960

Glu Asp Glu Asp Asp Asn Met Ser Thr Val Met Arg Leu Arg Thr Lys
                965                 970                 975

Met Pro Trp Lys Thr Cys Trp Arg Tyr Leu Thr Ser Gly Gly Phe Phe
            980                 985                 990

Leu Leu Ile Leu Met Ile Phe Ser  Lys Leu Leu Lys His  Ser Val
Ile
        995                 1000                1005
```

Val Ala Ile Asp Tyr Trp Leu Ala Thr Trp Thr Ser Glu Tyr Ser
1010 1015 1020

Ile Asn Asn Thr Gly Lys Ala Asp Gln Thr Tyr Tyr Val Ala Gly
1025 1030 1035

Phe Ser Ile Leu Cys Gly Ala Gly Ile Phe Leu Cys Leu Val Thr
1040 1045 1050

Ser Leu Thr Val Glu Trp Met Gly Leu Thr Ala Ala Lys Asn Leu
1055 1060 1065

His His Asn Leu Leu Asn Lys Ile Ile Leu Gly Pro Ile Arg Phe
1070 1075 1080

Phe Asp Thr Thr Pro Leu Gly Leu Ile Leu Asn Arg Phe Ser Ala
1085 1090 1095

Asp Thr Asn Ile Ile Asp Gln His Ile Pro Pro Thr Leu Glu Ser
1100 1105 1110

Leu Thr Arg Ser Thr Leu Leu Cys Leu Ser Ala Ile Gly Met Ile
1115 1120 1125

Ser Tyr Ala Thr Pro Val Phe Leu Val Ala Leu Leu Pro Leu Gly
1130 1135 1140

Val Ala Phe Tyr Phe Ile Gln Lys Tyr Phe Arg Val Ala Ser Lys
1145 1150 1155

Asp Leu Gln Glu Leu Asp Asp Ser Thr Gln Leu Pro Leu Leu Cys
1160 1165 1170

His Phe Ser Glu Thr Ala Glu Gly Leu Thr Thr Ile Arg Ala Phe
1175 1180 1185

Arg His Glu Thr Arg Phe Lys Gln Arg Met Leu Glu Leu Thr Asp
1190 1195 1200

Thr Asn Asn Ile Ala Tyr Leu Phe Leu Ser Ala Ala Asn Arg Trp
1205 1210 1215

Leu Glu Val Arg Thr Asp Tyr Leu Gly Ala Cys Ile Val Leu Thr

1220 1225 1230

Ala Ser Ile Ala Ser Ile Ser Gly Ser Ser Asn Ser Gly Leu Val
1235 1240 1245

Gly Leu Gly Leu Leu Tyr Ala Leu Thr Ile Thr Asn Tyr Leu Asn
1250 1255 1260

Trp Val Val Arg Asn Leu Ala Asp Leu Glu Val Gln Met Gly Ala
1265 1270 1275

Val Lys Lys Val Asn Ser Phe Leu Thr Met Glu Ser Glu Asn Tyr
1280 1285 1290

Glu Gly Thr Met Asp Pro Ser Gln Val Pro Glu His Trp Pro Gln
1295 1300 1305

Glu Gly Glu Ile Lys Ile His Asp Leu Cys Val Arg Tyr Glu Asn
1310 1315 1320

Asn Leu Lys Pro Val Leu Lys His Val Lys Ala Tyr Ile Lys Pro
1325 1330 1335

Gly Gln Lys Val Gly Ile Cys Gly Arg Thr Gly Ser Gly Lys Ser
1340 1345 1350

Ser Leu Ser Leu Ala Phe Phe Arg Met Val Asp Ile Phe Asp Gly
1355 1360 1365

Lys Ile Val Ile Asp Gly Ile Asp Ile Ser Lys Leu Pro Leu His
1370 1375 1380

Thr Leu Arg Ser Arg Leu Ser Ile Ile Leu Gln Asp Pro Ile Leu
1385 1390 1395

Phe Ser Gly Ser Ile Arg Phe Asn Leu Asp Pro Glu Cys Lys Cys
1400 1405 1410

Thr Asp Asp Arg Leu Trp Glu Ala Leu Glu Ile Ala Gln Leu Lys
1415 1420 1425

Asn Met Val Lys Ser Leu Pro Gly Gly Leu Asp Ala Val Val Thr
1430 1435 1440

```
Glu Gly  Gly Glu Asn Phe Ser  Val Gly Gln Arg Gln  Leu Phe Cys
    1445                1450                1455

Leu Ala  Arg Ala Phe Val Arg  Lys Ser Ser Ile Leu  Ile Met Asp
    1460                1465                1470

Glu Ala  Thr Ala Ser Ile Asp  Met Ala Thr Glu Asn  Ile Leu Gln
    1475                1480                1485

Lys Val  Val Met Thr Ala Phe  Ala Asp Arg Thr Val  Val Thr Ile
    1490                1495                1500

Ala His  Arg Val Ser Ser Ile  Met Asp Ala Gly Leu  Val Leu Val
    1505                1510                1515

Phe Ser  Glu Gly Ile Leu Val  Glu Cys Asp Thr Val  Pro Asn Leu
    1520                1525                1530

Leu Ala  His Lys Asn Gly Leu  Phe Ser Thr Leu Val  Met Thr Asn
    1535                1540                1545

Lys
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<210> 7766
<211> 149
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1629; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000317518"

<400> 7766
Met Ser Leu Ser Phe Cys Gly Asn Asn Ile Ser Ser Tyr Asn Ile Asn
1 5 10 15

Asp Gly Val Leu Gln Asn Ser Cys Phe Val Asp Ala Leu Asn Leu Val
20 25 30

Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe Ile Gly
35 40 45

Trp Gly Ser Gln Ser Ser Lys Val Gln Ile His His Asn Thr Trp Leu
50 55 60

His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Ala Leu Leu
65 70 75 80

Phe Val His Val Cys Glu Ile Ala Glu Gly Ile Val Ser Asp Ser Arg
85 90 95

Arg Glu Ser Arg His Leu His Leu Phe Met Pro Ala Val Met Gly Phe
100 105 110

Val Ala Thr Thr Thr Ser Ile Val Tyr Tyr His Asn Ile Glu Thr Ser
115 120 125

Asn Phe Pro Lys Leu Leu Leu Gly Phe Ser His His Glu Ser Lys Ser
130 135 140

Cys Tyr Gln His Ser
145

<210> 7767
<211> 1176
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1629; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC9; "

<220>
<221> source

<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440521"

<400> 7767

```
Ile Ser Glu Thr Leu Ser Ser Lys Glu Phe Leu Glu Asn Ala Tyr Val
1               5                  10                  15

Leu Ala Val Leu Leu Phe Leu Ala Leu Ile Leu Gln Arg Thr Phe Leu
            20                  25                  30

Gln Ala Ser Tyr Tyr Val Thr Ile Glu Thr Gly Ile Asn Leu Arg Gly
        35                  40                  45

Ala Leu Leu Ala Met Ile Tyr Asn Lys Ile Leu Arg Leu Ser Thr Ser
    50                  55                  60

Asn Leu Ser Met Gly Glu Met Thr Leu Gly Gln Ile Asn Asn Leu Val
65                  70                  75                  80

Ala Ile Glu Thr Asn Gln Leu Met Trp Phe Leu Phe Leu Cys Pro Asn
                85                  90                  95

Leu Trp Ala Met Pro Val Gln Ile Ile Met Gly Val Ile Leu Leu Tyr
            100                 105                 110

Asn Leu Leu Gly Ser Ser Ala Leu Val Gly Ala Ala Val Ile Val Leu
        115                 120                 125

Leu Ala Pro Ile Gln Tyr Phe Ile Ala Thr Lys Leu Ala Glu Ala Gln
    130                 135                 140

Lys Ser Thr Leu Asp Tyr Ser Thr Glu Arg Leu Lys Lys Thr Asn Glu
145                 150                 155                 160

Ile Leu Lys Gly Ile Lys Leu Leu Lys Leu Tyr Ala Trp Glu His Ile
                165                 170                 175

Phe Cys Lys Ser Val Glu Glu Thr Arg Met Lys Glu Leu Ser Ser Leu
            180                 185                 190
```

```
Lys Thr Phe Ala Leu Tyr Thr Ser Leu Ser Ile Phe Met Asn Ala Ala
        195                 200                 205

Ile Pro Ile Ala Ala Val Leu Ala Thr Phe Val Thr His Ala Tyr Ala
    210                 215                 220

Ser Gly Asn Asn Leu Lys Pro Ala Glu Ala Phe Ala Ser Leu Ser Leu
225                 230                 235                 240

Phe His Ile Leu Val Thr Pro Leu Phe Leu Leu Ser Thr Val Val Arg
                245                 250                 255

Phe Ala Val Lys Ala Ile Ile Ser Val Gln Lys Leu Asn Glu Phe Leu
            260                 265                 270

Leu Ser Asp Glu Ile Gly Asp Asp Ser Trp Arg Thr Gly Glu Ser Ser
        275                 280                 285

Leu Pro Phe Glu Ser Cys Lys Lys His Thr Gly Val Val Thr Asn Gly
    290                 295                 300

Tyr Phe Ser Trp Gly Ser Gly Leu Ala Thr Leu Ser Asn Ile Asp Ile
305                 310                 315                 320

Arg Ile Pro Thr Gly Gln Leu Thr Met Ile Val Gly Gln Val Gly Cys
                325                 330                 335

Gly Lys Ser Ser Leu Leu Leu Ala Ile Leu Gly Glu Met Gln Thr Leu
            340                 345                 350

Glu Gly Lys Val His Trp Ser Asn Val Asn Glu Ser Glu Pro Ser Phe
        355                 360                 365

Glu Ala Thr Arg Ser Arg Asn Arg Tyr Ser Val Ala Tyr Ala Ala Gln
    370                 375                 380

Lys Pro Trp Leu Leu Asn Ala Thr Val Glu Glu Asn Ile Thr Phe Gly
385                 390                 395                 400

Ser Pro Phe Asn Lys Gln Arg Tyr Lys Ala Val Thr Asp Ala Cys Ser
                405                 410                 415
```

```
Leu Gln Pro Asp Ile Asp Leu Leu Pro Phe Gly Asp Gln Thr Glu Ile
            420                 425                 430

Gly Glu Arg Gly Ile Asn Leu Ser Gly Gly Gln Arg Gln Arg Ile Cys
        435                 440                 445

Val Ala Arg Ala Leu Tyr Gln Asn Thr Asn Ile Val Phe Leu Asp Asp
    450                 455                 460

Pro Phe Ser Ala Leu Asp Ile His Leu Ser Asp His Leu Met Gln Glu
465                 470                 475                 480

Gly Ile Leu Lys Phe Leu Gln Asp Asp Lys Arg Thr Leu Val Leu Val
                485                 490                 495

Thr His Lys Leu Gln Tyr Leu Thr His Ala Asp Trp Ile Ile Ala Met
            500                 505                 510

Lys Asp Gly Ser Val Leu Arg Glu Gly Thr Leu Lys Asp Ile Gln Thr
        515                 520                 525

Lys Asp Val Glu Leu Tyr Glu His Trp Lys Thr Leu Met Asn Arg Gln
    530                 535                 540

Asp Gln Glu Leu Glu Lys Asp Met Glu Ala Asp Gln Thr Thr Leu Glu
545                 550                 555                 560

Arg Lys Thr Leu Arg Arg Ala Met Tyr Ser Arg Glu Ala Lys Ala Gln
                565                 570                 575

Met Glu Asp Glu Asp Glu Glu Glu Glu Glu Glu Glu Asp Glu Asp Asp
            580                 585                 590

Asn Met Ser Thr Val Met Arg Leu Arg Thr Lys Met Pro Trp Lys Thr
        595                 600                 605

Cys Trp Arg Tyr Leu Thr Ser Gly Gly Phe Phe Leu Leu Ile Leu Met
    610                 615                 620

Ile Phe Ser Lys Leu Leu Lys His Ser Val Ile Val Ala Ile Asp Tyr
625                 630                 635                 640

Trp Leu Ala Thr Trp Thr Ser Glu Tyr Ser Ile Asn Asn Thr Gly Lys
```

645 650 655

Ala Asp Gln Thr Tyr Tyr Val Ala Gly Phe Ser Ile Leu Cys Gly Ala
660 665 670

Gly Ile Phe Leu Cys Leu Val Thr Ser Leu Thr Val Glu Trp Met Gly
675 680 685

Leu Thr Ala Ala Lys Asn Leu His His Asn Leu Leu Asn Lys Ile Ile
690 695 700

Leu Gly Pro Ile Arg Phe Phe Asp Thr Thr Pro Leu Gly Leu Ile Leu
705 710 715 720

Asn Arg Phe Ser Ala Asp Thr Asn Ile Ile Asp Gln His Ile Pro Pro
725 730 735

Thr Leu Glu Ser Leu Thr Arg Ser Thr Leu Leu Cys Leu Ser Ala Ile
740 745 750

Gly Met Ile Ser Tyr Ala Thr Pro Val Phe Leu Val Ala Leu Leu Pro
755 760 765

Leu Gly Val Ala Phe Tyr Phe Ile Gln Lys Tyr Phe Arg Val Ala Ser
770 775 780

Lys Asp Leu Gln Glu Leu Asp Asp Ser Thr Gln Leu Pro Leu Leu Cys
785 790 795 800

His Phe Ser Glu Thr Ala Glu Gly Leu Thr Thr Ile Arg Ala Phe Arg
805 810 815

His Glu Thr Arg Phe Lys Gln Arg Met Leu Glu Leu Thr Asp Thr Asn
820 825 830

Asn Ile Ala Tyr Leu Phe Leu Ser Ala Ala Asn Arg Trp Leu Glu Val
835 840 845

Arg Thr Asp Tyr Leu Gly Ala Cys Ile Val Leu Thr Ala Ser Ile Ala
850 855 860

Ser Ile Ser Gly Ser Ser Asn Ser Gly Leu Val Gly Leu Gly Leu Leu
865 870 875 880

```
Tyr Ala Leu Thr Ile Thr Asn Tyr Leu Asn Trp Val Val Arg Asn Leu
                885                 890                 895

Ala Asp Leu Glu Val Gln Met Gly Ala Val Lys Lys Val Asn Ser Phe
            900                 905                 910

Leu Thr Met Glu Ser Glu Asn Tyr Glu Gly Thr Met Asp Pro Ser Gln
        915                 920                 925

Val Pro Glu His Trp Pro Gln Glu Gly Glu Ile Lys Ile His Asp Leu
    930                 935                 940

Cys Val Arg Tyr Glu Asn Asn Leu Lys Pro Val Leu Lys His Val Lys
945                 950                 955                 960

Ala Tyr Ile Lys Pro Gly Gln Lys Val Gly Ile Cys Gly Arg Thr Gly
                965                 970                 975

Ser Gly Lys Ser Ser Leu Ser Leu Ala Phe Phe Arg Met Val Asp Ile
            980                 985                 990

Phe Asp Gly Lys Ile Val Ile Asp  Gly Ile Asp Ile Ser  Lys Leu
Pro
        995                 1000                1005

Leu His  Thr Leu Arg Ser Arg  Leu Ser Ile Ile Leu  Gln Asp Pro
    1010                1015                1020

Ile Leu  Phe Ser Gly Ser Ile  Arg Phe Asn Leu Asp  Pro Glu Cys
    1025                1030                1035

Lys Cys  Thr Asp Asp Arg Leu  Trp Glu Ala Leu Glu  Ile Ala Gln
    1040                1045                1050

Leu Lys  Asn Met Val Lys Ser  Leu Pro Gly Gly Leu  Asp Ala Val
    1055                1060                1065

Val Thr  Glu Gly Gly Glu Asn  Phe Ser Val Gly Gln  Arg Gln Leu
    1070                1075                1080

Phe Cys  Leu Ala Arg Ala Phe  Val Arg Lys Ser Ser  Ile Leu Ile
    1085                1090                1095
```

```
Met Asp  Glu Ala Thr Ala Ser  Ile Asp Met Ala Thr  Glu Asn Ile
    1100                1105                1110

Leu Gln  Lys Val Val Met Thr  Ala Phe Ala Asp Arg  Thr Val Val
    1115                1120                1125

Thr Ile  Ala His Arg Val Ser  Ser Ile Met Asp Ala  Gly Leu Val
    1130                1135                1140

Leu Val  Phe Ser Glu Gly Ile  Leu Val Glu Cys Asp  Thr Val Pro
    1145                1150                1155

Asn Leu  Leu Ala His Lys Asn  Gly Leu Phe Ser Thr  Leu Val Met
    1160                1165                1170

Thr Asn  Lys
    1175


<210> 7768
<211> 170
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1629; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC9; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      C (CFTR/MRP),
      member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442604"

<400> 7768
Met Ser Leu Ser Phe Cys Gly Asn Asn Ile Ser Ser Tyr Asn Ile Asn
1               5                  10                  15

Asp Gly Val Leu Gln Asn Ser Cys Phe Val Asp Ala Leu Asn Leu Val
            20                  25                  30
```

```
Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe Ile Gly
        35                  40                  45

Trp Gly Ser Gln Ser Ser Lys Val Gln Ile His His Asn Thr Trp Leu
    50                  55                  60

His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Ala Leu Leu
65                  70                  75                  80

Phe Val His Val Cys Glu Ile Ala Glu Gly Ile Val Ser Asp Ser Arg
                85                  90                  95

Arg Glu Ser Arg His Leu His Leu Phe Met Pro Ala Val Met Gly Phe
            100                 105                 110

Val Ala Thr Thr Thr Ser Ile Val Tyr Tyr His Asn Ile Glu Thr Ser
        115                 120                 125

Asn Phe Pro Lys Leu Leu Leu Val Pro Gly Val Ser Val Ser Gly Leu
    130                 135                 140

Glu Ser Lys Asp Ile Phe Pro Arg Phe Lys Pro Phe Thr Asp Ala Val
145                 150                 155                 160

Gly Met Pro His Phe Thr Arg Ile Thr Met
                165                 170
```

<210> 7769
<211> 149
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1629; "

<220>
<221> source
<223> /note="Gene Symbol: ABCC9; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
C (CFTR/MRP),
member 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480233"

<400> 7769
Met Ser Leu Ser Phe Cys Gly Asn Asn Ile Ser Ser Tyr Asn Ile Asn
1   5   10   15

Asp Gly Val Leu Gln Asn Ser Cys Phe Val Asp Ala Leu Asn Leu Val
            20   25   30

Pro His Val Phe Leu Leu Phe Ile Thr Phe Pro Ile Leu Phe Ile Gly
        35   40   45

Trp Gly Ser Gln Ser Ser Lys Val Gln Ile His His Asn Thr Trp Leu
    50   55   60

His Phe Pro Gly His Asn Leu Arg Trp Ile Leu Thr Phe Ala Leu Leu
65   70   75   80

Phe Val His Val Cys Glu Ile Ala Glu Gly Ile Val Ser Asp Ser Arg
                85   90   95

Arg Glu Ser Arg His Leu His Leu Phe Met Pro Ala Val Met Gly Phe
            100   105   110

Val Ala Thr Thr Thr Ser Ile Val Tyr Tyr His Asn Ile Glu Thr Ser
        115   120   125

Asn Phe Pro Lys Leu Leu Leu Gly Phe Ser His His Glu Ser Lys Ser
    130   135   140

Cys Tyr Gln His Ser
145

<210> 7770
<211> 745
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1630; "

<220>
<221> source

<223> /note="Gene Symbol: ABCD1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P33897; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000218104"

<400> 7770

```
Met Pro Val Leu Ser Arg Pro Arg Pro Trp Arg Gly Asn Thr Leu Lys
1               5                   10                  15


Arg Thr Ala Val Leu Leu Ala Leu Ala Ala Tyr Gly Ala His Lys Val
            20                  25                  30


Tyr Pro Leu Val Arg Gln Cys Leu Ala Pro Ala Arg Gly Leu Gln Ala
        35                  40                  45


Pro Ala Gly Glu Pro Thr Gln Glu Ala Ser Gly Val Ala Ala Ala Lys
    50                  55                  60


Ala Gly Met Asn Arg Val Phe Leu Gln Arg Leu Leu Trp Leu Leu Arg
65                  70                  75                  80


Leu Leu Phe Pro Arg Val Leu Cys Arg Glu Thr Gly Leu Leu Ala Leu
                85                  90                  95


His Ser Ala Ala Leu Val Ser Arg Thr Phe Leu Ser Val Tyr Val Ala
            100                 105                 110


Arg Leu Asp Gly Arg Leu Ala Arg Cys Ile Val Arg Lys Asp Pro Arg
        115                 120                 125


Ala Phe Gly Trp Gln Leu Leu Gln Trp Leu Leu Ile Ala Leu Pro Ala
    130                 135                 140


Thr Phe Val Asn Ser Ala Ile Arg Tyr Leu Glu Gly Gln Leu Ala Leu
145                 150                 155                 160
```

```
Ser Phe Arg Ser Arg Leu Val Ala His Ala Tyr Arg Leu Tyr Phe Ser
                165                 170                 175

Gln Gln Thr Tyr Tyr Arg Val Ser Asn Met Asp Gly Arg Leu Arg Asn
            180                 185                 190

Pro Asp Gln Ser Leu Thr Glu Asp Val Val Ala Phe Ala Ala Ser Val
        195                 200                 205

Ala His Leu Tyr Ser Asn Leu Thr Lys Pro Leu Leu Asp Val Ala Val
    210                 215                 220

Thr Ser Tyr Thr Leu Leu Arg Ala Ala Arg Ser Arg Gly Ala Gly Thr
225                 230                 235                 240

Ala Trp Pro Ser Ala Ile Ala Gly Leu Val Val Phe Leu Thr Ala Asn
                245                 250                 255

Val Leu Arg Ala Phe Ser Pro Lys Phe Gly Glu Leu Val Ala Glu Glu
            260                 265                 270

Ala Arg Arg Lys Gly Glu Leu Arg Tyr Met His Ser Arg Val Val Ala
        275                 280                 285

Asn Ser Glu Glu Ile Ala Phe Tyr Gly Gly His Glu Val Glu Leu Ala
    290                 295                 300

Leu Leu Gln Arg Ser Tyr Gln Asp Leu Ala Ser Gln Ile Asn Leu Ile
305                 310                 315                 320

Leu Leu Glu Arg Leu Trp Tyr Val Met Leu Glu Gln Phe Leu Met Lys
                325                 330                 335

Tyr Val Trp Ser Ala Ser Gly Leu Leu Met Val Ala Val Pro Ile Ile
            340                 345                 350

Thr Ala Thr Gly Tyr Ser Glu Ser Asp Ala Glu Ala Val Lys Lys Ala
        355                 360                 365

Ala Leu Glu Lys Lys Glu Glu Glu Leu Val Ser Glu Arg Thr Glu Ala
    370                 375                 380
```

```
Phe Thr Ile Ala Arg Asn Leu Leu Thr Ala Ala Ala Asp Ala Ile Glu
385                 390                 395                 400

Arg Ile Met Ser Ser Tyr Lys Glu Val Thr Glu Leu Ala Gly Tyr Thr
                405                 410                 415

Ala Arg Val His Glu Met Phe Gln Val Phe Glu Asp Val Gln Arg Cys
            420                 425                 430

His Phe Lys Arg Pro Arg Glu Leu Glu Asp Ala Gln Ala Gly Ser Gly
        435                 440                 445

Thr Ile Gly Arg Ser Gly Val Arg Val Glu Gly Pro Leu Lys Ile Arg
    450                 455                 460

Gly Gln Val Val Asp Val Glu Gln Gly Ile Ile Cys Glu Asn Ile Pro
465                 470                 475                 480

Ile Val Thr Pro Ser Gly Glu Val Val Val Ala Ser Leu Asn Ile Arg
                485                 490                 495

Val Glu Glu Gly Met His Leu Leu Ile Thr Gly Pro Asn Gly Cys Gly
            500                 505                 510

Lys Ser Ser Leu Phe Arg Ile Leu Gly Gly Leu Trp Pro Thr Tyr Gly
        515                 520                 525

Gly Val Leu Tyr Lys Pro Pro Pro Gln Arg Met Phe Tyr Ile Pro Gln
    530                 535                 540

Arg Pro Tyr Met Ser Val Gly Ser Leu Arg Asp Gln Val Ile Tyr Pro
545                 550                 555                 560

Asp Ser Val Glu Asp Met Gln Arg Lys Gly Tyr Ser Glu Gln Asp Leu
                565                 570                 575

Glu Ala Ile Leu Asp Val Val His Leu His His Ile Leu Gln Arg Glu
            580                 585                 590

Gly Gly Trp Glu Ala Met Cys Asp Trp Lys Asp Val Leu Ser Gly Gly
        595                 600                 605

Glu Lys Gln Arg Ile Gly Met Ala Arg Met Phe Tyr His Arg Pro Lys
```

```
    610                 615                 620

Tyr Ala Leu Leu Asp Glu Cys Thr Ser Ala Val Ser Ile Asp Val Glu
625                 630                 635                 640

Gly Lys Ile Phe Gln Ala Ala Lys Asp Ala Gly Ile Ala Leu Leu Ser
                645                 650                 655

Ile Thr His Arg Pro Ser Leu Trp Lys Tyr His Thr His Leu Leu Gln
            660                 665                 670

Phe Asp Gly Glu Gly Gly Trp Lys Phe Glu Lys Leu Asp Ser Ala Ala
        675                 680                 685

Arg Leu Ser Leu Thr Glu Glu Lys Gln Arg Leu Glu Gln Gln Leu Ala
    690                 695                 700

Gly Ile Pro Lys Met Gln Arg Arg Leu Gln Glu Leu Cys Gln Ile Leu
705                 710                 715                 720

Gly Glu Ala Val Ala Pro Ala His Val Pro Ala Pro Ser Pro Gln Gly
                725                 730                 735

Pro Gly Gly Leu Gln Gly Ala Ser Thr
            740                 745


<210> 7771
<211> 227
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1630; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000359147"

<400> 7771

```
Met Asp Gly Arg Leu Arg Asn Pro Asp Gln Ser Leu Thr Glu Asp Val
1               5                  10                  15

Val Ala Phe Ala Ala Ser Val Ala His Leu Tyr Ser Asn Leu Thr Lys
            20                  25                  30

Pro Leu Leu Asp Val Ala Val Thr Ser Tyr Thr Leu Leu Arg Ala Ala
        35                  40                  45

Arg Ser Arg Gly Ala Gly Thr Ala Trp Pro Ser Ala Ile Ala Gly Leu
    50                  55                  60

Val Val Phe Leu Thr Ala Asn Val Leu Arg Ala Phe Ser Pro Lys Phe
65                  70                  75                  80

Gly Glu Leu Val Ala Glu Glu Ala Arg Arg Lys Gly Glu Leu Arg Tyr
                85                  90                  95

Met His Ser Arg Val Val Ala Asn Ser Glu Glu Ile Ala Phe Tyr Gly
            100                 105                 110

Gly His Glu Val Glu Leu Ala Leu Leu Gln Arg Ser Tyr Gln Asp Leu
        115                 120                 125

Ala Ser Gln Ile Asn Leu Ile Leu Leu Glu Arg Leu Trp Tyr Val Met
    130                 135                 140

Leu Glu Gln Phe Leu Met Lys Tyr Val Trp Ser Ala Ser Gly Leu Leu
145                 150                 155                 160

Met Val Ala Val Pro Ile Ile Thr Ala Thr Gly Tyr Ser Glu Ser Gly
                165                 170                 175

Glu Thr Gln Gly Ser Lys Arg Ile Gln Ala Arg Gly Leu Ser Pro Ile
            180                 185                 190

Pro Leu Gly Ala Glu Leu Thr Arg Ala Gln Leu Ser Gln Pro Ala Ala
        195                 200                 205

His Phe Cys Cys Arg Gly His Arg Gly Pro Ala Ala Ser Leu Asp Ala
    210                 215                 220
```

Phe Arg Gly
225

<210> 7772
<211> 740
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1631; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UBJ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000310688"

<400> 7772
Met Thr His Met Leu Asn Ala Ala Ala Asp Arg Val Lys Trp Thr Arg
1   5   10   15

Ser Ser Ala Ala Lys Arg Ala Ala Cys Leu Val Ala Ala Ala Tyr Ala
            20   25   30

Leu Lys Thr Leu Tyr Pro Ile Ile Gly Lys Arg Leu Lys Gln Ser Gly
        35   40   45

His Gly Lys Lys Lys Ala Ala Ala Tyr Pro Ala Ala Glu Asn Thr Glu
    50   55   60

Ile Leu His Cys Thr Glu Thr Ile Cys Glu Lys Pro Ser Pro Gly Val
65   70   75   80

Asn Ala Asp Phe Phe Lys Gln Leu Leu Glu Leu Arg Lys Ile Leu Phe
                85   90   95

```
Pro Lys Leu Val Thr Thr Glu Thr Gly Trp Leu Cys Leu His Ser Val
            100                 105                 110

Ala Leu Ile Ser Arg Thr Phe Leu Ser Ile Tyr Val Ala Gly Leu Asp
        115                 120                 125

Gly Lys Ile Val Lys Ser Ile Val Glu Lys Lys Pro Arg Thr Phe Ile
    130                 135                 140

Ile Lys Leu Ile Lys Trp Leu Met Ile Ala Ile Pro Ala Thr Phe Val
145                 150                 155                 160

Asn Ser Ala Ile Arg Tyr Leu Glu Cys Lys Leu Ala Leu Ala Phe Arg
                165                 170                 175

Thr Arg Leu Val Asp His Ala Tyr Glu Thr Tyr Phe Thr Asn Gln Thr
            180                 185                 190

Tyr Tyr Lys Val Ile Asn Met Asp Gly Arg Leu Ala Asn Pro Asp Gln
        195                 200                 205

Ser Leu Thr Glu Asp Ile Met Met Phe Ser Gln Ser Val Ala His Leu
    210                 215                 220

Tyr Ser Asn Leu Thr Lys Pro Ile Leu Asp Val Met Leu Thr Ser Tyr
225                 230                 235                 240

Thr Leu Ile Gln Thr Ala Thr Ser Arg Gly Ala Ser Pro Ile Gly Pro
                245                 250                 255

Thr Leu Leu Ala Gly Leu Val Val Tyr Ala Thr Ala Lys Val Leu Lys
            260                 265                 270

Ala Cys Ser Pro Lys Phe Gly Lys Leu Val Ala Glu Glu Ala His Arg
        275                 280                 285

Lys Gly Tyr Leu Arg Tyr Val His Ser Arg Ile Ile Ala Asn Val Glu
    290                 295                 300

Glu Ile Ala Phe Tyr Arg Gly His Lys Val Glu Met Lys Gln Leu Gln
305                 310                 315                 320
```

```
Lys Ser Tyr Lys Ala Leu Ala Asp Gln Met Asn Leu Ile Leu Ser Lys
                325                 330                 335

Arg Leu Trp Tyr Ile Met Ile Glu Gln Phe Leu Met Lys Tyr Val Trp
            340                 345                 350

Ser Ser Ser Gly Leu Ile Met Val Ala Ile Pro Ile Ile Thr Ala Thr
        355                 360                 365

Gly Phe Ala Asp Gly Glu Asp Gly Gln Lys Gln Val Met Val Ser Glu
    370                 375                 380

Arg Thr Glu Ala Phe Thr Thr Ala Arg Asn Leu Leu Ala Ser Gly Ala
385                 390                 395                 400

Asp Ala Ile Glu Arg Ile Met Ser Ser Tyr Lys Glu Val Thr Glu Leu
                405                 410                 415

Ala Gly Tyr Thr Ala Arg Val Tyr Asn Met Phe Trp Val Phe Asp Glu
            420                 425                 430

Val Lys Arg Gly Ile Tyr Lys Arg Thr Ala Val Ile Gln Glu Ser Glu
        435                 440                 445

Ser His Ser Lys Asn Gly Ala Lys Val Glu Leu Pro Leu Ser Asp Thr
    450                 455                 460

Leu Ala Ile Lys Gly Lys Val Ile Asp Val Asp His Gly Ile Ile Cys
465                 470                 475                 480

Glu Asn Val Pro Ile Ile Thr Pro Ala Gly Glu Val Val Ala Ser Arg
                485                 490                 495

Leu Asn Phe Lys Val Glu Glu Gly Met His Leu Leu Ile Thr Gly Pro
            500                 505                 510

Asn Gly Cys Gly Lys Ser Ser Leu Phe Arg Ile Leu Ser Gly Leu Trp
        515                 520                 525

Pro Val Tyr Glu Gly Val Leu Tyr Lys Pro Pro Pro Gln His Met Phe
    530                 535                 540
```

```
Tyr Ile Pro Gln Arg Pro Tyr Met Ser Leu Gly Ser Leu Arg Asp Gln
545                 550                 555                 560

Val Ile Tyr Pro Asp Ser Val Asp Asp Met His Asp Lys Gly Tyr Thr
                565                 570                 575

Asp Gln Asp Leu Glu Arg Ile Leu His Asn Val His Leu Tyr His Ile
            580                 585                 590

Val Gln Arg Glu Gly Gly Trp Asp Ala Val Met Asp Trp Lys Asp Val
        595                 600                 605

Leu Ser Gly Gly Glu Lys Gln Arg Met Gly Met Ala Arg Met Phe Tyr
    610                 615                 620

His Lys Pro Lys Tyr Ala Leu Leu Asp Glu Cys Thr Ser Ala Val Ser
625                 630                 635                 640

Ile Asp Val Glu Gly Lys Ile Phe Gln Ala Ala Lys Gly Ala Gly Ile
                645                 650                 655

Ser Leu Leu Ser Ile Thr His Arg Pro Ser Leu Trp Lys Tyr His Thr
            660                 665                 670

His Leu Leu Gln Phe Asp Gly Glu Gly Gly Trp Arg Phe Glu Gln Leu
        675                 680                 685

Asp Thr Ala Ile Arg Leu Thr Leu Ser Glu Glu Lys Gln Lys Leu Glu
    690                 695                 700

Ser Gln Leu Ala Gly Ile Pro Lys Met Gln Gln Arg Leu Asn Glu Leu
705                 710                 715                 720

Cys Lys Ile Leu Gly Glu Asp Ser Val Leu Lys Thr Ile Lys Asn Glu
                725                 730                 735

Asp Glu Thr Ser
            740
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<210> 7773
<211> 236
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1632; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 3; "

<220>
<221> source
<223> /note="Uniprot ID: P28288; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000326880"

<400> 7773
Met Ala Ala Phe Ser Lys Tyr Leu Thr Ala Arg Asn Ser Ser Leu Ala
1   5   10   15

Gly Ala Ala Phe Leu Leu Leu Cys Leu Leu His Lys Arg Arg Arg Ala
            20   25   30

Leu Gly Leu His Gly Lys Lys Ser Gly Lys Pro Pro Leu Gln Asn Asn
        35   40   45

Glu Lys Glu Gly Lys Lys Glu Arg Ala Val Val Asp Lys Val Phe Phe
    50   55   60

Ser Arg Leu Ile Gln Ile Leu Lys Ile Met Val Pro Arg Thr Phe Cys
65   70   75   80

Lys Glu Thr Gly Tyr Leu Val Leu Ile Ala Val Met Leu Val Ser Arg
                85   90   95

Thr Tyr Cys Asp Val Trp Met Ile Gln Asn Gly Thr Leu Ile Glu Ser
            100   105   110

Gly Ile Ile Gly Arg Ser Arg Lys Asp Phe Lys Arg Tyr Leu Leu Asn
        115   120   125

Phe Ile Ala Ala Met Pro Leu Ile Ser Leu Val Asn Asn Phe Leu Lys

```
    130                 135                 140

Tyr Gly Leu Asn Glu Leu Lys Leu Cys Phe Arg Val Arg Leu Thr Lys
145                 150                 155                 160

Tyr Leu Tyr Glu Glu Tyr Leu Gln Ala Phe Thr Tyr Tyr Lys Met Gly
                165                 170                 175

Asn Leu Asp Asn Arg Ile Ala Asn Pro Asp Gln Leu Leu Thr Gln Asp
            180                 185                 190

Val Glu Lys Phe Cys Asn Ser Val Val Asp Leu Tyr Ser Asn Leu Ser
        195                 200                 205

Lys Pro Phe Leu Asp Ile Val Leu Tyr Ile Phe Lys Leu Thr Ser Ala
    210                 215                 220

Ile Gly Ala Gln Val Leu Gly Lys Ile Leu Trp His
225                 230                 235


<210> 7774
<211> 659
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1632; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD3; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 3; "

<220>
<221> source
<223> /note="Uniprot ID:  P28288; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359233"

<400> 7774
Met Ala Ala Phe Ser Lys Tyr Leu Thr Ala Arg Asn Ser Ser Leu Ala
```

```
1               5                   10                  15

Gly Ala Ala Phe Leu Leu Leu Cys Leu Leu His Lys Arg Arg Arg Ala
            20                  25                  30

Leu Gly Leu His Gly Lys Lys Ser Gly Lys Pro Pro Leu Gln Asn Asn
        35                  40                  45

Glu Lys Glu Gly Lys Lys Glu Arg Ala Val Val Asp Lys Val Phe Phe
    50                  55                  60

Ser Arg Leu Ile Gln Ile Leu Lys Ile Met Val Pro Arg Thr Phe Cys
65                  70                  75                  80

Lys Glu Thr Gly Tyr Leu Val Leu Ile Ala Val Met Leu Val Ser Arg
                85                  90                  95

Thr Tyr Cys Asp Val Trp Met Ile Gln Asn Gly Thr Leu Ile Glu Ser
            100                 105                 110

Gly Ile Ile Gly Arg Ser Arg Lys Asp Phe Lys Arg Tyr Leu Leu Asn
        115                 120                 125

Phe Ile Ala Ala Met Pro Leu Ile Ser Leu Val Asn Asn Phe Leu Lys
    130                 135                 140

Tyr Gly Leu Asn Glu Leu Lys Leu Cys Phe Arg Val Arg Leu Thr Lys
145                 150                 155                 160

Tyr Leu Tyr Glu Glu Tyr Leu Gln Ala Phe Thr Tyr Tyr Lys Met Gly
                165                 170                 175

Asn Leu Asp Asn Arg Ile Ala Asn Pro Asp Gln Leu Leu Thr Gln Asp
            180                 185                 190

Val Glu Lys Phe Cys Asn Ser Val Val Asp Leu Tyr Ser Asn Leu Ser
        195                 200                 205

Lys Pro Phe Leu Asp Ile Val Leu Tyr Ile Phe Lys Leu Thr Ser Ala
    210                 215                 220

Ile Gly Ala Gln Gly Pro Ala Ser Met Met Ala Tyr Leu Val Val Ser
225                 230                 235                 240
```

```
Gly Leu Phe Leu Thr Arg Leu Arg Arg Pro Ile Gly Lys Met Thr Ile
                245                 250                 255

Thr Glu Gln Lys Tyr Glu Gly Glu Tyr Arg Tyr Val Asn Ser Arg Leu
            260                 265                 270

Ile Thr Asn Ser Glu Glu Ile Ala Phe Tyr Asn Gly Asn Lys Arg Glu
        275                 280                 285

Lys Gln Thr Val His Ser Val Phe Arg Lys Leu Val Glu His Leu His
    290                 295                 300

Asn Phe Ile Leu Phe Arg Phe Ser Met Gly Phe Ile Asp Ser Ile Ile
305                 310                 315                 320

Ala Lys Tyr Leu Ala Thr Val Val Gly Tyr Leu Val Val Ser Arg Pro
                325                 330                 335

Phe Leu Asp Leu Ser His Pro Arg His Leu Lys Ser Thr His Ser Glu
            340                 345                 350

Leu Leu Glu Asp Tyr Tyr Gln Ser Gly Arg Met Leu Leu Arg Met Ser
        355                 360                 365

Gln Ala Leu Gly Arg Ile Val Leu Ala Gly Arg Glu Met Thr Arg Leu
    370                 375                 380

Ala Gly Phe Thr Ala Arg Ile Thr Glu Leu Met Gln Val Leu Lys Asp
385                 390                 395                 400

Leu Asn His Gly Lys Tyr Glu Arg Thr Met Val Ser Gln Gln Glu Lys
                405                 410                 415

Gly Ile Glu Gly Val Gln Val Ile Pro Leu Ile Pro Gly Ala Gly Glu
            420                 425                 430

Ile Ile Ile Ala Asp Asn Ile Ile Lys Phe Asp His Val Pro Leu Ala
        435                 440                 445

Thr Pro Asn Gly Asp Val Leu Ile Arg Asp Leu Asn Phe Glu Val Arg
    450                 455                 460
```

Ser Gly Ala Asn Val Leu Ile Cys Gly Pro Asn Gly Cys Gly Lys Ser
465 470 475 480

Ser Leu Phe Arg Val Leu Gly Glu Leu Trp Pro Leu Phe Gly Gly Arg
485 490 495

Leu Thr Lys Pro Glu Arg Gly Lys Leu Phe Tyr Val Pro Gln Arg Pro
500 505 510

Tyr Met Thr Leu Gly Thr Leu Arg Asp Gln Val Ile Tyr Pro Asp Gly
515 520 525

Arg Glu Asp Gln Lys Arg Lys Gly Ile Ser Asp Leu Val Leu Lys Glu
530 535 540

Tyr Leu Asp Asn Val Gln Leu Gly His Ile Leu Glu Arg Glu Gly Gly
545 550 555 560

Trp Asp Ser Val Gln Asp Trp Met Asp Val Leu Ser Gly Gly Glu Lys
565 570 575

Gln Arg Met Ala Met Ala Arg Leu Phe Tyr His Lys Pro Gln Phe Ala
580 585 590

Ile Leu Asp Glu Cys Thr Ser Ala Val Ser Val Asp Val Glu Gly Tyr
595 600 605

Ile Tyr Ser His Cys Arg Lys Val Gly Ile Thr Leu Phe Thr Val Ser
610 615 620

His Arg Lys Ser Leu Trp Lys His His Glu Tyr Tyr Leu His Met Asp
625 630 635 640

Gly Arg Gly Asn Tyr Glu Phe Lys Gln Ile Thr Glu Asp Thr Val Glu
645 650 655

Phe Gly Ser

<210> 7775
<211> 606
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="Uniprot ID: O14678; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349396"

<400> 7775
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1   5   10   15

Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
            20   25   30

Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
        35   40   45

Leu Thr Leu Leu Glu Gln Phe Val Ile Tyr Gln Val Gly Leu Ile Pro
    50   55   60

Ser Gln Tyr Tyr Gly Val Leu Gly Asn Lys Asp Leu Glu Gly Phe Lys
65   70   75   80

Thr Leu Thr Phe Leu Ala Val Met Leu Ile Val Leu Asn Ser Thr Leu
                85   90   95

Lys Ser Phe Asp Gln Phe Thr Cys Asn Leu Leu Tyr Val Ser Trp Arg
            100   105   110

Lys Asp Leu Thr Glu His Leu His Arg Leu Tyr Phe Arg Gly Arg Ala
        115   120   125

```
Tyr Tyr Thr Leu Asn Val Leu Arg Asp Asp Ile Asp Asn Pro Asp Gln
    130                 135                 140

Arg Ile Ser Gln Asp Val Glu Arg Phe Cys Arg Gln Leu Ser Ser Met
145                 150                 155                 160

Ala Ser Lys Leu Ile Ile Ser Pro Phe Thr Leu Val Tyr Tyr Thr Tyr
                165                 170                 175

Gln Cys Phe Gln Ser Thr Gly Trp Leu Gly Pro Val Ser Ile Phe Gly
            180                 185                 190

Tyr Phe Ile Leu Gly Thr Val Val Asn Lys Thr Leu Met Gly Pro Ile
        195                 200                 205

Val Met Lys Leu Val His Gln Glu Lys Leu Glu Gly Asp Phe Arg Phe
    210                 215                 220

Lys His Met Gln Ile Arg Val Asn Ala Glu Pro Ala Ala Phe Tyr Arg
225                 230                 235                 240

Ala Gly His Val Glu His Met Arg Thr Asp Arg Arg Leu Gln Arg Leu
                245                 250                 255

Leu Gln Thr Gln Arg Glu Leu Met Ser Lys Glu Leu Trp Leu Tyr Ile
            260                 265                 270

Gly Ile Asn Thr Phe Asp Tyr Leu Gly Ser Ile Leu Ser Tyr Val Val
        275                 280                 285

Ile Ala Ile Pro Ile Phe Ser Gly Val Tyr Gly Asp Leu Ser Pro Ala
    290                 295                 300

Glu Leu Ser Thr Leu Val Ser Lys Asn Ala Phe Val Cys Ile Tyr Leu
305                 310                 315                 320

Ile Ser Cys Phe Thr Gln Leu Ile Asp Leu Ser Thr Thr Leu Ser Asp
                325                 330                 335

Val Ala Gly Tyr Thr His Arg Ile Gly Gln Leu Arg Glu Thr Leu Leu
            340                 345                 350

Asp Met Ser Leu Lys Ser Gln Asp Cys Glu Ile Leu Gly Glu Ser Glu
```

```
        355                 360                 365

Trp Gly Leu Asp Thr Pro Pro Gly Trp Pro Ala Ala Glu Pro Ala Asp
    370                 375                 380

Thr Ala Phe Leu Leu Glu Arg Val Ser Ile Ser Ala Pro Ser Ser Asp
385                 390                 395                 400

Lys Pro Leu Ile Lys Asp Leu Ser Leu Lys Ile Ser Glu Gly Gln Ser
                405                 410                 415

Leu Leu Ile Thr Gly Asn Thr Gly Thr Gly Lys Thr Ser Leu Leu Arg
            420                 425                 430

Val Leu Gly Gly Leu Trp Thr Ser Thr Arg Gly Ser Val Gln Met Leu
        435                 440                 445

Thr Asp Phe Gly Pro His Gly Val Leu Phe Leu Pro Gln Lys Pro Phe
    450                 455                 460

Phe Thr Asp Gly Thr Leu Arg Glu Gln Val Ile Tyr Pro Leu Lys Glu
465                 470                 475                 480

Val Tyr Pro Asp Ser Gly Ser Ala Asp Asp Glu Arg Ile Leu Arg Phe
                485                 490                 495

Leu Glu Leu Ala Gly Leu Ser Asn Leu Val Ala Arg Thr Glu Gly Leu
            500                 505                 510

Asp Gln Gln Val Asp Trp Asn Trp Tyr Asp Val Leu Ser Pro Gly Glu
        515                 520                 525

Met Gln Arg Leu Ser Phe Ala Arg Leu Phe Tyr Leu Gln Pro Lys Tyr
    530                 535                 540

Ala Val Leu Asp Glu Ala Thr Ser Ala Leu Thr Glu Glu Val Glu Ser
545                 550                 555                 560

Glu Leu Tyr Arg Ile Gly Gln Gln Leu Gly Met Thr Phe Ile Ser Val
                565                 570                 575

Gly His Arg Gln Ser Leu Glu Lys Phe His Ser Leu Val Leu Lys Leu
            580                 585                 590
```

Cys Gly Gly Gly Arg Trp Glu Leu Met Arg Ile Lys Val Glu
595 600 605

<210> 7776
<211> 173
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432557"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7776
Xaa Val Val Ile Ala Ile Pro Ile Phe Ser Gly Val Tyr Gly Asp Leu
1 5 10 15

Ser Pro Ala Glu Leu Ser Thr Leu Val Ser Lys Asn Ala Phe Val Cys
20 25 30

Ile Tyr Leu Ile Ser Cys Phe Thr Gln Leu Ile Asp Leu Ser Thr Thr
35 40 45

Leu Ser Asp Val Ala Gly Tyr Thr His Arg Ile Gly Gln Leu Arg Glu
50 55 60

Thr Leu Leu Asp Met Ser Leu Lys Ser Gln Asp Cys Glu Ile Leu Gly
65 70 75 80

```
Glu Ser Glu Trp Gly Leu Asp Thr Pro Pro Gly Trp Pro Ala Ala Glu
                85                  90                  95

Pro Ala Asp Thr Ala Phe Leu Leu Glu Arg Val Ser Ile Ser Ala Pro
            100                 105                 110

Ser Ser Asp Lys Pro Leu Ile Lys Asp Leu Ser Leu Lys Ile Ser Glu
        115                 120                 125

Gly Gln Ser Leu Leu Ile Thr Gly Asn Thr Gly Thr Gly Lys Thr Ser
    130                 135                 140

Leu Leu Arg Val Leu Gly Gly Leu Trp Thr Ser Thr Arg Gly Asp Ile
145                 150                 155                 160

Ser Pro Glu Gly Gly Leu Pro Arg Leu Arg Phe Cys Arg
                165                 170


<210> 7777
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432630"

<400> 7777
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1               5                   10                  15

Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
            20                  25                  30
```

Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
35 40 45

Leu Thr Leu Leu Ala Glu Glu Leu
50 55

<210> 7778
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434626"

<400> 7778
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Ala Ile Cys
1 5 10 15

Asp Leu Pro Gly Trp Leu Asp Pro Gln Ser Val Leu Trp Gly Pro Gly
20 25 30

Lys Gln Arg Leu Gly Arg Val
35

<210> 7779
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434792"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7779

```
Xaa Glu Arg Val Ser Ile Ser Ala Pro Ser Ser Asp Lys Pro Leu Ile
1               5                  10                  15

Lys Asp Leu Ser Leu Lys Ile Ser Glu Gly Gln Ser Leu Leu Ile Thr
            20                  25                  30

Gly Asn Thr Gly Thr Gly Lys Thr Ser Leu Leu Arg Val Leu Gly Gly
        35                  40                  45

Leu Trp Thr Ser Thr Arg Gly Ser Val Gln Met Leu Thr Asp Phe Gly
    50                  55                  60

Pro His Gly Val Leu Phe Leu Pro Gln Lys Pro Phe Phe Thr Asp Gly
65                  70                  75                  80

Thr Leu Arg Glu Gln Val Ile Tyr Pro Leu Lys Glu Val Tyr Pro Asp
                85                  90                  95

Ser Gly Ser Ala Asp Asp Glu Arg Ile Leu Arg Phe Leu Glu Leu Ala
            100                 105                 110

Gly Leu Val Ser Gly Glu Arg Asp Pro Gln Asp Pro Ser Pro Pro Gly
        115                 120                 125

Ser Thr Ser Tyr Ser Pro Thr Trp Trp Gln Gly Gln Arg Ala Trp Thr
    130                 135                 140

Ser Arg Trp Thr Gly Thr Gly Met Met Phe Cys Pro Arg Gly Arg Cys
145                 150                 155                 160
```

```
Asn Gly Ser Pro Leu Pro Asp Ser Ser Thr Cys Ser Arg Ser Thr Gln
                165                 170                 175


Cys Leu Met Lys Pro Pro Val Pro
            180


<210> 7780
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436527"

<400> 7780
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1               5                   10                  15


Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
            20                  25                  30


Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
        35                  40                  45


Leu Thr Leu Leu Ala Glu Glu Leu
    50                  55


<210> 7781
<211> 56
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436782"

<400> 7781
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1 5 10 15

Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
20 25 30

Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
35 40 45

Leu Thr Leu Leu Ala Glu Glu Leu
50 55

<210> 7782
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000450491"

<400> 7782
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Ala Ile Cys
1   5   10   15

Asp Leu Pro Gly Trp Leu Asp Pro Gln Ser Val Leu Trp Gly Pro Gly
            20   25   30

Lys Gln Arg Leu Gly Arg Val
        35

<210> 7783
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450611"

<400> 7783
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1   5   10   15

Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
            20   25   30

Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
        35   40   45

Leu Thr Leu Leu Ala Glu Glu Leu
    50   55

<210> 7784

<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450960"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7784
Xaa Glu Arg Val Ser Ile Ser Ala Pro Ser Ser Asp Lys Pro Leu Ile
1 5 10 15

Lys Asp Leu Ser Leu Lys Ile Ser Glu Gly Gln Ser Leu Leu Ile Thr
20 25 30

Gly Asn Thr Gly Thr Gly Lys Thr Ser Leu Leu Arg Val Leu Gly Gly
35 40 45

Leu Trp Thr Ser Thr Arg Gly Ser Val Gln Met Leu Thr Asp Phe Gly
50 55 60

Pro His Gly Val Leu Phe Leu Pro Gln Lys Pro Phe Phe Thr Asp Gly
65 70 75 80

Thr Leu Arg Glu Gln Val Ile Tyr Pro Leu Lys Glu Val Tyr Pro Asp
85 90 95

Ser Gly Ser Ala Asp Asp Glu Arg Ile Leu Arg Phe Leu Glu Leu Ala
100 105 110

Gly Leu Val Ser Gly Glu Arg Asp Pro Gln Asp Pro Ser Pro Pro Gly
        115   120   125

Ser Thr Ser Tyr Ser Pro Thr Trp Trp Gln Gly Gln Arg Ala Trp Thr
    130   135   140

Ser Arg Trp Thr Gly Thr Gly Met Met Phe Cys Pro Arg Gly Arg Cys
145   150   155   160

Asn Gly Ser Pro Leu Pro Asp Ser Ser Thr Cys Ser Arg Ser Thr Gln
                165   170   175

Cys Leu Met Lys Pro Pro Val Pro
            180

<210> 7785
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450982"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7785
Xaa Gly Ser Ala Asp Asp Glu Arg Ile Leu Arg Phe Leu Glu Leu Ala
1   5   10   15

Gly Leu Ser Asn Leu Val Ala Arg Thr Glu Gly Leu Asp Gln Gln Val

```
            20                  25                  30

Asp Trp Asn Trp Tyr Asp Val Leu Ser Pro Gly Glu Met Gln Arg Leu
        35                  40                  45

Ser Phe Ala Arg Leu Phe Tyr Leu Gln Pro Lys Tyr Ala Val Leu Asp
    50                  55                  60

Glu Ala Thr Ser Ala Leu Thr Glu Glu Val Glu Ser Glu Leu Tyr Arg
65                  70                  75                  80

Ile Gly Gln Gln Leu Gly Met Thr Phe Ile Ser Val Gly His Arg Gln
                85                  90                  95

Ser Leu Glu Lys Gly Ser Leu Ile Ser Met Trp Trp Trp Ser Leu Val
            100                 105                 110

Val Ser Phe Leu Gly Ser Glu Thr Leu Trp Arg Arg Lys Met Gly Ala
        115                 120                 125

Asp Glu Asn Gln Ser Gly Met Lys Leu Trp Leu Leu Glu Gly Glu Pro
    130                 135                 140

His Cys Gly Gly Ser Ala Ala Leu Arg Arg Asp Gln Glu Asp
145                 150                 155


<210> 7786
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000451457"

<400> 7786
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1   5   10   15

Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
            20   25   30

Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
        35   40   45

Leu Thr Leu Leu Gly Thr Ser Ala Ser Ala Arg Thr Trp Ser Asp Ser
    50   55   60

Ala Gly Ser Ser Ala Ala Trp Pro Ala Ser Ser Ser Ser Pro Arg Ser
65   70   75   80

Pro Ser Ser Thr Thr Leu Thr Ser Ala Ser Lys Ala Gln Ala Gly Ser
                85   90   95

Gly Leu

<210> 7787
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451521"

<400> 7787
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Ala Ile Cys

```
1               5                   10                  15

Asp Leu Pro Gly Trp Leu Asp Pro Gln Ser Val Leu Trp Gly Pro Gly
            20                  25                  30

Lys Gln Arg Leu Gly Arg Val
        35
```

<210> 7788
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451770"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7788

```
Xaa Arg Ser Arg Gly Pro Arg Pro Glu Leu Ala Pro Glu Gln Phe Val
1               5                   10                  15

Ile Tyr Gln Val Gly Leu Ile Pro Ser Gln Tyr Tyr Gly Val Leu Gly
            20                  25                  30

Asn Lys Asp Leu Glu Gly Phe Lys Thr Leu Thr Phe Leu Ala Val Met
        35                  40                  45

Leu Ile Val Leu Asn Ser Thr Leu Lys Ser Phe Asp Gln Phe Thr Cys
    50                  55                  60
```

```
Asn Leu Leu Tyr Val Ser Trp Arg Lys Asp Leu Thr Glu His Leu His
65                  70                  75                  80

Arg Leu Tyr Phe Arg Gly Arg Ala Tyr Tyr Thr Leu Asn Val Leu Arg
                85                  90                  95

Asp Asp Ile Asp Asn Pro Asp Gln Arg Ile Ser Gln Asp Val Glu Arg
            100                 105                 110

Phe Cys Arg Gln Leu Ser Ser Met Ala Ser Lys Leu Ile Ile Ser Pro
        115                 120                 125

Phe Thr Leu Val Tyr Tyr Thr Tyr Gln Cys Phe Gln Ser Thr Gly Trp
    130                 135                 140

Leu Gly Pro Val Ser Ile Phe Gly Tyr Phe Ile Leu Gly Thr Val Val
145                 150                 155                 160

Asn Lys Thr Leu Met Gly Pro Ile Val Met Lys Leu Val His Gln Glu
                165                 170                 175

Lys Leu Glu Gly Asp Phe Arg Phe Lys His Met Gln Ile Arg Val Asn
            180                 185                 190

Ala Glu Pro Ala Ala Phe Tyr Ser Arg His Gln His Leu
        195                 200                 205
```

<210> 7789
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
D (ALD),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451778"

<400> 7789
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Ala Ile Cys
1   5   10   15

Asp Leu Pro Gly Trp Leu Asp Pro Gln Ser Val Leu Trp Gly Pro Gly
            20   25   30

Lys Gln Arg Leu Gly Arg Val
        35

<210> 7790
<211> 203
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451993"

<400> 7790
Met Ala Val Ala Gly Pro Ala Pro Gly Ala Gly Ala Arg Pro Arg Leu
1   5   10   15

Asp Leu Gln Phe Leu Gln Arg Phe Leu Gln Ile Leu Lys Val Leu Phe
            20   25   30

Pro Ser Trp Ser Ser Gln Asn Ala Leu Met Phe Leu Thr Leu Leu Cys
        35   40   45

Leu Thr Leu Leu Glu Gln Phe Val Ile Tyr Gln Val Gly Leu Ile Pro
    50   55   60

```
Ser Gln Tyr Tyr Gly Val Leu Gly Asn Lys Asp Leu Glu Gly Phe Lys
65                  70                  75                  80

Thr Leu Thr Phe Leu Ala Val Met Leu Ile Val Leu Asn Ser Thr Leu
                85                  90                  95

Lys Ser Phe Asp Gln Phe Thr Cys Asn Leu Leu Tyr Val Ser Trp Arg
            100                 105                 110

Lys Asp Leu Thr Glu His Leu His Arg Leu Tyr Phe Arg Gly Arg Ala
        115                 120                 125

Tyr Tyr Thr Leu Asn Val Leu Arg Asp Asp Ile Asp Asn Pro Asp Gln
    130                 135                 140

Arg Ile Ser Gln Asp Val Glu Arg Phe Cys Arg Gln Leu Ser Ser Met
145                 150                 155                 160

Ala Ser Lys Leu Ile Ile Ser Pro Phe Thr Leu Val Tyr Tyr Thr Tyr
                165                 170                 175

Gln Cys Phe Gln Arg Phe Lys His Met Gln Ile Arg Val Asn Ala Glu
            180                 185                 190

Pro Ala Ala Phe Tyr Ser Arg His Gln His Leu
        195                 200


<210> 7791
<211> 94
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1633; "

<220>
<221> source
<223> /note="Gene Symbol: ABCD4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      D (ALD),
      member 4; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000452430"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7791
Xaa Ile Leu Gly Thr Val Val Asn Lys Thr Leu Met Gly Pro Ile Val
1 5 10 15

Met Lys Leu Val His Gln Glu Lys Leu Glu Gly Asp Phe Arg Phe Lys
20 25 30

His Met Gln Ile Arg Val Asn Ala Glu Pro Ala Ala Phe Tyr Ser Pro
35 40 45

Val Asp Ile Pro Ala Phe Pro Cys Gln Ser Trp Ala Cys Gly Ala His
50 55 60

Glu Asp Arg Pro Gln Ala Ala Glu Thr Pro Ser Asp Pro Glu Gly Ala
65 70 75 80

Asp Val Gln Gly Ala Leu Ala Val His Arg His Gln His Leu
85 90

<210> 7792
<211> 599
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1634; "

<220>
<221> source
<223> /note="Gene Symbol: ABCE1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
E (OABP),
member 1; "

<220>
<221> source

<223> /note="Uniprot ID: P61221; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296577"

<400> 7792
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Met Ala Asp Lys Leu Thr Arg Ile Ala Ile Val Asn His Asp Lys Cys
1               5                  10                  15

Lys Pro Lys Lys Cys Arg Gln Glu Cys Lys Lys Ser Cys Pro Val Val
            20                  25                  30

Arg Met Gly Lys Leu Cys Ile Glu Val Thr Pro Gln Ser Lys Ile Ala
        35                  40                  45

Trp Ile Ser Glu Thr Leu Cys Ile Gly Cys Gly Ile Cys Ile Lys Lys
    50                  55                  60

Cys Pro Phe Gly Ala Leu Ser Ile Val Asn Leu Pro Ser Asn Leu Glu
65                  70                  75                  80

Lys Glu Thr Thr His Arg Tyr Cys Ala Asn Ala Phe Lys Leu His Arg
                85                  90                  95

Leu Pro Ile Pro Arg Pro Gly Glu Val Leu Gly Leu Val Gly Thr Asn
            100                 105                 110

Gly Ile Gly Lys Ser Thr Ala Leu Lys Ile Leu Ala Gly Lys Gln Lys
        115                 120                 125

Pro Asn Leu Gly Lys Tyr Asp Asp Pro Pro Asp Trp Gln Glu Ile Leu
    130                 135                 140

Thr Tyr Phe Arg Gly Ser Glu Leu Gln Asn Tyr Phe Thr Lys Ile Leu
145                 150                 155                 160

Glu Asp Asp Leu Lys Ala Ile Ile Lys Pro Gln Tyr Val Asp Gln Ile
                165                 170                 175

Pro Lys Ala Ala Lys Gly Thr Val Gly Ser Ile Leu Asp Arg Lys Asp
            180                 185                 190

Glu Thr Lys Thr Gln Ala Ile Val Cys Gln Gln Leu Asp Leu Thr His
        195                 200                 205
```

```
Leu Lys Glu Arg Asn Val Glu Asp Leu Ser Gly Gly Glu Leu Gln Arg
    210                 215                 220

Phe Ala Cys Ala Val Val Cys Ile Gln Lys Ala Asp Ile Phe Met Phe
225                 230                 235                 240

Asp Glu Pro Ser Ser Tyr Leu Asp Val Lys Gln Arg Leu Lys Ala Ala
                245                 250                 255

Ile Thr Ile Arg Ser Leu Ile Asn Pro Asp Arg Tyr Ile Ile Val Val
            260                 265                 270

Glu His Asp Leu Ser Val Leu Asp Tyr Leu Ser Asp Phe Ile Cys Cys
        275                 280                 285

Leu Tyr Gly Val Pro Ser Ala Tyr Gly Val Val Thr Met Pro Phe Ser
    290                 295                 300

Val Arg Glu Gly Ile Asn Ile Phe Leu Asp Gly Tyr Val Pro Thr Glu
305                 310                 315                 320

Asn Leu Arg Phe Arg Asp Ala Ser Leu Val Phe Lys Val Ala Glu Thr
                325                 330                 335

Ala Asn Glu Glu Glu Val Lys Lys Met Cys Met Tyr Lys Tyr Pro Gly
            340                 345                 350

Met Lys Lys Lys Met Gly Glu Phe Glu Leu Ala Ile Val Ala Gly Glu
        355                 360                 365

Phe Thr Asp Ser Glu Ile Met Val Met Leu Gly Glu Asn Gly Thr Gly
    370                 375                 380

Lys Thr Thr Phe Ile Arg Met Leu Ala Gly Arg Leu Lys Pro Asp Glu
385                 390                 395                 400

Gly Gly Glu Val Pro Val Leu Asn Val Ser Tyr Lys Pro Gln Lys Ile
                405                 410                 415

Ser Pro Lys Ser Thr Gly Ser Val Arg Gln Leu Leu His Glu Lys Ile
            420                 425                 430
```

```
Arg Asp Ala Tyr Thr His Pro Gln Phe Val Thr Asp Val Met Lys Pro
        435                 440                 445

Leu Gln Ile Glu Asn Ile Ile Asp Gln Glu Val Gln Thr Leu Ser Gly
    450                 455                 460

Gly Glu Leu Gln Arg Val Ala Leu Ala Leu Cys Leu Gly Lys Pro Ala
465                 470                 475                 480

Asp Val Tyr Leu Ile Asp Glu Pro Ser Ala Tyr Leu Asp Ser Glu Gln
                485                 490                 495

Arg Leu Met Ala Ala Arg Val Val Lys Arg Phe Ile Leu His Ala Lys
            500                 505                 510

Lys Thr Ala Phe Val Val Glu His Asp Phe Ile Met Ala Thr Tyr Leu
        515                 520                 525

Ala Asp Arg Val Ile Val Phe Asp Gly Val Pro Ser Lys Asn Thr Val
    530                 535                 540

Ala Asn Ser Pro Gln Thr Leu Leu Ala Gly Met Asn Lys Phe Leu Ser
545                 550                 555                 560

Gln Leu Glu Ile Thr Phe Arg Arg Asp Pro Asn Asn Tyr Arg Pro Arg
                565                 570                 575

Ile Asn Lys Leu Asn Ser Ile Lys Asp Val Glu Gln Lys Lys Ser Gly
            580                 585                 590

Asn Tyr Phe Phe Leu Asp Asp
        595


<210> 7793
<211> 210
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1634; "

<220>
<221> source
<223> /note="Gene Symbol: ABCE1; "
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<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
E (OABP),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421250"

<400> 7793
Met Ala Asp Lys Leu Thr Arg Ile Ala Ile Val Asn His Asp Lys Cys
1 5 10 15

Lys Pro Lys Lys Cys Arg Gln Glu Cys Lys Lys Ser Cys Pro Val Val
20 25 30

Arg Met Gly Lys Leu Cys Ile Glu Val Thr Pro Gln Ser Lys Ile Ala
35 40 45

Trp Ile Ser Glu Thr Leu Cys Ile Gly Cys Gly Ile Cys Ile Lys Lys
50 55 60

Cys Pro Phe Gly Ala Leu Ser Ile Val Asn Leu Pro Ser Asn Leu Glu
65 70 75 80

Lys Glu Thr Thr His Arg Tyr Cys Ala Asn Ala Phe Lys Leu His Arg
85 90 95

Leu Pro Ile Pro Arg Pro Gly Glu Val Leu Gly Leu Val Gly Thr Asn
100 105 110

Gly Ile Gly Lys Ser Thr Ala Leu Lys Ile Leu Ala Gly Lys Gln Lys
115 120 125

Pro Asn Leu Gly Lys Tyr Asp Asp Pro Pro Asp Trp Gln Glu Ile Leu
130 135 140

Thr Tyr Phe Arg Gly Ser Glu Leu Gln Asn Tyr Phe Thr Lys Ile Leu
145 150 155 160

Glu Asp Asp Leu Lys Ala Ile Ile Lys Pro Gln Tyr Val Asp Gln Ile
165 170 175

```
Pro Lys Ala Ala Lys Gly Thr Val Gly Ser Ile Leu Asp Arg Lys Asp
            180                 185                 190

Glu Thr Lys Thr Gln Ala Ile Val Cys Gln Gln Leu Asp Leu Thr His
        195                 200                 205

Leu Lys
    210


<210> 7794
<211> 421
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1634; "

<220>
<221> source
<223> /note="Gene Symbol: ABCE1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      E (OABP),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422068"

<400> 7794
Met Ala Asp Lys Leu Thr Arg Ile Ala Ile Val Asn His Asp Lys Cys
1               5                   10                  15

Lys Pro Lys Lys Cys Arg Gln Glu Cys Lys Lys Ser Cys Pro Val Val
            20                  25                  30

Arg Met Gly Lys Leu Cys Ile Glu Val Thr Pro Gln Ser Lys Ile Ala
        35                  40                  45

Trp Ile Ser Glu Thr Leu Cys Ile Gly Cys Gly Ile Cys Ile Lys Lys
    50                  55                  60

Cys Pro Phe Gly Ala Leu Ser Ile Val Asn Leu Pro Ser Asn Leu Glu
65                  70                  75                  80
```

```
Lys Glu Thr Thr His Arg Tyr Cys Ala Asn Ala Phe Lys Leu His Arg
                85                  90                  95

Leu Pro Ile Pro Arg Pro Gly Glu Val Leu Gly Leu Val Gly Thr Asn
            100                 105                 110

Gly Ile Gly Lys Ser Thr Ala Leu Lys Ile Leu Ala Gly Lys Gln Lys
        115                 120                 125

Pro Asn Leu Gly Lys Tyr Asp Asp Pro Pro Asp Trp Gln Glu Ile Leu
    130                 135                 140

Thr Tyr Phe Arg Gly Ser Glu Leu Gln Asn Tyr Phe Thr Lys Ile Leu
145                 150                 155                 160

Glu Asp Asp Leu Lys Ala Ile Ile Lys Pro Gln Tyr Val Asp Gln Ile
                165                 170                 175

Pro Lys Ala Ala Lys Gly Thr Val Gly Ser Ile Leu Asp Arg Lys Asp
            180                 185                 190

Glu Thr Lys Thr Gln Ala Ile Val Cys Gln Gln Leu Asp Leu Thr His
        195                 200                 205

Leu Lys Glu Arg Asn Val Glu Asp Leu Ser Gly Gly Glu Leu Gln Arg
    210                 215                 220

Phe Ala Cys Ala Val Val Cys Ile Gln Lys Ala Asp Ile Phe Met Phe
225                 230                 235                 240

Asp Glu Pro Ser Ser Tyr Leu Asp Val Lys Gln Arg Leu Lys Ala Ala
                245                 250                 255

Ile Thr Ile Arg Ser Leu Ile Asn Pro Asp Arg Tyr Ile Ile Val Val
            260                 265                 270

Glu His Asp Leu Ser Val Leu Asp Tyr Leu Ser Asp Phe Ile Cys Cys
        275                 280                 285

Leu Tyr Gly Val Pro Ser Ala Tyr Gly Val Val Thr Met Pro Phe Ser
    290                 295                 300

Val Arg Glu Gly Ile Asn Ile Phe Leu Asp Gly Tyr Val Pro Thr Glu
```

```
305                 310                 315                 320

Asn Leu Arg Phe Arg Asp Ala Ser Leu Val Phe Lys Val Ala Glu Thr
                325                 330                 335

Ala Asn Glu Glu Glu Val Lys Lys Met Cys Met Tyr Lys Tyr Pro Gly
            340                 345                 350

Met Lys Lys Lys Met Gly Glu Phe Glu Leu Ala Ile Val Ala Gly Glu
        355                 360                 365

Phe Thr Asp Ser Glu Ile Met Val Met Leu Gly Glu Asn Gly Thr Gly
    370                 375                 380

Lys Thr Thr Phe Ile Arg Met Leu Ala Gly Arg Leu Lys Pro Asp Glu
385                 390                 395                 400

Gly Gly Glu Val Pro Val Leu Asn Val Ser Tyr Lys Pro Gln Lys Ile
                405                 410                 415

Ser Pro Lys Ser Thr
            420
```

<210> 7795
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1634; "

<220>
<221> source
<223> /note="Gene Symbol: ABCE1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
E (OABP),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423415"

<400> 7795
Gly Ala Leu Ser Ile Val Asn Leu Pro Ser Asn Leu Glu Lys Glu Thr

```
1               5                   10                  15

Thr His Arg Tyr Cys Ala Asn Ala Phe Lys Leu His Arg Leu Pro Ile
            20                  25                  30

Pro Arg Pro Gly Glu Val Leu Gly Leu Val Gly Thr Asn Gly Ile Gly
        35                  40                  45

Lys Ser Thr Ala Leu Lys Ile Leu Ala Gly Lys Gln Lys Pro Asn Leu
    50                  55                  60

Gly Lys Tyr Asp Asp Pro Pro Asp Trp Gln Glu Ile Leu Thr Tyr Phe
65                  70                  75                  80

Arg Gly Ser Glu Leu Gln Asn Tyr Phe Thr Lys Ile Leu Glu Asp Asp
                85                  90                  95

Leu Lys Ala Ile Ile Lys Pro Gln Tyr Val Asp Gln Ile Pro Lys Ala
            100                 105                 110

Ala Lys Gly Thr Val Gly Ser Ile Leu Asp Arg Lys Asp Glu Thr Lys
        115                 120                 125

Thr Gln Ala Ile Val Cys Gln Gln Leu Val Ser Cys Leu Met Ser Leu
    130                 135                 140

Leu Val Thr
145
```

<210> 7796
<211> 845
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),

member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000313603"

<400> 7796
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1   5   10   15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20   25   30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35   40   45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50   55   60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65   70   75   80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85   90   95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100   105   110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115   120   125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130   135   140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145   150   155   160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165   170   175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180   185   190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
195 200 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
210 215 220

Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225 230 235 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
245 250 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
260 265 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
275 280 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
290 295 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305 310 315 320

Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
325 330 335

Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
340 345 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
355 360 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
370 375 380

Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385 390 395 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
405 410 415

```
Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
            420                 425                 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
        435                 440                 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
    450                 455                 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465                 470                 475                 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
                485                 490                 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
            500                 505                 510

Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
        515                 520                 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
    530                 535                 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
545                 550                 555                 560

Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
                565                 570                 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
            580                 585                 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
        595                 600                 605

Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
    610                 615                 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625                 630                 635                 640
```

```
Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
                645                 650                 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
            660                 665                 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
        675                 680                 685

Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
    690                 695                 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705                 710                 715                 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
                725                 730                 735

Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
            740                 745                 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
        755                 760                 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
    770                 775                 780

Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785                 790                 795                 800

Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
                805                 810                 815

Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
            820                 825                 830

Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
        835                 840                 845
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<210> 7797
<211> 807
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365728"

<400> 7797

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
```

```
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335

Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365
```

```
Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380

Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
                405                 410                 415

Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430

Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560

Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575

Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590
```

```
Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
    610                 615                 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625                 630                 635                 640

His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
                645                 650                 655

Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
            660                 665                 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
        675                 680                 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
    690                 695                 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705                 710                 715                 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
                725                 730                 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
            740                 745                 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
        755                 760                 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
    770                 775                 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
785                 790                 795                 800

Met Val Ser Arg Pro Arg Glu
                805
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<210> 7798
<211> 807
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373081"

<400> 7798
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1   5   10   15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20   25   30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35   40   45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50   55   60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65   70   75   80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85   90   95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100   105   110

```
Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335

Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
```

```
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365

Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380

Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
                405                 410                 415

Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430

Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560

Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575
```

```
Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590

Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
    610                 615                 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625                 630                 635                 640

His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
                645                 650                 655

Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
            660                 665                 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
        675                 680                 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
    690                 695                 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705                 710                 715                 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
                725                 730                 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
            740                 745                 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
        755                 760                 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
    770                 775                 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
785                 790                 795                 800
```

Met Val Ser Arg Pro Arg Glu
805

<210> 7799
<211> 845
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
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<223> /note="ENSP ID: ENSP00000373082"

<400> 7799
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1 5 10 15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
20 25 30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
35 40 45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
50 55 60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65 70 75 80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
85 90 95

```
Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
                245                 250                 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
            260                 265                 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
        275                 280                 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
    290                 295                 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305                 310                 315                 320
```

```
Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
                325                 330                 335

Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
            340                 345                 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
        355                 360                 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
    370                 375                 380

Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385                 390                 395                 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
                405                 410                 415

Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
            420                 425                 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
        435                 440                 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
    450                 455                 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465                 470                 475                 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
                485                 490                 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
            500                 505                 510

Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
        515                 520                 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
    530                 535                 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
```

545 550 555 560

Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
565 570 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
580 585 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
595 600 605

Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
610 615 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625 630 635 640

Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
645 650 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
660 665 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
675 680 685

Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
690 695 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705 710 715 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
725 730 735

Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
740 745 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
755 760 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
770 775 780

```
Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785                 790                 795                 800


Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
                805                 810                 815


Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
            820                 825                 830


Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
        835                 840                 845


<210> 7800
<211> 238
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      F (GCN20),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000383452"

<400> 7800
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                   10                  15


Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30


Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45


Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60
```

```
Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Arg Gly Phe Asn Leu Pro Tyr
            100                 105                 110

Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala
        115                 120                 125

His Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val
    130                 135                 140

Val Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp
145                 150                 155                 160

Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu
                165                 170                 175

Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala
            180                 185                 190

Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln
        195                 200                 205

Ser Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val
    210                 215                 220

Leu Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
225                 230                 235


<210> 7801
<211> 845
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>
<221> source
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<223> /note="Gene Symbol: ABCF1; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389065"

<400> 7801

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160
```

```
Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
                245                 250                 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
            260                 265                 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
        275                 280                 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
    290                 295                 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305                 310                 315                 320

Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
                325                 330                 335

Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
            340                 345                 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
        355                 360                 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
    370                 375                 380
```

```
Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385                 390                 395                 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
                405                 410                 415

Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
            420                 425                 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
        435                 440                 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
    450                 455                 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465                 470                 475                 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
                485                 490                 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
            500                 505                 510

Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
        515                 520                 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
    530                 535                 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
545                 550                 555                 560

Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
                565                 570                 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
            580                 585                 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
        595                 600                 605

Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
```

610 615 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625 630 635 640

Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
645 650 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
660 665 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
675 680 685

Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
690 695 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705 710 715 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
725 730 735

Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
740 745 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
755 760 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
770 775 780

Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785 790 795 800

Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
805 810 815

Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
820 825 830

Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
835 840 845

<210> 7802
<211> 807
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389472"

<400> 7802

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110
```

```
Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335
```

```
Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365

Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380

Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
                405                 410                 415

Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430

Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560
```

```
Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575

Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590

Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
    610                 615                 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625                 630                 635                 640

His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
                645                 650                 655

Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
            660                 665                 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
        675                 680                 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
    690                 695                 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705                 710                 715                 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
                725                 730                 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
            740                 745                 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
        755                 760                 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
    770                 775                 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
```

785 790 795 800

Met Val Ser Arg Pro Arg Glu
805

<210> 7803
<211> 238
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>
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<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390550"

<400> 7803
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1 5 10 15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
20 25 30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
35 40 45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
50 55 60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65 70 75 80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
85 90 95

Leu Met Glu Arg Leu Lys Lys Leu Ser Arg Gly Phe Asn Leu Pro Tyr

```
            100                 105                 110

Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala
        115                 120                 125

His Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val
    130                 135                 140

Val Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp
145                 150                 155                 160

Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu
                165                 170                 175

Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala
            180                 185                 190

Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln
        195                 200                 205

Ser Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val
    210                 215                 220

Leu Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
225                 230                 235


<210> 7804
<211> 807
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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      F (GCN20),
      member 1; "

<220>
<221> source
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<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391102"

<400> 7804
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Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205
```

```
Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335

Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365

Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380

Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
                405                 410                 415

Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430
```

```
Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560

Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575

Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590

Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
    610                 615                 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625                 630                 635                 640

His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
                645                 650                 655
```

```
Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
            660                 665                 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
        675                 680                 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
    690                 695                 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705                 710                 715                 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
                725                 730                 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
            740                 745                 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
        755                 760                 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
    770                 775                 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
785                 790                 795                 800

Met Val Ser Arg Pro Arg Glu
                805


<210> 7805
<211> 807
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
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F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393143"

<400> 7805

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
```

```
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335

Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365

Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380

Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
                405                 410                 415
```

```
Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430

Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560

Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575

Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590

Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
    610                 615                 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625                 630                 635                 640
```

```
His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
                645                 650                 655

Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
            660                 665                 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
        675                 680                 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
    690                 695                 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705                 710                 715                 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
                725                 730                 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
            740                 745                 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
        755                 760                 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
    770                 775                 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
785                 790                 795                 800

Met Val Ser Arg Pro Arg Glu
                805
```

<210> 7806
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394785"

<400> 7806

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Arg Gly Phe Asn Leu Pro Tyr
            100                 105                 110

Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala
        115                 120                 125

His Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val
    130                 135                 140

Val Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp
145                 150                 155                 160

Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu
                165                 170                 175
```

```
Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala
            180                 185                 190

Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln
        195                 200                 205

Ser Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val
    210                 215                 220

Leu Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
225                 230                 235


<210> 7807
<211> 339
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      F (GCN20),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394994"

<400> 7807
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                   10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60
```

```
Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160

Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190

Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
```

290 295 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305 310 315 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
325 330 335

Gly Pro Asn

<210> 7808
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395308"

<400> 7808
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1 5 10 15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
20 25 30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
35 40 45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
50 55 60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg

65 70 75 80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
85 90 95

Leu Met Glu Arg Leu Lys Lys Leu Ser Arg Gly Phe Asn Leu Pro Tyr
100 105 110

Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala
115 120 125

His Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val
130 135 140

Val Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp
145 150 155 160

Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu
165 170 175

Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala
180 185 190

Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln
195 200 205

Ser Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val
210 215 220

Leu Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
225 230 235

<210> 7809
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
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<223> /note="Gene Symbol: ABCF1; "

<220>

<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397199"

<400> 7809

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Arg Gly Phe Asn Leu Pro Tyr
            100                 105                 110

Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala
        115                 120                 125

His Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val
    130                 135                 140

Val Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp
145                 150                 155                 160

Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu
                165                 170                 175

Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala
            180                 185                 190
```

```
Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln
        195                 200                 205

Ser Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val
    210                 215                 220

Leu Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
225                 230                 235


<210> 7810
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      F (GCN20),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397875"

<400> 7810
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                   10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80
```

```
Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Arg Gly Phe Asn Leu Pro Tyr
            100                 105                 110

Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala
        115                 120                 125

His Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val
    130                 135                 140

Val Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp
145                 150                 155                 160

Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu
                165                 170                 175

Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala
            180                 185                 190

Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln
        195                 200                 205

Ser Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val
    210                 215                 220

Leu Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
225                 230                 235


<210> 7811
<211> 339
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401969"

<400> 7811

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160

Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190
```

```
Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
    290                 295                 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305                 310                 315                 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
                325                 330                 335

Gly Pro Asn
```

<210> 7812
<211> 807
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:

ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403526"

<400> 7812

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175
```

```
Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335

Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365

Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380

Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
```

```
                405                 410                 415

Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430

Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560

Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575

Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590

Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
    610                 615                 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625                 630                 635                 640
```

```
His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
                645                 650                 655

Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
            660                 665                 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
        675                 680                 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
    690                 695                 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705                 710                 715                 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
                725                 730                 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
            740                 745                 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
        755                 760                 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
    770                 775                 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
785                 790                 795                 800

Met Val Ser Arg Pro Arg Glu
                805
```

<210> 7813
<211> 807
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>
<221> source

<223> /note="Gene Symbol: ABCF1; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
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<223> /note="Uniprot ID: Q8NE71; "

<220>
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<223> /note="ENSP ID: ENSP00000404726"

<400> 7813

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160
```

```
Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Met Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn
225                 230                 235                 240

Ala Ala Glu Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg
                245                 250                 255

Gln Ala Met Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser
            260                 265                 270

Ile Ser Ala His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile
        275                 280                 285

Val Ala Gly Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys
    290                 295                 300

Thr Thr Leu Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro
305                 310                 315                 320

Asn Ile Asp Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr
                325                 330                 335

Pro Ala Val Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu
            340                 345                 350

Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp
        355                 360                 365

Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr
    370                 375                 380
```

```
Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu
385                 390                 395                 400

Gly Phe Asp Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly
                405                 410                 415

Gly Trp Arg Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro
            420                 425                 430

Thr Leu Leu Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala
        435                 440                 445

Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu
    450                 455                 460

Ile Val Ser His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile
465                 470                 475                 480

Ile His Leu Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met
                485                 490                 495

Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln
            500                 505                 510

Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys
        515                 520                 525

Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys
    530                 535                 540

Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala
545                 550                 555                 560

Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe
                565                 570                 575

Pro Asp Pro Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val
            580                 585                 590

Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe
        595                 600                 605

Gly Ile Asp Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val
```

610 615 620

Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr
625 630 635 640

His Gly Glu Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn
645 650 655

Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr
660 665 670

Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu
675 680 685

Gly Arg Phe Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys
690 695 700

Leu Ser Gly Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys
705 710 715 720

Arg Glu Pro Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp
725 730 735

Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly
740 745 750

Ala Val Ile Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn
755 760 765

Cys Gln Leu Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly
770 775 780

Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val
785 790 795 800

Met Val Ser Arg Pro Arg Glu
805

<210> 7814
<211> 339
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1635; "

<220>
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<223> /note="Gene Symbol: ABCF1; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405512"

<400> 7814

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160
```

```
Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190

Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
    290                 295                 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305                 310                 315                 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
                325                 330                 335

Gly Pro Asn
```

<210> 7815
<211> 339
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1635; "

<220>
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000406756"

<400> 7815

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160
```

```
Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190

Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
    290                 295                 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305                 310                 315                 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
                325                 330                 335

Gly Pro Asn
```

<210> 7816
<211> 339
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>
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<223> /note="Gene Symbol: ABCF1; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406926"

<400> 7816

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160
```

```
Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190

Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
    290                 295                 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305                 310                 315                 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
                325                 330                 335

Gly Pro Asn
```

<210> 7817
<211> 339
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
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<223> /note="ENSP ID: ENSP00000406948"

<400> 7817

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160

Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
```

```
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190

Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
    290                 295                 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305                 310                 315                 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
                325                 330                 335

Gly Pro Asn
```

<210> 7818
<211> 845
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1635; "

<220>

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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411327"

<400> 7818

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160
```

```
Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
                245                 250                 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
            260                 265                 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
        275                 280                 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
    290                 295                 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305                 310                 315                 320

Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
                325                 330                 335

Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
            340                 345                 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
        355                 360                 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
    370                 375                 380
```

Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385 390 395 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
405 410 415

Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
420 425 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
435 440 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
450 455 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465 470 475 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
485 490 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
500 505 510

Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
515 520 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
530 535 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
545 550 555 560

Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
565 570 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
580 585 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
595 600 605

```
Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
    610                 615                 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625                 630                 635                 640

Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
                645                 650                 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
            660                 665                 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
        675                 680                 685

Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
    690                 695                 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705                 710                 715                 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
                725                 730                 735

Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
            740                 745                 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
        755                 760                 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
    770                 775                 780

Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785                 790                 795                 800

Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
                805                 810                 815

Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
            820                 825                 830

Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
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835 840 845

<210> 7819
<211> 845
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
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<223> /note="ENSP ID: ENSP00000412553"

<400> 7819
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1 5 10 15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
20 25 30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
35 40 45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
50 55 60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65 70 75 80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
85 90 95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu

```
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
                245                 250                 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
            260                 265                 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
        275                 280                 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
    290                 295                 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305                 310                 315                 320

Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
                325                 330                 335
```

```
Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
            340                 345                 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
        355                 360                 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
    370                 375                 380

Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385                 390                 395                 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
                405                 410                 415

Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
            420                 425                 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
        435                 440                 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
    450                 455                 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465                 470                 475                 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
                485                 490                 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
            500                 505                 510

Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
        515                 520                 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
    530                 535                 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
545                 550                 555                 560
```

```
Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
                565                 570                 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
            580                 585                 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
        595                 600                 605

Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
    610                 615                 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625                 630                 635                 640

Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
                645                 650                 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
            660                 665                 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
        675                 680                 685

Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
    690                 695                 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705                 710                 715                 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
                725                 730                 735

Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
            740                 745                 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
        755                 760                 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
    770                 775                 780
```

```
Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785                 790                 795                 800


Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
                805                 810                 815


Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
            820                 825                 830


Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
        835                 840                 845


<210> 7820
<211> 845
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      F (GCN20),
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413319"

<400> 7820
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                   10                  15


Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30


Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45
```

```
Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65                  70                  75                  80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
                85                  90                  95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
            100                 105                 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
        115                 120                 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
    130                 135                 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145                 150                 155                 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
                165                 170                 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
            180                 185                 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
        195                 200                 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
    210                 215                 220

Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
                245                 250                 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
            260                 265                 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
```

```
        275                 280                 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
    290                 295                 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305                 310                 315                 320

Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
                325                 330                 335

Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
            340                 345                 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
        355                 360                 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
    370                 375                 380

Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385                 390                 395                 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
                405                 410                 415

Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
            420                 425                 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
        435                 440                 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
    450                 455                 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465                 470                 475                 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
                485                 490                 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
            500                 505                 510
```

```
Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
        515                 520                 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
    530                 535                 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
545                 550                 555                 560

Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
                565                 570                 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
            580                 585                 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
        595                 600                 605

Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
    610                 615                 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625                 630                 635                 640

Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
                645                 650                 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
            660                 665                 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
        675                 680                 685

Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
    690                 695                 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705                 710                 715                 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
                725                 730                 735
```

```
Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
            740                 745                 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
        755                 760                 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
    770                 775                 780

Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785                 790                 795                 800

Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
                805                 810                 815

Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
            820                 825                 830

Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
        835                 840                 845
```

<210> 7821
<211> 845
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE71; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414373"

<400> 7821
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1 5 10 15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
20 25 30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
35 40 45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
50 55 60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr Arg
65 70 75 80

Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys Glu
85 90 95

Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu
100 105 110

Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly
115 120 125

Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu
130 135 140

Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg
145 150 155 160

Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys
165 170 175

Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys
180 185 190

Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile Ile
195 200 205

Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys Ala
210 215 220

```
Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys Lys
                245                 250                 255

Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val Ala
            260                 265                 270

Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser Gln
        275                 280                 285

Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp Ile
    290                 295                 300

Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe Val
305                 310                 315                 320

Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val Gly
                325                 330                 335

Pro Asn Gly Lys Gly Lys Thr Thr Leu Leu Lys His Ile Ala Asn Arg
            340                 345                 350

Ala Leu Ser Ile Pro Pro Asn Ile Asp Val Leu Leu Cys Glu Gln Glu
        355                 360                 365

Val Val Ala Asp Glu Thr Pro Ala Val Gln Ala Val Leu Arg Ala Asp
    370                 375                 380

Thr Lys Arg Leu Lys Leu Leu Glu Glu Glu Arg Arg Leu Gln Gly Gln
385                 390                 395                 400

Leu Glu Gln Gly Asp Asp Thr Ala Ala Glu Arg Leu Glu Lys Val Tyr
                405                 410                 415

Glu Glu Leu Arg Ala Thr Gly Ala Ala Ala Ala Glu Ala Lys Ala Arg
            420                 425                 430

Arg Ile Leu Ala Gly Leu Gly Phe Asp Pro Glu Met Gln Asn Arg Pro
        435                 440                 445

Thr Gln Lys Phe Ser Gly Gly Trp Arg Met Arg Val Ser Leu Ala Arg
```

```
    450                 455                 460

Ala Leu Phe Met Glu Pro Thr Leu Leu Met Leu Asp Glu Pro Thr Asn
465                 470                 475                 480

His Leu Asp Leu Asn Ala Val Ile Trp Leu Asn Asn Tyr Leu Gln Gly
                485                 490                 495

Trp Arg Lys Thr Leu Leu Ile Val Ser His Asp Gln Gly Phe Leu Asp
            500                 505                 510

Asp Val Cys Thr Asp Ile Ile His Leu Asp Ala Gln Arg Leu His Tyr
        515                 520                 525

Tyr Arg Gly Asn Tyr Met Thr Phe Lys Lys Met Tyr Gln Gln Lys Gln
    530                 535                 540

Lys Glu Leu Leu Lys Gln Tyr Glu Lys Gln Glu Lys Lys Leu Lys Glu
545                 550                 555                 560

Leu Lys Ala Gly Gly Lys Ser Thr Lys Gln Ala Glu Lys Gln Thr Lys
                565                 570                 575

Glu Ala Leu Thr Arg Lys Gln Gln Lys Cys Arg Arg Lys Asn Gln Asp
            580                 585                 590

Glu Glu Ser Gln Glu Ala Pro Glu Leu Leu Lys Arg Pro Lys Glu Tyr
        595                 600                 605

Thr Val Arg Phe Thr Phe Pro Asp Pro Pro Pro Leu Ser Pro Pro Val
    610                 615                 620

Leu Gly Leu His Gly Val Thr Phe Gly Tyr Gln Gly Gln Lys Pro Leu
625                 630                 635                 640

Phe Lys Asn Leu Asp Phe Gly Ile Asp Met Asp Ser Arg Ile Cys Ile
                645                 650                 655

Val Gly Pro Asn Gly Val Gly Lys Ser Thr Leu Leu Leu Leu Leu Thr
            660                 665                 670

Gly Lys Leu Thr Pro Thr His Gly Glu Met Arg Lys Asn His Arg Leu
        675                 680                 685
```

```
Lys Ile Gly Phe Phe Asn Gln Gln Tyr Ala Glu Gln Leu Arg Met Glu
    690                 695                 700

Glu Thr Pro Thr Glu Tyr Leu Gln Arg Gly Phe Asn Leu Pro Tyr Gln
705                 710                 715                 720

Asp Ala Arg Lys Cys Leu Gly Arg Phe Gly Leu Glu Ser His Ala His
                725                 730                 735

Thr Ile Gln Ile Cys Lys Leu Ser Gly Gly Gln Lys Ala Arg Val Val
            740                 745                 750

Phe Ala Glu Leu Ala Cys Arg Glu Pro Asp Val Leu Ile Leu Asp Glu
        755                 760                 765

Pro Thr Asn Asn Leu Asp Ile Glu Ser Ile Asp Ala Leu Gly Glu Ala
    770                 775                 780

Ile Asn Glu Tyr Lys Gly Ala Val Ile Val Val Ser His Asp Ala Arg
785                 790                 795                 800

Leu Ile Thr Glu Thr Asn Cys Gln Leu Trp Val Val Glu Glu Gln Ser
                805                 810                 815

Val Ser Gln Ile Asp Gly Asp Phe Glu Asp Tyr Lys Arg Glu Val Leu
            820                 825                 830

Glu Ala Leu Gly Glu Val Met Val Ser Arg Pro Arg Glu
        835                 840                 845


<210> 7822
<211> 339
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416890"

<400> 7822

```
Met Pro Lys Ala Pro Lys Gln Gln Pro Pro Glu Pro Glu Trp Ile Gly
1               5                  10                  15

Asp Gly Glu Ser Thr Ser Pro Ser Asp Lys Val Val Lys Lys Gly Lys
            20                  25                  30

Lys Asp Lys Lys Ile Lys Lys Thr Phe Phe Glu Glu Leu Ala Val Glu
        35                  40                  45

Asp Lys Gln Ala Gly Glu Glu Glu Lys Val Leu Lys Glu Lys Glu Gln
    50                  55                  60

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys Lys Lys Arg Asp Thr
65                  70                  75                  80

Arg Lys Gly Arg Arg Lys Lys Asp Val Asp Asp Asp Gly Glu Glu Lys
                85                  90                  95

Glu Leu Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu
            100                 105                 110

Glu Asp Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys
        115                 120                 125

Gly Gly Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu
    130                 135                 140

Glu Glu Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn
145                 150                 155                 160

Arg Ile Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly
                165                 170                 175

Lys Lys Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn
            180                 185                 190
```

```
Lys Phe Ala Ala Leu Asp Asn Glu Glu Glu Asp Lys Glu Glu Glu Ile
        195                 200                 205

Ile Lys Glu Lys Glu Pro Pro Lys Gln Gly Lys Glu Lys Ala Lys Lys
    210                 215                 220

Ala Glu Gln Gly Ser Glu Glu Glu Gly Glu Gly Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Gly Gly Glu Ser Lys Ala Asp Asp Pro Tyr Ala His Leu Ser Lys
                245                 250                 255

Lys Glu Lys Lys Lys Leu Lys Lys Gln Met Glu Tyr Glu Arg Gln Val
            260                 265                 270

Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu Asn Asp Phe Ser Val Ser
        275                 280                 285

Gln Ala Glu Met Ser Ser Arg Gln Ala Met Leu Glu Asn Ala Ser Asp
    290                 295                 300

Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala His Gly Lys Glu Leu Phe
305                 310                 315                 320

Val Asn Ala Asp Leu Tyr Ile Val Ala Gly Arg Arg Tyr Gly Leu Val
                325                 330                 335

Gly Pro Asn
```

<210> 7823
<211> 105
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:

ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440893"

<400> 7823
Met Glu Arg Leu Lys Lys Leu Ser Val Pro Thr Ser Asp Glu Glu Asp
1 5 10 15

Glu Val Pro Ala Pro Lys Pro Arg Gly Gly Lys Lys Thr Lys Gly Gly
20 25 30

Asn Val Phe Ala Ala Leu Ile Gln Asp Gln Ser Glu Glu Glu Glu Glu
35 40 45

Glu Glu Lys His Pro Pro Lys Pro Ala Lys Pro Glu Lys Asn Arg Ile
50 55 60

Asn Lys Ala Val Ser Glu Glu Gln Gln Pro Ala Leu Lys Gly Lys Lys
65 70 75 80

Gly Lys Glu Glu Lys Ser Lys Gly Lys Ala Lys Pro Gln Asn Lys Phe
85 90 95

Ala Ala Leu Asp Asn Glu Glu Glu Asp
100 105

<210> 7824
<211> 596
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1635; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445100"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7824
Xaa Ala His Leu Ser Lys Lys Glu Lys Lys Lys Leu Lys Lys Gln Met
1 5 10 15

Glu Tyr Glu Arg Gln Val Ala Ser Leu Lys Ala Ala Asn Ala Ala Glu
20 25 30

Asn Asp Phe Ser Val Ser Gln Ala Glu Met Ser Ser Arg Gln Ala Met
35 40 45

Leu Glu Asn Ala Ser Asp Ile Lys Leu Glu Lys Phe Ser Ile Ser Ala
50 55 60

His Gly Lys Glu Leu Phe Val Asn Ala Asp Leu Tyr Ile Val Ala Gly
65 70 75 80

Arg Arg Tyr Gly Leu Val Gly Pro Asn Gly Lys Gly Lys Thr Thr Leu
85 90 95

Leu Lys His Ile Ala Asn Arg Ala Leu Ser Ile Pro Pro Asn Ile Asp
100 105 110

Val Leu Leu Cys Glu Gln Glu Val Val Ala Asp Glu Thr Pro Ala Val
115 120 125

Gln Ala Val Leu Arg Ala Asp Thr Lys Arg Leu Lys Leu Leu Glu Glu
130 135 140

Glu Arg Arg Leu Gln Gly Gln Leu Glu Gln Gly Asp Asp Thr Ala Ala
145 150 155 160

Glu Arg Leu Glu Lys Val Tyr Glu Glu Leu Arg Ala Thr Gly Ala Ala
165 170 175

Ala Ala Glu Ala Lys Ala Arg Arg Ile Leu Ala Gly Leu Gly Phe Asp
180 185 190

```
Pro Glu Met Gln Asn Arg Pro Thr Gln Lys Phe Ser Gly Gly Trp Arg
        195                 200                 205

Met Arg Val Ser Leu Ala Arg Ala Leu Phe Met Glu Pro Thr Leu Leu
    210                 215                 220

Met Leu Asp Glu Pro Thr Asn His Leu Asp Leu Asn Ala Val Ile Trp
225                 230                 235                 240

Leu Asn Asn Tyr Leu Gln Gly Trp Arg Lys Thr Leu Leu Ile Val Ser
                245                 250                 255

His Asp Gln Gly Phe Leu Asp Asp Val Cys Thr Asp Ile Ile His Leu
            260                 265                 270

Asp Ala Gln Arg Leu His Tyr Tyr Arg Gly Asn Tyr Met Thr Phe Lys
        275                 280                 285

Lys Met Tyr Gln Gln Lys Gln Lys Glu Leu Leu Lys Gln Tyr Glu Lys
    290                 295                 300

Gln Glu Lys Lys Leu Lys Glu Leu Lys Ala Gly Gly Lys Ser Thr Lys
305                 310                 315                 320

Gln Ala Glu Lys Gln Thr Lys Glu Ala Leu Thr Arg Lys Gln Gln Lys
                325                 330                 335

Cys Arg Arg Lys Asn Gln Asp Glu Glu Ser Gln Glu Ala Pro Glu Leu
            340                 345                 350

Leu Lys Arg Pro Lys Glu Tyr Thr Val Arg Phe Thr Phe Pro Asp Pro
        355                 360                 365

Pro Pro Leu Ser Pro Pro Val Leu Gly Leu His Gly Val Thr Phe Gly
    370                 375                 380

Tyr Gln Gly Gln Lys Pro Leu Phe Lys Asn Leu Asp Phe Gly Ile Asp
385                 390                 395                 400

Met Asp Ser Arg Ile Cys Ile Val Gly Pro Asn Gly Val Gly Lys Ser
                405                 410                 415
```

```
Thr Leu Leu Leu Leu Leu Thr Gly Lys Leu Thr Pro Thr His Gly Glu
            420                 425                 430

Met Arg Lys Asn His Arg Leu Lys Ile Gly Phe Phe Asn Gln Gln Tyr
        435                 440                 445

Ala Glu Gln Leu Arg Met Glu Glu Thr Pro Thr Glu Tyr Leu Gln Arg
    450                 455                 460

Gly Phe Asn Leu Pro Tyr Gln Asp Ala Arg Lys Cys Leu Gly Arg Phe
465                 470                 475                 480

Gly Leu Glu Ser His Ala His Thr Ile Gln Ile Cys Lys Leu Ser Gly
                485                 490                 495

Gly Gln Lys Ala Arg Val Val Phe Ala Glu Leu Ala Cys Arg Glu Pro
            500                 505                 510

Asp Val Leu Ile Leu Asp Glu Pro Thr Asn Asn Leu Asp Ile Glu Ser
        515                 520                 525

Ile Asp Ala Leu Gly Glu Ala Ile Asn Glu Tyr Lys Gly Ala Val Ile
    530                 535                 540

Val Val Ser His Asp Ala Arg Leu Ile Thr Glu Thr Asn Cys Gln Leu
545                 550                 555                 560

Trp Val Val Glu Glu Gln Ser Val Ser Gln Ile Asp Gly Asp Phe Glu
                565                 570                 575

Asp Tyr Lys Arg Glu Val Leu Glu Ala Leu Gly Glu Val Met Val Ser
            580                 585                 590

Arg Pro Arg Glu
        595


<210> 7825
<211> 634
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1636; "
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<220>
<221> source
<223> /note="Gene Symbol: ABCF2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UG63; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000222388"

<400> 7825
Met Pro Ser Asp Leu Ala Lys Lys Lys Ala Ala Lys Lys Lys Glu Ala
1   5   10   15

Ala Lys Ala Arg Gln Arg Pro Arg Lys Gly His Glu Glu Asn Gly Asp
            20   25   30

Val Val Thr Glu Pro Gln Val Ala Glu Lys Asn Glu Ala Asn Gly Arg
        35   40   45

Glu Thr Thr Glu Val Asp Leu Leu Thr Lys Glu Leu Glu Asp Phe Glu
    50   55   60

Met Lys Lys Ala Ala Ala Arg Ala Val Thr Gly Val Leu Ala Ser His
65   70   75   80

Pro Asn Ser Thr Asp Val His Ile Ile Asn Leu Ser Leu Thr Phe His
                85   90   95

Gly Gln Glu Leu Leu Ser Asp Thr Lys Leu Glu Leu Asn Ser Gly Arg
            100   105   110

Arg Tyr Gly Leu Ile Gly Leu Asn Gly Ile Gly Lys Ser Met Leu Leu
        115   120   125

Ser Ala Ile Gly Lys Arg Glu Val Pro Ile Pro Glu His Ile Asp Ile
    130   135   140

```
Tyr His Leu Thr Arg Glu Met Pro Pro Ser Asp Lys Thr Pro Leu His
145                 150                 155                 160

Cys Val Met Glu Val Asp Thr Glu Arg Ala Met Leu Glu Lys Glu Ala
                165                 170                 175

Glu Arg Leu Ala His Glu Asp Ala Glu Cys Glu Lys Leu Met Glu Leu
            180                 185                 190

Tyr Glu Arg Leu Glu Glu Leu Asp Ala Asp Lys Ala Glu Met Arg Ala
        195                 200                 205

Ser Arg Ile Leu His Gly Leu Gly Phe Thr Pro Ala Met Gln Arg Lys
    210                 215                 220

Lys Leu Lys Asp Phe Ser Gly Gly Trp Arg Met Arg Val Ala Leu Ala
225                 230                 235                 240

Arg Ala Leu Phe Ile Arg Pro Phe Met Leu Leu Leu Asp Glu Pro Thr
                245                 250                 255

Asn His Leu Asp Leu Asp Ala Cys Val Trp Leu Glu Glu Glu Leu Lys
            260                 265                 270

Thr Phe Lys Arg Ile Leu Val Leu Val Ser His Ser Gln Asp Phe Leu
        275                 280                 285

Asn Gly Val Cys Thr Asn Ile Ile His Met His Asn Lys Lys Leu Lys
    290                 295                 300

Tyr Tyr Thr Gly Asn Tyr Asp Gln Tyr Val Lys Thr Arg Leu Glu Leu
305                 310                 315                 320

Glu Glu Asn Gln Met Lys Arg Phe His Trp Glu Gln Asp Gln Ile Ala
                325                 330                 335

His Met Lys Asn Tyr Ile Ala Arg Phe Gly His Gly Ser Ala Lys Leu
            340                 345                 350

Ala Arg Gln Ala Gln Ser Lys Glu Lys Thr Leu Gln Lys Met Met Ala
        355                 360                 365

Ser Gly Leu Thr Glu Arg Val Val Ser Asp Lys Thr Leu Ser Phe Tyr
```

```
    370                 375                 380

Phe Pro Pro Cys Gly Lys Ile Pro Pro Pro Val Ile Met Val Gln Asn
385                 390                 395                 400

Val Ser Phe Lys Tyr Thr Lys Asp Gly Pro Cys Ile Tyr Asn Asn Leu
                405                 410                 415

Glu Phe Gly Ile Asp Leu Asp Thr Arg Val Ala Leu Val Gly Pro Asn
            420                 425                 430

Gly Ala Gly Lys Ser Thr Leu Leu Lys Leu Leu Thr Gly Glu Leu Leu
        435                 440                 445

Pro Thr Asp Gly Met Ile Arg Lys His Ser His Val Lys Ile Gly Arg
    450                 455                 460

Tyr His Gln His Leu Gln Glu Gln Leu Asp Leu Asp Leu Ser Pro Leu
465                 470                 475                 480

Glu Tyr Met Met Lys Cys Tyr Pro Glu Ile Lys Glu Lys Glu Glu Met
                485                 490                 495

Arg Lys Ile Ile Gly Arg Tyr Gly Leu Thr Gly Lys Gln Gln Val Ser
            500                 505                 510

Pro Ile Arg Asn Leu Ser Asp Gly Gln Lys Cys Arg Val Cys Leu Ala
        515                 520                 525

Trp Leu Ala Trp Gln Asn Pro His Met Leu Phe Leu Asp Glu Pro Thr
    530                 535                 540

Asn His Leu Asp Ile Glu Thr Ile Asp Ala Leu Ala Asp Ala Ile Asn
545                 550                 555                 560

Glu Phe Glu Gly Gly Met Met Leu Val Ser His Asp Phe Arg Leu Ile
                565                 570                 575

Gln Gln Val Ala Gln Glu Ile Trp Val Cys Glu Lys Gln Thr Ile Thr
            580                 585                 590

Lys Trp Pro Gly Asp Ile Leu Ala Tyr Lys Glu His Leu Lys Ser Lys
        595                 600                 605
```

```
Leu Val Asp Glu Glu Pro Gln Leu Thr Lys Arg Thr His Asn Val Cys
    610                 615                 620

Thr Leu Thr Leu Ala Ser Leu Pro Arg Pro
625                 630
```

<210> 7826
<211> 623
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1636; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UG63; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000287844"

<400> 7826

```
Met Pro Ser Asp Leu Ala Lys Lys Lys Ala Ala Lys Lys Lys Glu Ala
1               5                   10                  15

Ala Lys Ala Arg Gln Arg Pro Arg Lys Gly His Glu Glu Asn Gly Asp
            20                  25                  30

Val Val Thr Glu Pro Gln Val Ala Glu Lys Asn Glu Ala Asn Gly Arg
        35                  40                  45

Glu Thr Thr Glu Val Asp Leu Leu Thr Lys Glu Leu Glu Asp Phe Glu
    50                  55                  60

Met Lys Lys Ala Ala Ala Arg Ala Val Thr Gly Val Leu Ala Ser His
65                  70                  75                  80
```

```
Pro Asn Ser Thr Asp Val His Ile Ile Asn Leu Ser Leu Thr Phe His
                85                  90                  95

Gly Gln Glu Leu Leu Ser Asp Thr Lys Leu Glu Leu Asn Ser Gly Arg
            100                 105                 110

Arg Tyr Gly Leu Ile Gly Leu Asn Gly Ile Gly Lys Ser Met Leu Leu
        115                 120                 125

Ser Ala Ile Gly Lys Arg Glu Val Pro Ile Pro Glu His Ile Asp Ile
    130                 135                 140

Tyr His Leu Thr Arg Glu Met Pro Pro Ser Asp Lys Thr Pro Leu His
145                 150                 155                 160

Cys Val Met Glu Val Asp Thr Glu Arg Ala Met Leu Glu Lys Glu Ala
                165                 170                 175

Glu Arg Leu Ala His Glu Asp Ala Glu Cys Glu Lys Leu Met Glu Leu
            180                 185                 190

Tyr Glu Arg Leu Glu Glu Leu Asp Ala Asp Lys Ala Glu Met Arg Ala
        195                 200                 205

Ser Arg Ile Leu His Gly Leu Gly Phe Thr Pro Ala Met Gln Arg Lys
    210                 215                 220

Lys Leu Lys Asp Phe Ser Gly Gly Trp Arg Met Arg Val Ala Leu Ala
225                 230                 235                 240

Arg Ala Leu Phe Ile Arg Pro Phe Met Leu Leu Leu Asp Glu Pro Thr
                245                 250                 255

Asn His Leu Asp Leu Asp Ala Cys Val Trp Leu Glu Glu Glu Leu Lys
            260                 265                 270

Thr Phe Lys Arg Ile Leu Val Leu Val Ser His Ser Gln Asp Phe Leu
        275                 280                 285

Asn Gly Val Cys Thr Asn Ile Ile His Met His Asn Lys Lys Leu Lys
    290                 295                 300
```

```
Tyr Tyr Thr Gly Asn Tyr Asp Gln Tyr Val Lys Thr Arg Leu Glu Leu
305                 310                 315                 320

Glu Glu Asn Gln Met Lys Arg Phe His Trp Glu Gln Asp Gln Ile Ala
                325                 330                 335

His Met Lys Asn Tyr Ile Ala Arg Phe Gly His Gly Ser Ala Lys Leu
            340                 345                 350

Ala Arg Gln Ala Gln Ser Lys Glu Lys Thr Leu Gln Lys Met Met Ala
        355                 360                 365

Ser Gly Leu Thr Glu Arg Val Val Ser Asp Lys Thr Leu Ser Phe Tyr
    370                 375                 380

Phe Pro Pro Cys Gly Lys Ile Pro Pro Pro Val Ile Met Val Gln Asn
385                 390                 395                 400

Val Ser Phe Lys Tyr Thr Lys Asp Gly Pro Cys Ile Tyr Asn Asn Leu
                405                 410                 415

Glu Phe Gly Ile Asp Leu Asp Thr Arg Val Ala Leu Val Gly Pro Asn
            420                 425                 430

Gly Ala Gly Lys Ser Thr Leu Leu Lys Leu Leu Thr Gly Glu Leu Leu
        435                 440                 445

Pro Thr Asp Gly Met Ile Arg Lys His Ser His Val Lys Ile Gly Arg
    450                 455                 460

Tyr His Gln His Leu Gln Glu Gln Leu Asp Leu Asp Leu Ser Pro Leu
465                 470                 475                 480

Glu Tyr Met Met Lys Cys Tyr Pro Glu Ile Lys Glu Lys Glu Glu Met
                485                 490                 495

Arg Lys Ile Ile Gly Arg Tyr Gly Leu Thr Gly Lys Gln Gln Val Ser
            500                 505                 510

Pro Ile Arg Asn Leu Ser Asp Gly Gln Lys Cys Arg Val Cys Leu Ala
        515                 520                 525
```

```
Trp Leu Ala Trp Gln Asn Pro His Met Leu Phe Leu Asp Glu Pro Thr
    530                 535                 540

Asn His Leu Asp Ile Glu Thr Ile Asp Ala Leu Ala Asp Ala Ile Asn
545                 550                 555                 560

Glu Phe Glu Gly Gly Met Met Leu Val Ser His Asp Phe Arg Leu Ile
                565                 570                 575

Gln Gln Val Ala Gln Glu Ile Trp Val Cys Glu Lys Gln Thr Ile Thr
            580                 585                 590

Lys Trp Pro Gly Asp Ile Leu Ala Tyr Lys Glu His Leu Lys Ser Lys
        595                 600                 605

Leu Val Asp Glu Glu Pro Gln Leu Thr Lys Arg Thr His Asn Val
    610                 615                 620
```

<210> 7827
<211> 240
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1636; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395785"

<400> 7827

```
Met Pro Ser Asp Leu Ala Lys Lys Lys Ala Ala Lys Lys Lys Glu Ala
1               5                   10                  15

Ala Lys Ala Arg Gln Arg Pro Arg Lys Gly His Glu Glu Asn Gly Asp
            20                  25                  30
```

```
Val Val Thr Glu Pro Gln Val Ala Glu Lys Asn Glu Ala Asn Gly Arg
        35                  40                  45

Glu Thr Thr Glu Val Asp Leu Leu Thr Lys Glu Leu Glu Asp Phe Glu
    50                  55                  60

Met Lys Lys Ala Ala Ala Arg Ala Val Thr Gly Val Leu Ala Ser His
65                  70                  75                  80

Pro Asn Ser Thr Asp Val His Ile Ile Asn Leu Ser Leu Thr Phe His
                85                  90                  95

Gly Gln Glu Leu Leu Ser Asp Thr Lys Leu Glu Leu Asn Ser Gly Arg
            100                 105                 110

Arg Tyr Gly Leu Ile Gly Leu Asn Gly Ile Gly Lys Ser Met Leu Leu
        115                 120                 125

Ser Ala Ile Gly Lys Arg Glu Val Pro Ile Pro Glu His Ile Asp Ile
    130                 135                 140

Tyr His Leu Thr Arg Glu Met Pro Pro Ser Asp Lys Thr Pro Leu His
145                 150                 155                 160

Cys Val Met Glu Val Asp Thr Glu Arg Ala Met Leu Glu Lys Glu Ala
                165                 170                 175

Glu Arg Leu Ala His Glu Asp Ala Glu Cys Glu Lys Leu Met Glu Leu
            180                 185                 190

Tyr Glu Arg Leu Glu Glu Leu Asp Ala Asp Lys Ala Glu Met Arg Ala
        195                 200                 205

Ser Arg Ile Leu His Gly Leu Gly Phe Thr Pro Ala Met Gln Arg Lys
    210                 215                 220

Lys Leu Lys Asp Phe Ser Gly Gly Trp Arg Met Arg Val Ala Leu Ala
225                 230                 235                 240
```

<210> 7828
<211> 287
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1636; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419720"

<400> 7828
Met Pro Ser Asp Leu Ala Lys Lys Lys Ala Ala Lys Lys Lys Glu Ala
1 5 10 15

Ala Lys Ala Arg Gln Arg Pro Arg Lys Gly His Glu Glu Asn Gly Asp
20 25 30

Val Val Thr Glu Pro Gln Val Ala Glu Lys Asn Glu Ala Asn Gly Arg
35 40 45

Glu Thr Thr Glu Val Asp Leu Leu Thr Lys Glu Leu Glu Asp Phe Glu
50 55 60

Met Lys Lys Ala Ala Ala Arg Ala Val Thr Gly Val Leu Ala Ser His
65 70 75 80

Pro Asn Ser Thr Asp Val His Ile Ile Asn Leu Ser Leu Thr Phe His
85 90 95

Gly Gln Glu Leu Leu Ser Asp Thr Lys Leu Glu Leu Asn Ser Gly Arg
100 105 110

Arg Tyr Gly Leu Ile Gly Leu Asn Gly Ile Gly Lys Ser Met Leu Leu
115 120 125

Ser Ala Ile Gly Lys Arg Glu Val Pro Ile Pro Glu His Ile Asp Ile
130 135 140

Tyr His Leu Thr Arg Glu Met Pro Pro Ser Asp Lys Thr Pro Leu His

```
145                 150                 155                 160

Cys Val Met Glu Val Asp Thr Glu Arg Ala Met Leu Glu Lys Glu Ala
                165                 170                 175

Glu Arg Leu Ala His Glu Asp Ala Glu Cys Glu Lys Leu Met Glu Leu
            180                 185                 190

Tyr Glu Arg Leu Glu Glu Leu Asp Ala Asp Lys Ala Glu Met Arg Ala
        195                 200                 205

Ser Arg Ile Leu His Gly Leu Gly Phe Thr Pro Ala Met Gln Arg Lys
    210                 215                 220

Lys Leu Lys Asp Phe Ser Gly Gly Trp Arg Met Arg Val Ala Leu Ala
225                 230                 235                 240

Arg Ala Leu Phe Ile Arg Pro Phe Met Leu Leu Leu Asp Glu Pro Thr
                245                 250                 255

Asn His Leu Asp Leu Asp Ala Cys Val Trp Leu Glu Glu Glu Leu Lys
            260                 265                 270

Thr Phe Lys Arg Ile Leu Val Leu Val Ser His Ser Gln Asp Phe
        275                 280                 285


<210> 7829
<211> 703
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1637; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF3; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      F (GCN20),
      member 3; "

<220>
<221> source
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<223> /note="Uniprot ID: Q9NUQ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000292808"

<400> 7829

```
Met Ala Thr Cys Ala Glu Ile Leu Arg Ser Glu Phe Pro Glu Ile Asp
1               5                  10                  15

Gly Gln Val Phe Asp Tyr Val Thr Gly Val Leu His Ser Gly Ser Ala
            20                  25                  30

Asp Phe Glu Ser Val Asp Asp Leu Val Glu Ala Val Gly Glu Leu Leu
        35                  40                  45

Gln Glu Val Ser Gly Asp Ser Lys Asp Asp Ala Gly Ile Arg Ala Val
    50                  55                  60

Cys Gln Arg Met Ala Glu Pro Gln Ser Gln Gly Asn Ser Gln Val Leu
65                  70                  75                  80

Leu Asp Ala Pro Ile Gln Leu Ser Lys Ile Thr Glu Asn Tyr Asp Cys
                85                  90                  95

Gly Thr Lys Leu Pro Gly Leu Leu Lys Arg Glu Gln Ser Ser Thr Val
            100                 105                 110

Asn Ala Lys Lys Leu Glu Lys Ala Glu Ala Arg Leu Lys Ala Lys Gln
        115                 120                 125

Glu Lys Arg Ser Glu Lys Asp Thr Leu Lys Thr Ser Asn Pro Leu Val
    130                 135                 140

Leu Glu Glu Ala Ser Ala Ser Gln Ala Gly Ser Arg Lys Glu Ser Arg
145                 150                 155                 160

Leu Glu Ser Ser Gly Lys Asn Lys Ser Tyr Asp Val Arg Ile Glu Asn
                165                 170                 175

Phe Asp Val Ser Phe Gly Asp Arg Val Leu Leu Ala Gly Ala Asp Val
            180                 185                 190

Asn Leu Ala Trp Gly Arg Arg Tyr Gly Leu Val Gly Arg Asn Gly Leu
        195                 200                 205
```

```
Gly Lys Thr Thr Leu Leu Lys Met Leu Ala Thr Arg Ser Leu Arg Val
    210                 215                 220

Pro Ala His Ile Ser Leu Leu His Val Glu Gln Glu Val Ala Gly Asp
225                 230                 235                 240

Asp Thr Pro Ala Leu Gln Ser Val Leu Glu Ser Asp Ser Val Arg Glu
                245                 250                 255

Asp Leu Leu Arg Arg Glu Arg Glu Leu Thr Ala Gln Ile Ala Ala Gly
            260                 265                 270

Arg Ala Glu Gly Ser Glu Ala Ala Glu Leu Ala Glu Ile Tyr Ala Lys
        275                 280                 285

Leu Glu Glu Ile Glu Ala Asp Lys Ala Pro Ala Arg Ala Ser Val Ile
    290                 295                 300

Leu Ala Gly Leu Gly Phe Thr Pro Lys Met Gln Gln Gln Pro Thr Arg
305                 310                 315                 320

Glu Phe Ser Gly Gly Trp Arg Met Arg Leu Ala Leu Ala Arg Ala Leu
                325                 330                 335

Phe Ala Arg Pro Asp Leu Leu Leu Leu Asp Glu Pro Thr Asn Met Leu
            340                 345                 350

Asp Val Arg Ala Ile Leu Trp Leu Glu Asn Tyr Leu Gln Thr Trp Pro
        355                 360                 365

Ser Thr Ile Leu Val Val Ser His Asp Arg Asn Phe Leu Asn Ala Ile
    370                 375                 380

Ala Thr Asp Ile Ile His Leu His Ser Gln Arg Leu Asp Gly Tyr Arg
385                 390                 395                 400

Gly Asp Phe Glu Thr Phe Ile Lys Ser Lys Gln Glu Arg Leu Leu Asn
                405                 410                 415

Gln Gln Arg Glu Tyr Glu Ala Gln Gln Gln Tyr Arg Gln His Ile Gln
            420                 425                 430
```

```
Val Phe Ile Asp Arg Phe Arg Tyr Asn Ala Asn Arg Ala Ser Gln Val
        435                 440                 445

Gln Ser Lys Leu Lys Met Leu Glu Lys Leu Pro Glu Leu Lys Pro Val
    450                 455                 460

Asp Lys Glu Ser Glu Val Val Met Lys Phe Pro Asp Gly Phe Glu Lys
465                 470                 475                 480

Phe Ser Pro Pro Ile Leu Gln Leu Asp Glu Val Asp Phe Tyr Tyr Asp
                485                 490                 495

Pro Lys His Val Ile Phe Ser Arg Leu Ser Val Ser Ala Asp Leu Glu
            500                 505                 510

Ser Arg Ile Cys Val Val Gly Glu Asn Gly Ala Gly Lys Ser Thr Met
        515                 520                 525

Leu Lys Leu Leu Leu Gly Asp Leu Ala Pro Val Arg Gly Ile Arg His
    530                 535                 540

Ala His Arg Asn Leu Lys Ile Gly Tyr Phe Ser Gln His His Val Glu
545                 550                 555                 560

Gln Leu Asp Leu Asn Val Ser Ala Val Glu Leu Leu Ala Arg Lys Phe
                565                 570                 575

Pro Gly Arg Pro Glu Glu Glu Tyr Arg His Gln Leu Gly Arg Tyr Gly
            580                 585                 590

Ile Ser Gly Glu Leu Ala Met Arg Pro Leu Ala Ser Leu Ser Gly Gly
        595                 600                 605

Gln Lys Ser Arg Val Ala Phe Ala Gln Met Thr Met Pro Cys Pro Asn
    610                 615                 620

Phe Tyr Ile Leu Asp Glu Pro Thr Asn His Leu Asp Met Glu Thr Ile
625                 630                 635                 640

Glu Ala Leu Gly Arg Ala Leu Asn Asn Phe Arg Gly Gly Val Ile Leu
                645                 650                 655
```

```
Val Ser His Asp Glu Arg Phe Ile Arg Leu Val Cys Arg Glu Leu Trp
            660                 665                 670

Val Cys Glu Gly Gly Gly Val Thr Arg Val Glu Gly Gly Phe Asp Gln
        675                 680                 685

Tyr Arg Ala Leu Leu Gln Glu Gln Phe Arg Arg Glu Gly Phe Leu
    690                 695                 700
```

<210> 7830
<211> 709
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1637; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NUQ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411471"

<400> 7830

```
Met Ala Thr Cys Ala Glu Ile Leu Arg Ser Glu Phe Pro Glu Ile Asp
1               5                  10                  15

Gly Gln Val Phe Asp Tyr Val Thr Gly Val Leu His Ser Gly Ser Ala
            20                  25                  30

Asp Phe Glu Ser Val Asp Asp Leu Val Glu Ala Val Gly Glu Leu Leu
        35                  40                  45

Gln Glu Val Ser Gly Asp Ser Lys Asp Asp Ala Gly Ile Arg Ala Val
    50                  55                  60
```

```
Cys Gln Arg Met Tyr Asn Thr Leu Arg Leu Ala Glu Pro Gln Ser Gln
65                  70                  75                  80

Gly Asn Ser Gln Val Leu Leu Asp Ala Pro Ile Gln Leu Ser Lys Ile
                85                  90                  95

Thr Glu Asn Tyr Asp Cys Gly Thr Lys Leu Pro Gly Leu Leu Lys Arg
            100                 105                 110

Glu Gln Ser Ser Thr Val Asn Ala Lys Lys Leu Glu Lys Ala Glu Ala
        115                 120                 125

Arg Leu Lys Ala Lys Gln Glu Lys Arg Ser Glu Lys Asp Thr Leu Lys
    130                 135                 140

Thr Ser Asn Pro Leu Val Leu Glu Glu Ala Ser Ala Ser Gln Ala Gly
145                 150                 155                 160

Ser Arg Lys Glu Ser Arg Leu Glu Ser Ser Gly Lys Asn Lys Ser Tyr
                165                 170                 175

Asp Val Arg Ile Glu Asn Phe Asp Val Ser Phe Gly Asp Arg Val Leu
            180                 185                 190

Leu Ala Gly Ala Asp Val Asn Leu Ala Trp Gly Arg Arg Tyr Gly Leu
        195                 200                 205

Val Gly Arg Asn Gly Leu Gly Lys Thr Thr Leu Leu Lys Met Leu Ala
    210                 215                 220

Thr Arg Ser Leu Arg Val Pro Ala His Ile Ser Leu Leu His Val Glu
225                 230                 235                 240

Gln Glu Val Ala Gly Asp Asp Thr Pro Ala Leu Gln Ser Val Leu Glu
                245                 250                 255

Ser Asp Ser Val Arg Glu Asp Leu Leu Arg Arg Glu Arg Glu Leu Thr
            260                 265                 270

Ala Gln Ile Ala Ala Gly Arg Ala Glu Gly Ser Glu Ala Ala Glu Leu
        275                 280                 285

Ala Glu Ile Tyr Ala Lys Leu Glu Glu Ile Glu Ala Asp Lys Ala Pro
```

290 295 300

Ala Arg Ala Ser Val Ile Leu Ala Gly Leu Gly Phe Thr Pro Lys Met
305 310 315 320

Gln Gln Gln Pro Thr Arg Glu Phe Ser Gly Gly Trp Arg Met Arg Leu
325 330 335

Ala Leu Ala Arg Ala Leu Phe Ala Arg Pro Asp Leu Leu Leu Leu Asp
340 345 350

Glu Pro Thr Asn Met Leu Asp Val Arg Ala Ile Leu Trp Leu Glu Asn
355 360 365

Tyr Leu Gln Thr Trp Pro Ser Thr Ile Leu Val Val Ser His Asp Arg
370 375 380

Asn Phe Leu Asn Ala Ile Ala Thr Asp Ile Ile His Leu His Ser Gln
385 390 395 400

Arg Leu Asp Gly Tyr Arg Gly Asp Phe Glu Thr Phe Ile Lys Ser Lys
405 410 415

Gln Glu Arg Leu Leu Asn Gln Gln Arg Glu Tyr Glu Ala Gln Gln Gln
420 425 430

Tyr Arg Gln His Ile Gln Val Phe Ile Asp Arg Phe Arg Tyr Asn Ala
435 440 445

Asn Arg Ala Ser Gln Val Gln Ser Lys Leu Lys Met Leu Glu Lys Leu
450 455 460

Pro Glu Leu Lys Pro Val Asp Lys Glu Ser Glu Val Val Met Lys Phe
465 470 475 480

Pro Asp Gly Phe Glu Lys Phe Ser Pro Pro Ile Leu Gln Leu Asp Glu
485 490 495

Val Asp Phe Tyr Tyr Asp Pro Lys His Val Ile Phe Ser Arg Leu Ser
500 505 510

Val Ser Ala Asp Leu Glu Ser Arg Ile Cys Val Val Gly Glu Asn Gly
515 520 525

Ala Gly Lys Ser Thr Met Leu Lys Leu Leu Leu Gly Asp Leu Ala Pro
530 535 540

Val Arg Gly Ile Arg His Ala His Arg Asn Leu Lys Ile Gly Tyr Phe
545 550 555 560

Ser Gln His His Val Glu Gln Leu Asp Leu Asn Val Ser Ala Val Glu
565 570 575

Leu Leu Ala Arg Lys Phe Pro Gly Arg Pro Glu Glu Glu Tyr Arg His
580 585 590

Gln Leu Gly Arg Tyr Gly Ile Ser Gly Glu Leu Ala Met Arg Pro Leu
595 600 605

Ala Ser Leu Ser Gly Gly Gln Lys Ser Arg Val Ala Phe Ala Gln Met
610 615 620

Thr Met Pro Cys Pro Asn Phe Tyr Ile Leu Asp Glu Pro Thr Asn His
625 630 635 640

Leu Asp Met Glu Thr Ile Glu Ala Leu Gly Arg Ala Leu Asn Asn Phe
645 650 655

Arg Gly Gly Val Ile Leu Val Ser His Asp Glu Arg Phe Ile Arg Leu
660 665 670

Val Cys Arg Glu Leu Trp Val Cys Glu Gly Gly Gly Val Thr Arg Val
675 680 685

Glu Gly Gly Phe Asp Gln Tyr Arg Ala Leu Leu Gln Glu Gln Phe Arg
690 695 700

Arg Glu Gly Phe Leu
705

<210> 7831
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1637; "

<220>
<221> source
<223> /note="Gene Symbol: ABCF3; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
F (GCN20),
member 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415704"

<400> 7831
Met Ala Thr Cys Ala Glu Ile Leu Arg Ser Glu Phe Pro Glu Ile Asp
1 5 10 15

Gly Gln Val Phe Asp Tyr Val Thr Gly Val Leu His Ser Gly Ser Ala
20 25 30

Asp Phe Glu Ser Val Asp Asp Leu Val Glu Ala Val Gly Glu Leu Leu
35 40 45

Gln Glu Val Ser Gly Asp Ser Lys Asp Asp Ala Gly Ile Arg Ala Val
50 55 60

Cys Gln Arg Met Tyr Asn Thr Leu Arg Leu Ala Glu Pro Gln Ser Gln
65 70 75 80

Gly Asn Ser Gln Val Leu Leu Asp Ala Pro Ile Gln Leu Ser Lys Ile
85 90 95

Thr Glu Asn Tyr Gly Arg Arg
100

<210> 7832
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "

<220>
<221> source

<223> /note="Gene Symbol: ABCG1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P45844; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000291524"

<400> 7832

```
Met Ile Met Arg Leu Pro Gln Pro His Gly Thr Asn Ala Ser Ser Tyr
1               5                  10                  15

Ser Ala Glu Met Thr Glu Pro Lys Ser Val Cys Val Ser Val Asp Glu
            20                  25                  30

Val Val Ser Ser Asn Met Glu Ala Thr Glu Thr Asp Leu Leu Asn Gly
        35                  40                  45

His Leu Lys Lys Val Asp Asn Asn Leu Thr Glu Ala Gln Arg Phe Ser
    50                  55                  60

Ser Leu Pro Arg Arg Ala Ala Val Asn Ile Glu Phe Arg Asp Leu Ser
65                  70                  75                  80

Tyr Ser Val Pro Glu Gly Pro Trp Trp Arg Lys Lys Gly Tyr Lys Thr
                85                  90                  95

Leu Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser Gly Glu Leu Val Ala
            100                 105                 110

Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Met Asn Ile Leu
        115                 120                 125

Ala Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala Val Leu Ile Asn Gly
    130                 135                 140

Leu Pro Arg Asp Leu Arg Cys Phe Arg Lys Val Ser Cys Tyr Ile Met
145                 150                 155                 160
```

```
Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Gln Glu Ala Met Met
                165                 170                 175

Val Ser Ala His Leu Lys Leu Gln Glu Lys Asp Glu Gly Arg Arg Glu
            180                 185                 190

Met Val Lys Glu Ile Leu Thr Ala Leu Gly Leu Leu Ser Cys Ala Asn
        195                 200                 205

Thr Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg Lys Arg Leu Ala Ile
    210                 215                 220

Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp Glu Pro
225                 230                 235                 240

Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser Leu Met
                245                 250                 255

Lys Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile Cys Thr Ile His Gln
            260                 265                 270

Pro Ser Ala Lys Leu Phe Glu Leu Phe Asp Gln Leu Tyr Val Leu Ser
        275                 280                 285

Gln Gly Gln Cys Val Tyr Arg Gly Lys Val Cys Asn Leu Val Pro Tyr
    290                 295                 300

Leu Arg Asp Leu Gly Leu Asn Cys Pro Thr Tyr His Asn Pro Ala Asp
305                 310                 315                 320

Phe Val Met Glu Val Ala Ser Gly Glu Tyr Gly Asp Gln Asn Ser Arg
                325                 330                 335

Leu Val Arg Ala Val Arg Glu Gly Met Cys Asp Ser Asp His Lys Arg
            340                 345                 350

Asp Leu Gly Gly Asp Ala Glu Val Asn Pro Phe Leu Trp His Arg Pro
        355                 360                 365

Ser Glu Glu Asp Ser Ser Ser Met Glu Gly Cys His Ser Phe Ser Ala
    370                 375                 380
```

```
Ser Cys Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser
385                 390                 395                 400

Ile Met Arg Asp Ser Val Leu Thr His Leu Arg Ile Thr Ser His Ile
                405                 410                 415

Gly Ile Gly Leu Leu Ile Gly Leu Leu Tyr Leu Gly Ile Gly Asn Glu
            420                 425                 430

Ala Lys Lys Val Leu Ser Asn Ser Gly Phe Leu Phe Phe Ser Met Leu
        435                 440                 445

Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu
    450                 455                 460

Glu Met Gly Val Phe Leu Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu
465                 470                 475                 480

Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Ile
                485                 490                 495

Met Phe Pro Val Ala Tyr Cys Ser Ile Val Tyr Trp Met Thr Ser Gln
            500                 505                 510

Pro Ser Asp Ala Val Arg Phe Val Leu Phe Ala Ala Leu Gly Thr Met
        515                 520                 525

Thr Ser Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser
    530                 535                 540

Thr Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro
545                 550                 555                 560

Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Asp Thr Ile Pro Thr
                565                 570                 575

Tyr Leu Gln Trp Met Ser Tyr Ile Ser Tyr Val Arg Tyr Gly Phe Glu
            580                 585                 590

Gly Val Ile Leu Ser Ile Tyr Gly Leu Asp Arg Glu Asp Leu His Cys
        595                 600                 605

Asp Ile Asp Glu Thr Cys His Phe Gln Lys Ser Glu Ala Ile Leu Arg
```

```
    610                 615                 620

Glu Leu Asp Val Glu Asn Ala Lys Leu Tyr Leu Asp Phe Ile Val Leu
625                 630                 635                 640

Gly Ile Phe Phe Ile Ser Leu Arg Leu Ile Ala Tyr Phe Val Leu Arg
                645                 650                 655

Tyr Lys Ile Arg Ala Glu Arg
            660

<210> 7833
<211> 677
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P45844; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339744"

<400> 7833
Met Arg Ile Ser Leu Pro Arg Ala Pro Glu Arg Asp Gly Gly Val Ser
1               5                   10                  15

Ala Ser Ser Leu Leu Asp Thr Val Thr Asn Ala Ser Ser Tyr Ser Ala
            20                  25                  30

Glu Met Thr Glu Pro Lys Ser Val Cys Val Ser Val Asp Glu Val Val
        35                  40                  45

Ser Ser Asn Met Glu Ala Thr Glu Thr Asp Leu Leu Asn Gly His Leu
```

50 55 60

Lys Lys Val Asp Asn Asn Leu Thr Glu Ala Gln Arg Phe Ser Ser Leu
65 70 75 80

Pro Arg Arg Ala Ala Val Asn Ile Glu Phe Arg Asp Leu Ser Tyr Ser
85 90 95

Val Pro Glu Gly Pro Trp Trp Arg Lys Lys Gly Tyr Lys Thr Leu Leu
100 105 110

Lys Gly Ile Ser Gly Lys Phe Asn Ser Gly Glu Leu Val Ala Ile Met
115 120 125

Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Met Asn Ile Leu Ala Gly
130 135 140

Tyr Arg Glu Thr Gly Met Lys Gly Ala Val Leu Ile Asn Gly Leu Pro
145 150 155 160

Arg Asp Leu Arg Cys Phe Arg Lys Val Ser Cys Tyr Ile Met Gln Asp
165 170 175

Asp Met Leu Leu Pro His Leu Thr Val Gln Glu Ala Met Met Val Ser
180 185 190

Ala His Leu Lys Leu Gln Glu Lys Asp Glu Gly Arg Arg Glu Met Val
195 200 205

Lys Glu Ile Leu Thr Ala Leu Gly Leu Leu Ser Cys Ala Asn Thr Arg
210 215 220

Thr Gly Ser Leu Ser Gly Gly Gln Arg Lys Arg Leu Ala Ile Ala Leu
225 230 235 240

Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp Glu Pro Thr Ser
245 250 255

Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser Leu Met Lys Gly
260 265 270

Leu Ala Gln Gly Gly Arg Ser Ile Ile Cys Thr Ile His Gln Pro Ser
275 280 285

```
Ala Lys Leu Phe Glu Leu Phe Asp Gln Leu Tyr Val Leu Ser Gln Gly
    290                 295                 300

Gln Cys Val Tyr Arg Gly Lys Val Cys Asn Leu Val Pro Tyr Leu Arg
305                 310                 315                 320

Asp Leu Gly Leu Asn Cys Pro Thr Tyr His Asn Pro Ala Asp Phe Val
                325                 330                 335

Met Glu Val Ala Ser Gly Glu Tyr Gly Asp Gln Asn Ser Arg Leu Val
            340                 345                 350

Arg Ala Val Arg Glu Gly Met Cys Asp Ser Asp His Lys Arg Asp Leu
        355                 360                 365

Gly Gly Asp Ala Glu Val Asn Pro Phe Leu Trp His Arg Pro Ser Glu
    370                 375                 380

Glu Asp Ser Ser Ser Met Glu Gly Cys His Ser Phe Ser Ala Ser Cys
385                 390                 395                 400

Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser Ile Met
                405                 410                 415

Arg Asp Ser Val Leu Thr His Leu Arg Ile Thr Ser His Ile Gly Ile
            420                 425                 430

Gly Leu Leu Ile Gly Leu Leu Tyr Leu Gly Ile Gly Asn Glu Ala Lys
        435                 440                 445

Lys Val Leu Ser Asn Ser Gly Phe Leu Phe Phe Ser Met Leu Phe Leu
    450                 455                 460

Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu Glu Met
465                 470                 475                 480

Gly Val Phe Leu Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu Lys Ala
                485                 490                 495

Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Ile Met Phe
            500                 505                 510
```

```
Pro Val Ala Tyr Cys Ser Ile Val Tyr Trp Met Thr Ser Gln Pro Ser
        515                 520                 525

Asp Ala Val Arg Phe Val Leu Phe Ala Ala Leu Gly Thr Met Thr Ser
    530                 535                 540

Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser Thr Ser
545                 550                 555                 560

Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro Val Leu
                565                 570                 575

Leu Phe Ser Gly Phe Phe Val Ser Phe Asp Thr Ile Pro Thr Tyr Leu
            580                 585                 590

Gln Trp Met Ser Tyr Ile Ser Tyr Val Arg Tyr Gly Phe Glu Gly Val
        595                 600                 605

Ile Leu Ser Ile Tyr Gly Leu Asp Arg Glu Asp Leu His Cys Asp Ile
    610                 615                 620

Asp Glu Thr Cys His Phe Gln Lys Ser Glu Ala Ile Leu Arg Glu Leu
625                 630                 635                 640

Asp Val Glu Asn Ala Lys Leu Tyr Leu Asp Phe Ile Val Leu Gly Ile
                645                 650                 655

Phe Phe Ile Ser Leu Arg Leu Ile Ala Tyr Phe Val Leu Arg Tyr Lys
            660                 665                 670

Ile Arg Ala Glu Arg
        675


<210> 7834
<211> 678
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG1; "
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<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P45844; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354995"

<400> 7834

```
Met Ala Cys Leu Met Ala Ala Phe Ser Val Gly Thr Ala Met Asn Ala
1               5                  10                  15

Ser Ser Tyr Ser Ala Glu Met Thr Glu Pro Lys Ser Val Cys Val Ser
            20                  25                  30

Val Asp Glu Val Val Ser Ser Asn Met Glu Ala Thr Glu Thr Asp Leu
        35                  40                  45

Leu Asn Gly His Leu Lys Lys Val Asp Asn Asn Leu Thr Glu Ala Gln
    50                  55                  60

Arg Phe Ser Ser Leu Pro Arg Arg Ala Ala Val Asn Ile Glu Phe Arg
65                  70                  75                  80

Asp Leu Ser Tyr Ser Val Pro Glu Gly Pro Trp Trp Arg Lys Lys Gly
                85                  90                  95

Tyr Lys Thr Leu Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser Gly Glu
            100                 105                 110

Leu Val Ala Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Met
        115                 120                 125

Asn Ile Leu Ala Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala Val Leu
    130                 135                 140

Ile Asn Gly Leu Pro Arg Asp Leu Arg Cys Phe Arg Lys Val Ser Cys
145                 150                 155                 160
```

```
Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Gln Glu
                165                 170                 175

Ala Met Met Val Ser Ala His Leu Lys Leu Gln Glu Lys Asp Glu Gly
            180                 185                 190

Arg Arg Glu Met Val Lys Glu Ile Leu Thr Ala Leu Gly Leu Leu Ser
        195                 200                 205

Cys Ala Asn Thr Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg Lys Arg
    210                 215                 220

Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe
225                 230                 235                 240

Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val
                245                 250                 255

Ser Leu Met Lys Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile Cys Thr
            260                 265                 270

Ile His Gln Pro Ser Ala Lys Leu Phe Glu Leu Phe Asp Gln Leu Tyr
        275                 280                 285

Val Leu Ser Gln Gly Gln Cys Val Tyr Arg Gly Lys Val Cys Asn Leu
    290                 295                 300

Val Pro Tyr Leu Arg Asp Leu Gly Leu Asn Cys Pro Thr Tyr His Asn
305                 310                 315                 320

Pro Ala Asp Phe Val Met Glu Val Ala Ser Gly Glu Tyr Gly Asp Gln
                325                 330                 335

Asn Ser Arg Leu Val Arg Ala Val Arg Glu Gly Met Cys Asp Ser Asp
            340                 345                 350

His Lys Arg Asp Leu Gly Gly Asp Ala Glu Val Asn Pro Phe Leu Trp
        355                 360                 365

His Arg Pro Ser Glu Glu Val Lys Gln Thr Lys Arg Leu Lys Gly Leu
    370                 375                 380

Arg Lys Asp Ser Ser Ser Met Glu Gly Cys His Ser Phe Ser Ala Ser
```

385 390 395 400

Cys Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser Ile
405 410 415

Met Arg Asp Ser Val Leu Thr His Leu Arg Ile Thr Ser His Ile Gly
420 425 430

Ile Gly Leu Leu Ile Gly Leu Leu Tyr Leu Gly Ile Gly Asn Glu Ala
435 440 445

Lys Lys Val Leu Ser Asn Ser Gly Phe Leu Phe Phe Ser Met Leu Phe
450 455 460

Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu Glu
465 470 475 480

Met Gly Val Phe Leu Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu Lys
485 490 495

Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Ile Met
500 505 510

Phe Pro Val Ala Tyr Cys Ser Ile Val Tyr Trp Met Thr Ser Gln Pro
515 520 525

Ser Asp Ala Val Arg Phe Val Leu Phe Ala Ala Leu Gly Thr Met Thr
530 535 540

Ser Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser Thr
545 550 555 560

Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro Val
565 570 575

Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Asp Thr Ile Pro Thr Tyr
580 585 590

Leu Gln Trp Met Ser Tyr Ile Ser Tyr Val Arg Tyr Gly Phe Glu Gly
595 600 605

Val Ile Leu Ser Ile Tyr Gly Leu Asp Arg Glu Asp Leu His Cys Asp
610 615 620

```
Ile Asp Glu Thr Cys His Phe Gln Lys Ser Glu Ala Ile Leu Arg Glu
625                 630                 635                 640


Leu Asp Val Glu Asn Ala Lys Leu Tyr Leu Asp Phe Ile Val Leu Gly
                645                 650                 655


Ile Phe Phe Ile Ser Leu Arg Leu Ile Ala Tyr Phe Val Leu Arg Tyr
            660                 665                 670


Lys Ile Arg Ala Glu Arg
        675


<210> 7835
<211> 824
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000381464"

<400> 7835
Met Leu Ala Val Gln Gln Thr Glu His Leu Pro Ala Cys Pro Pro Ala
1               5                   10                  15


Arg Arg Trp Ser Ser Asn Phe Cys Pro Glu Ser Thr Glu Gly Gly Pro
            20                  25                  30


Ser Leu Leu Gly Leu Arg Asp Met Val Arg Arg Gly Trp Ser Val Cys
        35                  40                  45


Thr Ala Ile Leu Leu Ala Arg Leu Trp Cys Leu Val Pro Thr His Thr
    50                  55                  60
```

```
Phe Leu Ser Glu Tyr Pro Glu Ala Ala Glu Tyr Pro His Pro Gly Trp
65                  70                  75                  80

Val Tyr Trp Leu Gln Met Ala Val Ala Pro Gly His Leu Arg Ala Trp
                85                  90                  95

Val Met Arg Asn Asn Val Thr Thr Asn Ile Pro Ser Ala Phe Ser Gly
            100                 105                 110

Thr Leu Thr His Glu Glu Lys Ala Val Leu Thr Val Phe Thr Gly Thr
        115                 120                 125

Ala Thr Ala Val His Val Gln Val Ala Ala Leu Ala Ser Ala Lys Leu
    130                 135                 140

Glu Ser Ser Val Phe Val Thr Asp Cys Val Ser Cys Lys Ile Glu Asn
145                 150                 155                 160

Val Cys Asp Ser Ala Leu Gln Gly Lys Arg Val Pro Met Ser Gly Leu
                165                 170                 175

Gln Gly Ser Ser Ile Val Ile Met Pro Pro Ser Asn Arg Pro Leu Ala
            180                 185                 190

Ser Ala Ala Ser Cys Thr Trp Ser Val Gln Val Gln Gly Gly Pro His
        195                 200                 205

His Leu Gly Val Val Ala Ile Ser Gly Lys Val Leu Ser Ala Ala His
    210                 215                 220

Gly Ala Gly Arg Ala Tyr Gly Trp Gly Phe Pro Gly Asp Pro Met Glu
225                 230                 235                 240

Glu Gly Tyr Lys Thr Leu Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser
                245                 250                 255

Gly Glu Leu Val Ala Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr
            260                 265                 270

Leu Met Asn Ile Leu Ala Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala
        275                 280                 285
```

```
Val Leu Ile Asn Gly Leu Pro Arg Asp Leu Arg Cys Phe Arg Lys Val
    290                 295                 300

Ser Cys Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val
305                 310                 315                 320

Gln Glu Ala Met Met Val Ser Ala His Leu Lys Leu Gln Glu Lys Asp
                325                 330                 335

Glu Gly Arg Arg Glu Met Val Lys Glu Ile Leu Thr Ala Leu Gly Leu
            340                 345                 350

Leu Ser Cys Ala Asn Thr Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg
        355                 360                 365

Lys Arg Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met
    370                 375                 380

Phe Phe Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln
385                 390                 395                 400

Val Val Ser Leu Met Lys Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile
                405                 410                 415

Cys Thr Ile His Gln Pro Ser Ala Lys Leu Phe Glu Leu Phe Asp Gln
            420                 425                 430

Leu Tyr Val Leu Ser Gln Gly Gln Cys Val Tyr Arg Gly Lys Val Cys
        435                 440                 445

Asn Leu Val Pro Tyr Leu Arg Asp Leu Gly Leu Asn Cys Pro Thr Tyr
    450                 455                 460

His Asn Pro Ala Asp Phe Val Met Glu Val Ala Ser Gly Glu Tyr Gly
465                 470                 475                 480

Asp Gln Asn Ser Arg Leu Val Arg Ala Val Arg Glu Gly Met Cys Asp
                485                 490                 495

Ser Asp His Lys Arg Asp Leu Gly Gly Asp Ala Glu Val Asn Pro Phe
            500                 505                 510
```

```
Leu Trp His Arg Pro Ser Glu Glu Val Lys Gln Thr Lys Arg Leu Lys
        515                 520                 525

Gly Leu Arg Lys Asp Ser Ser Ser Met Glu Gly Cys His Ser Phe Ser
    530                 535                 540

Ala Ser Cys Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu
545                 550                 555                 560

Ser Ile Met Arg Asp Ser Val Leu Thr His Leu Arg Ile Thr Ser His
                565                 570                 575

Ile Gly Ile Gly Leu Leu Ile Gly Leu Leu Tyr Leu Gly Ile Gly Asn
            580                 585                 590

Glu Ala Lys Lys Val Leu Ser Asn Ser Gly Phe Leu Phe Phe Ser Met
        595                 600                 605

Leu Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro
    610                 615                 620

Leu Glu Met Gly Val Phe Leu Arg Glu His Leu Asn Tyr Trp Tyr Ser
625                 630                 635                 640

Leu Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln
                645                 650                 655

Ile Met Phe Pro Val Ala Tyr Cys Ser Ile Val Tyr Trp Met Thr Ser
            660                 665                 670

Gln Pro Ser Asp Ala Val Arg Phe Val Leu Phe Ala Ala Leu Gly Thr
        675                 680                 685

Met Thr Ser Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala
    690                 695                 700

Ser Thr Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile
705                 710                 715                 720

Pro Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Asp Thr Ile Pro
                725                 730                 735

Thr Tyr Leu Gln Trp Met Ser Tyr Ile Ser Tyr Val Arg Tyr Gly Phe
```

```
            740                 745                 750

Glu Gly Val Ile Leu Ser Ile Tyr Gly Leu Asp Arg Glu Asp Leu His
        755                 760                 765

Cys Asp Ile Asp Glu Thr Cys His Phe Gln Lys Ser Glu Ala Ile Leu
    770                 775                 780

Arg Glu Leu Asp Val Glu Asn Ala Lys Leu Tyr Leu Asp Phe Ile Val
785                 790                 795                 800

Leu Gly Ile Phe Phe Ile Ser Leu Arg Leu Ile Ala Tyr Phe Val Leu
                805                 810                 815

Arg Tyr Lys Ile Arg Ala Glu Arg
            820


<210> 7836
<211> 666
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P45844; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000381467"

<400> 7836
Met Ala Cys Leu Met Ala Ala Phe Ser Val Gly Thr Ala Met Asn Ala
1               5                   10                  15

Ser Ser Tyr Ser Ala Glu Met Thr Glu Pro Lys Ser Val Cys Val Ser
```

```
            20                  25                  30

Val Asp Glu Val Val Ser Ser Asn Met Glu Ala Thr Glu Thr Asp Leu
        35                  40                  45

Leu Asn Gly His Leu Lys Lys Val Asp Asn Asn Leu Thr Glu Ala Gln
    50                  55                  60

Arg Phe Ser Ser Leu Pro Arg Arg Ala Ala Val Asn Ile Glu Phe Arg
65                  70                  75                  80

Asp Leu Ser Tyr Ser Val Pro Glu Gly Pro Trp Trp Arg Lys Lys Gly
                85                  90                  95

Tyr Lys Thr Leu Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser Gly Glu
            100                 105                 110

Leu Val Ala Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Met
        115                 120                 125

Asn Ile Leu Ala Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala Val Leu
    130                 135                 140

Ile Asn Gly Leu Pro Arg Asp Leu Arg Cys Phe Arg Lys Val Ser Cys
145                 150                 155                 160

Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Gln Glu
                165                 170                 175

Ala Met Met Val Ser Ala His Leu Lys Leu Gln Glu Lys Asp Glu Gly
            180                 185                 190

Arg Arg Glu Met Val Lys Glu Ile Leu Thr Ala Leu Gly Leu Leu Ser
        195                 200                 205

Cys Ala Asn Thr Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg Lys Arg
    210                 215                 220

Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe
225                 230                 235                 240

Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val
                245                 250                 255
```

```
Ser Leu Met Lys Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile Cys Thr
            260                 265                 270

Ile His Gln Pro Ser Ala Lys Leu Phe Glu Leu Phe Asp Gln Leu Tyr
        275                 280                 285

Val Leu Ser Gln Gly Gln Cys Val Tyr Arg Gly Lys Val Cys Asn Leu
    290                 295                 300

Val Pro Tyr Leu Arg Asp Leu Gly Leu Asn Cys Pro Thr Tyr His Asn
305                 310                 315                 320

Pro Ala Asp Phe Val Met Glu Val Ala Ser Gly Glu Tyr Gly Asp Gln
                325                 330                 335

Asn Ser Arg Leu Val Arg Ala Val Arg Glu Gly Met Cys Asp Ser Asp
            340                 345                 350

His Lys Arg Asp Leu Gly Gly Asp Ala Glu Val Asn Pro Phe Leu Trp
        355                 360                 365

His Arg Pro Ser Glu Glu Asp Ser Ser Ser Met Glu Gly Cys His Ser
    370                 375                 380

Phe Ser Ala Ser Cys Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr
385                 390                 395                 400

Phe Leu Ser Ile Met Arg Asp Ser Val Leu Thr His Leu Arg Ile Thr
                405                 410                 415

Ser His Ile Gly Ile Gly Leu Leu Ile Gly Leu Leu Tyr Leu Gly Ile
            420                 425                 430

Gly Asn Glu Ala Lys Lys Val Leu Ser Asn Ser Gly Phe Leu Phe Phe
        435                 440                 445

Ser Met Leu Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr
    450                 455                 460

Phe Pro Leu Glu Met Gly Val Phe Leu Arg Glu His Leu Asn Tyr Trp
465                 470                 475                 480
```

```
Tyr Ser Leu Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro
                485                 490                 495

Phe Gln Ile Met Phe Pro Val Ala Tyr Cys Ser Ile Val Tyr Trp Met
            500                 505                 510

Thr Ser Gln Pro Ser Asp Ala Val Arg Phe Val Leu Phe Ala Ala Leu
        515                 520                 525

Gly Thr Met Thr Ser Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly
    530                 535                 540

Ala Ala Ser Thr Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr
545                 550                 555                 560

Ala Ile Pro Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Asp Thr
                565                 570                 575

Ile Pro Thr Tyr Leu Gln Trp Met Ser Tyr Ile Ser Tyr Val Arg Tyr
            580                 585                 590

Gly Phe Glu Gly Val Ile Leu Ser Ile Tyr Gly Leu Asp Arg Glu Asp
        595                 600                 605

Leu His Cys Asp Ile Asp Glu Thr Cys His Phe Gln Lys Ser Glu Ala
    610                 615                 620

Ile Leu Arg Glu Leu Asp Val Glu Asn Ala Lys Leu Tyr Leu Asp Phe
625                 630                 635                 640

Ile Val Leu Gly Ile Phe Phe Ile Ser Leu Arg Leu Ile Ala Tyr Phe
                645                 650                 655

Val Leu Arg Tyr Lys Ile Arg Ala Glu Arg
            660                 665


<210> 7837
<211> 668
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "
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<220>
<221> source
<223> /note="Gene Symbol: ABCG1; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 1; "

<220>
<221> source
<223> /note="Uniprot ID: P45844; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000381475"

<400> 7837

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Met Leu Gly Thr Gln Gly Trp Thr Lys Gln Arg Lys Pro Cys Pro Gln
1               5                  10                  15

Asn Ala Ser Ser Tyr Ser Ala Glu Met Thr Glu Pro Lys Ser Val Cys
            20                  25                  30

Val Ser Val Asp Glu Val Val Ser Ser Asn Met Glu Ala Thr Glu Thr
        35                  40                  45

Asp Leu Leu Asn Gly His Leu Lys Lys Val Asp Asn Asn Leu Thr Glu
    50                  55                  60

Ala Gln Arg Phe Ser Ser Leu Pro Arg Arg Ala Ala Val Asn Ile Glu
65                  70                  75                  80

Phe Arg Asp Leu Ser Tyr Ser Val Pro Glu Gly Pro Trp Trp Arg Lys
                85                  90                  95

Lys Gly Tyr Lys Thr Leu Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser
            100                 105                 110

Gly Glu Leu Val Ala Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr
        115                 120                 125

Leu Met Asn Ile Leu Ala Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala
    130                 135                 140
```

Val Leu Ile Asn Gly Leu Pro Arg Asp Leu Arg Cys Phe Arg Lys Val
145 150 155 160

Ser Cys Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val
165 170 175

Gln Glu Ala Met Met Val Ser Ala His Leu Lys Leu Gln Glu Lys Asp
180 185 190

Glu Gly Arg Arg Glu Met Val Lys Glu Ile Leu Thr Ala Leu Gly Leu
195 200 205

Leu Ser Cys Ala Asn Thr Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg
210 215 220

Lys Arg Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met
225 230 235 240

Phe Phe Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln
245 250 255

Val Val Ser Leu Met Lys Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile
260 265 270

Cys Thr Ile His Gln Pro Ser Ala Lys Leu Phe Glu Leu Phe Asp Gln
275 280 285

Leu Tyr Val Leu Ser Gln Gly Gln Cys Val Tyr Arg Gly Lys Val Cys
290 295 300

Asn Leu Val Pro Tyr Leu Arg Asp Leu Gly Leu Asn Cys Pro Thr Tyr
305 310 315 320

His Asn Pro Ala Asp Phe Val Met Glu Val Ala Ser Gly Glu Tyr Gly
325 330 335

Asp Gln Asn Ser Arg Leu Val Arg Ala Val Arg Glu Gly Met Cys Asp
340 345 350

Ser Asp His Lys Arg Asp Leu Gly Gly Asp Ala Glu Val Asn Pro Phe
355 360 365

Leu Trp His Arg Pro Ser Glu Glu Asp Ser Ser Ser Met Glu Gly Cys

370 375 380

His Ser Phe Ser Ala Ser Cys Leu Thr Gln Phe Cys Ile Leu Phe Lys
385 390 395 400

Arg Thr Phe Leu Ser Ile Met Arg Asp Ser Val Leu Thr His Leu Arg
405 410 415

Ile Thr Ser His Ile Gly Ile Gly Leu Leu Ile Gly Leu Leu Tyr Leu
420 425 430

Gly Ile Gly Asn Glu Ala Lys Lys Val Leu Ser Asn Ser Gly Phe Leu
435 440 445

Phe Phe Ser Met Leu Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val
450 455 460

Leu Thr Phe Pro Leu Glu Met Gly Val Phe Leu Arg Glu His Leu Asn
465 470 475 480

Tyr Trp Tyr Ser Leu Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp
485 490 495

Val Pro Phe Gln Ile Met Phe Pro Val Ala Tyr Cys Ser Ile Val Tyr
500 505 510

Trp Met Thr Ser Gln Pro Ser Asp Ala Val Arg Phe Val Leu Phe Ala
515 520 525

Ala Leu Gly Thr Met Thr Ser Leu Val Ala Gln Ser Leu Gly Leu Leu
530 535 540

Ile Gly Ala Ala Ser Thr Ser Leu Gln Val Ala Thr Phe Val Gly Pro
545 550 555 560

Val Thr Ala Ile Pro Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe
565 570 575

Asp Thr Ile Pro Thr Tyr Leu Gln Trp Met Ser Tyr Ile Ser Tyr Val
580 585 590

Arg Tyr Gly Phe Glu Gly Val Ile Leu Ser Ile Tyr Gly Leu Asp Arg
595 600 605

```
Glu Asp Leu His Cys Asp Ile Asp Glu Thr Cys His Phe Gln Lys Ser
    610                 615                 620

Glu Ala Ile Leu Arg Glu Leu Asp Val Glu Asn Ala Lys Leu Tyr Leu
625                 630                 635                 640

Asp Phe Ile Val Leu Gly Ile Phe Phe Ile Ser Leu Arg Leu Ile Ala
                645                 650                 655

Tyr Phe Val Leu Arg Tyr Lys Ile Arg Ala Glu Arg
            660                 665


<210> 7838
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1638; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414541"

<400> 7838
Met Ala Cys Leu Met Ala Ala Phe Ser Val Gly Thr Ala Met Asn Ala
1               5                   10                  15

Ser Ser Tyr Ser Ala Glu Met Thr Glu Pro Lys Ser Val Cys Val Ser
            20                  25                  30

Val Asp Glu Val Val Ser Ser Asn Met Glu Ala Thr Glu Thr Asp Leu
        35                  40                  45

Leu Asn Gly His Leu Lys Lys Val Asp Asn Asn Leu Thr Glu Ala Gln
    50                  55                  60
```

Arg Phe Ser Ser Leu Pro Arg Arg Ala Ala Val Asn Ile Glu Phe Arg
65 70 75 80

Asp Leu Ser Tyr Ser Val Pro Glu Gly Pro Trp Trp Arg Lys Lys Gly
85 90 95

Tyr Lys Thr Leu Leu Lys Gly Ile Ser Gly Lys Phe Asn Ser Gly Glu
100 105 110

Leu Val Ala Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Met
115 120 125

Asn Ile Leu Ala Gly Tyr Arg Glu Thr Gly Met Lys Gly Ala Val Leu
130 135 140

Ile Asn Gly Leu Pro Arg Asp Leu Arg Cys Phe Arg Lys Val Ser Cys
145 150 155 160

Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Gln Glu
165 170 175

Ala Met Met Val Lys Glu Ile Leu Thr Ala Leu Gly Leu Leu Ser Cys
180 185 190

Ala Asn Thr Arg Thr Gly Ser Leu Ser Gly Gly Gln Arg Lys Arg Leu
195 200 205

Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp
210 215 220

Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser
225 230 235 240

Leu Met Lys Gly Leu Ala Gln Gly Gly Arg Ser Ile Ile Cys Thr Ile
245 250 255

His

<210> 7839
<211> 655
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1639; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG2; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 2 (Junior blood group); "

<220>
<221> source
<223> /note="Uniprot ID: Q9UNQ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000237612"

<400> 7839

```
Met Ser Ser Ser Asn Val Glu Val Phe Ile Pro Val Ser Gln Gly Asn
1               5                  10                  15

Thr Asn Gly Phe Pro Ala Thr Ala Ser Asn Asp Leu Lys Ala Phe Thr
            20                  25                  30

Glu Gly Ala Val Leu Ser Phe His Asn Ile Cys Tyr Arg Val Lys Leu
        35                  40                  45

Lys Ser Gly Phe Leu Pro Cys Arg Lys Pro Val Glu Lys Glu Ile Leu
    50                  55                  60

Ser Asn Ile Asn Gly Ile Met Lys Pro Gly Leu Asn Ala Ile Leu Gly
65                  70                  75                  80

Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu Asp Val Leu Ala Ala Arg
                85                  90                  95

Lys Asp Pro Ser Gly Leu Ser Gly Asp Val Leu Ile Asn Gly Ala Pro
            100                 105                 110

Arg Pro Ala Asn Phe Lys Cys Asn Ser Gly Tyr Val Val Gln Asp Asp
        115                 120                 125
```

```
Val Val Met Gly Thr Leu Thr Val Arg Glu Asn Leu Gln Phe Ser Ala
    130                 135                 140

Ala Leu Arg Leu Ala Thr Thr Met Thr Asn His Glu Lys Asn Glu Arg
145                 150                 155                 160

Ile Asn Arg Val Ile Gln Glu Leu Gly Leu Asp Lys Val Ala Asp Ser
                165                 170                 175

Lys Val Gly Thr Gln Phe Ile Arg Gly Val Ser Gly Gly Glu Arg Lys
            180                 185                 190

Arg Thr Ser Ile Gly Met Glu Leu Ile Thr Asp Pro Ser Ile Leu Phe
        195                 200                 205

Leu Asp Glu Pro Thr Thr Gly Leu Asp Ser Ser Thr Ala Asn Ala Val
    210                 215                 220

Leu Leu Leu Leu Lys Arg Met Ser Lys Gln Gly Arg Thr Ile Ile Phe
225                 230                 235                 240

Ser Ile His Gln Pro Arg Tyr Ser Ile Phe Lys Leu Phe Asp Ser Leu
                245                 250                 255

Thr Leu Leu Ala Ser Gly Arg Leu Met Phe His Gly Pro Ala Gln Glu
            260                 265                 270

Ala Leu Gly Tyr Phe Glu Ser Ala Gly Tyr His Cys Glu Ala Tyr Asn
        275                 280                 285

Asn Pro Ala Asp Phe Phe Leu Asp Ile Ile Asn Gly Asp Ser Thr Ala
    290                 295                 300

Val Ala Leu Asn Arg Glu Glu Asp Phe Lys Ala Thr Glu Ile Ile Glu
305                 310                 315                 320

Pro Ser Lys Gln Asp Lys Pro Leu Ile Glu Lys Leu Ala Glu Ile Tyr
                325                 330                 335

Val Asn Ser Ser Phe Tyr Lys Glu Thr Lys Ala Glu Leu His Gln Leu
            340                 345                 350
```

```
Ser Gly Gly Glu Lys Lys Lys Lys Ile Thr Val Phe Lys Glu Ile Ser
        355                 360                 365

Tyr Thr Thr Ser Phe Cys His Gln Leu Arg Trp Val Ser Lys Arg Ser
    370                 375                 380

Phe Lys Asn Leu Leu Gly Asn Pro Gln Ala Ser Ile Ala Gln Ile Ile
385                 390                 395                 400

Val Thr Val Val Leu Gly Leu Val Ile Gly Ala Ile Tyr Phe Gly Leu
                405                 410                 415

Lys Asn Asp Ser Thr Gly Ile Gln Asn Arg Ala Gly Val Leu Phe Phe
            420                 425                 430

Leu Thr Thr Asn Gln Cys Phe Ser Ser Val Ser Ala Val Glu Leu Phe
        435                 440                 445

Val Val Glu Lys Lys Leu Phe Ile His Glu Tyr Ile Ser Gly Tyr Tyr
    450                 455                 460

Arg Val Ser Ser Tyr Phe Leu Gly Lys Leu Leu Ser Asp Leu Leu Pro
465                 470                 475                 480

Met Arg Met Leu Pro Ser Ile Ile Phe Thr Cys Ile Val Tyr Phe Met
                485                 490                 495

Leu Gly Leu Lys Pro Lys Ala Asp Ala Phe Phe Val Met Met Phe Thr
            500                 505                 510

Leu Met Met Val Ala Tyr Ser Ala Ser Ser Met Ala Leu Ala Ile Ala
        515                 520                 525

Ala Gly Gln Ser Val Val Ser Val Ala Thr Leu Leu Met Thr Ile Cys
    530                 535                 540

Phe Val Phe Met Met Ile Phe Ser Gly Leu Leu Val Asn Leu Thr Thr
545                 550                 555                 560

Ile Ala Ser Trp Leu Ser Trp Leu Gln Tyr Phe Ser Ile Pro Arg Tyr
                565                 570                 575

Gly Phe Thr Ala Leu Gln His Asn Glu Phe Leu Gly Gln Asn Phe Cys
```

```
            580                 585                 590

Pro Gly Leu Asn Ala Thr Gly Asn Asn Pro Cys Asn Tyr Ala Thr Cys
        595                 600                 605

Thr Gly Glu Glu Tyr Leu Val Lys Gln Gly Ile Asp Leu Ser Pro Trp
    610                 615                 620

Gly Leu Trp Lys Asn His Val Ala Leu Ala Cys Met Ile Val Ile Phe
625                 630                 635                 640

Leu Thr Ile Ala Tyr Leu Lys Leu Leu Phe Leu Lys Lys Tyr Ser
                645                 650                 655


<210> 7840
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1639; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 2 (Junior blood group);"

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426916"

<400> 7840
Lys Arg Phe Arg Ala Arg Arg Arg Glu Glu Ala Val Pro Ala Thr Pro
1               5                   10                  15

Thr Glu Ile Glu Arg Arg Gly Lys Glu Ala Ala Cys Gly Gly Thr Gly
            20                  25                  30

Lys Ile Lys Thr Leu Gln Met Ser Ser Ser Asn Val Glu Val Phe Ile
        35                  40                  45

Pro Val Ser Gln Gly Asn Thr Asn Gly Phe Pro Ala Thr Ala Ser Asn
```

```
    50                  55                  60

Asp Leu Lys Ala Phe Thr Glu Gly Ala Val Leu Ser Phe His Asn Ile
65                  70                  75                  80

Cys Tyr Arg Val Lys Leu Lys Ser Gly Phe Leu Pro Cys Arg Lys Pro
                85                  90                  95

Val Glu Lys Glu Ile Leu Ser Asn Ile Asn Gly Ile Met Lys Pro Gly
            100                 105                 110

Leu Asn Ala Ile Leu Gly Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu
        115                 120                 125

Asp Val Leu Ala Ala Arg Lys Asp Pro Ser Gly Leu Ser Gly Asp Val
    130                 135                 140

Leu Ile Asn Gly Ala Pro
145                 150


<210> 7841
<211> 611
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1639; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG2; "

<220>
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<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 2 (Junior blood group);"

<220>
<221> source
<223> /note="Uniprot ID:  Q9UNQ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426917"

<400> 7841
Met Ser Ser Ser Asn Val Glu Val Phe Ile Pro Val Ser Gln Gly Asn
```

```
1               5                   10                  15

Thr Asn Gly Phe Pro Ala Thr Ala Ser Asn Asp Leu Lys Ala Phe Thr
            20                  25                  30

Glu Gly Ala Val Leu Ser Phe His Asn Ile Cys Tyr Arg Val Lys Leu
        35                  40                  45

Lys Ser Gly Phe Leu Pro Cys Arg Lys Pro Val Glu Lys Glu Ile Leu
    50                  55                  60

Ser Asn Ile Asn Gly Ile Met Lys Pro Gly Leu Asn Ala Ile Leu Gly
65                  70                  75                  80

Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu Asp Val Leu Ala Ala Arg
                85                  90                  95

Lys Asp Pro Ser Gly Leu Ser Gly Asp Val Leu Ile Asn Gly Ala Pro
            100                 105                 110

Arg Pro Ala Asn Phe Lys Cys Asn Ser Gly Tyr Val Val Gln Asp Asp
        115                 120                 125

Val Val Met Gly Thr Leu Thr Val Arg Glu Asn Leu Gln Phe Ser Ala
    130                 135                 140

Ala Leu Arg Leu Ala Thr Thr Met Thr Asn His Glu Lys Asn Glu Arg
145                 150                 155                 160

Ile Asn Arg Val Ile Gln Glu Leu Gly Leu Asp Lys Val Ala Asp Ser
                165                 170                 175

Lys Val Gly Thr Gln Phe Ile Arg Gly Val Ser Gly Gly Glu Arg Lys
            180                 185                 190

Arg Thr Ser Ile Gly Met Glu Leu Ile Thr Asp Pro Ser Ile Leu Phe
        195                 200                 205

Leu Asp Glu Pro Thr Thr Gly Leu Asp Ser Ser Thr Ala Asn Ala Val
    210                 215                 220

Leu Leu Leu Leu Lys Arg Met Ser Lys Gln Gly Arg Thr Ile Ile Phe
225                 230                 235                 240
```

```
Ser Ile His Gln Pro Arg Tyr Ser Ile Phe Lys Leu Phe Asp Ser Leu
                245                 250                 255

Thr Leu Leu Ala Ser Gly Arg Leu Met Phe His Gly Pro Ala Gln Glu
            260                 265                 270

Ala Leu Gly Tyr Phe Glu Ser Ala Gly Tyr His Cys Glu Ala Tyr Asn
        275                 280                 285

Asn Pro Ala Asp Phe Phe Leu Asp Ile Ile Asn Gly Asp Ser Thr Ala
    290                 295                 300

Val Ala Leu Asn Arg Glu Glu Asp Phe Lys Ala Thr Glu Ile Ile Glu
305                 310                 315                 320

Pro Ser Lys Gln Asp Lys Pro Leu Ile Glu Lys Leu Ala Glu Ile Tyr
                325                 330                 335

Val Asn Ser Ser Phe Tyr Lys Glu Thr Lys Ala Glu Leu His Gln Leu
            340                 345                 350

Ser Gly Gly Glu Lys Lys Lys Lys Ile Thr Val Phe Lys Glu Ile Ser
        355                 360                 365

Tyr Thr Thr Ser Phe Cys His Gln Leu Arg Trp Val Ser Lys Arg Ser
    370                 375                 380

Phe Lys Asn Leu Leu Gly Asn Pro Gln Ala Ser Ile Ala Gln Ile Ile
385                 390                 395                 400

Val Thr Val Val Leu Gly Leu Val Ile Gly Ala Ile Tyr Phe Gly Leu
                405                 410                 415

Lys Asn Asp Ser Thr Gly Ile Gln Asn Arg Ala Gly Val Leu Phe Phe
            420                 425                 430

Leu Thr Thr Asn Gln Cys Phe Ser Ser Val Ser Ala Val Glu Leu Phe
        435                 440                 445

Val Val Glu Lys Lys Leu Phe Ile His Glu Tyr Ile Ser Gly Tyr Tyr
    450                 455                 460
```

```
Arg Val Ser Ser Tyr Phe Leu Gly Lys Leu Leu Ser Asp Leu Leu Pro
465                 470                 475                 480

Met Arg Met Leu Pro Ser Ile Ile Phe Thr Cys Ile Val Tyr Phe Met
                485                 490                 495

Leu Gly Leu Lys Pro Lys Ala Asp Ala Phe Phe Val Met Met Phe Thr
            500                 505                 510

Leu Met Met Val Ala Tyr Ser Ala Ser Ser Met Ala Leu Ala Ile Ala
        515                 520                 525

Ala Gly Gln Ser Val Val Ser Val Ala Thr Leu Leu Met Thr Ile Cys
    530                 535                 540

Phe Val Phe Met Met Val Cys Trp Ser Ile Ser Gln Pro Leu His Leu
545                 550                 555                 560

Gly Cys His Gly Phe Ser Thr Ser Ala Phe His Asp Met Asp Leu Arg
                565                 570                 575

Leu Cys Ser Ile Met Asn Phe Trp Asp Lys Thr Ser Ala Gln Asp Ser
            580                 585                 590

Met Gln Gln Glu Thr Ile Leu Val Thr Met Gln His Val Leu Ala Lys
        595                 600                 605

Asn Ile Trp
    610


<210> 7842
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1639; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG2; "

<220>
<221> source
<223> /note="Gene Name:
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ATP-binding cassette, sub-family
G (WHITE),
member 2 (Junior blood group);"

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426934"

<400> 7842
Ser Asp Gly Asp Gln Thr Gln Leu Gly Gln Thr Arg Lys Ile Lys Thr
1 5 10 15

Leu Gln Met Ser Ser Ser Asn Val Glu Val Phe Ile Pro Val Ser Gln
20 25 30

Gly Asn Thr Asn Gly Phe Pro Ala Thr Ala Ser Asn Asp Leu Lys Ala
35 40 45

Phe Thr Glu Gly Ala Val Leu Ser Phe His Asn Ile Cys Tyr Arg Val
50 55 60

Lys Leu Lys Ser Gly Phe Leu Pro Cys Arg Lys Pro Val Glu Lys Glu
65 70 75 80

Ile Leu Ser Asn Ile Asn Gly Ile Met Lys Pro Gly Leu Asn Ala Ile
85 90 95

Leu Gly Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu Asp Val Leu Ala
100 105 110

Ala Arg Lys Asp Pro Ser Gly Leu Ser Gly Asp Val Leu Ile Asn Gly
115 120 125

Ala Pro
130

<210> 7843
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1640; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431915"

<400> 7843
Met Ala Glu Lys Ala Leu Glu Ala Val Gly Cys Gly Leu Gly Pro Gly
1 5 10 15

Ala Val Ala Met Ala Val Thr Leu Glu Asp Gly Ala Glu Pro Pro Val
20 25 30

Leu Thr Thr His Leu Lys Lys Val Glu Asn His Ile Thr Glu Ala Gln
35 40 45

Arg Phe Ser His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val
50 55 60

Glu Leu Ser Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly
65 70 75 80

Tyr Lys Thr Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu
85 90 95

Leu Ile Gly Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met
100 105 110

Asn Ile Leu Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu
115 120 125

Val Asn Gly Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys
130 135 140

Tyr Ile Met Gln Asp Asp Met Leu
145 150

<210> 7844
<211> 646
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1640; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG4; "

<220>
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<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H172; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479253"

<400> 7844

```
Met Ala Glu Lys Ala Leu Glu Ala Val Gly Cys Gly Leu Gly Pro Gly
1               5                  10                  15

Ala Val Ala Met Ala Val Thr Leu Glu Asp Gly Ala Glu Pro Pro Val
            20                  25                  30

Leu Thr Thr His Leu Lys Lys Val Glu Asn His Ile Thr Glu Ala Gln
        35                  40                  45

Arg Phe Ser His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val
    50                  55                  60

Glu Leu Ser Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly
65                  70                  75                  80

Tyr Lys Thr Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu
                85                  90                  95

Leu Ile Gly Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met
            100                 105                 110

Asn Ile Leu Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu
        115                 120                 125
```

```
Val Asn Gly Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys
    130                 135                 140

Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu
145                 150                 155                 160

Ala Met Met Val Ser Ala Asn Leu Lys Leu Ser Glu Lys Gln Glu Val
                165                 170                 175

Lys Lys Glu Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser
            180                 185                 190

Cys Ser His Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg
        195                 200                 205

Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe
    210                 215                 220

Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val
225                 230                 235                 240

Ser Leu Met Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr
                245                 250                 255

Ile His Gln Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr
            260                 265                 270

Ile Leu Ser Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu
        275                 280                 285

Ile Pro Tyr Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn
    290                 295                 300

Pro Ala Asp Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu
305                 310                 315                 320

Asn Pro Met Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala
                325                 330                 335

Glu Lys Lys Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro
            340                 345                 350

Pro Cys Pro Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr
```

```
        355                 360                 365

Ser Thr Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser
    370                 375                 380

Ile Leu Arg Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val
385                 390                 395                 400

Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp
                405                 410                 415

Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu
            420                 425                 430

Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu
        435                 440                 445

Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu
    450                 455                 460

Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val
465                 470                 475                 480

Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln
                485                 490                 495

Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala
            500                 505                 510

Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser
        515                 520                 525

Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro
    530                 535                 540

Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr
545                 550                 555                 560

Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu
                565                 570                 575

Gly Val Ile Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys
            580                 585                 590
```

```
Leu Glu Glu Arg Cys Pro Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala
        595                 600                 605

Leu Asp Val Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly
    610                 615                 620

Ile Phe Phe Leu Ala Leu Arg Leu Leu Ala Tyr Leu Val Leu Arg Tyr
625                 630                 635                 640

Arg Val Lys Ser Glu Arg
                645
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<210> 7845
<211> 646
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1640; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG4; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H172; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481728"

<400> 7845

```
Met Ala Glu Lys Ala Leu Glu Ala Val Gly Cys Gly Leu Gly Pro Gly
1               5                  10                  15

Ala Val Ala Met Ala Val Thr Leu Glu Asp Gly Ala Glu Pro Pro Val
            20                  25                  30

Leu Thr Thr His Leu Lys Lys Val Glu Asn His Ile Thr Glu Ala Gln
        35                  40                  45
```

```
Arg Phe Ser His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val
    50                  55                  60

Glu Leu Ser Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly
65                  70                  75                  80

Tyr Lys Thr Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu
                85                  90                  95

Leu Ile Gly Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met
            100                 105                 110

Asn Ile Leu Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu
        115                 120                 125

Val Asn Gly Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys
    130                 135                 140

Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu
145                 150                 155                 160

Ala Met Met Val Ser Ala Asn Leu Lys Leu Ser Glu Lys Gln Glu Val
                165                 170                 175

Lys Lys Glu Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser
            180                 185                 190

Cys Ser His Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg
        195                 200                 205

Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe
    210                 215                 220

Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val
225                 230                 235                 240

Ser Leu Met Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr
                245                 250                 255

Ile His Gln Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr
            260                 265                 270
```

```
Ile Leu Ser Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu
        275                 280                 285

Ile Pro Tyr Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn
    290                 295                 300

Pro Ala Asp Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu
305                 310                 315                 320

Asn Pro Met Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala
                325                 330                 335

Glu Lys Lys Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro
            340                 345                 350

Pro Cys Pro Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr
        355                 360                 365

Ser Thr Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser
    370                 375                 380

Ile Leu Arg Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val
385                 390                 395                 400

Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp
                405                 410                 415

Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu
            420                 425                 430

Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu
        435                 440                 445

Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu
    450                 455                 460

Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val
465                 470                 475                 480

Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln
                485                 490                 495
```

```
Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala
            500                 505                 510

Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser
        515                 520                 525

Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro
    530                 535                 540

Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr
545                 550                 555                 560

Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu
                565                 570                 575

Gly Val Ile Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys
            580                 585                 590

Leu Glu Glu Arg Cys Pro Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala
        595                 600                 605

Leu Asp Val Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly
    610                 615                 620

Ile Phe Phe Leu Ala Leu Arg Leu Leu Ala Tyr Leu Val Leu Arg Tyr
625                 630                 635                 640

Arg Val Lys Ser Glu Arg
                645


<210> 7846
<211> 646
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1640; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG4; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
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G (WHITE),
member 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H172; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484289"

<400> 7846
Met Ala Glu Lys Ala Leu Glu Ala Val Gly Cys Gly Leu Gly Pro Gly
1   5   10   15

Ala Val Ala Met Ala Val Thr Leu Glu Asp Gly Ala Glu Pro Pro Val
            20   25   30

Leu Thr Thr His Leu Lys Lys Val Glu Asn His Ile Thr Glu Ala Gln
        35   40   45

Arg Phe Ser His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val
    50   55   60

Glu Leu Ser Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly
65   70   75   80

Tyr Lys Thr Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu
                85   90   95

Leu Ile Gly Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met
            100   105   110

Asn Ile Leu Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu
        115   120   125

Val Asn Gly Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys
    130   135   140

Tyr Ile Met Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu
145   150   155   160

Ala Met Met Val Ser Ala Asn Leu Lys Leu Ser Glu Lys Gln Glu Val
                165   170   175

Lys Lys Glu Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser

```
            180                 185                 190

Cys Ser His Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg
        195                 200                 205

Leu Ala Ile Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe
    210                 215                 220

Asp Glu Pro Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val
225                 230                 235                 240

Ser Leu Met Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr
                245                 250                 255

Ile His Gln Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr
            260                 265                 270

Ile Leu Ser Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu
        275                 280                 285

Ile Pro Tyr Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn
    290                 295                 300

Pro Ala Asp Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu
305                 310                 315                 320

Asn Pro Met Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala
                325                 330                 335

Glu Lys Lys Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro
            340                 345                 350

Pro Cys Pro Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr
        355                 360                 365

Ser Thr Leu Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser
    370                 375                 380

Ile Leu Arg Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val
385                 390                 395                 400

Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp
                405                 410                 415
```

```
Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu
            420                 425                 430

Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu
        435                 440                 445

Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu
    450                 455                 460

Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val
465                 470                 475                 480

Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln
                485                 490                 495

Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala
            500                 505                 510

Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser
        515                 520                 525

Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro
    530                 535                 540

Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr
545                 550                 555                 560

Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu
                565                 570                 575

Gly Val Ile Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys
            580                 585                 590

Leu Glu Glu Arg Cys Pro Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala
        595                 600                 605

Leu Asp Val Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly
    610                 615                 620

Ile Phe Phe Leu Ala Leu Arg Leu Leu Ala Tyr Leu Val Leu Arg Tyr
625                 630                 635                 640
```

Arg Val Lys Ser Glu Arg
645

<210> 7847
<211> 651
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1641; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H222; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000260645"

<400> 7847
Met Gly Asp Leu Ser Ser Leu Thr Pro Gly Gly Ser Met Gly Leu Gln
1 5 10 15

Val Asn Arg Gly Ser Gln Ser Ser Leu Glu Gly Ala Pro Ala Thr Ala
20 25 30

Pro Glu Pro His Ser Leu Gly Ile Leu His Ala Ser Tyr Ser Val Ser
35 40 45

His Arg Val Arg Pro Trp Trp Asp Ile Thr Ser Cys Arg Gln Gln Trp
50 55 60

Thr Arg Gln Ile Leu Lys Asp Val Ser Leu Tyr Val Glu Ser Gly Gln
65 70 75 80

Ile Met Cys Ile Leu Gly Ser Ser Gly Ser Gly Lys Thr Thr Leu Leu
85 90 95

```
Asp Ala Met Ser Gly Arg Leu Gly Arg Ala Gly Thr Phe Leu Gly Glu
            100                 105                 110

Val Tyr Val Asn Gly Arg Ala Leu Arg Arg Glu Gln Phe Gln Asp Cys
        115                 120                 125

Phe Ser Tyr Val Leu Gln Ser Asp Thr Leu Leu Ser Ser Leu Thr Val
    130                 135                 140

Arg Glu Thr Leu His Tyr Thr Ala Leu Leu Ala Ile Arg Arg Gly Asn
145                 150                 155                 160

Pro Gly Ser Phe Gln Lys Lys Val Glu Ala Val Met Ala Glu Leu Ser
                165                 170                 175

Leu Ser His Val Ala Asp Arg Leu Ile Gly Asn Tyr Ser Leu Gly Gly
            180                 185                 190

Ile Ser Thr Gly Glu Arg Arg Arg Val Ser Ile Ala Ala Gln Leu Leu
        195                 200                 205

Gln Asp Pro Lys Val Met Leu Phe Asp Glu Pro Thr Thr Gly Leu Asp
    210                 215                 220

Cys Met Thr Ala Asn Gln Ile Val Val Leu Leu Val Glu Leu Ala Arg
225                 230                 235                 240

Arg Asn Arg Ile Val Val Leu Thr Ile His Gln Pro Arg Ser Glu Leu
                245                 250                 255

Phe Gln Leu Phe Asp Lys Ile Ala Ile Leu Ser Phe Gly Glu Leu Ile
            260                 265                 270

Phe Cys Gly Thr Pro Ala Glu Met Leu Asp Phe Phe Asn Asp Cys Gly
        275                 280                 285

Tyr Pro Cys Pro Glu His Ser Asn Pro Phe Asp Phe Tyr Met Asp Leu
    290                 295                 300

Thr Ser Val Asp Thr Gln Ser Lys Glu Arg Glu Ile Glu Thr Ser Lys
305                 310                 315                 320
```

```
Arg Val Gln Met Ile Glu Ser Ala Tyr Lys Lys Ser Ala Ile Cys His
                325                 330                 335

Lys Thr Leu Lys Asn Ile Glu Arg Met Lys His Leu Lys Thr Leu Pro
            340                 345                 350

Met Val Pro Phe Lys Thr Lys Asp Ser Pro Gly Val Phe Ser Lys Leu
        355                 360                 365

Gly Val Leu Leu Arg Arg Val Thr Arg Asn Leu Val Arg Asn Lys Leu
    370                 375                 380

Ala Val Ile Thr Arg Leu Leu Gln Asn Leu Ile Met Gly Leu Phe Leu
385                 390                 395                 400

Leu Phe Phe Val Leu Arg Val Arg Ser Asn Val Leu Lys Gly Ala Ile
                405                 410                 415

Gln Asp Arg Val Gly Leu Leu Tyr Gln Phe Val Gly Ala Thr Pro Tyr
            420                 425                 430

Thr Gly Met Leu Asn Ala Val Asn Leu Phe Pro Val Leu Arg Ala Val
        435                 440                 445

Ser Asp Gln Glu Ser Gln Asp Gly Leu Tyr Gln Lys Trp Gln Met Met
    450                 455                 460

Leu Ala Tyr Ala Leu His Val Leu Pro Phe Ser Val Val Ala Thr Met
465                 470                 475                 480

Ile Phe Ser Ser Val Cys Tyr Trp Thr Leu Gly Leu His Pro Glu Val
                485                 490                 495

Ala Arg Phe Gly Tyr Phe Ser Ala Ala Leu Leu Ala Pro His Leu Ile
            500                 505                 510

Gly Glu Phe Leu Thr Leu Val Leu Leu Gly Ile Val Gln Asn Pro Asn
        515                 520                 525

Ile Val Asn Ser Val Val Ala Leu Leu Ser Ile Ala Gly Val Leu Val
    530                 535                 540

Gly Ser Gly Phe Leu Arg Asn Ile Gln Glu Met Pro Ile Pro Phe Lys
```

```
545                 550                 555                 560

Ile Ile Ser Tyr Phe Thr Phe Gln Lys Tyr Cys Ser Glu Ile Leu Val
                565                 570                 575

Val Asn Glu Phe Tyr Gly Leu Asn Phe Thr Cys Gly Ser Ser Asn Val
            580                 585                 590

Ser Val Thr Thr Asn Pro Met Cys Ala Phe Thr Gln Gly Ile Gln Phe
        595                 600                 605

Ile Glu Lys Thr Cys Pro Gly Ala Thr Ser Arg Phe Thr Met Asn Phe
    610                 615                 620

Leu Ile Leu Tyr Ser Phe Ile Pro Ala Leu Val Ile Leu Gly Ile Val
625                 630                 635                 640

Val Phe Lys Ile Arg Asp His Leu Ile Ser Arg
                645                 650


<210> 7848
<211> 480
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1641; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG5; "

<220>
<221> source
<223> /note="Gene Name:
      ATP-binding cassette, sub-family
      G (WHITE),
      member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384513"

<400> 7848
Met Cys Ile Leu Gly Ser Ser Gly Ser Gly Lys Thr Thr Leu Leu Asp
1               5                   10                  15

Ala Met Ser Gly Arg Leu Gly Arg Ala Gly Thr Phe Leu Gly Glu Val
```

```
            20                  25                  30

Tyr Val Asn Gly Arg Ala Leu Arg Arg Glu Gln Phe Gln Asp Cys Phe
        35                  40                  45

Ser Tyr Val Leu Gln Ser Asp Thr Leu Leu Ser Ser Leu Thr Val Arg
    50                  55                  60

Glu Thr Leu His Tyr Thr Ala Leu Leu Ala Ile Arg Arg Gly Asn Pro
65                  70                  75                  80

Gly Ser Phe Gln Lys Lys Val Glu Ala Val Met Ala Glu Leu Ser Leu
                85                  90                  95

Ser His Val Ala Asp Arg Leu Ile Gly Asn Tyr Ser Leu Gly Gly Ile
            100                 105                 110

Ser Thr Gly Glu Arg Arg Arg Val Ser Ile Ala Ala Gln Leu Leu Gln
        115                 120                 125

Asp Pro Met Asp Leu Thr Ser Val Asp Thr Gln Ser Lys Glu Arg Glu
    130                 135                 140

Ile Glu Thr Ser Lys Arg Val Gln Met Ile Glu Ser Ala Tyr Lys Lys
145                 150                 155                 160

Ser Ala Ile Cys His Lys Thr Leu Lys Asn Ile Glu Arg Met Lys His
                165                 170                 175

Leu Lys Thr Leu Pro Met Val Pro Phe Lys Thr Lys Asp Ser Pro Gly
            180                 185                 190

Val Phe Ser Lys Leu Gly Val Leu Leu Arg Arg Val Thr Arg Asn Leu
        195                 200                 205

Val Arg Asn Lys Leu Ala Val Ile Thr Arg Leu Leu Gln Asn Leu Ile
    210                 215                 220

Met Gly Leu Phe Leu Leu Phe Phe Val Leu Arg Val Arg Ser Asn Val
225                 230                 235                 240

Leu Lys Gly Ala Ile Gln Asp Arg Val Gly Leu Leu Tyr Gln Phe Val
                245                 250                 255
```

```
Gly Ala Thr Pro Tyr Thr Gly Met Leu Asn Ala Val Asn Leu Phe Pro
            260                 265                 270

Val Leu Arg Ala Val Ser Asp Gln Glu Ser Gln Asp Gly Leu Tyr Gln
        275                 280                 285

Lys Trp Gln Met Met Leu Ala Tyr Ala Leu His Val Leu Pro Phe Ser
    290                 295                 300

Val Val Ala Thr Met Ile Phe Ser Ser Val Cys Tyr Trp Thr Leu Gly
305                 310                 315                 320

Leu His Pro Glu Val Ala Arg Phe Gly Tyr Phe Ser Ala Ala Leu Leu
                325                 330                 335

Ala Pro His Leu Ile Gly Glu Phe Leu Thr Leu Val Leu Leu Gly Ile
            340                 345                 350

Val Gln Asn Pro Asn Ile Val Asn Ser Val Val Ala Leu Leu Ser Ile
        355                 360                 365

Ala Gly Val Leu Val Gly Ser Gly Phe Leu Arg Asn Ile Gln Glu Met
    370                 375                 380

Pro Ile Pro Phe Lys Ile Ile Ser Tyr Phe Thr Phe Gln Lys Tyr Cys
385                 390                 395                 400

Ser Glu Ile Leu Val Val Asn Glu Phe Tyr Gly Leu Asn Phe Thr Cys
                405                 410                 415

Gly Ser Ser Asn Val Ser Val Thr Thr Asn Pro Met Cys Ala Phe Thr
            420                 425                 430

Gln Gly Ile Gln Phe Ile Glu Lys Thr Cys Pro Gly Ala Thr Ser Arg
        435                 440                 445

Phe Thr Met Asn Phe Leu Ile Leu Tyr Ser Phe Ile Pro Ala Leu Val
    450                 455                 460

Ile Leu Gly Ile Val Val Phe Lys Ile Arg Asp His Leu Ile Ser Arg
465                 470                 475                 480
```

<210> 7849
<211> 132
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1641; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386501"

<400> 7849

```
Met Cys Ile Leu Gly Ser Ser Gly Ser Gly Lys Thr Thr Leu Leu Asp
1               5                  10                  15

Ala Met Ser Gly Arg Leu Gly Arg Ala Gly Thr Phe Leu Gly Glu Val
            20                  25                  30

Tyr Val Asn Gly Arg Ala Leu Arg Arg Glu Gln Phe Gln Asp Cys Phe
        35                  40                  45

Ser Tyr Val Leu Gln Ser Asp Thr Leu Leu Ser Ser Leu Thr Val Arg
    50                  55                  60

Glu Thr Leu His Tyr Thr Ala Leu Leu Ala Ile Arg Arg Gly Asn Pro
65                  70                  75                  80

Gly Ser Phe Gln Lys Lys Val Glu Ala Val Met Ala Glu Leu Ser Leu
                85                  90                  95

Ser His Val Ala Asp Arg Leu Ile Gly Asn Tyr Ser Leu Gly Gly Ile
            100                 105                 110

Ser Thr Gly Glu Arg Arg Arg Val Ser Ile Ala Ala Gln Leu Leu Gln
        115                 120                 125
```

Asp Pro Arg Glu
130

<210> 7850
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1641; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG5; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430935"

<400> 7850
Met Cys Ile Leu Gly Ser Ser Gly Ser Gly Lys Thr Thr Leu Leu Asp
1 5 10 15

Ala Met Ser Gly Arg Leu Gly Arg Ala Gly Thr Phe Leu Gly Glu Val
20 25 30

Tyr Val Asn Gly Arg Ala Leu Arg Arg Glu Gln Phe Gln Asp Cys Phe
35 40 45

Ser Tyr Val Leu Gln Ser Asp Thr Leu Leu Ser Ser Leu Thr Val Arg
50 55 60

Glu Thr Leu His Tyr Thr Ala Leu Leu Ala Ile Arg Arg Gly Asn Pro
65 70 75 80

Gly Ser Phe Gln Lys Lys Arg Gln Gly Leu Ser Leu Leu Pro Lys Leu
85 90 95

Val Ser Asn Ser Trp Pro Gln Ala Ile Leu Pro Pro Gln Pro Ser Lys
100 105 110

Val Leu Gly Leu Gln Ala
115

<210> 7851
<211> 673
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1642; "

<220>
<221> source
<223> /note="Gene Symbol: ABCG8; "

<220>
<221> source
<223> /note="Gene Name:
ATP-binding cassette, sub-family
G (WHITE),
member 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H221; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000272286"

<400> 7851
Met Ala Gly Lys Ala Ala Glu Glu Arg Gly Leu Pro Lys Gly Ala Thr
1 5 10 15

Pro Gln Asp Thr Ser Gly Leu Gln Asp Arg Leu Phe Ser Ser Glu Ser
20 25 30

Asp Asn Ser Leu Tyr Phe Thr Tyr Ser Gly Gln Pro Asn Thr Leu Glu
35 40 45

Val Arg Asp Leu Asn Tyr Gln Val Asp Leu Ala Ser Gln Val Pro Trp
50 55 60

Phe Glu Gln Leu Ala Gln Phe Lys Met Pro Trp Thr Ser Pro Ser Cys
65 70 75 80

Gln Asn Ser Cys Glu Leu Gly Ile Gln Asn Leu Ser Phe Lys Val Arg
85 90 95

```
Ser Gly Gln Met Leu Ala Ile Ile Gly Ser Ser Gly Cys Gly Arg Ala
            100                 105                 110

Ser Leu Leu Asp Val Ile Thr Gly Arg Gly His Gly Gly Lys Ile Lys
        115                 120                 125

Ser Gly Gln Ile Trp Ile Asn Gly Gln Pro Ser Ser Pro Gln Leu Val
    130                 135                 140

Arg Lys Cys Val Ala His Val Arg Gln His Asn Gln Leu Leu Pro Asn
145                 150                 155                 160

Leu Thr Val Arg Glu Thr Leu Ala Phe Ile Ala Gln Met Arg Leu Pro
                165                 170                 175

Arg Thr Phe Ser Gln Ala Gln Arg Asp Lys Arg Val Glu Asp Val Ile
            180                 185                 190

Ala Glu Leu Arg Leu Arg Gln Cys Ala Asp Thr Arg Val Gly Asn Met
        195                 200                 205

Tyr Val Arg Gly Leu Ser Gly Gly Glu Arg Arg Arg Val Ser Ile Gly
    210                 215                 220

Val Gln Leu Leu Trp Asn Pro Gly Ile Leu Ile Leu Asp Glu Pro Thr
225                 230                 235                 240

Ser Gly Leu Asp Ser Phe Thr Ala His Asn Leu Val Lys Thr Leu Ser
                245                 250                 255

Arg Leu Ala Lys Gly Asn Arg Leu Val Leu Ile Ser Leu His Gln Pro
            260                 265                 270

Arg Ser Asp Ile Phe Arg Leu Phe Asp Leu Val Leu Leu Met Thr Ser
        275                 280                 285

Gly Thr Pro Ile Tyr Leu Gly Ala Ala Gln His Met Val Gln Tyr Phe
    290                 295                 300

Thr Ala Ile Gly Tyr Pro Cys Pro Arg Tyr Ser Asn Pro Ala Asp Phe
305                 310                 315                 320
```

```
Tyr Val Asp Leu Thr Ser Ile Asp Arg Arg Ser Arg Glu Gln Glu Leu
                325                 330                 335

Ala Thr Arg Glu Lys Ala Gln Ser Leu Ala Ala Leu Phe Leu Glu Lys
            340                 345                 350

Val Arg Asp Leu Asp Asp Phe Leu Trp Lys Ala Glu Thr Lys Asp Leu
        355                 360                 365

Asp Glu Asp Thr Cys Val Glu Ser Ser Val Thr Pro Leu Asp Thr Asn
    370                 375                 380

Cys Leu Pro Ser Pro Thr Lys Met Pro Gly Ala Val Gln Gln Phe Thr
385                 390                 395                 400

Thr Leu Ile Arg Arg Gln Ile Ser Asn Asp Phe Arg Asp Leu Pro Thr
                405                 410                 415

Leu Leu Ile His Gly Ala Glu Ala Cys Leu Met Ser Met Thr Ile Gly
            420                 425                 430

Phe Leu Tyr Phe Gly His Gly Ser Ile Gln Leu Ser Phe Met Asp Thr
        435                 440                 445

Ala Ala Leu Leu Phe Met Ile Gly Ala Leu Ile Pro Phe Asn Val Ile
    450                 455                 460

Leu Asp Val Ile Ser Lys Cys Tyr Ser Glu Arg Ala Met Leu Tyr Tyr
465                 470                 475                 480

Glu Leu Glu Asp Gly Leu Tyr Thr Thr Gly Pro Tyr Phe Phe Ala Lys
                485                 490                 495

Ile Leu Gly Glu Leu Pro Glu His Cys Ala Tyr Ile Ile Ile Tyr Gly
            500                 505                 510

Met Pro Thr Tyr Trp Leu Ala Asn Leu Arg Pro Gly Leu Gln Pro Phe
        515                 520                 525

Leu Leu His Phe Leu Leu Val Trp Leu Val Val Phe Cys Cys Arg Ile
    530                 535                 540

Met Ala Leu Ala Ala Ala Ala Leu Leu Pro Thr Phe His Met Ala Ser
```

```
545                 550                 555                 560

Phe Phe Ser Asn Ala Leu Tyr Asn Ser Phe Tyr Leu Ala Gly Gly Phe
                565                 570                 575

Met Ile Asn Leu Ser Ser Leu Trp Thr Val Pro Ala Trp Ile Ser Lys
            580                 585                 590

Val Ser Phe Leu Arg Trp Cys Phe Glu Gly Leu Met Lys Ile Gln Phe
        595                 600                 605

Ser Arg Arg Thr Tyr Lys Met Pro Leu Gly Asn Leu Thr Ile Ala Val
    610                 615                 620

Ser Gly Asp Lys Ile Leu Ser Val Met Glu Leu Asp Ser Tyr Pro Leu
625                 630                 635                 640

Tyr Ala Ile Tyr Leu Ile Val Ile Gly Leu Ser Gly Gly Phe Met Val
                645                 650                 655

Leu Tyr Tyr Val Ser Leu Arg Phe Ile Lys Gln Lys Pro Ser Gln Asp
            660                 665                 670

Trp
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<210> 7852
<211> 764
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1643; "

<220>
<221> source
<223> /note="Gene Symbol: ATRIP; "

<220>
<221> source
<223> /note="Gene Name:
ATR interacting prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WXE1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000302338"

<400> 7852
Met Ala Gly Thr Ser Ala Pro Gly Ser Lys Arg Arg Ser Glu Pro Pro
1   5   10   15

Ala Pro Arg Pro Gly Pro Pro Pro Gly Thr Gly His Pro Pro Ser Lys
            20   25   30

Arg Ala Arg Gly Phe Ser Ala Ala Ala Ala Pro Asp Pro Asp Asp Pro
        35   40   45

Phe Gly Ala His Gly Asp Phe Thr Ala Asp Asp Leu Glu Glu Leu Asp
    50   55   60

Thr Leu Ala Ser Gln Ala Leu Ser Gln Cys Pro Ala Ala Ala Arg Asp
65   70   75   80

Val Ser Ser Asp His Lys Val His Arg Leu Leu Asp Gly Met Ser Lys
                85   90   95

Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys Asp Asn Phe
            100   105   110

Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys Glu Lys Met
        115   120   125

Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu Ile Lys Ile
    130   135   140

Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu Glu Gln Arg
145   150   155   160

Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala Leu Ser Asp
                165   170   175

Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln Ser Glu Leu
            180   185   190

Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys Leu Gln Thr
        195   200   205

```
Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser His Val Ser
    210                 215                 220

Pro Arg Lys Asn Pro Ser Val Val Ile Lys Pro Glu Ala Cys Ser Pro
225                 230                 235                 240

Gln Phe Gly Lys Thr Ser Phe Pro Thr Lys Glu Ser Phe Ser Ala Asn
                245                 250                 255

Met Ser Leu Pro His Pro Cys Gln Thr Glu Ser Gly Tyr Lys Pro Leu
            260                 265                 270

Val Gly Arg Glu Asp Ser Lys Pro His Ser Leu Arg Gly Asp Ser Ile
        275                 280                 285

Lys Gln Glu Glu Ala Gln Lys Ser Phe Val Asp Ser Trp Arg Gln Arg
    290                 295                 300

Ser Asn Thr Gln Gly Ser Ile Leu Ile Asn Leu Leu Leu Lys Gln Pro
305                 310                 315                 320

Leu Ile Pro Gly Ser Ser Leu Ser Leu Cys His Leu Leu Ser Ser Ser
                325                 330                 335

Ser Glu Ser Pro Ala Gly Thr Pro Leu Gln Pro Pro Gly Phe Gly Ser
            340                 345                 350

Thr Leu Ala Gly Met Ser Gly Leu Arg Thr Thr Gly Ser Tyr Asp Gly
        355                 360                 365

Ser Phe Ser Leu Ser Ala Leu Arg Glu Ala Gln Asn Leu Ala Phe Thr
    370                 375                 380

Gly Leu Asn Leu Val Ala Arg Asn Glu Cys Ser Arg Asp Gly Asp Pro
385                 390                 395                 400

Ala Glu Gly Gly Arg Arg Ala Phe Pro Leu Cys Gln Leu Pro Gly Ala
                405                 410                 415

Val His Phe Leu Pro Leu Val Gln Phe Phe Ile Gly Leu His Cys Gln
            420                 425                 430

Ala Leu Gln Asp Leu Ala Ala Ala Lys Arg Ser Gly Ala Pro Gly Asp
```

```
        435                 440                 445

Ser Pro Thr His Ser Ser Cys Val Ser Ser Gly Val Glu Thr Asn Pro
    450                 455                 460

Glu Asp Ser Val Cys Ile Leu Glu Gly Phe Ser Val Thr Ala Leu Ser
465                 470                 475                 480

Ile Leu Gln His Leu Val Cys His Ser Gly Ala Val Val Ser Leu Leu
                485                 490                 495

Leu Ser Gly Val Gly Ala Asp Ser Ala Ala Gly Glu Gly Asn Arg Ser
            500                 505                 510

Leu Val His Arg Leu Ser Asp Gly Asp Met Thr Ser Ala Leu Arg Gly
        515                 520                 525

Val Ala Asp Asp Gln Gly Gln His Pro Leu Leu Lys Met Leu Leu His
    530                 535                 540

Leu Leu Ala Phe Ser Ser Ala Ala Thr Gly His Leu Gln Ala Ser Val
545                 550                 555                 560

Leu Thr Gln Cys Leu Lys Val Leu Val Lys Leu Ala Glu Asn Thr Ser
                565                 570                 575

Cys Asp Phe Leu Pro Arg Phe Gln Cys Val Phe Gln Val Leu Pro Lys
            580                 585                 590

Cys Leu Ser Pro Glu Thr Pro Leu Pro Ser Val Leu Leu Ala Val Glu
        595                 600                 605

Leu Leu Ser Leu Leu Ala Asp His Asp Gln Leu Ala Pro Gln Leu Cys
    610                 615                 620

Ser His Ser Glu Gly Cys Leu Leu Leu Leu Leu Tyr Met Tyr Ile Thr
625                 630                 635                 640

Ser Arg Pro Asp Arg Val Ala Leu Glu Thr Gln Trp Leu Gln Leu Glu
                645                 650                 655

Gln Glu Val Val Arg Ala Leu Thr Val Met Leu His Arg Gln Trp Leu
            660                 665                 670
```

```
Thr Val Arg Arg Ala Gly Gly Pro Pro Arg Thr Asp Gln Gln Arg Arg
        675                 680                 685

Thr Val Arg Cys Leu Arg Asp Thr Val Leu Leu Leu His Gly Leu Ser
    690                 695                 700

Gln Lys Asp Lys Leu Phe Met Met His Cys Val Glu Val Leu His Gln
705                 710                 715                 720

Phe Asp Gln Val Met Pro Gly Val Ser Met Leu Ile Arg Gly Leu Pro
                725                 730                 735

Asp Val Thr Asp Cys Glu Glu Ala Ala Leu Asp Asp Leu Cys Ala Ala
            740                 745                 750

Glu Thr Asp Val Glu Asp Pro Glu Val Glu Cys Gly
        755                 760


<210> 7853
<211> 791
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1643; "

<220>
<221> source
<223> /note="Gene Symbol: ATRIP; "

<220>
<221> source
<223> /note="Gene Name:
      ATR interacting prt; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WXE1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000323099"

<400> 7853
Met Ala Gly Thr Ser Ala Pro Gly Ser Lys Arg Arg Ser Glu Pro Pro
1               5                   10                  15
```

```
Ala Pro Arg Pro Gly Pro Pro Pro Gly Thr Gly His Pro Pro Ser Lys
            20                  25                  30

Arg Ala Arg Gly Phe Ser Ala Ala Ala Pro Asp Pro Asp Asp Pro
        35                  40                  45

Phe Gly Ala His Gly Asp Phe Thr Ala Asp Asp Leu Glu Glu Leu Asp
    50                  55                  60

Thr Leu Ala Ser Gln Ala Leu Ser Gln Cys Pro Ala Ala Ala Arg Asp
65                  70                  75                  80

Val Ser Ser Asp His Lys Val His Arg Leu Leu Asp Gly Met Ser Lys
                85                  90                  95

Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys Asp Asn Phe
            100                 105                 110

Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys Glu Lys Met
        115                 120                 125

Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu Ile Lys Ile
    130                 135                 140

Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu Glu Gln Arg
145                 150                 155                 160

Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala Leu Ser Asp
                165                 170                 175

Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln Ser Glu Leu
            180                 185                 190

Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys Leu Gln Thr
        195                 200                 205

Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser His Val Ser
    210                 215                 220

Pro Arg Lys Asn Pro Ser Val Val Ile Lys Pro Glu Ala Cys Ser Pro
225                 230                 235                 240

Gln Phe Gly Lys Thr Ser Phe Pro Thr Lys Glu Ser Phe Ser Ala Asn
```

```
                245                 250                 255

Met Ser Leu Pro His Pro Cys Gln Thr Glu Ser Gly Tyr Lys Pro Leu
            260                 265                 270

Val Gly Arg Glu Asp Ser Lys Pro His Ser Leu Arg Gly Asp Ser Ile
        275                 280                 285

Lys Gln Glu Glu Ala Gln Lys Ser Phe Val Asp Ser Trp Arg Gln Arg
    290                 295                 300

Ser Asn Thr Gln Gly Ser Ile Leu Ile Asn Leu Leu Leu Lys Gln Pro
305                 310                 315                 320

Leu Ile Pro Gly Ser Ser Leu Ser Leu Cys His Leu Leu Ser Ser Ser
                325                 330                 335

Ser Glu Ser Pro Ala Gly Thr Pro Leu Gln Pro Pro Gly Phe Gly Ser
            340                 345                 350

Thr Leu Ala Gly Met Ser Gly Leu Arg Thr Thr Gly Ser Tyr Asp Gly
        355                 360                 365

Ser Phe Ser Leu Ser Ala Leu Arg Glu Ala Gln Asn Leu Ala Phe Thr
    370                 375                 380

Gly Leu Asn Leu Val Ala Arg Asn Glu Cys Ser Arg Asp Gly Asp Pro
385                 390                 395                 400

Ala Glu Gly Gly Arg Arg Ala Phe Pro Leu Cys Gln Leu Pro Gly Ala
                405                 410                 415

Val His Phe Leu Pro Leu Val Gln Phe Phe Ile Gly Leu His Cys Gln
            420                 425                 430

Ala Leu Gln Asp Leu Ala Ala Ala Lys Arg Ser Gly Ala Pro Gly Asp
        435                 440                 445

Ser Pro Thr His Ser Ser Cys Val Ser Ser Gly Val Glu Thr Asn Pro
    450                 455                 460

Glu Asp Ser Val Cys Ile Leu Glu Gly Phe Ser Val Thr Ala Leu Ser
465                 470                 475                 480
```

```
Ile Leu Gln His Leu Val Cys His Ser Gly Ala Val Val Ser Leu Leu
                485                 490                 495

Leu Ser Gly Val Gly Ala Asp Ser Ala Ala Gly Glu Gly Asn Arg Ser
            500                 505                 510

Leu Val His Arg Leu Ser Asp Gly Asp Met Thr Ser Ala Leu Arg Gly
        515                 520                 525

Val Ala Asp Asp Gln Gly Gln His Pro Leu Leu Lys Met Leu Leu His
    530                 535                 540

Leu Leu Ala Phe Ser Ser Ala Ala Thr Gly His Leu Gln Ala Ser Val
545                 550                 555                 560

Leu Thr Gln Cys Leu Lys Val Leu Val Lys Leu Ala Glu Asn Thr Ser
                565                 570                 575

Cys Asp Phe Leu Pro Arg Phe Gln Cys Val Phe Gln Val Leu Pro Lys
            580                 585                 590

Cys Leu Ser Pro Glu Thr Pro Leu Pro Ser Val Leu Leu Ala Val Glu
        595                 600                 605

Leu Leu Ser Leu Leu Ala Asp His Asp Gln Leu Ala Pro Gln Leu Cys
    610                 615                 620

Ser His Ser Glu Gly Cys Leu Leu Leu Leu Leu Tyr Met Tyr Ile Thr
625                 630                 635                 640

Ser Arg Pro Asp Arg Val Ala Leu Glu Thr Gln Trp Leu Gln Leu Glu
                645                 650                 655

Gln Glu Val Val Trp Leu Leu Ala Lys Leu Gly Val Gln Ser Pro Leu
            660                 665                 670

Pro Pro Val Thr Gly Ser Asn Cys Gln Cys Asn Val Glu Val Val Arg
        675                 680                 685

Ala Leu Thr Val Met Leu His Arg Gln Trp Leu Thr Val Arg Arg Ala
    690                 695                 700
```

```
Gly Gly Pro Pro Arg Thr Asp Gln Gln Arg Arg Thr Val Arg Cys Leu
705                 710                 715                 720


Arg Asp Thr Val Leu Leu Leu His Gly Leu Ser Gln Lys Asp Lys Leu
                725                 730                 735


Phe Met Met His Cys Val Glu Val Leu His Gln Phe Asp Gln Val Met
            740                 745                 750


Pro Gly Val Ser Met Leu Ile Arg Gly Leu Pro Asp Val Thr Asp Cys
        755                 760                 765


Glu Glu Ala Ala Leu Asp Asp Leu Cys Ala Ala Glu Thr Asp Val Glu
    770                 775                 780


Asp Pro Glu Val Glu Cys Gly
785                 790


<210> 7854
<211> 698
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1643; "

<220>
<221> source
<223> /note="Gene Symbol: ATRIP; "

<220>
<221> source
<223> /note="Gene Name:
      ATR interacting prt; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WXE1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400930"

<400> 7854
Met Ser Lys Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys
1               5                   10                  15


Asp Asn Phe Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys
```

```
            20                  25                  30

Glu Lys Met Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu
        35                  40                  45

Ile Lys Ile Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu
    50                  55                  60

Glu Gln Arg Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala
65                  70                  75                  80

Leu Ser Asp Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln
                85                  90                  95

Ser Glu Leu Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys
            100                 105                 110

Leu Gln Thr Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser
        115                 120                 125

His Val Ser Pro Arg Lys Asn Pro Ser Val Val Ile Lys Pro Glu Ala
    130                 135                 140

Cys Ser Pro Gln Phe Gly Lys Thr Ser Phe Pro Thr Lys Glu Ser Phe
145                 150                 155                 160

Ser Ala Asn Met Ser Leu Pro His Pro Cys Gln Thr Glu Ser Gly Tyr
                165                 170                 175

Lys Pro Leu Val Gly Arg Glu Asp Ser Lys Pro His Ser Leu Arg Gly
            180                 185                 190

Asp Ser Ile Lys Gln Glu Glu Ala Gln Lys Ser Phe Val Asp Ser Trp
        195                 200                 205

Arg Gln Arg Ser Asn Thr Gln Gly Ser Ile Leu Ile Asn Leu Leu Leu
    210                 215                 220

Lys Gln Pro Leu Ile Pro Gly Ser Ser Leu Ser Leu Cys His Leu Leu
225                 230                 235                 240

Ser Ser Ser Ser Glu Ser Pro Ala Gly Thr Pro Leu Gln Pro Pro Gly
                245                 250                 255
```

```
Phe Gly Ser Thr Leu Ala Gly Met Ser Gly Leu Arg Thr Thr Gly Ser
            260                 265                 270

Tyr Asp Gly Ser Phe Ser Leu Ser Ala Leu Arg Glu Ala Gln Asn Leu
        275                 280                 285

Ala Phe Thr Gly Leu Asn Leu Val Ala Arg Asn Glu Cys Ser Arg Asp
    290                 295                 300

Gly Asp Pro Ala Glu Gly Gly Arg Arg Ala Phe Pro Leu Cys Gln Leu
305                 310                 315                 320

Pro Gly Ala Val His Phe Leu Pro Leu Val Gln Phe Phe Ile Gly Leu
                325                 330                 335

His Cys Gln Ala Leu Gln Asp Leu Ala Ala Ala Lys Arg Ser Gly Ala
            340                 345                 350

Pro Gly Asp Ser Pro Thr His Ser Ser Cys Val Ser Ser Gly Val Glu
        355                 360                 365

Thr Asn Pro Glu Asp Ser Val Cys Ile Leu Glu Gly Phe Ser Val Thr
    370                 375                 380

Ala Leu Ser Ile Leu Gln His Leu Val Cys His Ser Gly Ala Val Val
385                 390                 395                 400

Ser Leu Leu Leu Ser Gly Val Gly Ala Asp Ser Ala Ala Gly Glu Gly
                405                 410                 415

Asn Arg Ser Leu Val His Arg Leu Ser Asp Gly Asp Met Thr Ser Ala
            420                 425                 430

Leu Arg Gly Val Ala Asp Asp Gln Gly Gln His Pro Leu Leu Lys Met
        435                 440                 445

Leu Leu His Leu Leu Ala Phe Ser Ser Ala Ala Thr Gly His Leu Gln
    450                 455                 460

Ala Ser Val Leu Thr Gln Cys Leu Lys Val Leu Val Lys Leu Ala Glu
465                 470                 475                 480
```

```
Asn Thr Ser Cys Asp Phe Leu Pro Arg Phe Gln Cys Val Phe Gln Val
                485                 490                 495

Leu Pro Lys Cys Leu Ser Pro Glu Thr Pro Leu Pro Ser Val Leu Leu
            500                 505                 510

Ala Val Glu Leu Leu Ser Leu Leu Ala Asp His Asp Gln Leu Ala Pro
        515                 520                 525

Gln Leu Cys Ser His Ser Glu Gly Cys Leu Leu Leu Leu Leu Tyr Met
    530                 535                 540

Tyr Ile Thr Ser Arg Pro Asp Arg Val Ala Leu Glu Thr Gln Trp Leu
545                 550                 555                 560

Gln Leu Glu Gln Glu Val Val Trp Leu Leu Ala Lys Leu Gly Val Gln
                565                 570                 575

Ser Pro Leu Pro Pro Val Thr Gly Ser Asn Cys Gln Cys Asn Val Glu
            580                 585                 590

Val Val Arg Ala Leu Thr Val Met Leu His Arg Gln Trp Leu Thr Val
        595                 600                 605

Arg Arg Ala Gly Gly Pro Pro Arg Thr Asp Gln Gln Arg Arg Thr Val
    610                 615                 620

Arg Cys Leu Arg Asp Thr Val Leu Leu Leu His Gly Leu Ser Gln Lys
625                 630                 635                 640

Asp Lys Leu Phe Met Met His Cys Val Glu Val Leu His Gln Phe Asp
                645                 650                 655

Gln Val Met Pro Gly Val Ser Met Leu Ile Arg Gly Leu Pro Asp Val
            660                 665                 670

Thr Asp Cys Glu Glu Ala Ala Leu Asp Asp Leu Cys Ala Ala Glu Thr
        675                 680                 685

Asp Val Glu Asp Pro Glu Val Glu Cys Gly
    690                 695
```

<210> 7855
<211> 131
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1643; "

<220>
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<223> /note="Gene Symbol: ATRIP; "

<220>
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<223> /note="Gene Name:
ATR interacting prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489136"

<400> 7855

```
Met Ser Lys Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys
1               5                   10                  15


Asp Asn Phe Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys
            20                  25                  30


Glu Lys Met Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu
        35                  40                  45


Ile Lys Ile Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu
    50                  55                  60


Glu Gln Arg Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala
65                  70                  75                  80


Leu Ser Asp Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln
                85                  90                  95


Ser Glu Leu Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys
            100                 105                 110


Leu Gln Thr Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser
        115                 120                 125


His Val Arg
    130
```

<210> 7856
<211> 196
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATRIP; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000489608"

<400> 7856
Met Ser Lys Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys
1 5 10 15

Asp Asn Phe Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys
20 25 30

Glu Lys Met Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu
35 40 45

Ile Lys Ile Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu
50 55 60

Glu Gln Arg Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala
65 70 75 80

Leu Ser Asp Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln
85 90 95

Ser Glu Leu Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys
100 105 110

Leu Gln Thr Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser
115 120 125

```
His Val Ser Pro Arg Lys Asn Pro Ser Val Val Ile Lys Pro Glu Ala
    130                 135                 140

Cys Ser Pro Gln Phe Gly Lys Thr Ser Phe Pro Thr Lys Glu Ser Phe
145                 150                 155                 160

Ser Ala Asn Met Ser Leu Pro His Pro Cys Gln Thr Glu Ser Gly Tyr
                165                 170                 175

Lys Pro Leu Val Gly Arg Glu Asp Ser Lys Pro His Ser Leu Arg Gly
            180                 185                 190

Asp Ser Ile Lys
        195


<210> 7857
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1644; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
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<220>
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<223> /note="Uniprot ID:  Q9NSU2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296443"

<400> 7857
Met Gly Ser Gln Ala Leu Pro Pro Gly Pro Met Gln Thr Leu Ile Phe
1               5                   10                  15

Phe Asp Met Glu Ala Thr Gly Leu Pro Phe Ser Gln Pro Lys Val Thr
            20                  25                  30

Glu Leu Cys Leu Leu Ala Val His Arg Cys Ala Leu Glu Ser Pro Pro
```

```
        35                  40                  45

Thr Ser Gln Gly Pro Pro Pro Thr Val Pro Pro Pro Pro Arg Val Val
    50                  55                  60

Asp Lys Leu Ser Leu Cys Val Ala Pro Gly Lys Ala Cys Ser Pro Ala
65                  70                  75                  80

Ala Ser Glu Ile Thr Gly Leu Ser Thr Ala Val Leu Ala Ala His Gly
                85                  90                  95

Arg Gln Cys Phe Asp Asp Asn Leu Ala Asn Leu Leu Leu Ala Phe Leu
            100                 105                 110

Arg Arg Gln Pro Gln Pro Trp Cys Leu Val Ala His Asn Gly Asp Arg
        115                 120                 125

Tyr Asp Phe Pro Leu Leu Gln Ala Glu Leu Ala Met Leu Gly Leu Thr
    130                 135                 140

Ser Ala Leu Asp Gly Ala Phe Cys Val Asp Ser Ile Thr Ala Leu Lys
145                 150                 155                 160

Ala Leu Glu Arg Ala Ser Ser Pro Ser Glu His Gly Pro Arg Lys Ser
                165                 170                 175

Tyr Ser Leu Gly Ser Ile Tyr Thr Arg Leu Tyr Gly Gln Ser Pro Pro
            180                 185                 190

Asp Ser His Thr Ala Glu Gly Asp Val Leu Ala Leu Leu Ser Ile Cys
        195                 200                 205

Gln Trp Arg Pro Gln Ala Leu Leu Arg Trp Val Asp Ala His Ala Arg
    210                 215                 220

Pro Phe Gly Thr Ile Arg Pro Met Tyr Gly Val Thr Ala Ser Ala Arg
225                 230                 235                 240

Thr Lys Pro Arg Pro Ser Ala Val Thr Thr Thr Ala His Leu Ala Thr
                245                 250                 255

Thr Arg Asn Thr Ser Pro Ser Leu Gly Glu Ser Arg Gly Thr Lys Asp
            260                 265                 270
```

```
Leu Pro Pro Val Lys Asp Pro Gly Ala Leu Ser Arg Glu Gly Leu Leu
        275                 280                 285


Ala Pro Leu Gly Leu Leu Ala Ile Leu Thr Leu Ala Val Ala Thr Leu
    290                 295                 300


Tyr Gly Leu Ser Leu Ala Thr Pro Gly Glu
305                 310


<210> 7858
<211> 664
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1644; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      ATR interacting prt
      [Source:EntrezGene;Acc:84126]; "

<220>
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<223> /note="Uniprot ID:  Q8WXE1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349620"

<400> 7858
Met Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu Ile Lys
1               5                   10                  15


Ile Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu Glu Gln
            20                  25                  30


Arg Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala Leu Ser
        35                  40                  45


Asp Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln Ser Glu
    50                  55                  60
```

```
Leu Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys Leu Gln
65                  70                  75                  80

Thr Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser His Val
                85                  90                  95

Ser Pro Arg Lys Asn Pro Ser Val Val Ile Lys Pro Glu Ala Cys Ser
            100                 105                 110

Pro Gln Phe Gly Lys Thr Ser Phe Pro Thr Lys Glu Ser Phe Ser Ala
        115                 120                 125

Asn Met Ser Leu Pro His Pro Cys Gln Thr Glu Ser Gly Tyr Lys Pro
    130                 135                 140

Leu Val Gly Arg Glu Asp Ser Lys Pro His Ser Leu Arg Gly Asp Ser
145                 150                 155                 160

Ile Lys Gln Glu Glu Ala Gln Lys Ser Phe Val Asp Ser Trp Arg Gln
                165                 170                 175

Arg Ser Asn Thr Gln Gly Ser Ile Leu Ile Asn Leu Leu Leu Lys Gln
            180                 185                 190

Pro Leu Ile Pro Gly Ser Ser Leu Ser Leu Cys His Leu Leu Ser Ser
        195                 200                 205

Ser Ser Glu Ser Pro Ala Gly Thr Pro Leu Gln Pro Pro Gly Phe Gly
    210                 215                 220

Ser Thr Leu Ala Gly Met Ser Gly Leu Arg Thr Thr Gly Ser Tyr Asp
225                 230                 235                 240

Gly Ser Phe Ser Leu Ser Ala Leu Arg Glu Ala Gln Asn Leu Ala Phe
                245                 250                 255

Thr Gly Leu Asn Leu Val Ala Arg Asn Glu Cys Ser Arg Asp Gly Asp
            260                 265                 270

Pro Ala Glu Gly Gly Arg Arg Ala Phe Pro Leu Cys Gln Leu Pro Gly
        275                 280                 285
```

```
Ala Val His Phe Leu Pro Leu Val Gln Phe Phe Ile Gly Leu His Cys
    290                 295                 300

Gln Ala Leu Gln Asp Leu Ala Ala Ala Lys Arg Ser Gly Ala Pro Gly
305                 310                 315                 320

Asp Ser Pro Thr His Ser Ser Cys Val Ser Ser Gly Val Glu Thr Asn
                325                 330                 335

Pro Glu Asp Ser Val Cys Ile Leu Glu Gly Phe Ser Val Thr Ala Leu
            340                 345                 350

Ser Ile Leu Gln His Leu Val Cys His Ser Gly Ala Val Val Ser Leu
        355                 360                 365

Leu Leu Ser Gly Val Gly Ala Asp Ser Ala Ala Gly Glu Gly Asn Arg
    370                 375                 380

Ser Leu Val His Arg Leu Ser Asp Gly Asp Met Thr Ser Ala Leu Arg
385                 390                 395                 400

Gly Val Ala Asp Asp Gln Gly Gln His Pro Leu Leu Lys Met Leu Leu
                405                 410                 415

His Leu Leu Ala Phe Ser Ser Ala Ala Thr Gly His Leu Gln Ala Ser
            420                 425                 430

Val Leu Thr Gln Cys Leu Lys Val Leu Val Lys Leu Ala Glu Asn Thr
        435                 440                 445

Ser Cys Asp Phe Leu Pro Arg Phe Gln Cys Val Phe Gln Val Leu Pro
    450                 455                 460

Lys Cys Leu Ser Pro Glu Thr Pro Leu Pro Ser Val Leu Leu Ala Val
465                 470                 475                 480

Glu Leu Leu Ser Leu Leu Ala Asp His Asp Gln Leu Ala Pro Gln Leu
                485                 490                 495

Cys Ser His Ser Glu Gly Cys Leu Leu Leu Leu Leu Tyr Met Tyr Ile
            500                 505                 510

Thr Ser Arg Pro Asp Arg Val Ala Leu Glu Thr Gln Trp Leu Gln Leu
```

```
        515                 520                 525

Glu Gln Glu Val Val Trp Leu Leu Ala Lys Leu Gly Val Gln Ser Pro
    530                 535                 540

Leu Pro Pro Val Thr Gly Ser Asn Cys Gln Cys Asn Val Glu Val Val
545                 550                 555                 560

Arg Ala Leu Thr Val Met Leu His Arg Gln Trp Leu Thr Val Arg Arg
                565                 570                 575

Ala Gly Gly Pro Pro Arg Thr Asp Gln Gln Arg Arg Thr Val Arg Cys
            580                 585                 590

Leu Arg Asp Thr Val Leu Leu Leu His Gly Leu Ser Gln Lys Asp Lys
        595                 600                 605

Leu Phe Met Met His Cys Val Glu Val Leu His Gln Phe Asp Gln Val
    610                 615                 620

Met Pro Gly Val Ser Met Leu Ile Arg Gly Leu Pro Asp Val Thr Asp
625                 630                 635                 640

Cys Glu Glu Ala Ala Leu Asp Asp Leu Cys Ala Ala Glu Thr Asp Val
                645                 650                 655

Glu Asp Pro Glu Val Glu Cys Gly
            660


<210> 7859
<211> 46
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1644; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
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<223> /note="Gene Name:
      ATR interacting prt
      [Source:EntrezGene;Acc:84126]; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000489041"

<400> 7859
Met Ser Lys Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys
1   5   10   15

Asp Asn Phe Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys
            20   25   30

Glu Lys Leu Cys Lys Lys Ala Asp Thr Ser Tyr His His Leu
        35   40   45

<210> 7860
<211> 464
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1644; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
ATR interacting prt
[Source:EntrezGene;Acc:84126]; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489199"

<400> 7860
Met Ala Gly Thr Ser Ala Pro Gly Ser Lys Arg Arg Ser Glu Pro Pro
1   5   10   15

Ala Pro Arg Pro Gly Pro Pro Pro Gly Thr Gly His Pro Pro Ser Lys
            20   25   30

Arg Ala Arg Gly Phe Ser Ala Ala Ala Ala Pro Asp Pro Asp Asp Pro
        35   40   45

Phe Gly Ala His Gly Asp Phe Thr Ala Asp Asp Leu Glu Glu Leu Asp
    50   55   60

```
Thr Leu Ala Ser Gln Ala Leu Ser Gln Cys Pro Ala Ala Ala Arg Asp
65                  70                  75                  80

Val Ser Ser Asp His Lys Val His Arg Leu Leu Asp Gly Met Ser Lys
                85                  90                  95

Asn Pro Ser Gly Lys Asn Arg Glu Thr Val Pro Ile Lys Asp Asn Phe
            100                 105                 110

Glu Leu Glu Val Leu Gln Ala Gln Tyr Lys Glu Leu Lys Glu Lys Met
        115                 120                 125

Lys Val Met Glu Glu Glu Val Leu Ile Lys Asn Gly Glu Ile Lys Ile
    130                 135                 140

Leu Arg Asp Ser Leu His Gln Thr Glu Ser Val Leu Glu Glu Gln Arg
145                 150                 155                 160

Arg Ser His Phe Leu Leu Glu Gln Glu Lys Thr Gln Ala Leu Ser Asp
                165                 170                 175

Lys Glu Lys Glu Phe Ser Lys Lys Leu Gln Ser Leu Gln Ser Glu Leu
            180                 185                 190

Gln Phe Lys Asp Ala Glu Met Asn Glu Leu Arg Thr Lys Leu Gln Thr
        195                 200                 205

Ser Glu Arg Ala Asn Lys Leu Ala Ala Pro Ser Val Ser His Val Ser
    210                 215                 220

Pro Arg Lys Asn Pro Ser Val Val Ile Lys Pro Glu Ala Cys Ser Pro
225                 230                 235                 240

Gln Phe Gly Lys Thr Ser Phe Pro Thr Lys Glu Ser Phe Ser Ala Asn
                245                 250                 255

Met Ser Leu Pro His Pro Cys Gln Thr Glu Ser Gly Tyr Lys Pro Leu
            260                 265                 270

Val Gly Arg Glu Asp Ser Lys Pro His Ser Leu Arg Gly Asp Ser Ile
        275                 280                 285
```

```
Lys Gln Glu Glu Ala Gln Lys Ser Phe Val Asp Ser Trp Arg Gln Arg
    290                 295                 300

Ser Asn Thr Gln Gly Ser Ile Leu Ile Asn Leu Leu Leu Lys Gln Pro
305                 310                 315                 320

Leu Ile Pro Gly Ser Ser Leu Ser Leu Cys His Leu Leu Ser Ser Ser
                325                 330                 335

Ser Glu Ser Pro Ala Gly Thr Pro Leu Gln Pro Pro Gly Phe Gly Ser
            340                 345                 350

Thr Leu Ala Gly Met Ser Gly Leu Arg Thr Thr Gly Ser Tyr Asp Gly
        355                 360                 365

Ser Phe Ser Leu Ser Ala Leu Arg Glu Ala Gln Asn Leu Ala Phe Thr
    370                 375                 380

Gly Leu Asn Leu Val Ala Arg Asn Glu Cys Ser Arg Asp Gly Asp Pro
385                 390                 395                 400

Ala Glu Gly Gly Arg Arg Ala Phe Pro Leu Cys Gln Leu Pro Gly Ala
                405                 410                 415

Val His Phe Leu Pro Leu Val Gln Phe Phe Ile Gly Leu His Cys Gln
            420                 425                 430

Ala Leu Gln Asp Leu Ala Ala Ala Lys Arg Ser Gly Ala Pro Gly Asp
        435                 440                 445

Ser Pro Thr His Ser Ser Cys Gln Gln Val Thr Phe Lys Pro Val Ser
    450                 455                 460


<210> 7861
<211> 2644
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATR; "
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<220>
<221> source
<223> /note="Gene Name:
ATR serine/threonine kinase; "

<220>
<221> source
<223> /note="Uniprot ID: Q13535; "

<220>
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<223> /note="ENSP ID: ENSP00000343741"

<400> 7861
Met Gly Glu His Gly Leu Glu Leu Ala Ser Met Ile Pro Ala Leu Arg
1   5   10   15

Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn Thr Val Val Gln Lys
            20   25   30

Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg Ile Leu Thr Asp Val
        35   40   45

Asn Val Val Ala Val Glu Leu Val Lys Lys Thr Asp Ser Gln Pro Thr
    50   55   60

Ser Val Met Leu Leu Asp Phe Ile Gln His Ile Met Lys Ser Ser Pro
65   70   75   80

Leu Met Phe Val Asn Val Ser Gly Ser His Glu Ala Lys Gly Ser Cys
                85   90   95

Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu Leu Arg Ile Ala Ala
            100   105   110

Thr Pro Ser Cys His Leu Leu His Lys Lys Ile Cys Glu Val Ile Cys
        115   120   125

Ser Leu Leu Phe Leu Phe Lys Ser Lys Ser Pro Ala Ile Phe Gly Val
    130   135   140

Leu Thr Lys Glu Leu Leu Gln Leu Phe Glu Asp Leu Val Tyr Leu His
145   150   155   160

Arg Arg Asn Val Met Gly His Ala Val Glu Trp Pro Val Val Met Ser
                165   170   175

```
Arg Phe Leu Ser Gln Leu Asp Glu His Met Gly Tyr Leu Gln Ser Ala
            180                 185                 190

Pro Leu Gln Leu Met Ser Met Gln Asn Leu Glu Phe Ile Glu Val Thr
        195                 200                 205

Leu Leu Met Val Leu Thr Arg Ile Ile Ala Ile Val Phe Phe Arg Arg
    210                 215                 220

Gln Glu Leu Leu Leu Trp Gln Ile Gly Cys Val Leu Leu Glu Tyr Gly
225                 230                 235                 240

Ser Pro Lys Ile Lys Ser Leu Ala Ile Ser Phe Leu Thr Glu Leu Phe
                245                 250                 255

Gln Leu Gly Gly Leu Pro Ala Gln Pro Ala Ser Thr Phe Phe Ser Ser
            260                 265                 270

Phe Leu Glu Leu Leu Lys His Leu Val Glu Met Asp Thr Asp Gln Leu
        275                 280                 285

Lys Leu Tyr Glu Glu Pro Leu Ser Lys Leu Ile Lys Thr Leu Phe Pro
    290                 295                 300

Phe Glu Ala Glu Ala Tyr Arg Asn Ile Glu Pro Val Tyr Leu Asn Met
305                 310                 315                 320

Leu Leu Glu Lys Leu Cys Val Met Phe Glu Asp Gly Val Leu Met Arg
                325                 330                 335

Leu Lys Ser Asp Leu Leu Lys Ala Ala Leu Cys His Leu Leu Gln Tyr
            340                 345                 350

Phe Leu Lys Phe Val Pro Ala Gly Tyr Glu Ser Ala Leu Gln Val Arg
        355                 360                 365

Lys Val Tyr Val Arg Asn Ile Cys Lys Ala Leu Leu Asp Val Leu Gly
    370                 375                 380

Ile Glu Val Asp Ala Glu Tyr Leu Leu Gly Pro Leu Tyr Ala Ala Leu
385                 390                 395                 400
```

```
Lys Met Glu Ser Met Glu Ile Ile Glu Glu Ile Gln Cys Gln Thr Gln
                405                 410                 415

Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile Ser Pro Lys Arg Arg
            420                 425                 430

Arg Leu Ser Ser Ser Leu Asn Pro Ser Lys Arg Ala Pro Lys Gln Thr
        435                 440                 445

Glu Glu Ile Lys His Val Asp Met Asn Gln Lys Ser Ile Leu Trp Ser
    450                 455                 460

Ala Leu Lys Gln Lys Ala Glu Ser Leu Gln Ile Ser Leu Glu Tyr Ser
465                 470                 475                 480

Gly Leu Lys Asn Pro Val Ile Glu Met Leu Glu Gly Ile Ala Val Val
                485                 490                 495

Leu Gln Leu Thr Ala Leu Cys Thr Val His Cys Ser His Gln Asn Met
            500                 505                 510

Asn Cys Arg Thr Phe Lys Asp Cys Gln His Lys Ser Lys Lys Lys Pro
        515                 520                 525

Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe Tyr Thr Lys Val Leu
    530                 535                 540

Lys Ser Cys Arg Ser Leu Leu Glu Ser Val Gln Lys Leu Asp Leu Glu
545                 550                 555                 560

Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp Ala Leu Ile Tyr Met
                565                 570                 575

Gln Val Asn Ser Ser Phe Glu Asp His Ile Leu Glu Asp Leu Cys Gly
            580                 585                 590

Met Leu Ser Leu Pro Trp Ile Tyr Ser His Ser Asp Asp Gly Cys Leu
        595                 600                 605

Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr Leu Ser Cys Arg Ile
    610                 615                 620

Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg Cys Val Phe Leu Leu
```

625 630 635 640

Thr Leu Phe Pro Arg Arg Ile Phe Leu Glu Trp Arg Thr Ala Val Tyr
645 650 655

Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile Arg Ala Ser Cys Val
660 665 670

Ser Gly Phe Phe Ile Leu Leu Gln Gln Gln Asn Ser Cys Asn Arg Val
675 680 685

Pro Lys Ile Leu Ile Asp Lys Val Lys Asp Asp Ser Asp Ile Val Lys
690 695 700

Lys Glu Phe Ala Ser Ile Leu Gly Gln Leu Val Cys Thr Leu His Gly
705 710 715 720

Met Phe Tyr Leu Thr Ser Ser Leu Thr Glu Pro Phe Ser Glu His Gly
725 730 735

His Val Asp Leu Phe Cys Arg Asn Leu Lys Ala Thr Ser Gln His Glu
740 745 750

Cys Ser Ser Ser Gln Leu Lys Ala Ser Val Cys Lys Pro Phe Leu Phe
755 760 765

Leu Leu Lys Lys Lys Ile Pro Ser Pro Val Lys Leu Ala Phe Ile Asp
770 775 780

Asn Leu His His Leu Cys Lys His Leu Asp Phe Arg Glu Asp Glu Thr
785 790 795 800

Asp Val Lys Ala Val Leu Gly Thr Leu Leu Asn Leu Met Glu Asp Pro
805 810 815

Asp Lys Asp Val Arg Val Ala Phe Ser Gly Asn Ile Lys His Ile Leu
820 825 830

Glu Ser Leu Asp Ser Glu Asp Gly Phe Ile Lys Glu Leu Phe Val Leu
835 840 845

Arg Met Lys Glu Ala Tyr Thr His Ala Gln Ile Ser Arg Asn Asn Glu
850 855 860

```
Leu Lys Asp Thr Leu Ile Leu Thr Thr Gly Asp Ile Gly Arg Ala Ala
865                 870                 875                 880

Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His Leu Leu His Cys Leu
                885                 890                 895

Leu Ser Lys Ser Ala Ser Val Ser Gly Ala Ala Tyr Thr Glu Ile Arg
            900                 905                 910

Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln Ser Phe Phe Ser Gln
        915                 920                 925

Tyr Lys Lys Pro Ile Cys Gln Phe Leu Val Glu Ser Leu His Ser Ser
    930                 935                 940

Gln Met Thr Ala Leu Pro Asn Thr Pro Cys Gln Asn Ala Asp Val Arg
945                 950                 955                 960

Lys Gln Asp Val Ala His Gln Arg Glu Met Ala Leu Asn Thr Leu Ser
                965                 970                 975

Glu Ile Ala Asn Val Phe Asp Phe Pro Asp Leu Asn Arg Phe Leu Thr
            980                 985                 990

Arg Thr Leu Gln Val Leu Leu Pro  Asp Leu Ala Ala Lys  Ala Ser
Pro
        995                 1000                1005

Ala Ala  Ser Ala Leu Ile Arg  Thr Leu Gly Lys Gln  Leu Asn Val
    1010                1015                1020

Asn Arg  Arg Glu Ile Leu Ile  Asn Asn Phe Lys Tyr  Ile Phe Ser
    1025                1030                1035

His Leu  Val Cys Ser Cys Ser  Lys Asp Glu Leu Glu  Arg Ala Leu
    1040                1045                1050

His Tyr  Leu Lys Asn Glu Thr  Glu Ile Glu Leu Gly  Ser Leu Leu
    1055                1060                1065

Arg Gln  Asp Phe Gln Gly Leu  His Asn Glu Leu Leu  Leu Arg Ile
    1070                1075                1080
```

```
Gly Glu  His Tyr Gln Gln Val  Phe Asn Gly Leu Ser  Ile Leu Ala
    1085                1090                1095

Ser Phe  Ala Ser Ser Asp Asp  Pro Tyr Gln Gly Pro  Arg Asp Ile
    1100                1105                1110

Ile Ser  Pro Glu Leu Met Ala  Asp Tyr Leu Gln Pro  Lys Leu Leu
    1115                1120                1125

Gly Ile  Leu Ala Phe Phe Asn  Met Gln Leu Leu Ser  Ser Ser Val
    1130                1135                1140

Gly Ile  Glu Asp Lys Lys Met  Ala Leu Asn Ser Leu  Met Ser Leu
    1145                1150                1155

Met Lys  Leu Met Gly Pro Lys  His Val Ser Ser Val  Arg Val Lys
    1160                1165                1170

Met Met  Thr Thr Leu Arg Thr  Gly Leu Arg Phe Lys  Asp Asp Phe
    1175                1180                1185

Pro Glu  Leu Cys Cys Arg Ala  Trp Asp Cys Phe Val  Arg Cys Leu
    1190                1195                1200

Asp His  Ala Cys Leu Gly Ser  Leu Leu Ser His Val  Ile Val Ala
    1205                1210                1215

Leu Leu  Pro Leu Ile His Ile  Gln Pro Lys Glu Thr  Ala Ala Ile
    1220                1225                1230

Phe His  Tyr Leu Ile Ile Glu  Asn Arg Asp Ala Val  Gln Asp Phe
    1235                1240                1245

Leu His  Glu Ile Tyr Phe Leu  Pro Asp His Pro Glu  Leu Lys Lys
    1250                1255                1260

Ile Lys  Ala Val Leu Gln Glu  Tyr Arg Lys Glu Thr  Ser Glu Ser
    1265                1270                1275

Thr Asp  Leu Gln Thr Thr Leu  Gln Leu Ser Met Lys  Ala Ile Gln
    1280                1285                1290
```

```
His Glu  Asn Val Asp Val Arg  Ile His Ala Leu Thr  Ser Leu Lys
    1295                 1300                 1305

Glu Thr  Leu Tyr Lys Asn Gln  Glu Lys Leu Ile Lys  Tyr Ala Thr
    1310                 1315                 1320

Asp Ser  Glu Thr Val Glu Pro  Ile Ile Ser Gln Leu  Val Thr Val
    1325                 1330                 1335

Leu Leu  Lys Gly Cys Gln Asp  Ala Asn Ser Gln Ala  Arg Leu Leu
    1340                 1345                 1350

Cys Gly  Glu Cys Leu Gly Glu  Leu Gly Ala Ile Asp  Pro Gly Arg
    1355                 1360                 1365

Leu Asp  Phe Ser Thr Thr Glu  Thr Gln Gly Lys Asp  Phe Thr Phe
    1370                 1375                 1380

Val Thr  Gly Val Glu Asp Ser  Ser Phe Ala Tyr Gly  Leu Leu Met
    1385                 1390                 1395

Glu Leu  Thr Arg Ala Tyr Leu  Ala Tyr Ala Asp Asn  Ser Arg Ala
    1400                 1405                 1410

Gln Asp  Ser Ala Ala Tyr Ala  Ile Gln Glu Leu Leu  Ser Ile Tyr
    1415                 1420                 1425

Asp Cys  Arg Glu Met Glu Thr  Asn Gly Pro Gly His  Gln Leu Trp
    1430                 1435                 1440

Arg Arg  Phe Pro Glu His Val  Arg Glu Ile Leu Glu  Pro His Leu
    1445                 1450                 1455

Asn Thr  Arg Tyr Lys Ser Ser  Gln Lys Ser Thr Asp  Trp Ser Gly
    1460                 1465                 1470

Val Lys  Lys Pro Ile Tyr Leu  Ser Lys Leu Gly Ser  Asn Phe Ala
    1475                 1480                 1485

Glu Trp  Ser Ala Ser Trp Ala  Gly Tyr Leu Ile Thr  Lys Val Arg
    1490                 1495                 1500
```

```
His Asp  Leu Ala Ser Lys Ile  Phe Thr Cys Cys Ser  Ile Met Met
    1505                1510                1515

Lys His  Asp Phe Lys Val Thr  Ile Tyr Leu Leu Pro  His Ile Leu
    1520                1525                1530

Val Tyr  Val Leu Leu Gly Cys  Asn Gln Glu Asp Gln  Gln Glu Val
    1535                1540                1545

Tyr Ala  Glu Ile Met Ala Val  Leu Lys His Asp Asp  Gln His Thr
    1550                1555                1560

Ile Asn  Thr Gln Asp Ile Ala  Ser Asp Leu Cys Gln  Leu Ser Thr
    1565                1570                1575

Gln Thr  Val Phe Ser Met Leu  Asp His Leu Thr Gln  Trp Ala Arg
    1580                1585                1590

His Lys  Phe Gln Ala Leu Lys  Ala Glu Lys Cys Pro  His Ser Lys
    1595                1600                1605

Ser Asn  Arg Asn Lys Val Asp  Ser Met Val Ser Thr  Val Asp Tyr
    1610                1615                1620

Glu Asp  Tyr Gln Ser Val Thr  Arg Phe Leu Asp Leu  Ile Pro Gln
    1625                1630                1635

Asp Thr  Leu Ala Val Ala Ser  Phe Arg Ser Lys Ala  Tyr Thr Arg
    1640                1645                1650

Ala Val  Met His Phe Glu Ser  Phe Ile Thr Glu Lys  Lys Gln Asn
    1655                1660                1665

Ile Gln  Glu His Leu Gly Phe  Leu Gln Lys Leu Tyr  Ala Ala Met
    1670                1675                1680

His Glu  Pro Asp Gly Val Ala  Gly Val Ser Ala Ile  Arg Lys Ala
    1685                1690                1695

Glu Pro  Ser Leu Lys Glu Gln  Ile Leu Glu His Glu  Ser Leu Gly
    1700                1705                1710

Leu Leu  Arg Asp Ala Thr Ala  Cys Tyr Asp Arg Ala  Ile Gln Leu
```

1715 1720 1725

Glu Pro Asp Gln Ile Ile His Tyr His Gly Val Val Lys Ser Met
1730 1735 1740

Leu Gly Leu Gly Gln Leu Ser Thr Val Ile Thr Gln Val Asn Gly
1745 1750 1755

Val His Ala Asn Arg Ser Glu Trp Thr Asp Glu Leu Asn Thr Tyr
1760 1765 1770

Arg Val Glu Ala Ala Trp Lys Leu Ser Gln Trp Asp Leu Val Glu
1775 1780 1785

Asn Tyr Leu Ala Ala Asp Gly Lys Ser Thr Thr Trp Ser Val Arg
1790 1795 1800

Leu Gly Gln Leu Leu Leu Ser Ala Lys Lys Arg Asp Ile Thr Ala
1805 1810 1815

Phe Tyr Asp Ser Leu Lys Leu Val Arg Ala Glu Gln Ile Val Pro
1820 1825 1830

Leu Ser Ala Ala Ser Phe Glu Arg Gly Ser Tyr Gln Arg Gly Tyr
1835 1840 1845

Glu Tyr Ile Val Arg Leu His Met Leu Cys Glu Leu Glu His Ser
1850 1855 1860

Ile Lys Pro Leu Phe Gln His Ser Pro Gly Asp Ser Ser Gln Glu
1865 1870 1875

Asp Ser Leu Asn Trp Val Ala Arg Leu Glu Met Thr Gln Asn Ser
1880 1885 1890

Tyr Arg Ala Lys Glu Pro Ile Leu Ala Leu Arg Arg Ala Leu Leu
1895 1900 1905

Ser Leu Asn Lys Arg Pro Asp Tyr Asn Glu Met Val Gly Glu Cys
1910 1915 1920

Trp Leu Gln Ser Ala Arg Val Ala Arg Lys Ala Gly His His Gln
1925 1930 1935

```
Thr Ala  Tyr Asn Ala Leu Leu  Asn Ala Gly Glu Ser  Arg Leu Ala
    1940                1945                1950

Glu Leu  Tyr Val Glu Arg Ala  Lys Trp Leu Trp Ser  Lys Gly Asp
    1955                1960                1965

Val His  Gln Ala Leu Ile Val  Leu Gln Lys Gly Val  Glu Leu Cys
    1970                1975                1980

Phe Pro  Glu Asn Glu Thr Pro  Pro Glu Gly Lys Asn  Met Leu Ile
    1985                1990                1995

His Gly  Arg Ala Met Leu Leu  Val Gly Arg Phe Met  Glu Glu Thr
    2000                2005                2010

Ala Asn  Phe Glu Ser Asn Ala  Ile Met Lys Lys Tyr  Lys Asp Val
    2015                2020                2025

Thr Ala  Cys Leu Pro Glu Trp  Glu Asp Gly His Phe  Tyr Leu Ala
    2030                2035                2040

Lys Tyr  Tyr Asp Lys Leu Met  Pro Met Val Thr Asp  Asn Lys Met
    2045                2050                2055

Glu Lys  Gln Gly Asp Leu Ile  Arg Tyr Ile Val Leu  His Phe Gly
    2060                2065                2070

Arg Ser  Leu Gln Tyr Gly Asn  Gln Phe Ile Tyr Gln  Ser Met Pro
    2075                2080                2085

Arg Met  Leu Thr Leu Trp Leu  Asp Tyr Gly Thr Lys  Ala Tyr Glu
    2090                2095                2100

Trp Glu  Lys Ala Gly Arg Ser  Asp Arg Val Gln Met  Arg Asn Asp
    2105                2110                2115

Leu Gly  Lys Ile Asn Lys Val  Ile Thr Glu His Thr  Asn Tyr Leu
    2120                2125                2130

Ala Pro  Tyr Gln Phe Leu Thr  Ala Phe Ser Gln Leu  Ile Ser Arg
    2135                2140                2145
```

Ile Cys His Ser His Asp Glu Val Phe Val Val Leu Met Glu Ile
2150 2155 2160

Ile Ala Lys Val Phe Leu Ala Tyr Pro Gln Gln Ala Met Trp Met
2165 2170 2175

Met Thr Ala Val Ser Lys Ser Ser Tyr Pro Met Arg Val Asn Arg
2180 2185 2190

Cys Lys Glu Ile Leu Asn Lys Ala Ile His Met Lys Lys Ser Leu
2195 2200 2205

Glu Lys Phe Val Gly Asp Ala Thr Arg Leu Thr Asp Lys Leu Leu
2210 2215 2220

Glu Leu Cys Asn Lys Pro Val Asp Gly Ser Ser Ser Thr Leu Ser
2225 2230 2235

Met Ser Thr His Phe Lys Met Leu Lys Lys Leu Val Glu Glu Ala
2240 2245 2250

Thr Phe Ser Glu Ile Leu Ile Pro Leu Gln Ser Val Met Ile Pro
2255 2260 2265

Thr Leu Pro Ser Ile Leu Gly Thr His Ala Asn His Ala Ser His
2270 2275 2280

Glu Pro Phe Pro Gly His Trp Ala Tyr Ile Ala Gly Phe Asp Asp
2285 2290 2295

Met Val Glu Ile Leu Ala Ser Leu Gln Lys Pro Lys Lys Ile Ser
2300 2305 2310

Leu Lys Gly Ser Asp Gly Lys Phe Tyr Ile Met Met Cys Lys Pro
2315 2320 2325

Lys Asp Asp Leu Arg Lys Asp Cys Arg Leu Met Glu Phe Asn Ser
2330 2335 2340

Leu Ile Asn Lys Cys Leu Arg Lys Asp Ala Glu Ser Arg Arg Arg
2345 2350 2355

```
Glu Leu  His Ile Arg Thr Tyr  Ala Val Ile Pro Leu  Asn Asp Glu
    2360                2365                2370

Cys Gly  Ile Ile Glu Trp Val  Asn Asn Thr Ala Gly  Leu Arg Pro
    2375                2380                2385

Ile Leu  Thr Lys Leu Tyr Lys  Glu Lys Gly Val Tyr  Met Thr Gly
    2390                2395                2400

Lys Glu  Leu Arg Gln Cys Met  Leu Pro Lys Ser Ala  Ala Leu Ser
    2405                2410                2415

Glu Lys  Leu Lys Val Phe Arg  Glu Phe Leu Leu Pro  Arg His Pro
    2420                2425                2430

Pro Ile  Phe His Glu Trp Phe  Leu Arg Thr Phe Pro  Asp Pro Thr
    2435                2440                2445

Ser Trp  Tyr Ser Ser Arg Ser  Ala Tyr Cys Arg Ser  Thr Ala Val
    2450                2455                2460

Met Ser  Met Val Gly Tyr Ile  Leu Gly Leu Gly Asp  Arg His Gly
    2465                2470                2475

Glu Asn  Ile Leu Phe Asp Ser  Leu Thr Gly Glu Cys  Val His Val
    2480                2485                2490

Asp Phe  Asn Cys Leu Phe Asn  Lys Gly Glu Thr Phe  Glu Val Pro
    2495                2500                2505

Glu Ile  Val Pro Phe Arg Leu  Thr His Asn Met Val  Asn Gly Met
    2510                2515                2520

Gly Pro  Met Gly Thr Glu Gly  Leu Phe Arg Arg Ala  Cys Glu Val
    2525                2530                2535

Thr Met  Arg Leu Met Arg Asp  Gln Arg Glu Pro Leu  Met Ser Val
    2540                2545                2550

Leu Lys  Thr Phe Leu His Asp  Pro Leu Val Glu Trp  Ser Lys Pro
    2555                2560                2565

Val Lys  Gly His Ser Lys Ala  Pro Leu Asn Glu Thr  Gly Glu Val
```

```
    2570                2575                2580

Val Asn  Glu Lys Ala Lys Thr  His Val Leu Asp Ile  Glu Gln Arg
    2585                2590                2595

Leu Gln  Gly Val Ile Lys Thr  Arg Asn Arg Val Thr  Gly Leu Pro
    2600                2605                2610

Leu Ser  Ile Glu Gly His Val  His Tyr Leu Ile Gln  Glu Ala Thr
    2615                2620                2625

Asp Glu  Asn Leu Leu Cys Gln  Met Tyr Leu Gly Trp  Thr Pro Tyr
    2630                2635                2640

Met
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<210> 7862
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1645; "

<220>
<221> source
<223> /note="Gene Symbol: ATR; "

<220>
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<223> /note="Gene Name:
ATR serine/threonine kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421870"

<400> 7862

```
Ala Pro Leu Asn Glu Thr Gly Glu Val Val Asn Glu Lys Val Ser Arg
1               5                  10                  15

Arg Trp Gln Val Leu Gln Ile His Leu Ser Asn Val Lys Phe Val Leu
            20                  25                  30

Gln Arg Val Leu Pro Leu Ile
        35
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<210> 7863
<211> 80
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000422553"

<400> 7863
His Asn Met Val Asn Gly Met Gly Pro Met Gly Thr Glu Gly Leu Phe
1 5 10 15

Arg Arg Ala Cys Glu Val Thr Met Arg Leu Met Arg Asp Gln Arg Glu
20 25 30

Pro Leu Met Ser Val Leu Lys Thr Phe Leu His Asp Pro Leu Val Glu
35 40 45

Trp Ser Lys Pro Val Lys Gly His Ser Lys Ala Pro Leu Asn Glu Thr
50 55 60

Gly Glu Val Val Asn Glu Lys Met Ala Ser Ser Ser Asn Ser Phe Lys
65 70 75 80

<210> 7864
<211> 457
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000424355"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7864
Xaa Glu Val Phe Val Val Leu Met Glu Ile Ile Ala Lys Val Phe Leu
1 5 10 15

Ala Tyr Pro Gln Gln Ala Met Trp Met Met Thr Ala Val Ser Lys Ser
20 25 30

Ser Tyr Pro Met Arg Val Asn Arg Cys Lys Glu Ile Leu Asn Lys Ala
35 40 45

Ile His Met Lys Lys Ser Leu Glu Lys Phe Val Gly Asp Ala Thr Arg
50 55 60

Leu Thr Asp Lys Leu Leu Glu Leu Cys Asn Lys Pro Val Asp Gly Ser
65 70 75 80

Ser Ser Thr Leu Ser Met Ser Thr His Phe Lys Met Leu Lys Lys Leu
85 90 95

Val Glu Glu Ala Thr Phe Ser Glu Ile Leu Ile Pro Leu Gln Ser Val
100 105 110

Met Ile Pro Thr Leu Pro Ser Ile Leu Gly Thr His Ala Asn His Ala
115 120 125

Ser His Glu Pro Phe Pro Gly His Trp Ala Tyr Ile Ala Gly Phe Asp
130 135 140

Asp Met Val Glu Ile Leu Ala Ser Leu Gln Lys Pro Lys Lys Ile Ser
145 150 155 160

Leu Lys Gly Ser Asp Gly Lys Phe Tyr Ile Met Met Cys Lys Pro Lys

```
                165                 170                 175

Asp Asp Leu Arg Lys Asp Cys Arg Leu Met Glu Phe Asn Ser Leu Ile
            180                 185                 190

Asn Lys Cys Leu Arg Lys Asp Ala Glu Ser Arg Arg Arg Glu Leu His
        195                 200                 205

Ile Arg Thr Tyr Ala Val Ile Pro Leu Asn Asp Glu Cys Gly Ile Ile
    210                 215                 220

Glu Trp Val Asn Asn Thr Ala Gly Leu Arg Pro Ile Leu Thr Lys Leu
225                 230                 235                 240

Tyr Lys Glu Lys Gly Val Tyr Met Thr Gly Lys Glu Leu Arg Gln Cys
                245                 250                 255

Met Leu Pro Lys Ser Ala Ala Leu Ser Glu Lys Leu Lys Val Phe Arg
            260                 265                 270

Glu Phe Leu Leu Pro Arg His Pro Pro Ile Phe His Glu Trp Phe Leu
        275                 280                 285

Arg Thr Phe Pro Asp Pro Thr Ser Trp Tyr Ser Ser Arg Ser Ala Tyr
    290                 295                 300

Cys Arg Ser Thr Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu
305                 310                 315                 320

Gly Asp Arg His Gly Glu Asn Ile Leu Phe Asp Ser Leu Thr Gly Glu
                325                 330                 335

Cys Val His Val Asp Phe Asn Cys Leu Phe Asn Lys Gly Glu Thr Phe
            340                 345                 350

Glu Val Pro Glu Ile Val Pro Phe Arg Leu Thr His Asn Met Val Asn
        355                 360                 365

Gly Met Gly Pro Met Gly Thr Glu Gly Leu Phe Arg Arg Ala Cys Glu
    370                 375                 380

Val Thr Met Arg Leu Met Arg Asp Gln Arg Glu Pro Leu Met Ser Val
385                 390                 395                 400
```

```
Leu Lys Thr Phe Leu His Asp Pro Leu Val Glu Trp Ser Lys Pro Val
                405                 410                 415

Lys Gly His Ser Lys Ala Pro Leu Asn Glu Thr Gly Glu Val Val Asn
            420                 425                 430

Glu Lys Val Ser Arg Arg Tyr Ser Leu Ile Trp Ala Val Val Leu Ile
        435                 440                 445

Ser Thr Asn Glu Leu Asp Met Gln Leu
    450                 455


<210> 7865
<211> 309
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1645; "

<220>
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<223> /note="Gene Symbol: ATR; "

<220>
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<223> /note="Gene Name:
      ATR serine/threonine kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425897"

<400> 7865
Met Leu Leu Glu Lys Leu Cys Val Met Phe Glu Asp Gly Val Leu Met
1               5                   10                  15

Arg Leu Lys Ser Asp Leu Leu Lys Ala Ala Leu Cys His Leu Leu Gln
            20                  25                  30

Tyr Phe Leu Lys Phe Val Pro Ala Gly Tyr Glu Ser Ala Leu Gln Val
        35                  40                  45

Arg Lys Val Tyr Val Arg Asn Ile Cys Lys Ala Leu Leu Asp Val Leu
    50                  55                  60
```

```
Gly Ile Glu Val Asp Ala Glu Tyr Leu Leu Gly Pro Leu Tyr Ala Ala
65                  70                  75                  80

Leu Lys Met Glu Ser Met Glu Ile Ile Glu Glu Ile Gln Cys Gln Thr
                85                  90                  95

Gln Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile Ser Pro Lys Arg
            100                 105                 110

Arg Arg Leu Ser Ser Ser Leu Asn Pro Ser Lys Arg Ala Pro Lys Gln
        115                 120                 125

Thr Glu Asp Arg Thr Phe Lys Asp Cys Gln His Lys Ser Lys Lys Lys
    130                 135                 140

Pro Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe Tyr Thr Lys Val
145                 150                 155                 160

Leu Lys Ser Cys Arg Ser Leu Leu Glu Ser Val Gln Lys Leu Asp Leu
                165                 170                 175

Glu Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp Ala Leu Ile Tyr
            180                 185                 190

Met Gln Val Asn Ser Ser Phe Glu Asp His Ile Leu Glu Asp Leu Cys
        195                 200                 205

Gly Met Leu Ser Leu Pro Trp Ile Tyr Ser His Ser Asp Asp Gly Cys
    210                 215                 220

Leu Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr Leu Ser Cys Arg
225                 230                 235                 240

Ile Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg Cys Val Phe Leu
                245                 250                 255

Leu Thr Leu Phe Pro Arg Arg Ile Phe Leu Glu Trp Arg Thr Ala Val
            260                 265                 270

Tyr Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile Arg Ala Ser Cys
        275                 280                 285

Val Ser Gly Phe Phe Ile Leu Leu Gln Gln Gln Asn Ser Cys Asn Arg
```

```
    290                 295                 300

Val Pro Lys Ile Leu
305
```

<210> 7866
<211> 100
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATR serine/threonine kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426595"

<400> 7866

```
Met Gly Glu His Gly Leu Glu Leu Ala Ser Met Ile Pro Ala Leu Arg
1               5                   10                  15

Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn Thr Val Val Gln Lys
            20                  25                  30

Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg Ile Leu Thr Asp Val
        35                  40                  45

Asn Val Val Ala Val Glu Leu Val Lys Lys Thr Asp Ser Gln Pro Thr
    50                  55                  60

Ser Val Met Leu Leu Asp Phe Ile Gln His Ile Met Lys Ser Ser Pro
65                  70                  75                  80

Leu Met Phe Val Asn Val Ser Gly Ser His Glu Ala Lys Gly Ser Cys
                85                  90                  95

Ile Val Phe Pro
            100
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<210> 7867
<211> 1190
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1646; "

<220>
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<223> /note="Gene Symbol: ATN1; "

<220>
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<223> /note="Gene Name:
atrophin 1; "

<220>
<221> source
<223> /note="Uniprot ID: P54259; "

<220>
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<223> /note="ENSP ID: ENSP00000349076"

<400> 7867
Met Lys Thr Arg Gln Asn Lys Asp Ser Met Ser Met Arg Ser Gly Arg
1   5   10   15

Lys Lys Glu Ala Pro Gly Pro Arg Glu Glu Leu Arg Ser Arg Gly Arg
            20   25   30

Ala Ser Pro Gly Gly Val Ser Thr Ser Ser Ser Asp Gly Lys Ala Glu
        35   40   45

Lys Ser Arg Gln Thr Ala Lys Lys Ala Arg Val Glu Glu Ala Ser Thr
    50   55   60

Pro Lys Val Asn Lys Gln Gly Arg Ser Glu Glu Ile Ser Glu Ser Glu
65   70   75   80

Ser Glu Glu Thr Asn Ala Pro Lys Lys Thr Lys Thr Glu Gln Glu Leu
                85   90   95

Pro Arg Pro Gln Ser Pro Ser Asp Leu Asp Ser Leu Asp Gly Arg Ser
            100   105   110

Leu Asn Asp Asp Gly Ser Ser Asp Pro Arg Asp Ile Asp Gln Asp Asn

```
        115                 120                 125

Arg Ser Thr Ser Pro Ser Ile Tyr Ser Pro Gly Ser Val Glu Asn Asp
    130                 135                 140

Ser Asp Ser Ser Ser Gly Leu Ser Gln Gly Pro Ala Arg Pro Tyr His
145                 150                 155                 160

Pro Pro Pro Leu Phe Pro Pro Ser Pro Gln Pro Pro Asp Ser Thr Pro
                165                 170                 175

Arg Gln Pro Glu Ala Ser Phe Glu Pro His Pro Ser Val Thr Pro Thr
            180                 185                 190

Gly Tyr His Ala Pro Met Glu Pro Pro Thr Ser Arg Met Phe Gln Ala
        195                 200                 205

Pro Pro Gly Ala Pro Pro Pro His Pro Gln Leu Tyr Pro Gly Gly Thr
    210                 215                 220

Gly Gly Val Leu Ser Gly Pro Pro Met Gly Pro Lys Gly Gly Gly Ala
225                 230                 235                 240

Ala Ser Ser Val Gly Gly Pro Asn Gly Gly Lys Gln His Pro Pro Pro
                245                 250                 255

Thr Thr Pro Ile Ser Val Ser Ser Ser Gly Ala Ser Gly Ala Pro Pro
            260                 265                 270

Thr Lys Pro Pro Thr Thr Pro Val Gly Gly Gly Asn Leu Pro Ser Ala
        275                 280                 285

Pro Pro Pro Ala Asn Phe Pro His Val Thr Pro Asn Leu Pro Pro Pro
    290                 295                 300

Pro Ala Leu Arg Pro Leu Asn Asn Ala Ser Ala Ser Pro Pro Gly Leu
305                 310                 315                 320

Gly Ala Gln Pro Leu Pro Gly His Leu Pro Ser Pro His Ala Met Gly
                325                 330                 335

Gln Gly Met Gly Gly Leu Pro Pro Gly Pro Glu Lys Gly Pro Thr Leu
            340                 345                 350
```

```
Ala Pro Ser Pro His Ser Leu Pro Pro Ala Ser Ser Ser Ala Pro Ala
        355                 360                 365

Pro Pro Met Arg Phe Pro Tyr Ser Ser Ser Ser Ser Ser Ser Ala Ala
    370                 375                 380

Ala Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ala Ser Pro Phe Pro
385                 390                 395                 400

Ala Ser Gln Ala Leu Pro Ser Tyr Pro His Ser Phe Pro Pro Pro Thr
                405                 410                 415

Ser Leu Ser Val Ser Asn Gln Pro Pro Lys Tyr Thr Gln Pro Ser Leu
            420                 425                 430

Pro Ser Gln Ala Val Trp Ser Gln Gly Pro Pro Pro Pro Pro Pro Tyr
        435                 440                 445

Gly Arg Leu Leu Ala Asn Ser Asn Ala His Pro Gly Pro Phe Pro Pro
    450                 455                 460

Ser Thr Gly Ala Gln Ser Thr Ala His Pro Pro Val Ser Thr His His
465                 470                 475                 480

His His His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
                485                 490                 495

Gln Gln Gln Gln Gln Gln His His Gly Asn Ser Gly Pro Pro Pro Pro
            500                 505                 510

Gly Ala Phe Pro His Pro Leu Glu Gly Gly Ser Ser His His Ala His
        515                 520                 525

Pro Tyr Ala Met Ser Pro Ser Leu Gly Ser Leu Arg Pro Tyr Pro Pro
    530                 535                 540

Gly Pro Ala His Leu Pro Pro Pro His Ser Gln Val Ser Tyr Ser Gln
545                 550                 555                 560

Ala Gly Pro Asn Gly Pro Pro Val Ser Ser Ser Ser Asn Ser Ser Ser
                565                 570                 575
```

```
Ser Thr Ser Gln Gly Ser Tyr Pro Cys Ser His Pro Ser Pro Ser Gln
            580                 585                 590

Gly Pro Gln Gly Ala Pro Tyr Pro Phe Pro Pro Val Pro Thr Val Thr
        595                 600                 605

Thr Ser Ser Ala Thr Leu Ser Thr Val Ile Ala Thr Val Ala Ser Ser
    610                 615                 620

Pro Ala Gly Tyr Lys Thr Ala Ser Pro Pro Gly Pro Pro Pro Tyr Gly
625                 630                 635                 640

Lys Arg Ala Pro Ser Pro Gly Ala Tyr Lys Thr Ala Thr Pro Pro Gly
                645                 650                 655

Tyr Lys Pro Gly Ser Pro Pro Ser Phe Arg Thr Gly Thr Pro Pro Gly
            660                 665                 670

Tyr Arg Gly Thr Ser Pro Pro Ala Gly Pro Gly Thr Phe Lys Pro Gly
        675                 680                 685

Ser Pro Thr Val Gly Pro Gly Pro Leu Pro Pro Ala Gly Pro Ser Gly
    690                 695                 700

Leu Pro Ser Leu Pro Pro Pro Pro Ala Ala Pro Ala Ser Gly Pro Pro
705                 710                 715                 720

Leu Ser Ala Thr Gln Ile Lys Gln Glu Pro Ala Glu Glu Tyr Glu Thr
                725                 730                 735

Pro Glu Ser Pro Val Pro Pro Ala Arg Ser Pro Ser Pro Pro Pro Lys
            740                 745                 750

Val Val Asp Val Pro Ser His Ala Ser Gln Ser Ala Arg Phe Asn Lys
        755                 760                 765

His Leu Asp Arg Gly Phe Asn Ser Cys Ala Arg Ser Asp Leu Tyr Phe
    770                 775                 780

Val Pro Leu Glu Gly Ser Lys Leu Ala Lys Lys Arg Ala Asp Leu Val
785                 790                 795                 800
```

```
Glu Lys Val Arg Arg Glu Ala Glu Gln Arg Ala Arg Glu Glu Lys Glu
                805                 810                 815

Arg Glu Arg Glu Arg Glu Arg Glu Lys Glu Arg Glu Arg Glu Lys Glu
            820                 825                 830

Arg Glu Leu Glu Arg Ser Val Lys Leu Ala Gln Glu Gly Arg Ala Pro
        835                 840                 845

Val Glu Cys Pro Ser Leu Gly Pro Val Pro His Arg Pro Pro Phe Glu
    850                 855                 860

Pro Gly Ser Ala Val Ala Thr Val Pro Pro Tyr Leu Gly Pro Asp Thr
865                 870                 875                 880

Pro Ala Leu Arg Thr Leu Ser Glu Tyr Ala Arg Pro His Val Met Ser
                885                 890                 895

Pro Gly Asn Arg Asn His Pro Phe Tyr Val Pro Leu Gly Ala Val Asp
            900                 905                 910

Pro Gly Leu Leu Gly Tyr Asn Val Pro Ala Leu Tyr Ser Ser Asp Pro
        915                 920                 925

Ala Ala Arg Glu Arg Glu Arg Glu Ala Arg Glu Arg Asp Leu Arg Asp
    930                 935                 940

Arg Leu Lys Pro Gly Phe Glu Val Lys Pro Ser Glu Leu Glu Pro Leu
945                 950                 955                 960

His Gly Val Pro Gly Pro Gly Leu Asp Pro Phe Pro Arg His Gly Gly
                965                 970                 975

Leu Ala Leu Gln Pro Gly Pro Pro Gly Leu His Pro Phe Pro Phe His
            980                 985                 990

Pro Ser Leu Gly Pro Leu Glu Arg  Glu Arg Leu Ala Leu  Ala Ala
Gly
        995                 1000                1005

Pro Ala  Leu Arg Pro Asp Met  Ser Tyr Ala Glu Arg  Leu Ala Ala
    1010                1015                1020
```

```
Glu Arg  Gln His Ala Glu Arg  Val Ala Ala Leu Gly  Asn Asp Pro
    1025                1030                1035

Leu Ala  Arg Leu Gln Met Leu  Asn Val Thr Pro His  His His Gln
    1040                1045                1050

His Ser  His Ile His Ser His  Leu His Leu His Gln  Gln Asp Ala
    1055                1060                1065

Ile His  Ala Ala Ser Ala Ser  Val His Pro Leu Ile  Asp Pro Leu
    1070                1075                1080

Ala Ser  Gly Ser His Leu Thr  Arg Ile Pro Tyr Pro  Ala Gly Thr
    1085                1090                1095

Leu Pro  Asn Pro Leu Leu Pro  His Pro Leu His Glu  Asn Glu Val
    1100                1105                1110

Leu Arg  His Gln Leu Phe Ala  Ala Pro Tyr Arg Asp  Leu Pro Ala
    1115                1120                1125

Ser Leu  Ser Ala Pro Met Ser  Ala Ala His Gln Leu  Gln Ala Met
    1130                1135                1140

His Ala  Gln Ser Ala Glu Leu  Gln Arg Leu Ala Leu  Glu Gln Gln
    1145                1150                1155

Gln Trp  Leu His Ala His His  Pro Leu His Ser Val  Pro Leu Pro
    1160                1165                1170

Ala Gln  Glu Asp Tyr Tyr Ser  His Leu Lys Lys Glu  Ser Asp Lys
    1175                1180                1185

Pro Leu
    1190


<210> 7868
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<223> /note="Gene Name:
atrophin 1; "

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<220>
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<400> 7868

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Met Lys Thr Arg Gln Asn Lys Asp Ser Met Ser Met Arg Ser Gly Arg
1               5                   10                  15

Lys Lys Glu Ala Pro Gly Pro Arg Glu Glu Leu Arg Ser Arg Gly Arg
            20                  25                  30

Ala Ser Pro Gly Gly Val Ser Thr Ser Ser Ser Asp Gly Lys Ala Glu
        35                  40                  45

Lys Ser Arg Gln Thr Ala Lys Lys Ala Arg Val Glu Glu Ala Ser Thr
    50                  55                  60

Pro Lys Val Asn Lys Gln Gly Arg Ser Glu Glu Ile Ser Glu Ser Glu
65                  70                  75                  80

Ser Glu Glu Thr Asn Ala Pro Lys Lys Thr Lys Thr Glu Gln Glu Leu
                85                  90                  95

Pro Arg Pro Gln Ser Pro Ser Asp Leu Asp Ser Leu Asp Gly Arg Ser
            100                 105                 110

Leu Asn Asp Asp Gly Ser Ser Asp Pro Arg Asp Ile Asp Gln Asp Asn
        115                 120                 125

Arg Ser Thr Ser Pro Ser Ile Tyr Ser Pro Gly Ser Val Glu Asn Asp
    130                 135                 140

Ser Asp Ser Ser Ser Gly Leu Ser Gln Gly Pro Ala Arg Pro Tyr His
145                 150                 155                 160
```

```
Pro Pro Pro Leu Phe Pro Pro Ser Pro Gln Pro Pro Asp Ser Thr Pro
                165                 170                 175

Arg Gln Pro Glu Ala Ser Phe Glu Pro His Pro Ser Val Thr Pro Thr
            180                 185                 190

Gly Tyr His Ala Pro Met Glu Pro Pro Thr Ser Arg Met Phe Gln Ala
        195                 200                 205

Pro Pro Gly Ala Pro Pro Pro His Pro Gln Leu Tyr Pro Gly Gly Thr
    210                 215                 220

Gly Gly Val Leu Ser Gly Pro Pro Met Gly Pro Lys Gly Gly Gly Ala
225                 230                 235                 240

Ala Ser Ser Val Gly Gly Pro Asn Gly Gly Lys Gln His Pro Pro Pro
                245                 250                 255

Thr Thr Pro Ile Ser Val Ser Ser Ser Gly Ala Ser Gly Ala Pro Pro
            260                 265                 270

Thr Lys Pro Pro Thr Thr Pro Val Gly Gly Gly Asn Leu Pro Ser Ala
        275                 280                 285

Pro Pro Pro Ala Asn Phe Pro His Val Thr Pro Asn Leu Pro Pro Pro
    290                 295                 300

Pro Ala Leu Arg Pro Leu Asn Asn Ala Ser Ala Ser Pro Pro Gly Leu
305                 310                 315                 320

Gly Ala Gln Pro Leu Pro Gly His Leu Pro Ser Pro His Ala Met Gly
                325                 330                 335

Gln Gly Met Gly Gly Leu Pro Pro Gly Pro Glu Lys Gly Pro Thr Leu
            340                 345                 350

Ala Pro Ser Pro His Ser Leu Pro Pro Ala Ser Ser Ser Ala Pro Ala
        355                 360                 365

Pro Pro Met Arg Phe Pro Tyr Ser Ser Ser Ser Ser Ser Ser Ala Ala
    370                 375                 380
```

```
Ala Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ala Ser Pro Phe Pro
385                 390                 395                 400

Ala Ser Gln Ala Leu Pro Ser Tyr Pro His Ser Phe Pro Pro Pro Thr
                405                 410                 415

Ser Leu Ser Val Ser Asn Gln Pro Pro Lys Tyr Thr Gln Pro Ser Leu
            420                 425                 430

Pro Ser Gln Ala Val Trp Ser Gln Gly Pro Pro Pro Pro Pro Pro Tyr
        435                 440                 445

Gly Arg Leu Leu Ala Asn Ser Asn Ala His Pro Gly Pro Phe Pro Pro
    450                 455                 460

Ser Thr Gly Ala Gln Ser Thr Ala His Pro Pro Val Ser Thr His His
465                 470                 475                 480

His His His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
                485                 490                 495

Gln Gln Gln Gln Gln Gln His His Gly Asn Ser Gly Pro Pro Pro Pro
            500                 505                 510

Gly Ala Phe Pro His Pro Leu Glu Gly Gly Ser Ser His His Ala His
        515                 520                 525

Pro Tyr Ala Met Ser Pro Ser Leu Gly Ser Leu Arg Pro Tyr Pro Pro
    530                 535                 540

Gly Pro Ala His Leu Pro Pro Pro His Ser Gln Val Ser Tyr Ser Gln
545                 550                 555                 560

Ala Gly Pro Asn Gly Pro Pro Val Ser Ser Ser Ser Asn Ser Ser Ser
                565                 570                 575

Ser Thr Ser Gln Gly Ser Tyr Pro Cys Ser His Pro Ser Pro Ser Gln
            580                 585                 590

Gly Pro Gln Gly Ala Pro Tyr Pro Phe Pro Pro Val Pro Thr Val Thr
        595                 600                 605

Thr Ser Ser Ala Thr Leu Ser Thr Val Ile Ala Thr Val Ala Ser Ser
```

610 615 620

Pro Ala Gly Tyr Lys Thr Ala Ser Pro Pro Gly Pro Pro Pro Tyr Gly
625 630 635 640

Lys Arg Ala Pro Ser Pro Gly Ala Tyr Lys Thr Ala Thr Pro Pro Gly
645 650 655

Tyr Lys Pro Gly Ser Pro Pro Ser Phe Arg Thr Gly Thr Pro Pro Gly
660 665 670

Tyr Arg Gly Thr Ser Pro Pro Ala Gly Pro Gly Thr Phe Lys Pro Gly
675 680 685

Ser Pro Thr Val Gly Pro Gly Pro Leu Pro Pro Ala Gly Pro Ser Gly
690 695 700

Leu Pro Ser Leu Pro Pro Pro Pro Ala Ala Pro Ala Ser Gly Pro Pro
705 710 715 720

Leu Ser Ala Thr Gln Ile Lys Gln Glu Pro Ala Glu Glu Tyr Glu Thr
725 730 735

Pro Glu Ser Pro Val Pro Pro Ala Arg Ser Pro Ser Pro Pro Pro Lys
740 745 750

Val Val Asp Val Pro Ser His Ala Ser Gln Ser Ala Arg Phe Asn Lys
755 760 765

His Leu Asp Arg Gly Phe Asn Ser Cys Ala Arg Ser Asp Leu Tyr Phe
770 775 780

Val Pro Leu Glu Gly Ser Lys Leu Ala Lys Lys Arg Ala Asp Leu Val
785 790 795 800

Glu Lys Val Arg Arg Glu Ala Glu Gln Arg Ala Arg Glu Glu Lys Glu
805 810 815

Arg Glu Arg Glu Arg Glu Arg Glu Lys Glu Arg Glu Arg Glu Lys Glu
820 825 830

Arg Glu Leu Glu Arg Ser Val Lys Leu Ala Gln Glu Gly Arg Ala Pro
835 840 845

```
Val Glu Cys Pro Ser Leu Gly Pro Val Pro His Arg Pro Pro Phe Glu
    850                 855                 860

Pro Gly Ser Ala Val Ala Thr Val Pro Pro Tyr Leu Gly Pro Asp Thr
865                 870                 875                 880

Pro Ala Leu Arg Thr Leu Ser Glu Tyr Ala Arg Pro His Val Met Ser
                885                 890                 895

Pro Gly Asn Arg Asn His Pro Phe Tyr Val Pro Leu Gly Ala Val Asp
            900                 905                 910

Pro Gly Leu Leu Gly Tyr Asn Val Pro Ala Leu Tyr Ser Ser Asp Pro
        915                 920                 925

Ala Ala Arg Glu Arg Glu Arg Glu Ala Arg Glu Arg Asp Leu Arg Asp
    930                 935                 940

Arg Leu Lys Pro Gly Phe Glu Val Lys Pro Ser Glu Leu Glu Pro Leu
945                 950                 955                 960

His Gly Val Pro Gly Pro Gly Leu Asp Pro Phe Pro Arg His Gly Gly
                965                 970                 975

Leu Ala Leu Gln Pro Gly Pro Pro Gly Leu His Pro Phe Pro Phe His
            980                 985                 990

Pro Ser Leu Gly Pro Leu Glu Arg  Glu Arg Leu Ala Leu  Ala Ala
Gly
        995                 1000                1005

Pro Ala  Leu Arg Pro Asp Met  Ser Tyr Ala Glu Arg  Leu Ala Ala
    1010                1015                1020

Glu Arg  Gln His Ala Glu Arg  Val Ala Ala Leu Gly  Asn Asp Pro
    1025                1030                1035

Leu Ala  Arg Leu Gln Met Leu  Asn Val Thr Pro His  His His Gln
    1040                1045                1050

His Ser  His Ile His Ser His  Leu His Leu His Gln  Gln Asp Ala
    1055                1060                1065
```

```
Ile His  Ala Ala Ser Ala Ser  Val His Pro Leu Ile  Asp Pro Leu
    1070                1075                1080

Ala Ser  Gly Ser His Leu Thr  Arg Ile Pro Tyr Pro  Ala Gly Thr
    1085                1090                1095

Leu Pro  Asn Pro Leu Leu Pro  His Pro Leu His Glu  Asn Glu Val
    1100                1105                1110

Leu Arg  His Gln Leu Phe Ala  Ala Pro Tyr Arg Asp  Leu Pro Ala
    1115                1120                1125

Ser Leu  Ser Ala Pro Met Ser  Ala Ala His Gln Leu  Gln Ala Met
    1130                1135                1140

His Ala  Gln Ser Ala Glu Leu  Gln Arg Leu Ala Leu  Glu Gln Gln
    1145                1150                1155

Gln Trp  Leu His Ala His His  Pro Leu His Ser Val  Pro Leu Pro
    1160                1165                1170

Ala Gln  Glu Asp Tyr Tyr Ser  His Leu Lys Lys Glu  Ser Asp Lys
    1175                1180                1185

Pro Leu
    1190


<210> 7869
<211> 1429
<212> PRT
<213> Homo sapiens

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      attractin; "

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<220>
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Met Val Ala Ala Ala Ala Ala Thr Glu Ala Arg Leu Arg Arg Arg Thr
1   5   10   15

Ala Ala Thr Ala Ala Leu Ala Gly Arg Ser Gly Gly Pro His Trp Asp
            20   25   30

Trp Asp Val Thr Arg Ala Gly Arg Pro Gly Leu Gly Ala Gly Leu Arg
        35   40   45

Leu Pro Arg Leu Leu Ser Pro Pro Leu Arg Pro Arg Leu Leu Leu Leu
    50   55   60

Leu Leu Leu Leu Ser Pro Pro Leu Leu Leu Leu Leu Leu Pro Cys Glu
65   70   75   80

Ala Glu Ala Ala Ala Ala Ala Ala Ala Val Ser Gly Ser Ala Ala Ala
                85   90   95

Glu Ala Lys Glu Cys Asp Arg Pro Cys Val Asn Gly Gly Arg Cys Asn
            100   105   110

Pro Gly Thr Gly Gln Cys Val Cys Pro Ala Gly Trp Val Gly Glu Gln
        115   120   125

Cys Gln His Cys Gly Gly Arg Phe Arg Leu Thr Gly Ser Ser Gly Phe
    130   135   140

Val Thr Asp Gly Pro Gly Asn Tyr Lys Tyr Lys Thr Lys Cys Thr Trp
145   150   155   160

Leu Ile Glu Gly Gln Pro Asn Arg Ile Met Arg Leu Arg Phe Asn His
                165   170   175

Phe Ala Thr Glu Cys Ser Trp Asp His Leu Tyr Val Tyr Asp Gly Asp
            180   185   190

Ser Ile Tyr Ala Pro Leu Val Ala Ala Phe Ser Gly Leu Ile Val Pro

```
        195                 200                 205

Glu Arg Asp Gly Asn Glu Thr Val Pro Glu Val Val Ala Thr Ser Gly
    210                 215                 220

Tyr Ala Leu Leu His Phe Phe Ser Asp Ala Ala Tyr Asn Leu Thr Gly
225                 230                 235                 240

Phe Asn Ile Thr Tyr Ser Phe Asp Met Cys Pro Asn Asn Cys Ser Gly
                245                 250                 255

Arg Gly Glu Cys Lys Ile Ser Asn Ser Ser Asp Thr Val Glu Cys Glu
            260                 265                 270

Cys Ser Glu Asn Trp Lys Gly Glu Ala Cys Asp Ile Pro His Cys Thr
        275                 280                 285

Asp Asn Cys Gly Phe Pro His Arg Gly Ile Cys Asn Ser Ser Asp Val
    290                 295                 300

Arg Gly Cys Ser Cys Phe Ser Asp Trp Gln Gly Pro Gly Cys Ser Val
305                 310                 315                 320

Pro Val Pro Ala Asn Gln Ser Phe Trp Thr Arg Glu Glu Tyr Ser Asn
                325                 330                 335

Leu Lys Leu Pro Arg Ala Ser His Lys Ala Val Val Asn Gly Asn Ile
            340                 345                 350

Met Trp Val Val Gly Gly Tyr Met Phe Asn His Ser Asp Tyr Asn Met
        355                 360                 365

Val Leu Ala Tyr Asp Leu Ala Ser Arg Glu Trp Leu Pro Leu Asn Arg
    370                 375                 380

Ser Val Asn Asn Val Val Val Arg Tyr Gly His Ser Leu Ala Leu Tyr
385                 390                 395                 400

Lys Asp Lys Ile Tyr Met Tyr Gly Gly Lys Ile Asp Ser Thr Gly Asn
                405                 410                 415

Val Thr Asn Glu Leu Arg Val Phe His Ile His Asn Glu Ser Trp Val
            420                 425                 430
```

```
Leu Leu Thr Pro Lys Ala Lys Glu Gln Tyr Ala Val Val Gly His Ser
        435                 440                 445

Ala His Ile Val Thr Leu Lys Asn Gly Arg Val Val Met Leu Val Ile
    450                 455                 460

Phe Gly His Cys Pro Leu Tyr Gly Tyr Ile Ser Asn Val Gln Glu Tyr
465                 470                 475                 480

Asp Leu Asp Lys Asn Thr Trp Ser Ile Leu His Thr Gln Gly Ala Leu
                485                 490                 495

Val Gln Gly Gly Tyr Gly His Ser Ser Val Tyr Asp His Arg Thr Arg
            500                 505                 510

Ala Leu Tyr Val His Gly Gly Tyr Lys Ala Phe Ser Ala Asn Lys Tyr
        515                 520                 525

Arg Leu Ala Asp Asp Leu Tyr Arg Tyr Asp Val Asp Thr Gln Met Trp
    530                 535                 540

Thr Ile Leu Lys Asp Ser Arg Phe Phe Arg Tyr Leu His Thr Ala Val
545                 550                 555                 560

Ile Val Ser Gly Thr Met Leu Val Phe Gly Gly Asn Thr His Asn Asp
                565                 570                 575

Thr Ser Met Ser His Gly Ala Lys Cys Phe Ser Ser Asp Phe Met Ala
            580                 585                 590

Tyr Asp Ile Ala Cys Asp Arg Trp Ser Val Leu Pro Arg Pro Asp Leu
        595                 600                 605

His His Asp Val Asn Arg Phe Gly His Ser Ala Val Leu His Asn Ser
    610                 615                 620

Thr Met Tyr Val Phe Gly Gly Phe Asn Ser Leu Leu Leu Ser Asp Ile
625                 630                 635                 640

Leu Val Phe Thr Ser Glu Gln Cys Asp Ala His Arg Ser Glu Ala Ala
                645                 650                 655
```

```
Cys Leu Ala Ala Gly Pro Gly Ile Arg Cys Val Trp Asn Thr Gly Ser
            660                 665                 670

Ser Gln Cys Ile Ser Trp Ala Leu Ala Thr Asp Glu Gln Glu Glu Lys
        675                 680                 685

Leu Lys Ser Glu Cys Phe Ser Lys Arg Thr Leu Asp His Asp Arg Cys
    690                 695                 700

Asp Gln His Thr Asp Cys Tyr Ser Cys Thr Ala Asn Thr Asn Asp Cys
705                 710                 715                 720

His Trp Cys Asn Asp His Cys Val Pro Arg Asn His Ser Cys Ser Glu
                725                 730                 735

Gly Gln Ile Ser Ile Phe Arg Tyr Glu Asn Cys Pro Lys Asp Asn Pro
            740                 745                 750

Met Tyr Tyr Cys Asn Lys Lys Thr Ser Cys Arg Ser Cys Ala Leu Asp
        755                 760                 765

Gln Asn Cys Gln Trp Glu Pro Arg Asn Gln Glu Cys Ile Ala Leu Pro
    770                 775                 780

Glu Asn Ile Cys Gly Ile Gly Trp His Leu Val Gly Asn Ser Cys Leu
785                 790                 795                 800

Lys Ile Thr Thr Ala Lys Glu Asn Tyr Asp Asn Ala Lys Leu Phe Cys
                805                 810                 815

Arg Asn His Asn Ala Leu Leu Ala Ser Leu Thr Thr Gln Lys Lys Val
            820                 825                 830

Glu Phe Val Leu Lys Gln Leu Arg Ile Met Gln Ser Ser Gln Ser Met
        835                 840                 845

Ser Lys Leu Thr Leu Thr Pro Trp Val Gly Leu Arg Lys Ile Asn Val
    850                 855                 860

Ser Tyr Trp Cys Trp Glu Asp Met Ser Pro Phe Thr Asn Ser Leu Leu
865                 870                 875                 880
```

```
Gln Trp Met Pro Ser Glu Pro Ser Asp Ala Gly Phe Cys Gly Ile Leu
                885                 890                 895

Ser Glu Pro Ser Thr Arg Gly Leu Lys Ala Ala Thr Cys Ile Asn Pro
            900                 905                 910

Leu Asn Gly Ser Val Cys Glu Arg Pro Ala Asn His Ser Ala Lys Gln
        915                 920                 925

Cys Arg Thr Pro Cys Ala Leu Arg Thr Ala Cys Gly Asp Cys Thr Ser
    930                 935                 940

Gly Ser Ser Glu Cys Met Trp Cys Ser Asn Met Lys Gln Cys Val Asp
945                 950                 955                 960

Ser Asn Ala Tyr Val Ala Ser Phe Pro Phe Gly Gln Cys Met Glu Trp
                965                 970                 975

Tyr Thr Met Ser Thr Cys Pro Pro Glu Asn Cys Ser Gly Tyr Cys Thr
            980                 985                 990

Cys Ser His Cys Leu Glu Gln Pro  Gly Cys Gly Trp Cys  Thr Asp
Pro
        995                 1000                1005

Ser Asn  Thr Gly Lys Gly Lys  Cys Ile Glu Gly Ser  Tyr Lys Gly
    1010                1015                1020

Pro Val  Lys Met Pro Ser Gln  Ala Pro Thr Gly Asn  Phe Tyr Pro
    1025                1030                1035

Gln Pro  Leu Leu Asn Ser Ser  Met Cys Leu Glu Asp  Ser Arg Tyr
    1040                1045                1050

Asn Trp  Ser Phe Ile His Cys  Pro Ala Cys Gln Cys  Asn Gly His
    1055                1060                1065

Ser Lys  Cys Ile Asn Gln Ser  Ile Cys Glu Lys Cys  Glu Asn Leu
    1070                1075                1080

Thr Thr  Gly Lys His Cys Glu  Thr Cys Ile Ser Gly  Phe Tyr Gly
    1085                1090                1095
```

```
Asp Pro  Thr Asn Gly Gly Lys  Cys Gln Pro Cys Lys  Cys Asn Gly
    1100                 1105                 1110

His Ala  Ser Leu Cys Asn Thr  Asn Thr Gly Lys Cys  Phe Cys Thr
    1115                 1120                 1125

Thr Lys  Gly Val Lys Gly Asp  Glu Cys Gln Leu Cys  Glu Val Glu
    1130                 1135                 1140

Asn Arg  Tyr Gln Gly Asn Pro  Leu Arg Gly Thr Cys  Tyr Tyr Thr
    1145                 1150                 1155

Leu Leu  Ile Asp Tyr Gln Phe  Thr Phe Ser Leu Ser  Gln Glu Asp
    1160                 1165                 1170

Asp Arg  Tyr Tyr Thr Ala Ile  Asn Phe Val Ala Thr  Pro Asp Glu
    1175                 1180                 1185

Gln Asn  Arg Asp Leu Asp Met  Phe Ile Asn Ala Ser  Lys Asn Phe
    1190                 1195                 1200

Asn Leu  Asn Ile Thr Trp Ala  Ala Ser Phe Ser Ala  Gly Thr Gln
    1205                 1210                 1215

Ala Gly  Glu Glu Met Pro Val  Val Ser Lys Thr Asn  Ile Lys Glu
    1220                 1225                 1230

Tyr Lys  Asp Ser Phe Ser Asn  Glu Lys Phe Asp Phe  Arg Asn His
    1235                 1240                 1245

Pro Asn  Ile Thr Phe Phe Val  Tyr Val Ser Asn Phe  Thr Trp Pro
    1250                 1255                 1260

Ile Lys  Ile Gln Ile Ala Phe  Ser Gln His Ser Asn  Phe Met Asp
    1265                 1270                 1275

Leu Val  Gln Phe Phe Val Thr  Phe Phe Ser Cys Phe  Leu Ser Leu
    1280                 1285                 1290

Leu Leu  Val Ala Ala Val Val  Trp Lys Ile Lys Gln  Ser Cys Trp
    1295                 1300                 1305

Ala Ser  Arg Arg Arg Glu Gln  Leu Leu Arg Glu Met  Gln Gln Met
```

```
    1310                1315                1320

Ala Ser  Arg Pro Phe Ala Ser  Val Asn Val Ala Leu  Glu Thr Asp
    1325                1330                1335

Glu Glu  Pro Pro Asp Leu Ile  Gly Gly Ser Ile Lys  Thr Val Pro
    1340                1345                1350

Lys Pro  Ile Ala Leu Glu Pro  Cys Phe Gly Asn Lys  Ala Ala Val
    1355                1360                1365

Leu Ser  Val Phe Val Arg Leu  Pro Arg Gly Leu Gly  Gly Ile Pro
    1370                1375                1380

Pro Pro  Gly Gln Ser Gly Leu  Ala Val Ala Ser Ala  Leu Val Asp
    1385                1390                1395

Ile Ser  Gln Gln Met Pro Ile  Val Tyr Lys Glu Lys  Ser Gly Ala
    1400                1405                1410

Val Arg  Asn Arg Lys Gln Gln  Pro Pro Ala Gln Pro  Gly Thr Cys
    1415                1420                1425

Ile
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<212> PRT
<213> Homo sapiens

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<220>
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<400> 7870
Met Val Ala Ala Ala Ala Ala Thr Glu Ala Arg Leu Arg Arg Arg Thr
1   5   10   15

Ala Ala Thr Ala Ala Leu Ala Gly Arg Ser Gly Gly Pro His Trp Asp
            20   25   30

Trp Asp Val Thr Arg Ala Gly Arg Pro Gly Leu Gly Ala Gly Leu Arg
        35   40   45

Leu Pro Arg Leu Leu Ser Pro Pro Leu Arg Pro Arg Leu Leu Leu Leu
    50   55   60

Leu Leu Leu Leu Ser Pro Pro Leu Leu Leu Leu Leu Leu Pro Cys Glu
65   70   75   80

Ala Glu Ala Ala Ala Ala Ala Ala Ala Val Ser Gly Ser Ala Ala Ala
                85   90   95

Glu Ala Lys Glu Cys Asp Arg Pro Cys Val Asn Gly Gly Arg Cys Asn
            100   105   110

Pro Gly Thr Gly Gln Cys Val Cys Pro Ala Gly Trp Val Gly Glu Gln
        115   120   125

Cys Gln His Cys Gly Gly Arg Phe Arg Leu Thr Gly Ser Ser Gly Phe
    130   135   140

Val Thr Asp Gly Pro Gly Asn Tyr Lys Tyr Lys Thr Lys Cys Thr Trp
145   150   155   160

Leu Ile Glu Gly Gln Pro Asn Arg Ile Met Arg Leu Arg Phe Asn His
                165   170   175

Phe Ala Thr Glu Cys Ser Trp Asp His Leu Tyr Val Tyr Asp Gly Asp
            180   185   190

Ser Ile Tyr Ala Pro Leu Val Ala Ala Phe Ser Gly Leu Ile Val Pro
        195   200   205

```
Glu Arg Asp Gly Asn Glu Thr Val Pro Glu Val Val Ala Thr Ser Gly
    210                 215                 220

Tyr Ala Leu Leu His Phe Phe Ser Asp Ala Ala Tyr Asn Leu Thr Gly
225                 230                 235                 240

Phe Asn Ile Thr Tyr Ser Phe Asp Met Cys Pro Asn Asn Cys Ser Gly
                245                 250                 255

Arg Gly Glu Cys Lys Ile Ser Asn Ser Ser Asp Thr Val Glu Cys Glu
            260                 265                 270

Cys Ser Glu Asn Trp Lys Gly Glu Ala Cys Asp Ile Pro His Cys Thr
        275                 280                 285

Asp Asn Cys Gly Phe Pro His Arg Gly Ile Cys Asn Ser Ser Asp Val
    290                 295                 300

Arg Gly Cys Ser Cys Phe Ser Asp Trp Gln Gly Pro Gly Cys Ser Val
305                 310                 315                 320

Pro Val Pro Ala Asn Gln Ser Phe Trp Thr Arg Glu Glu Tyr Ser Asn
                325                 330                 335

Leu Lys Leu Pro Arg Ala Ser His Lys Ala Val Val Asn Gly Asn Ile
            340                 345                 350

Met Trp Val Val Gly Gly Tyr Met Phe Asn His Ser Asp Tyr Asn Met
        355                 360                 365

Val Leu Ala Tyr Asp Leu Ala Ser Arg Glu Trp Leu Pro Leu Asn Arg
    370                 375                 380

Ser Val Asn Asn Val Val Val Arg Tyr Gly His Ser Leu Ala Leu Tyr
385                 390                 395                 400

Lys Asp Lys Ile Tyr Met Tyr Gly Gly Lys Ile Asp Ser Thr Gly Asn
                405                 410                 415

Val Thr Asn Glu Leu Arg Val Phe His Ile His Asn Glu Ser Trp Val
            420                 425                 430

Leu Leu Thr Pro Lys Ala Lys Glu Gln Tyr Ala Val Val Gly His Ser
```

```
        435                 440                 445

Ala His Ile Val Thr Leu Lys Asn Gly Arg Val Val Met Leu Val Ile
    450                 455                 460

Phe Gly His Cys Pro Leu Tyr Gly Tyr Ile Ser Asn Val Gln Glu Tyr
465                 470                 475                 480

Asp Leu Asp Lys Asn Thr Trp Ser Ile Leu His Thr Gln Gly Ala Leu
                485                 490                 495

Val Gln Gly Gly Tyr Gly His Ser Ser Val Tyr Asp His Arg Thr Arg
            500                 505                 510

Ala Leu Tyr Val His Gly Gly Tyr Lys Ala Phe Ser Ala Asn Lys Tyr
        515                 520                 525

Arg Leu Ala Asp Asp Leu Tyr Arg Tyr Asp Val Asp Thr Gln Met Trp
    530                 535                 540

Thr Ile Leu Lys Asp Ser Arg Phe Phe Arg Tyr Leu His Thr Ala Val
545                 550                 555                 560

Ile Val Ser Gly Thr Met Leu Val Phe Gly Gly Asn Thr His Asn Asp
                565                 570                 575

Thr Ser Met Ser His Gly Ala Lys Cys Phe Ser Ser Asp Phe Met Ala
            580                 585                 590

Tyr Asp Ile Ala Cys Asp Arg Trp Ser Val Leu Pro Arg Pro Asp Leu
        595                 600                 605

His His Asp Val Asn Arg Phe Gly His Ser Ala Val Leu His Asn Ser
    610                 615                 620

Thr Met Tyr Val Phe Gly Gly Phe Asn Ser Leu Leu Leu Ser Asp Ile
625                 630                 635                 640

Leu Val Phe Thr Ser Glu Gln Cys Asp Ala His Arg Ser Glu Ala Ala
                645                 650                 655

Cys Leu Ala Ala Gly Pro Gly Ile Arg Cys Val Trp Asn Thr Gly Ser
            660                 665                 670
```

```
Ser Gln Cys Ile Ser Trp Ala Leu Ala Thr Asp Glu Gln Glu Glu Lys
        675                 680                 685

Leu Lys Ser Glu Cys Phe Ser Lys Arg Thr Leu Asp His Asp Arg Cys
    690                 695                 700

Asp Gln His Thr Asp Cys Tyr Ser Cys Thr Ala Asn Thr Asn Asp Cys
705                 710                 715                 720

His Trp Cys Asn Asp His Cys Val Pro Arg Asn His Ser Cys Ser Glu
                725                 730                 735

Gly Gln Ile Ser Ile Phe Arg Tyr Glu Asn Cys Pro Lys Asp Asn Pro
            740                 745                 750

Met Tyr Tyr Cys Asn Lys Lys Thr Ser Cys Arg Ser Cys Ala Leu Asp
        755                 760                 765

Gln Asn Cys Gln Trp Glu Pro Arg Asn Gln Glu Cys Ile Ala Leu Pro
    770                 775                 780

Glu Asn Ile Cys Gly Ile Gly Trp His Leu Val Gly Asn Ser Cys Leu
785                 790                 795                 800

Lys Ile Thr Thr Ala Lys Glu Asn Tyr Asp Asn Ala Lys Leu Phe Cys
                805                 810                 815

Arg Asn His Asn Ala Leu Leu Ala Ser Leu Thr Thr Gln Lys Lys Val
            820                 825                 830

Glu Phe Val Leu Lys Gln Leu Arg Ile Met Gln Ser Ser Gln Ser Met
        835                 840                 845

Ser Lys Leu Thr Leu Thr Pro Trp Val Gly Leu Arg Lys Ile Asn Val
    850                 855                 860

Ser Tyr Trp Cys Trp Glu Asp Met Ser Pro Phe Thr Asn Ser Leu Leu
865                 870                 875                 880

Gln Trp Met Pro Ser Glu Pro Ser Asp Ala Gly Phe Cys Gly Ile Leu
                885                 890                 895
```

```
Ser Glu Pro Ser Thr Arg Gly Leu Lys Ala Ala Thr Cys Ile Asn Pro
            900                 905                 910

Leu Asn Gly Ser Val Cys Glu Arg Pro Ala Asn His Ser Ala Lys Gln
        915                 920                 925

Cys Arg Thr Pro Cys Ala Leu Arg Thr Ala Cys Gly Asp Cys Thr Ser
    930                 935                 940

Gly Ser Ser Glu Cys Met Trp Cys Ser Asn Met Lys Gln Cys Val Asp
945                 950                 955                 960

Ser Asn Ala Tyr Val Ala Ser Phe Pro Phe Gly Gln Cys Met Glu Trp
                965                 970                 975

Tyr Thr Met Ser Thr Cys Pro Pro Glu Asn Cys Ser Gly Tyr Cys Thr
            980                 985                 990

Cys Ser His Cys Leu Glu Gln Pro  Gly Cys Gly Trp Cys  Thr Asp
Pro
        995                 1000                1005

Ser Asn  Thr Gly Lys Gly Lys  Cys Ile Glu Gly Ser  Tyr Lys Gly
    1010                1015                1020

Pro Val  Lys Met Pro Ser Gln  Ala Pro Thr Gly Asn  Phe Tyr Pro
    1025                1030                1035

Gln Pro  Leu Leu Asn Ser Ser  Met Cys Leu Glu Asp  Ser Arg Tyr
    1040                1045                1050

Asn Trp  Ser Phe Ile His Cys  Pro Ala Cys Gln Cys  Asn Gly His
    1055                1060                1065

Ser Lys  Cys Ile Asn Gln Ser  Ile Cys Glu Lys Cys  Glu Asn Leu
    1070                1075                1080

Thr Thr  Gly Lys His Cys Glu  Thr Cys Ile Ser Gly  Phe Tyr Gly
    1085                1090                1095

Asp Pro  Thr Asn Gly Gly Lys  Cys Gln Pro Cys Lys  Cys Asn Gly
    1100                1105                1110
```

```
His Ala  Ser Leu Cys Asn Thr  Asn Thr Gly Lys Cys  Phe Cys Thr
    1115                1120                1125

Thr Lys  Gly Val Lys Gly Asp  Glu Cys Gln Leu Cys  Glu Val Glu
    1130                1135                1140

Asn Arg  Tyr Gln Gly Asn Pro  Leu Arg Gly Thr Cys  Tyr Tyr Thr
    1145                1150                1155

Leu Leu  Ile Asp Tyr Gln Phe  Thr Phe Ser Leu Ser  Gln Glu Asp
    1160                1165                1170

Asp Arg  Tyr Tyr Thr Ala Ile  Asn Phe Val Ala Thr  Pro Asp Glu
    1175                1180                1185

Gln Asn  Arg Asp Leu Asp Met  Phe Ile Asn Ala Ser  Lys Asn Phe
    1190                1195                1200

Asn Leu  Asn Ile Thr Trp Ala  Ala Ser Phe Ser Ala  Gly Thr Gln
    1205                1210                1215

Ala Gly  Glu Glu Met Pro Val  Val Ser Lys Thr Asn  Ile Lys Glu
    1220                1225                1230

Tyr Lys  Asp Ser Phe Ser Asn  Glu Lys Phe Asp Phe  Arg Asn His
    1235                1240                1245

Pro Asn  Ile Thr Phe Phe Val  Tyr Val Ser Asn Phe  Thr Trp Pro
    1250                1255                1260

Ile Lys  Ile Gln Val Gln Thr  Glu Gln
    1265                1270
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<210> 7871
<211> 1379
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1648; "

<220>
<221> source
<223> /note="Gene Symbol: ATRNL1; "

<220>
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<223> /note="Gene Name:
attractin-like 1; "

<220>
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<223> /note="Uniprot ID: Q5VV63; "

<220>
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<223> /note="ENSP ID: ENSP00000347152"

<400> 7871

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Met Glu Thr Gly Gly Arg Ala Arg Thr Gly Thr Pro Gln Pro Ala Ala
1               5                   10                  15


Pro Gly Val Trp Arg Ala Arg Pro Ala Gly Gly Gly Gly Gly Gly Ala
            20                  25                  30


Ser Ser Trp Leu Leu Asp Gly Asn Ser Trp Leu Leu Cys Tyr Gly Phe
        35                  40                  45


Leu Tyr Leu Ala Leu Tyr Ala Gln Val Ser Gln Ser Lys Pro Cys Glu
    50                  55                  60


Arg Thr Gly Ser Cys Phe Ser Gly Arg Cys Val Asn Ser Thr Cys Leu
65                  70                  75                  80


Cys Asp Pro Gly Trp Val Gly Asp Gln Cys Gln His Cys Gln Gly Arg
                85                  90                  95


Phe Lys Leu Thr Glu Pro Ser Gly Tyr Leu Thr Asp Gly Pro Ile Asn
            100                 105                 110


Tyr Lys Tyr Lys Thr Lys Cys Thr Trp Leu Ile Glu Gly Tyr Pro Asn
        115                 120                 125


Ala Val Leu Arg Leu Arg Phe Asn His Phe Ala Thr Glu Cys Ser Trp
    130                 135                 140


Asp His Met Tyr Val Tyr Asp Gly Asp Ser Ile Tyr Ala Pro Leu Ile
145                 150                 155                 160


Ala Val Leu Ser Gly Leu Ile Val Pro Glu Ile Arg Gly Asn Glu Thr
                165                 170                 175
```

```
Val Pro Glu Val Val Thr Thr Ser Gly Tyr Ala Leu Leu His Phe Phe
            180                 185                 190

Ser Asp Ala Ala Tyr Asn Leu Thr Gly Phe Asn Ile Phe Tyr Ser Ile
        195                 200                 205

Asn Ser Cys Pro Asn Asn Cys Ser Gly His Gly Lys Cys Thr Thr Ser
    210                 215                 220

Val Ser Val Pro Ser Gln Val Tyr Cys Glu Cys Asp Lys Tyr Trp Lys
225                 230                 235                 240

Gly Glu Ala Cys Asp Ile Pro Tyr Cys Lys Ala Asn Cys Gly Ser Pro
                245                 250                 255

Asp His Gly Tyr Cys Asp Leu Thr Gly Glu Lys Leu Cys Val Cys Asn
            260                 265                 270

Asp Ser Trp Gln Gly Pro Asp Cys Ser Leu Asn Val Pro Ser Thr Glu
        275                 280                 285

Ser Tyr Trp Ile Leu Pro Asn Val Lys Pro Phe Ser Pro Ser Val Gly
    290                 295                 300

Arg Ala Ser His Lys Ala Val Leu His Gly Lys Phe Met Trp Val Ile
305                 310                 315                 320

Gly Gly Tyr Thr Phe Asn Tyr Ser Ser Phe Gln Met Val Leu Asn Tyr
                325                 330                 335

Asn Leu Glu Ser Ser Ile Trp Asn Val Gly Thr Pro Ser Arg Gly Pro
            340                 345                 350

Leu Gln Arg Tyr Gly His Ser Leu Ala Leu Tyr Gln Glu Asn Ile Phe
        355                 360                 365

Met Tyr Gly Gly Arg Ile Glu Thr Asn Asp Gly Asn Val Thr Asp Glu
    370                 375                 380

Leu Trp Val Phe Asn Ile His Ser Gln Ser Trp Ser Thr Lys Thr Pro
385                 390                 395                 400
```

Thr Val Leu Gly His Gly Gln Gln Tyr Ala Val Glu Gly His Ser Ala
405 410 415

His Ile Met Glu Leu Asp Ser Arg Asp Val Val Met Ile Ile Ile Phe
420 425 430

Gly Tyr Ser Ala Ile Tyr Gly Tyr Thr Ser Ser Ile Gln Glu Tyr His
435 440 445

Ile Ser Ser Asn Thr Trp Leu Val Pro Glu Thr Lys Gly Ala Ile Val
450 455 460

Gln Gly Gly Tyr Gly His Thr Ser Val Tyr Asp Glu Ile Thr Lys Ser
465 470 475 480

Ile Tyr Val His Gly Gly Tyr Lys Ala Leu Pro Gly Asn Lys Tyr Gly
485 490 495

Leu Val Asp Asp Leu Tyr Lys Tyr Glu Val Asn Thr Lys Thr Trp Thr
500 505 510

Ile Leu Lys Glu Ser Gly Phe Ala Arg Tyr Leu His Ser Ala Val Leu
515 520 525

Ile Asn Gly Ala Met Leu Ile Phe Gly Gly Asn Thr His Asn Asp Thr
530 535 540

Ser Leu Ser Asn Gly Ala Lys Cys Phe Ser Ala Asp Phe Leu Ala Tyr
545 550 555 560

Asp Ile Ala Cys Asp Glu Trp Lys Ile Leu Pro Lys Pro Asn Leu His
565 570 575

Arg Asp Val Asn Arg Phe Gly His Ser Ala Val Val Ile Asn Gly Ser
580 585 590

Met Tyr Ile Phe Gly Gly Phe Ser Ser Val Leu Leu Asn Asp Ile Leu
595 600 605

Val Tyr Lys Pro Pro Asn Cys Lys Ala Phe Arg Asp Glu Glu Leu Cys
610 615 620

```
Lys Asn Ala Gly Pro Gly Ile Lys Cys Val Trp Asn Lys Asn His Cys
625                 630                 635                 640

Glu Ser Trp Glu Ser Gly Asn Thr Asn Asn Ile Leu Arg Ala Lys Cys
                645                 650                 655

Pro Pro Lys Thr Ala Ala Ser Asp Asp Arg Cys Tyr Arg Tyr Ala Asp
            660                 665                 670

Cys Ala Ser Cys Thr Ala Asn Thr Asn Gly Cys Gln Trp Cys Asp Asp
        675                 680                 685

Lys Lys Cys Ile Ser Ala Asn Ser Asn Cys Ser Met Ser Val Lys Asn
    690                 695                 700

Tyr Thr Lys Cys His Val Arg Asn Glu Gln Ile Cys Asn Lys Leu Thr
705                 710                 715                 720

Ser Cys Lys Ser Cys Ser Leu Asn Leu Asn Cys Gln Trp Asp Gln Arg
                725                 730                 735

Gln Gln Glu Cys Gln Ala Leu Pro Ala His Leu Cys Gly Glu Gly Trp
            740                 745                 750

Ser His Ile Gly Asp Ala Cys Leu Arg Val Asn Ser Ser Arg Glu Asn
        755                 760                 765

Tyr Asp Asn Ala Lys Leu Tyr Cys Tyr Asn Leu Ser Gly Asn Leu Ala
    770                 775                 780

Ser Leu Thr Thr Ser Lys Glu Val Glu Phe Val Leu Asp Glu Ile Gln
785                 790                 795                 800

Lys Tyr Thr Gln Gln Lys Val Ser Pro Trp Val Gly Leu Arg Lys Ile
                805                 810                 815

Asn Ile Ser Tyr Trp Gly Trp Glu Asp Met Ser Pro Phe Thr Asn Thr
            820                 825                 830

Thr Leu Gln Trp Leu Pro Gly Glu Pro Asn Asp Ser Gly Phe Cys Ala
        835                 840                 845

Tyr Leu Glu Arg Ala Ala Val Ala Gly Leu Lys Ala Asn Pro Cys Thr
```

```
    850                 855                 860

Ser Met Ala Asn Gly Leu Val Cys Glu Lys Pro Val Val Ser Pro Asn
865                 870                 875                 880

Gln Asn Ala Arg Pro Cys Lys Lys Pro Cys Ser Leu Arg Thr Ser Cys
                885                 890                 895

Ser Asn Cys Thr Ser Asn Gly Met Glu Cys Met Trp Cys Ser Ser Thr
            900                 905                 910

Lys Arg Cys Val Asp Ser Asn Ala Tyr Ile Ile Ser Phe Pro Tyr Gly
        915                 920                 925

Gln Cys Leu Glu Trp Gln Thr Ala Thr Cys Ser Pro Gln Asn Cys Ser
    930                 935                 940

Gly Leu Arg Thr Cys Gly Gln Cys Leu Glu Gln Pro Gly Cys Gly Trp
945                 950                 955                 960

Cys Asn Asp Pro Ser Asn Thr Gly Arg Gly His Cys Ile Glu Gly Ser
                965                 970                 975

Ser Arg Gly Pro Met Lys Leu Ile Gly Met His His Ser Glu Met Val
            980                 985                 990

Leu Asp Thr Asn Leu Cys Pro Lys  Glu Lys Asn Tyr Glu  Trp Ser
Phe
        995                 1000                1005

Ile Gln  Cys Pro Ala Cys Gln  Cys Asn Gly His Ser  Thr Cys Ile
    1010                1015                1020

Asn Asn  Asn Val Cys Glu Gln  Cys Lys Asn Leu Thr  Thr Gly Lys
    1025                1030                1035

Gln Cys  Gln Asp Cys Met Pro  Gly Tyr Tyr Gly Asp  Pro Thr Asn
    1040                1045                1050

Gly Gly  Gln Cys Thr Ala Cys  Thr Cys Ser Gly His  Ala Asn Ile
    1055                1060                1065

Cys His  Leu His Thr Gly Lys  Cys Phe Cys Thr Thr  Lys Gly Ile
```

1070 1075 1080

Lys Gly Asp Gln Cys Gln Leu Cys Asp Ser Glu Asn Arg Tyr Val
1085 1090 1095

Gly Asn Pro Leu Arg Gly Thr Cys Tyr Tyr Ser Leu Leu Ile Asp
1100 1105 1110

Tyr Gln Phe Thr Phe Ser Leu Leu Gln Glu Asp Asp Arg His His
1115 1120 1125

Thr Ala Ile Asn Phe Ile Ala Asn Pro Glu Gln Ser Asn Lys Asn
1130 1135 1140

Leu Asp Ile Ser Ile Asn Ala Ser Asn Asn Phe Asn Leu Asn Ile
1145 1150 1155

Thr Trp Ser Val Gly Ser Thr Ala Gly Thr Ile Ser Gly Glu Glu
1160 1165 1170

Thr Ser Ile Val Ser Lys Asn Asn Ile Lys Glu Tyr Arg Asp Ser
1175 1180 1185

Phe Ser Tyr Glu Lys Phe Asn Phe Arg Ser Asn Pro Asn Ile Thr
1190 1195 1200

Phe Tyr Val Tyr Val Ser Asn Phe Ser Trp Pro Ile Lys Ile Gln
1205 1210 1215

Ile Ala Phe Ser Gln His Asn Thr Ile Met Asp Leu Val Gln Phe
1220 1225 1230

Phe Val Thr Phe Phe Ser Cys Phe Leu Ser Leu Leu Leu Val Ala
1235 1240 1245

Ala Val Val Trp Lys Ile Lys Gln Thr Cys Trp Ala Ser Arg Arg
1250 1255 1260

Arg Glu Gln Leu Leu Arg Glu Arg Gln Gln Met Ala Ser Arg Pro
1265 1270 1275

Phe Ala Ser Val Asp Val Ala Leu Glu Val Gly Ala Glu Gln Thr
1280 1285 1290

```
Glu Phe  Leu Arg Gly Pro Leu  Glu Gly Ala Pro Lys  Pro Ile Ala
    1295                1300                1305

Ile Glu  Pro Cys Ala Gly Asn  Arg Ala Ala Val Leu  Thr Val Phe
    1310                1315                1320

Leu Cys  Leu Pro Arg Gly Ser  Ser Gly Ala Pro Pro  Pro Gly Gln
    1325                1330                1335

Ser Gly  Leu Ala Ile Ala Ser  Ala Leu Ile Asp Ile  Ser Gln Gln
    1340                1345                1350

Lys Ala  Ser Asp Ser Lys Asp  Lys Thr Ser Gly Val  Arg Asn Arg
    1355                1360                1365

Lys His  Leu Ser Thr Arg Gln  Gly Thr Cys Val
    1370                1375
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<210> 7872
<211> 252
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATRNL1; "

<220>
<221> source
<223> /note="Gene Name:
attractin-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431423"

<400> 7872

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Met Pro Glu Cys Asp Trp Arg Gln Pro Ser Gly Gly Asp Gly Gly Trp
1               5                  10                  15

Asp Leu Ser Leu Leu Thr Gly Glu Arg Asp Ser Asp Gly Arg Arg Leu
            20                  25                  30
```

```
Thr Glu Pro Ser Gly Tyr Leu Thr Asp Gly Pro Ile Asn Tyr Lys Tyr
        35                  40                  45

Lys Thr Lys Cys Thr Trp Leu Ile Glu Gly Tyr Pro Asn Ala Val Leu
    50                  55                  60

Arg Leu Arg Phe Asn His Phe Ala Thr Glu Cys Ser Trp Asp His Met
65                  70                  75                  80

Tyr Val Tyr Asp Gly Asp Ser Ile Tyr Ala Pro Leu Ile Ala Val Leu
                85                  90                  95

Ser Gly Leu Ile Val Pro Glu Ile Arg Gly Asn Glu Thr Val Pro Glu
            100                 105                 110

Val Val Thr Thr Ser Gly Tyr Ala Leu Leu His Phe Phe Ser Asp Ala
        115                 120                 125

Ala Tyr Asn Leu Thr Gly Phe Asn Ile Phe Tyr Ser Ile Asn Ser Cys
    130                 135                 140

Pro Asn Asn Cys Ser Gly His Gly Lys Cys Thr Thr Ser Val Ser Val
145                 150                 155                 160

Pro Ser Gln Val Tyr Cys Glu Cys Asp Lys Tyr Trp Lys Gly Glu Ala
                165                 170                 175

Cys Asp Ile Pro Tyr Cys Lys Ala Asn Cys Gly Ser Pro Asp His Gly
            180                 185                 190

Tyr Cys Asp Leu Thr Gly Glu Lys Leu Cys Val Cys Asn Asp Ser Trp
        195                 200                 205

Gln Gly Pro Asp Cys Ser Leu Asn Val Pro Ser Thr Glu Ser Tyr Trp
    210                 215                 220

Ile Leu Pro Asn Val Lys Pro Phe Ser Pro Ser Val Gly Arg Ala Ser
225                 230                 235                 240

His Lys Ala Val Leu His Gly Lys Phe Met Trp Val
                245                 250
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<210> 7873

<211> 216
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000434118"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7873
Xaa Cys Glu Lys Pro Val Val Ser Pro Asn Gln Asn Ala Arg Pro Cys
1 5 10 15

Lys Lys Pro Cys Ser Leu Arg Thr Ser Cys Ser Asn Cys Thr Ser Asn
20 25 30

Gly Met Glu Cys Met Trp Cys Ser Ser Thr Lys Arg Cys Val Asp Ser
35 40 45

Asn Ala Tyr Ile Ile Ser Phe Pro Tyr Gly Gln Cys Leu Glu Trp Gln
50 55 60

Thr Ala Thr Cys Ser Pro Gln Asn Cys Ser Gly Leu Arg Thr Cys Gly
65 70 75 80

Gln Cys Leu Glu Gln Pro Gly Cys Gly Trp Cys Asn Asp Pro Ser Asn
85 90 95

Thr Gly Arg Gly His Cys Ile Glu Gly Ser Ser Arg Gly Pro Met Lys
100 105 110

Leu Ile Gly Met His His Ser Glu Met Val Leu Asp Thr Asn Leu Cys

115 120 125

Pro Lys Glu Lys Asn Tyr Glu Trp Ser Phe Ile Gln Cys Pro Ala Cys
130 135 140

Thr Cys Ser Gly His Ala Asn Ile Cys His Leu His Thr Gly Lys Cys
145 150 155 160

Phe Cys Thr Thr Lys Gly Ile Lys Gly Asp Gln Cys Gln Leu Cys Asp
165 170 175

Ser Glu Asn Arg Tyr Val Gly Asn Pro Leu Arg Gly Thr Cys Tyr Tyr
180 185 190

Ser Leu Leu Ile Asp Tyr Gln Phe Thr Phe Ser Leu Leu Gln Glu Asp
195 200 205

Asp Arg His His Thr Ala Ile Asn
210 215

<210> 7874
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1648; "

<220>
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<220>
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<223> /note="Gene Name:
attractin-like 1; "

<220>
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<223> /note="ENSP ID: ENSP00000473412"

<400> 7874
Met Glu Thr Gly Gly Arg Ala Arg Thr Gly Thr Pro Gln Pro Ala Ala
1 5 10 15

Pro Gly Val Trp Arg Ala Arg Pro Ala Gly Gly Gly Gly Gly Gly Ala
20 25 30

```
Ser Ser Trp Leu Leu Asp Gly Asn Ser Trp Leu Leu Cys Tyr Gly Phe
        35                  40                  45

Leu Tyr Leu Ala Leu Tyr Ala Gln Val Ser Gln Ser Lys Pro Cys Glu
    50                  55                  60

Arg Thr Gly Ser Cys Phe Ser Gly Arg Cys Val Asn Ser Thr Cys Leu
65                  70                  75                  80

Cys Asp Pro Gly Trp Val Gly Asp Gln Cys Gln His Cys Gln Gly Arg
                85                  90                  95

Phe Lys Leu Thr Glu Pro Ser Gly Tyr Leu Thr Asp Gly Pro Ile Asn
            100                 105                 110

Tyr Lys Tyr Lys Thr Lys Cys Thr Trp Leu Ile Glu Gly Tyr Pro Asn
        115                 120                 125

Ala Val Leu Arg Leu Arg Phe Asn His Phe Ala Thr Glu Cys Ser Trp
    130                 135                 140

Asp His Met Tyr Val Tyr Asp Gly Asp Ser Ile Tyr Ala Pro Leu Ile
145                 150                 155                 160

Ala Val Leu Ser Gly Leu Ile Val Pro Glu Ile Arg Gly Asn Glu Thr
                165                 170                 175

Val Pro Glu Val Val Thr Thr Ser Gly Tyr Ala Leu Leu His Phe Phe
            180                 185                 190

Ser Asp Ala Ala Tyr Asn Leu Thr Gly Phe Asn Ile Phe Tyr Ser Ile
        195                 200                 205

Asn Ser Cys Pro Asn Asn Cys Ser Gly His Gly Lys Cys Thr Thr Ser
    210                 215                 220

Val Ser Val Pro Ser Gln Val Tyr Cys Glu Cys Asp Lys Tyr Trp Lys
225                 230                 235                 240

Gly Glu Ala Cys Asp Ile Pro Tyr Cys Lys Ala Asn Cys Gly Ser Pro
                245                 250                 255
```

```
Asp His Gly Tyr Cys Asp Leu Thr Gly Glu Lys Leu Cys Val Cys Asn
            260                 265                 270

Asp Ser Trp Gln Gly Pro Asp Cys Ser Leu Asn Val Pro Ser Thr Glu
        275                 280                 285

Ser Tyr Trp Ile Leu Pro Asn Val Lys Pro Phe Ser Pro Ser Val Gly
    290                 295                 300

Arg Ala Ser His Lys Ala Val Leu His Gly Lys Phe Met Trp Val Ile
305                 310                 315                 320

Gly Gly Tyr Thr Phe Asn Tyr Ser Ser Phe Gln Met Val Leu Lys Lys
                325                 330                 335

Thr Ser Leu Cys Met Glu Ala Glu Leu Lys Gln Met Met Ala Met Ser
            340                 345                 350

Gln Met Asn Tyr Gly Phe Leu Thr Tyr Ile Val Ser His Gly Val Gln
        355                 360                 365

Lys Leu Leu Leu Phe Leu Asp Met Val Ser Ser Met Leu Trp Arg Asp
    370                 375                 380

Ile Gln His Ile Leu Trp Ser Trp Ile Val Glu Met Leu Ser
385                 390                 395


<210> 7875
<211> 467
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q5VV63; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000476902"

<400> 7875
Met Glu Thr Gly Gly Arg Ala Arg Thr Gly Thr Pro Gln Pro Ala Ala
1   5   10   15

Pro Gly Val Trp Arg Ala Arg Pro Ala Gly Gly Gly Gly Gly Gly Ala
            20   25   30

Ser Ser Trp Leu Leu Asp Gly Asn Ser Trp Leu Leu Cys Tyr Gly Phe
        35   40   45

Leu Tyr Leu Ala Leu Tyr Ala Gln Val Ser Gln Ser Lys Pro Cys Glu
    50   55   60

Arg Thr Gly Ser Cys Phe Ser Gly Arg Cys Val Asn Ser Thr Cys Leu
65   70   75   80

Cys Asp Pro Gly Trp Val Gly Asp Gln Cys Gln His Cys Gln Gly Arg
                85   90   95

Phe Lys Leu Thr Glu Pro Ser Gly Tyr Leu Thr Asp Gly Pro Ile Asn
            100   105   110

Tyr Lys Tyr Lys Thr Lys Cys Thr Trp Leu Ile Glu Gly Tyr Pro Asn
        115   120   125

Ala Val Leu Arg Leu Arg Phe Asn His Phe Ala Thr Glu Cys Ser Trp
    130   135   140

Asp His Met Tyr Val Tyr Asp Gly Asp Ser Ile Tyr Ala Pro Leu Ile
145   150   155   160

Ala Val Leu Ser Gly Leu Ile Val Pro Glu Ile Arg Gly Asn Glu Thr
                165   170   175

Val Pro Glu Val Val Thr Thr Ser Gly Tyr Ala Leu Leu His Phe Phe
            180   185   190

Ser Asp Ala Ala Tyr Asn Leu Thr Gly Phe Asn Ile Phe Tyr Ser Ile
        195   200   205

```
Asn Ser Cys Pro Asn Asn Cys Ser Gly His Gly Lys Cys Thr Thr Ser
    210                 215                 220

Val Ser Val Pro Ser Gln Val Tyr Cys Glu Cys Asp Lys Tyr Trp Lys
225                 230                 235                 240

Gly Glu Ala Cys Asp Ile Pro Tyr Cys Lys Ala Asn Cys Gly Ser Pro
                245                 250                 255

Asp His Gly Tyr Cys Asp Leu Thr Gly Glu Lys Leu Cys Val Cys Asn
            260                 265                 270

Asp Ser Trp Gln Gly Pro Asp Cys Ser Leu Asn Val Pro Ser Thr Glu
        275                 280                 285

Ser Tyr Trp Ile Leu Pro Asn Val Lys Pro Phe Ser Pro Ser Val Gly
    290                 295                 300

Arg Ala Ser His Lys Ala Val Leu His Gly Lys Phe Met Trp Val Ile
305                 310                 315                 320

Gly Gly Tyr Thr Phe Asn Tyr Ser Ser Phe Gln Met Val Leu Asn Tyr
                325                 330                 335

Asn Leu Glu Ser Ser Ile Trp Asn Val Gly Thr Pro Ser Arg Gly Pro
            340                 345                 350

Leu Gln Arg Tyr Gly His Ser Leu Ala Leu Tyr Gln Glu Asn Ile Phe
        355                 360                 365

Met Tyr Gly Gly Arg Ile Glu Thr Asn Asp Gly Asn Val Thr Asp Glu
    370                 375                 380

Leu Trp Val Phe Asn Ile His Ser Gln Ser Trp Ser Thr Lys Thr Pro
385                 390                 395                 400

Thr Val Leu Gly His Gly Gln Gln Tyr Ala Val Glu Gly His Ser Ala
                405                 410                 415

His Ile Met Glu Leu Asp Ser Arg Asp Val Val Met Ile Ile Ile Phe
            420                 425                 430
```

Gly Tyr Ser Ala Ile Tyr Gly Tyr Thr Ser Ser Ile Gln Glu Tyr His
        435   440   445

Ile Cys Glu Leu Leu Lys Asn Cys Asn Phe Phe Ile Asp Trp Glu Cys
    450   455   460

Phe Ser Leu
465

<210> 7876
<211> 36
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000483722"

<400> 7876
Met Pro Glu Cys Asp Trp Arg Gln Pro Ser Gly Gly Asp Gly Gly Trp
1   5   10   15

Asp Leu Ser Leu Leu Thr Gly Glu Arg Asp Ser Asp Gly Arg Arg Asp
            20   25   30

Phe Ala Arg Glu
        35

<210> 7877
<211> 338
<212> PRT
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<220>
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<223> /note="Gene Symbol: ACKR1; "

<220>
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<223> /note="Gene Name:
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blood group); "

<220>
<221> source
<223> /note="Uniprot ID: Q16570; "

<220>
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<223> /note="ENSP ID: ENSP00000357103"

<400> 7877

Met	Ala	Ser	Ser	Gly	Tyr	Val	Leu	Gln	Ala	Glu	Leu	Ser	Pro	Ser	Thr
1				5				10					15		

Glu	Asn	Ser	Ser	Gln	Leu	Asp	Phe	Glu	Asp	Val	Trp	Asn	Ser	Ser	Tyr
			20					25					30		

Gly	Val	Asn	Asp	Ser	Phe	Pro	Asp	Gly	Asp	Tyr	Gly	Ala	Asn	Leu	Glu
		35					40					45			

Ala	Ala	Ala	Pro	Cys	His	Ser	Cys	Asn	Leu	Leu	Asp	Asp	Ser	Ala	Leu
	50					55					60				

Pro	Phe	Phe	Ile	Leu	Thr	Ser	Val	Leu	Gly	Ile	Leu	Ala	Ser	Ser	Thr
65					70					75					80

Val	Leu	Phe	Met	Leu	Phe	Arg	Pro	Leu	Phe	Arg	Trp	Gln	Leu	Cys	Pro
				85					90					95	

Gly	Trp	Pro	Val	Leu	Ala	Gln	Leu	Ala	Val	Gly	Ser	Ala	Leu	Phe	Ser
			100					105					110		

Ile	Val	Val	Pro	Val	Leu	Ala	Pro	Gly	Leu	Gly	Ser	Thr	Arg	Ser	Ser
		115					120					125			

Ala	Leu	Cys	Ser	Leu	Gly	Tyr	Cys	Val	Trp	Tyr	Gly	Ser	Ala	Phe	Ala
	130					135					140				

Gln	Ala	Leu	Leu	Leu	Gly	Cys	His	Ala	Ser	Leu	Gly	His	Arg	Leu	Gly
145					150					155					160

```
Ala Gly Gln Val Pro Gly Leu Thr Leu Gly Leu Thr Val Gly Ile Trp
                165                 170                 175

Gly Val Ala Ala Leu Leu Thr Leu Pro Val Thr Leu Ala Ser Gly Ala
            180                 185                 190

Ser Gly Gly Leu Cys Thr Leu Ile Tyr Ser Thr Glu Leu Lys Ala Leu
        195                 200                 205

Gln Ala Thr His Thr Val Ala Cys Leu Ala Ile Phe Val Leu Leu Pro
    210                 215                 220

Leu Gly Leu Phe Gly Ala Lys Gly Leu Lys Lys Ala Leu Gly Met Gly
225                 230                 235                 240

Pro Gly Pro Trp Met Asn Ile Leu Trp Ala Trp Phe Ile Phe Trp Trp
                245                 250                 255

Pro His Gly Val Val Leu Gly Leu Asp Phe Leu Val Arg Ser Lys Leu
            260                 265                 270

Leu Leu Leu Ser Thr Cys Leu Ala Gln Gln Ala Leu Asp Leu Leu Leu
        275                 280                 285

Asn Leu Ala Glu Ala Leu Ala Ile Leu His Cys Val Ala Thr Pro Leu
    290                 295                 300

Leu Leu Ala Leu Phe Cys His Gln Ala Thr Arg Thr Leu Leu Pro Ser
305                 310                 315                 320

Leu Pro Leu Pro Glu Gly Trp Ser Ser His Leu Asp Thr Leu Gly Ser
                325                 330                 335

Lys Ser
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<210> 7878
<211> 336
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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atypical chemokine receptor 1 (Duffy
blood group); "

<220>
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<223> /note="Uniprot ID: Q16570; "

<220>
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<400> 7878
Met Gly Asn Cys Leu His Arg Ala Glu Leu Ser Pro Ser Thr Glu Asn
1   5   10   15

Ser Ser Gln Leu Asp Phe Glu Asp Val Trp Asn Ser Ser Tyr Gly Val
            20   25   30

Asn Asp Ser Phe Pro Asp Gly Asp Tyr Gly Ala Asn Leu Glu Ala Ala
        35   40   45

Ala Pro Cys His Ser Cys Asn Leu Leu Asp Asp Ser Ala Leu Pro Phe
    50   55   60

Phe Ile Leu Thr Ser Val Leu Gly Ile Leu Ala Ser Ser Thr Val Leu
65   70   75   80

Phe Met Leu Phe Arg Pro Leu Phe Arg Trp Gln Leu Cys Pro Gly Trp
                85   90   95

Pro Val Leu Ala Gln Leu Ala Val Gly Ser Ala Leu Phe Ser Ile Val
            100   105   110

Val Pro Val Leu Ala Pro Gly Leu Gly Ser Thr Arg Ser Ser Ala Leu
        115   120   125

Cys Ser Leu Gly Tyr Cys Val Trp Tyr Gly Ser Ala Phe Ala Gln Ala
    130   135   140

Leu Leu Leu Gly Cys His Ala Ser Leu Gly His Arg Leu Gly Ala Gly

```
145                 150                 155                 160

Gln Val Pro Gly Leu Thr Leu Gly Leu Thr Val Gly Ile Trp Gly Val
                165                 170                 175

Ala Ala Leu Leu Thr Leu Pro Val Thr Leu Ala Ser Gly Ala Ser Gly
            180                 185                 190

Gly Leu Cys Thr Leu Ile Tyr Ser Thr Glu Leu Lys Ala Leu Gln Ala
        195                 200                 205

Thr His Thr Val Ala Cys Leu Ala Ile Phe Val Leu Leu Pro Leu Gly
    210                 215                 220

Leu Phe Gly Ala Lys Gly Leu Lys Lys Ala Leu Gly Met Gly Pro Gly
225                 230                 235                 240

Pro Trp Met Asn Ile Leu Trp Ala Trp Phe Ile Phe Trp Trp Pro His
                245                 250                 255

Gly Val Val Leu Gly Leu Asp Phe Leu Val Arg Ser Lys Leu Leu Leu
            260                 265                 270

Leu Ser Thr Cys Leu Ala Gln Gln Ala Leu Asp Leu Leu Leu Asn Leu
        275                 280                 285

Ala Glu Ala Leu Ala Ile Leu His Cys Val Ala Thr Pro Leu Leu Leu
    290                 295                 300

Ala Leu Phe Cys His Gln Ala Thr Arg Thr Leu Leu Pro Ser Leu Pro
305                 310                 315                 320

Leu Pro Glu Gly Trp Ser Ser His Leu Asp Thr Leu Gly Ser Lys Ser
                325                 330                 335


<210> 7879
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1649; "

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<221> source
<223> /note="Gene Symbol: ACKR1; "

<220>
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blood group); "

<220>
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<400> 7879
Met Ala Ser Ser Gly Tyr Val Leu Gln Ala Glu Leu Ser Pro Ser Thr
1 5 10 15

Glu Asn Ser Ser Gln Leu Asp Phe Glu Asp Val Trp Asn Ser Ser Tyr
20 25 30

Gly Val Asn Asp Ser Phe Pro Asp Gly Asp Tyr Gly Ala Asn Leu Glu
35 40 45

Ala Ala Ala Pro Cys His Ser Cys Asn Leu Leu Asp Asp Ser Ala Leu
50 55 60

Pro Phe Phe Ile Leu Thr Ser Val Leu Gly Ile Leu Ala Ser Ser Thr
65 70 75 80

Val Leu Phe Met Leu Phe Arg Pro Leu Phe Arg Trp Gln Leu Cys Pro
85 90 95

Gly Trp Pro Val Leu Ala Gln Leu Ala Val Gly Ser Ala Leu Phe Ser
100 105 110

Ile Val Val Pro Val Leu Ala Pro Gly Leu Gly Ser Thr Arg Ser Ser
115 120 125

Ala Leu Cys Ser Leu Gly Tyr Cys Val Trp Tyr Gly Ser Ala Phe Ala
130 135 140

Gln Ala Leu Leu Leu Gly Cys His Ala Ser Leu
145 150 155

<210> 7880
<211> 336
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<400> 7880

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Met Gly Asn Cys Leu His Arg Ala Glu Leu Ser Pro Ser Thr Glu Asn
1               5                  10                  15


Ser Ser Gln Leu Asp Phe Glu Asp Val Trp Asn Ser Ser Tyr Gly Val
            20                  25                  30


Asn Asp Ser Phe Pro Asp Gly Asp Tyr Gly Ala Asn Leu Glu Ala Ala
        35                  40                  45


Ala Pro Cys His Ser Cys Asn Leu Leu Asp Asp Ser Ala Leu Pro Phe
    50                  55                  60


Phe Ile Leu Thr Ser Val Leu Gly Ile Leu Ala Ser Ser Thr Val Leu
65                  70                  75                  80


Phe Met Leu Phe Arg Pro Leu Phe Arg Trp Gln Leu Cys Pro Gly Trp
                85                  90                  95


Pro Val Leu Ala Gln Leu Ala Val Gly Ser Ala Leu Phe Ser Ile Val
            100                 105                 110


Val Pro Val Leu Ala Pro Gly Leu Gly Ser Thr Arg Ser Ser Ala Leu
        115                 120                 125
```

```
Cys Ser Leu Gly Tyr Cys Val Trp Tyr Gly Ser Ala Phe Ala Gln Ala
    130                 135                 140

Leu Leu Leu Gly Cys His Ala Ser Leu Gly His Arg Leu Gly Ala Gly
145                 150                 155                 160

Gln Val Pro Gly Leu Thr Leu Gly Leu Thr Val Gly Ile Trp Gly Val
                165                 170                 175

Ala Ala Leu Leu Thr Leu Pro Val Thr Leu Ala Ser Gly Ala Ser Gly
            180                 185                 190

Gly Leu Cys Thr Leu Ile Tyr Ser Thr Glu Leu Lys Ala Leu Gln Ala
        195                 200                 205

Thr His Thr Val Ala Cys Leu Ala Ile Phe Val Leu Leu Pro Leu Gly
    210                 215                 220

Leu Phe Gly Ala Lys Gly Leu Lys Lys Ala Leu Gly Met Gly Pro Gly
225                 230                 235                 240

Pro Trp Met Asn Ile Leu Trp Ala Trp Phe Ile Phe Trp Trp Pro His
                245                 250                 255

Gly Val Val Leu Gly Leu Asp Phe Leu Val Arg Ser Lys Leu Leu Leu
            260                 265                 270

Leu Ser Thr Cys Leu Ala Gln Gln Ala Leu Asp Leu Leu Leu Asn Leu
        275                 280                 285

Ala Glu Ala Leu Ala Ile Leu His Cys Val Ala Thr Pro Leu Leu Leu
    290                 295                 300

Ala Leu Phe Cys His Gln Ala Thr Arg Thr Leu Leu Pro Ser Leu Pro
305                 310                 315                 320

Leu Pro Glu Gly Trp Ser Ser His Leu Asp Thr Leu Gly Ser Lys Ser
                325                 330                 335
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<210> 7881
<211> 384
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1650; "

<220>
<221> source
<223> /note="Gene Symbol: ACKR2; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: O00590; "

<220>
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<400> 7881

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Met Ala Ala Thr Ala Ser Pro Gln Pro Leu Ala Thr Glu Asp Ala Asp
1               5                   10                  15

Ser Glu Asn Ser Ser Phe Tyr Tyr Tyr Asp Tyr Leu Asp Glu Val Ala
            20                  25                  30

Phe Met Leu Cys Arg Lys Asp Ala Val Val Ser Phe Gly Lys Val Phe
        35                  40                  45

Leu Pro Val Phe Tyr Ser Leu Ile Phe Val Leu Gly Leu Ser Gly Asn
    50                  55                  60

Leu Leu Leu Leu Met Val Leu Leu Arg Tyr Val Pro Arg Arg Arg Met
65                  70                  75                  80

Val Glu Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asn Leu Leu Phe Leu
                85                  90                  95

Val Thr Leu Pro Phe Trp Gly Ile Ser Val Ala Trp His Trp Val Phe
            100                 105                 110

Gly Ser Phe Leu Cys Lys Met Val Ser Thr Leu Tyr Thr Ile Asn Phe
        115                 120                 125

Tyr Ser Gly Ile Phe Phe Ile Ser Cys Met Ser Leu Asp Lys Tyr Leu
    130                 135                 140
```

```
Glu Ile Val His Ala Gln Pro Tyr His Arg Leu Arg Thr Arg Ala Lys
145                 150                 155                 160

Ser Leu Leu Leu Ala Thr Ile Val Trp Ala Val Ser Leu Ala Val Ser
                165                 170                 175

Ile Pro Asp Met Val Phe Val Gln Thr His Glu Asn Pro Lys Gly Val
            180                 185                 190

Trp Asn Cys His Ala Asp Phe Gly Gly His Gly Thr Ile Trp Lys Leu
        195                 200                 205

Phe Leu Arg Phe Gln Gln Asn Leu Leu Gly Phe Leu Leu Pro Leu Leu
    210                 215                 220

Ala Met Ile Phe Phe Tyr Ser Arg Ile Gly Cys Val Leu Val Arg Leu
225                 230                 235                 240

Arg Pro Ala Gly Gln Gly Arg Ala Leu Lys Ile Ala Ala Ala Leu Val
                245                 250                 255

Val Ala Phe Phe Val Leu Trp Phe Pro Tyr Asn Leu Thr Leu Phe Leu
            260                 265                 270

His Thr Leu Leu Asp Leu Gln Val Phe Gly Asn Cys Glu Val Ser Gln
        275                 280                 285

His Leu Asp Tyr Ala Leu Gln Val Thr Glu Ser Ile Ala Phe Leu His
    290                 295                 300

Cys Cys Phe Ser Pro Ile Leu Tyr Ala Phe Ser Ser His Arg Phe Arg
305                 310                 315                 320

Gln Tyr Leu Lys Ala Phe Leu Ala Ala Val Leu Gly Trp His Leu Ala
                325                 330                 335

Pro Gly Thr Ala Gln Ala Ser Leu Ser Ser Cys Ser Glu Ser Ser Ile
            340                 345                 350

Leu Thr Ala Gln Glu Glu Met Thr Gly Met Asn Asp Leu Gly Glu Arg
        355                 360                 365
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Gln Ser Glu Asn Tyr Pro Asn Lys Glu Asp Val Gly Asn Lys Ser Ala
370 375 380

<210> 7882
<211> 384
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1650; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: O00590; "

<220>
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<223> /note="ENSP ID: ENSP00000416996"

<400> 7882
Met Ala Ala Thr Ala Ser Pro Gln Pro Leu Ala Thr Glu Asp Ala Asp
1 5 10 15

Ser Glu Asn Ser Ser Phe Tyr Tyr Tyr Asp Tyr Leu Asp Glu Val Ala
20 25 30

Phe Met Leu Cys Arg Lys Asp Ala Val Val Ser Phe Gly Lys Val Phe
35 40 45

Leu Pro Val Phe Tyr Ser Leu Ile Phe Val Leu Gly Leu Ser Gly Asn
50 55 60

Leu Leu Leu Leu Met Val Leu Leu Arg Tyr Val Pro Arg Arg Arg Met
65 70 75 80

Val Glu Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asn Leu Leu Phe Leu
85 90 95

Val Thr Leu Pro Phe Trp Gly Ile Ser Val Ala Trp His Trp Val Phe
100 105 110

```
Gly Ser Phe Leu Cys Lys Met Val Ser Thr Leu Tyr Thr Ile Asn Phe
        115                 120                 125

Tyr Ser Gly Ile Phe Phe Ile Ser Cys Met Ser Leu Asp Lys Tyr Leu
    130                 135                 140

Glu Ile Val His Ala Gln Pro Tyr His Arg Leu Arg Thr Arg Ala Lys
145                 150                 155                 160

Ser Leu Leu Leu Ala Thr Ile Val Trp Ala Val Ser Leu Ala Val Ser
                165                 170                 175

Ile Pro Asp Met Val Phe Val Gln Thr His Glu Asn Pro Lys Gly Val
            180                 185                 190

Trp Asn Cys His Ala Asp Phe Gly Gly His Gly Thr Ile Trp Lys Leu
        195                 200                 205

Phe Leu Arg Phe Gln Gln Asn Leu Leu Gly Phe Leu Leu Pro Leu Leu
    210                 215                 220

Ala Met Ile Phe Phe Tyr Ser Arg Ile Gly Cys Val Leu Val Arg Leu
225                 230                 235                 240

Arg Pro Ala Gly Gln Gly Arg Ala Leu Lys Ile Ala Ala Ala Leu Val
                245                 250                 255

Val Ala Phe Phe Val Leu Trp Phe Pro Tyr Asn Leu Thr Leu Phe Leu
            260                 265                 270

His Thr Leu Leu Asp Leu Gln Val Phe Gly Asn Cys Glu Val Ser Gln
        275                 280                 285

His Leu Asp Tyr Ala Leu Gln Val Thr Glu Ser Ile Ala Phe Leu His
    290                 295                 300

Cys Cys Phe Ser Pro Ile Leu Tyr Ala Phe Ser Ser His Arg Phe Arg
305                 310                 315                 320

Gln Tyr Leu Lys Ala Phe Leu Ala Ala Val Leu Gly Trp His Leu Ala
                325                 330                 335
```

```
Pro Gly Thr Ala Gln Ala Ser Leu Ser Ser Cys Ser Glu Ser Ser Ile
            340                 345                 350

Leu Thr Ala Gln Glu Glu Met Thr Gly Met Asn Asp Leu Gly Glu Arg
        355                 360                 365

Gln Ser Glu Asn Tyr Pro Asn Lys Glu Asp Val Gly Asn Lys Ser Ala
    370                 375                 380


<210> 7883
<211> 233
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1650; "

<220>
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<223> /note="Gene Symbol: ACKR2; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000476581"

<400> 7883
Met Ala Ala Thr Ala Ser Pro Gln Pro Leu Ala Thr Glu Asp Ala Asp
1               5                   10                  15

Ser Glu Asn Ser Ser Phe Tyr Tyr Tyr Asp Tyr Leu Asp Glu Val Ala
            20                  25                  30

Phe Met Leu Cys Arg Lys Asp Ala Val Val Ser Phe Gly Lys Val Phe
        35                  40                  45

Leu Pro Val Phe Tyr Ser Leu Ile Phe Val Leu Gly Leu Ser Gly Asn
    50                  55                  60

Leu Leu Leu Leu Met Val Leu Leu Arg Tyr Val Pro Arg Arg Arg Met
65                  70                  75                  80

Val Glu Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asn Leu Leu Phe Leu
```

```
                85                  90                  95

Val Thr Leu Pro Phe Trp Gly Ile Ser Val Ala Trp His Trp Val Phe
            100                 105                 110

Gly Ser Phe Leu Cys Lys Met Val Ser Thr Leu Tyr Thr Ile Asn Phe
        115                 120                 125

Tyr Ser Gly Ile Phe Phe Ile Ser Cys Met Ser Leu Asp Lys Tyr Leu
    130                 135                 140

Glu Ile Val His Ala Gln Pro Tyr His Arg Leu Arg Thr Arg Ala Lys
145                 150                 155                 160

Ser Leu Leu Leu Ala Thr Ile Val Trp Ala Val Ser Leu Ala Val Ser
                165                 170                 175

Ile Pro Asp Met Val Phe Val Gln Thr His Glu Asn Pro Lys Gly Val
            180                 185                 190

Trp Asn Cys His Ala Asp Phe Gly Gly His Gly Thr Ile Trp Lys Leu
        195                 200                 205

Phe Leu Arg Phe Gln Gln Asn Leu Leu Gly Phe Leu Leu Pro Leu Leu
    210                 215                 220

Ala Met Ile Phe Phe Tyr Ser Arg Ile
225                 230


<210> 7884
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1650; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000476901"

<400> 7884
Met Ala Ala Thr Ala Ser Pro Gln Pro Leu Ala Thr Glu Asp Ala Asp
1   5   10   15

Ser Glu Asn Ser Ser Phe Tyr Tyr Tyr Asp Tyr Leu Asp Glu Val Ala
            20   25   30

Phe Met Leu Cys Arg Lys Asp Ala Val Val Ser Phe Gly Lys Val Phe
        35   40   45

Leu Pro Val Phe Tyr Ser Leu Ile Phe Val Leu Gly Leu Ser Gly Asn
    50   55   60

Leu Leu Leu Leu Met Val Leu Leu Arg Tyr Val Pro Arg Arg Arg Met
65   70   75   80

Val Glu Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asn Leu Leu Phe Leu
                85   90   95

Val Thr Leu Pro Phe Trp Gly Ile Ser Val Ala Trp His Trp Val Phe
            100   105   110

Gly Ser Phe Leu Cys Lys Met Val Ser Thr Leu Tyr
        115   120

<210> 7885
<211> 170
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ACKR2; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000477157"

<400> 7885
Met Ala Ala Thr Ala Ser Pro Gln Pro Leu Ala Thr Glu Asp Ala Asp
1 5 10 15

Ser Glu Asn Ser Ser Phe Tyr Tyr Tyr Asp Tyr Leu Asp Glu Val Ala
20 25 30

Phe Met Leu Cys Arg Lys Asp Ala Val Val Ser Phe Gly Lys Val Phe
35 40 45

Leu Pro Val Phe Tyr Ser Leu Ile Phe Val Leu Gly Leu Ser Gly Asn
50 55 60

Leu Leu Leu Leu Met Val Leu Leu Arg Tyr Val Pro Arg Arg Arg Met
65 70 75 80

Val Glu Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asn Leu Leu Phe Leu
85 90 95

Val Thr Leu Pro Phe Trp Gly Ile Ser Val Ala Trp His Trp Val Phe
100 105 110

Gly Ser Phe Leu Cys Lys Met Val Ser Thr Leu Tyr Thr Ile Asn Phe
115 120 125

Tyr Ser Gly Ile Phe Phe Ile Ser Cys Met Ser Leu Asp Lys Tyr Leu
130 135 140

Glu Ile Val His Ala Gln Pro Tyr His Arg Leu Arg Thr Arg Ala Lys
145 150 155 160

Ser Leu Leu Leu Ala Thr Ile Val Trp Ala
165 170

<210> 7886
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1650; "

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<221> source
<223> /note="Gene Symbol: ACKR2; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000477475"

<400> 7886
Met Ala Ala Thr Ala Ser Pro Gln Pro Leu Ala Thr Glu Asp Ala Asp
1 5 10 15

Ser Glu Asn Ser Ser Phe Tyr Tyr Tyr Asp Tyr Leu Asp Glu Val Ala
20 25 30

Phe Met Leu Cys Arg Lys Asp Ala Val Val Ser Phe Gly Lys Val Phe
35 40 45

Leu Pro Val Phe Tyr Ser Leu Ile Phe Val Leu Gly Leu Ser Gly Asn
50 55 60

Leu Leu Leu Leu Met Val Leu Leu Arg Tyr Val Pro Arg Arg Arg Met
65 70 75 80

Val Glu Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asn Leu Leu Phe Leu
85 90 95

Val Thr Leu Pro Phe Trp Gly Ile Ser Val Ala Trp His Trp Val Phe
100 105 110

Gly Ser Phe Leu Cys Lys Met Val Ser Thr Leu Tyr Thr Ile Asn Phe
115 120 125

Tyr Ser Gly Ile Phe Phe Ile Ser Cys Met Ser Leu Asp Lys
130 135 140

<210> 7887
<211> 362
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1651; "

<220>
<221> source
<223> /note="Gene Symbol: ACKR3; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P25106; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000272928"

<400> 7887
Met Asp Leu His Leu Phe Asp Tyr Ser Glu Pro Gly Asn Phe Ser Asp
1 5 10 15

Ile Ser Trp Pro Cys Asn Ser Ser Asp Cys Ile Val Val Asp Thr Val
20 25 30

Met Cys Pro Asn Met Pro Asn Lys Ser Val Leu Leu Tyr Thr Leu Ser
35 40 45

Phe Ile Tyr Ile Phe Ile Phe Val Ile Gly Met Ile Ala Asn Ser Val
50 55 60

Val Val Trp Val Asn Ile Gln Ala Lys Thr Thr Gly Tyr Asp Thr His
65 70 75 80

Cys Tyr Ile Leu Asn Leu Ala Ile Ala Asp Leu Trp Val Val Leu Thr
85 90 95

Ile Pro Val Trp Val Val Ser Leu Val Gln His Asn Gln Trp Pro Met
100 105 110

Gly Glu Leu Thr Cys Lys Val Thr His Leu Ile Phe Ser Ile Asn Leu
115 120 125

Phe Gly Ser Ile Phe Phe Leu Thr Cys Met Ser Val Asp Arg Tyr Leu
130 135 140

Ser Ile Thr Tyr Phe Thr Asn Thr Pro Ser Ser Arg Lys Lys Met Val
145 150 155 160

```
Arg Arg Val Val Cys Ile Leu Val Trp Leu Leu Ala Phe Cys Val Ser
                165                 170                 175

Leu Pro Asp Thr Tyr Tyr Leu Lys Thr Val Thr Ser Ala Ser Asn Asn
            180                 185                 190

Glu Thr Tyr Cys Arg Ser Phe Tyr Pro Glu His Ser Ile Lys Glu Trp
        195                 200                 205

Leu Ile Gly Met Glu Leu Val Ser Val Val Leu Gly Phe Ala Val Pro
    210                 215                 220

Phe Ser Ile Ile Ala Val Phe Tyr Phe Leu Leu Ala Arg Ala Ile Ser
225                 230                 235                 240

Ala Ser Ser Asp Gln Glu Lys His Ser Ser Arg Lys Ile Ile Phe Ser
                245                 250                 255

Tyr Val Val Val Phe Leu Val Cys Trp Leu Pro Tyr His Val Ala Val
            260                 265                 270

Leu Leu Asp Ile Phe Ser Ile Leu His Tyr Ile Pro Phe Thr Cys Arg
        275                 280                 285

Leu Glu His Ala Leu Phe Thr Ala Leu His Val Thr Gln Cys Leu Ser
    290                 295                 300

Leu Val His Cys Cys Val Asn Pro Val Leu Tyr Ser Phe Ile Asn Arg
305                 310                 315                 320

Asn Tyr Arg Tyr Glu Leu Met Lys Ala Phe Ile Phe Lys Tyr Ser Ala
                325                 330                 335

Lys Thr Gly Leu Thr Lys Leu Ile Asp Ala Ser Arg Val Ser Glu Thr
            340                 345                 350

Glu Tyr Ser Ala Leu Glu Gln Ser Thr Lys
        355                 360
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<210> 7888
<211> 210
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1651; "

<220>
<221> source
<223> /note="Gene Symbol: ACKR3; "

<220>
<221> source
<223> /note="Gene Name:
atypical chemokine receptor 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405945"

<400> 7888

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Met Asp Leu His Leu Phe Asp Tyr Ser Glu Pro Gly Asn Phe Ser Asp
1               5                  10                  15

Ile Ser Trp Pro Cys Asn Ser Ser Asp Cys Ile Val Val Asp Thr Val
            20                  25                  30

Met Cys Pro Asn Met Pro Asn Lys Ser Val Leu Leu Tyr Thr Leu Ser
        35                  40                  45

Phe Ile Tyr Ile Phe Ile Phe Val Ile Gly Met Ile Ala Asn Ser Val
    50                  55                  60

Val Val Trp Val Asn Ile Gln Ala Lys Thr Thr Gly Tyr Asp Thr His
65                  70                  75                  80

Cys Tyr Ile Leu Asn Leu Ala Ile Ala Asp Leu Trp Val Val Leu Thr
                85                  90                  95

Ile Pro Val Trp Val Val Ser Leu Val Gln His Asn Gln Trp Pro Met
            100                 105                 110

Gly Glu Leu Thr Cys Lys Val Thr His Leu Ile Phe Ser Ile Asn Leu
        115                 120                 125

Phe Gly Ser Ile Phe Phe Leu Thr Cys Met Ser Val Asp Arg Tyr Leu
    130                 135                 140

Ser Ile Thr Tyr Phe Thr Asn Thr Pro Ser Ser Arg Lys Lys Met Val
```

145 150 155 160

Arg Arg Val Val Cys Ile Leu Val Trp Leu Leu Ala Phe Cys Val Ser
165 170 175

Leu Pro Asp Thr Tyr Tyr Leu Lys Thr Val Thr Ser Ala Ser Asn Asn
180 185 190

Glu Thr Tyr Cys Arg Ser Phe Tyr Pro Glu His Ser Ile Lys Glu Trp
195 200 205

Leu Ile
210

<210> 7889
<211> 350
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1652; "

<220>
<221> source
<223> /note="Gene Symbol: ACKR4; "

<220>
<221> source
<223> /note="Gene Name:
atypical chemokine receptor 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NPB9; "

<220>
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<223> /note="ENSP ID: ENSP00000249887"

<400> 7889
Met Ala Leu Glu Gln Asn Gln Ser Thr Asp Tyr Tyr Tyr Glu Glu Asn
1 5 10 15

Glu Met Asn Gly Thr Tyr Asp Tyr Ser Gln Tyr Glu Leu Ile Cys Ile
20 25 30

Lys Glu Asp Val Arg Glu Phe Ala Lys Val Phe Leu Pro Val Phe Leu
35 40 45

```
Thr Ile Val Phe Val Ile Gly Leu Ala Gly Asn Ser Met Val Val Ala
    50                  55                  60

Ile Tyr Ala Tyr Tyr Lys Lys Gln Arg Thr Lys Thr Asp Val Tyr Ile
65                  70                  75                  80

Leu Asn Leu Ala Val Ala Asp Leu Leu Leu Leu Phe Thr Leu Pro Phe
                85                  90                  95

Trp Ala Val Asn Ala Val His Gly Trp Val Leu Gly Lys Ile Met Cys
            100                 105                 110

Lys Ile Thr Ser Ala Leu Tyr Thr Leu Asn Phe Val Ser Gly Met Gln
        115                 120                 125

Phe Leu Ala Cys Ile Ser Ile Asp Arg Tyr Val Ala Val Thr Lys Val
    130                 135                 140

Pro Ser Gln Ser Gly Val Gly Lys Pro Cys Trp Ile Ile Cys Phe Cys
145                 150                 155                 160

Val Trp Met Ala Ala Ile Leu Leu Ser Ile Pro Gln Leu Val Phe Tyr
                165                 170                 175

Thr Val Asn Asp Asn Ala Arg Cys Ile Pro Ile Phe Pro Arg Tyr Leu
            180                 185                 190

Gly Thr Ser Met Lys Ala Leu Ile Gln Met Leu Glu Ile Cys Ile Gly
        195                 200                 205

Phe Val Val Pro Phe Leu Ile Met Gly Val Cys Tyr Phe Ile Thr Ala
    210                 215                 220

Arg Thr Leu Met Lys Met Pro Asn Ile Lys Ile Ser Arg Pro Leu Lys
225                 230                 235                 240

Val Leu Leu Thr Val Val Ile Val Phe Ile Val Thr Gln Leu Pro Tyr
                245                 250                 255

Asn Ile Val Lys Phe Cys Arg Ala Ile Asp Ile Ile Tyr Ser Leu Ile
            260                 265                 270
```

```
Thr Ser Cys Asn Met Ser Lys Arg Met Asp Ile Ala Ile Gln Val Thr
        275                 280                 285


Glu Ser Ile Ala Leu Phe His Ser Cys Leu Asn Pro Ile Leu Tyr Val
    290                 295                 300


Phe Met Gly Ala Ser Phe Lys Asn Tyr Val Met Lys Val Ala Lys Lys
305                 310                 315                 320


Tyr Gly Ser Trp Arg Arg Gln Arg Gln Ser Val Glu Glu Phe Pro Phe
                325                 330                 335


Asp Ser Glu Gly Pro Thr Glu Pro Thr Ser Thr Phe Ser Ile
            340                 345                 350


<210> 7890
<211> 20
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1652; "

<220>
<221> source
<223> /note="Gene Symbol: ACKR4; "

<220>
<221> source
<223> /note="Gene Name:
      atypical chemokine receptor 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425557"

<400> 7890
Val Glu Glu Phe Pro Phe Asp Ser Glu Gly Pro Thr Glu Pro Thr Ser
1               5                   10                  15


Thr Phe Ser Ile
            20


<210> 7891
<211> 310
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1653; "

<220>
<221> source
<223> /note="Gene Symbol: AUH; "

<220>
<221> source
<223> /note="Gene Name:
AU RNA binding prt/enoyl-CoA hydratase; "

<220>
<221> source
<223> /note="Uniprot ID: Q13825; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000307334"

<400> 7891

```
Met Ala Ala Ala Val Ala Ala Ala Pro Gly Ala Leu Gly Ser Leu His
1               5                  10                  15

Ala Gly Gly Ala Arg Leu Val Ala Ala Cys Ser Ala Trp Leu Cys Pro
            20                  25                  30

Gly Leu Arg Leu Pro Gly Ser Leu Ala Gly Arg Arg Ala Gly Pro Ala
        35                  40                  45

Ile Trp Ala Gln Gly Trp Val Pro Ala Ala Gly Gly Pro Ala Pro Lys
    50                  55                  60

Arg Gly Tyr Ser Ser Glu Met Lys Thr Glu Asp Glu Leu Arg Val Arg
65                  70                  75                  80

His Leu Glu Glu Glu Asn Arg Gly Ile Val Val Leu Gly Ile Asn Arg
                85                  90                  95

Ala Tyr Gly Lys Asn Ser Leu Ser Lys Asn Leu Ile Lys Met Leu Ser
            100                 105                 110

Lys Ala Val Asp Ala Leu Lys Ser Asp Lys Lys Val Arg Thr Ile Ile
        115                 120                 125

Ile Arg Ser Glu Val Pro Gly Ile Phe Cys Ala Ala Asn Leu Pro Val
    130                 135                 140
```

```
Pro Thr Ile Ala Ala Ile Asp Gly Leu Ala Leu Gly Gly Gly Leu Glu
145                 150                 155                 160

Leu Ala Leu Ala Cys Asp Ile Arg Val Ala Ala Ser Ser Ala Lys Met
                165                 170                 175

Gly Leu Val Glu Thr Lys Leu Ala Ile Ile Pro Gly Gly Gly Gly Thr
            180                 185                 190

Gln Arg Leu Pro Arg Ala Ile Gly Met Ser Leu Ala Lys Glu Leu Ile
        195                 200                 205

Phe Ser Ala Arg Val Leu Asp Gly Lys Glu Ala Lys Ala Val Gly Leu
    210                 215                 220

Ile Ser His Val Leu Glu Gln Asn Gln Glu Gly Asp Ala Ala Tyr Arg
225                 230                 235                 240

Lys Ala Leu Asp Leu Ala Arg Glu Phe Leu Pro Gln Gly Pro Val Ala
                245                 250                 255

Met Arg Val Ala Lys Leu Ala Ile Asn Gln Gly Met Glu Val Asp Leu
            260                 265                 270

Val Thr Gly Leu Ala Ile Glu Glu Ala Cys Tyr Ala Gln Thr Ile Pro
        275                 280                 285

Thr Lys Asp Arg Leu Glu Gly Leu Leu Ala Phe Lys Glu Lys Arg Pro
    290                 295                 300

Pro Arg Tyr Lys Gly Glu
305                 310


<210> 7892
<211> 339
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: AUH; "
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<220>
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<223> /note="Gene Name:
AU RNA binding prt/enoyl-CoA hydratase; "

<220>
<221> source
<223> /note="Uniprot ID: Q13825; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364883"

<400> 7892
Met Ala Ala Ala Val Ala Ala Ala Pro Gly Ala Leu Gly Ser Leu His
1 5 10 15

Ala Gly Gly Ala Arg Leu Val Ala Ala Cys Ser Ala Trp Leu Cys Pro
20 25 30

Gly Leu Arg Leu Pro Gly Ser Leu Ala Gly Arg Arg Ala Gly Pro Ala
35 40 45

Ile Trp Ala Gln Gly Trp Val Pro Ala Ala Gly Gly Pro Ala Pro Lys
50 55 60

Arg Gly Tyr Ser Ser Glu Met Lys Thr Glu Asp Glu Leu Arg Val Arg
65 70 75 80

His Leu Glu Glu Glu Asn Arg Gly Ile Val Val Leu Gly Ile Asn Arg
85 90 95

Ala Tyr Gly Lys Asn Ser Leu Ser Lys Asn Leu Ile Lys Met Leu Ser
100 105 110

Lys Ala Val Asp Ala Leu Lys Ser Asp Lys Lys Val Arg Thr Ile Ile
115 120 125

Ile Arg Ser Glu Val Pro Gly Ile Phe Cys Ala Gly Ala Asp Leu Lys
130 135 140

Glu Arg Ala Lys Met Ser Ser Ser Glu Val Gly Pro Phe Val Ser Lys
145 150 155 160

Ile Arg Ala Val Ile Asn Asp Ile Ala Asn Leu Pro Val Pro Thr Ile
165 170 175

```
Ala Ala Ile Asp Gly Leu Ala Leu Gly Gly Gly Leu Glu Leu Ala Leu
            180                 185                 190

Ala Cys Asp Ile Arg Val Ala Ala Ser Ser Ala Lys Met Gly Leu Val
        195                 200                 205

Glu Thr Lys Leu Ala Ile Ile Pro Gly Gly Gly Gly Thr Gln Arg Leu
    210                 215                 220

Pro Arg Ala Ile Gly Met Ser Leu Ala Lys Glu Leu Ile Phe Ser Ala
225                 230                 235                 240

Arg Val Leu Asp Gly Lys Glu Ala Lys Ala Val Gly Leu Ile Ser His
                245                 250                 255

Val Leu Glu Gln Asn Gln Glu Gly Asp Ala Ala Tyr Arg Lys Ala Leu
            260                 265                 270

Asp Leu Ala Arg Glu Phe Leu Pro Gln Gly Pro Val Ala Met Arg Val
        275                 280                 285

Ala Lys Leu Ala Ile Asn Gln Gly Met Glu Val Asp Leu Val Thr Gly
    290                 295                 300

Leu Ala Ile Glu Glu Ala Cys Tyr Ala Gln Thr Ile Pro Thr Lys Asp
305                 310                 315                 320

Arg Leu Glu Gly Leu Leu Ala Phe Lys Glu Lys Arg Pro Pro Arg Tyr
                325                 330                 335

Lys Gly Glu
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<210> 7893
<211> 403
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1654; "

<220>
<221> source
<223> /note="Gene Symbol: AURKA; "

<220>
<221> source
<223> /note="Gene Name:
aurora kinase A; "

<220>
<221> source
<223> /note="Uniprot ID: O14965; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000216911"

<400> 7893
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1 5 10 15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
20 25 30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
35 40 45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
50 55 60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65 70 75 80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
85 90 95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
100 105 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
115 120 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
130 135 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145 150 155 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
165 170 175

```
Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400
```

Lys Gln Ser

<210> 7894
<211> 403
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1654; "

<220>
<221> source
<223> /note="Gene Symbol: AURKA; "

<220>
<221> source
<223> /note="Gene Name:
aurora kinase A; "

<220>
<221> source
<223> /note="Uniprot ID: O14965; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000321591"

<400> 7894

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Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1               5                  10                  15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20                  25                  30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35                  40                  45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50                  55                  60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65                  70                  75                  80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85                  90                  95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
```

```
            100                 105                 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115                 120                 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130                 135                 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335
```

```
Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400

Lys Gln Ser
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<210> 7895
<211> 403
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1654; "

<220>
<221> source
<223> /note="Gene Symbol: AURKA; "

<220>
<221> source
<223> /note="Gene Name:
aurora kinase A; "

<220>
<221> source
<223> /note="Uniprot ID: O14965; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360407"

<400> 7895

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Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1               5                   10                  15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20                  25                  30
```

```
Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35                  40                  45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50                  55                  60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65                  70                  75                  80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85                  90                  95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100                 105                 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115                 120                 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130                 135                 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
```

```
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400

Lys Gln Ser
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<210> 7896
<211> 347
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1654; "

<220>
<221> source
<223> /note="Gene Symbol: AURKA; "

<220>
<221> source
<223> /note="Gene Name:
aurora kinase A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379243"

<400> 7896
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1   5   10   15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20   25   30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35   40   45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50   55   60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65   70   75   80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85   90   95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100   105   110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115   120   125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130   135   140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145   150   155   160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165   170   175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180   185   190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195   200   205

```
Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Arg Arg Asn
            340                 345


<210> 7897
<211> 403
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1654; "

<220>
<221> source
<223> /note="Gene Symbol: AURKA; "

<220>
<221> source
<223> /note="Gene Name:
      aurora kinase A; "

<220>
<221> source
<223> /note="Uniprot ID:  O14965; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000379247"

<400> 7897
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1   5   10   15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20   25   30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35   40   45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50   55   60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65   70   75   80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85   90   95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100   105   110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115   120   125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130   135   140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145   150   155   160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165   170   175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180   185   190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195   200   205

```
Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400

Lys Gln Ser
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<210> 7898
<211> 403
<212> PRT
<213> Homo sapiens

<220>
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<400> 7898
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1   5   10   15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20   25   30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35   40   45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50   55   60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65   70   75   80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85   90   95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100   105   110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115   120   125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130   135   140

```
Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365
```

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370   375   380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385   390   395   400

Lys Gln Ser

<210> 7899
<211> 403
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID: O14965; "

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<400> 7899
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1   5   10   15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20   25   30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35   40   45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50   55   60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln

65 70 75 80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
85 90 95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
100 105 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
115 120 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
130 135 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145 150 155 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
165 170 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
180 185 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
195 200 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
210 215 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225 230 235 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
245 250 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
260 265 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
275 280 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
290 295 300

```
Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400

Lys Gln Ser
```

<210> 7900
<211> 403
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 7900

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Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1               5                  10                  15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20                  25                  30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35                  40                  45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50                  55                  60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65                  70                  75                  80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85                  90                  95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100                 105                 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115                 120                 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130                 135                 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
```

```
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys Ile
            260                 265                 270

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Ser Arg Arg Thr Thr
        275                 280                 285

Leu Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
    290                 295                 300

Met His Asp Glu Lys Val Asp Leu Trp Ser Leu Gly Val Leu Cys Tyr
305                 310                 315                 320

Glu Phe Leu Val Gly Lys Pro Pro Phe Glu Ala Asn Thr Tyr Gln Glu
                325                 330                 335

Thr Tyr Lys Arg Ile Ser Arg Val Glu Phe Thr Phe Pro Asp Phe Val
            340                 345                 350

Thr Glu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Lys His Asn Pro
        355                 360                 365

Ser Gln Arg Pro Met Leu Arg Glu Val Leu Glu His Pro Trp Ile Thr
    370                 375                 380

Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385                 390                 395                 400

Lys Gln Ser
```

<210> 7901
<211> 188
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
aurora kinase A; "

<220>
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<223> /note="ENSP ID: ENSP00000388073"

<400> 7901

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Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1               5                  10                  15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20                  25                  30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35                  40                  45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50                  55                  60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65                  70                  75                  80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85                  90                  95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
            100                 105                 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
        115                 120                 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130                 135                 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175
```

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu
180 185

<210> 7902
<211> 271
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 7902
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1 5 10 15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
20 25 30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
35 40 45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
50 55 60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65 70 75 80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
85 90 95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
100 105 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
115 120 125

```
Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
    130                 135                 140

Gly Asn Val Tyr Leu Ala Arg Glu Lys Gln Ser Lys Phe Ile Leu Ala
145                 150                 155                 160

Leu Lys Val Leu Phe Lys Ala Gln Leu Glu Lys Ala Gly Val Glu His
                165                 170                 175

Gln Leu Arg Arg Glu Val Glu Ile Gln Ser His Leu Arg His Pro Asn
            180                 185                 190

Ile Leu Arg Leu Tyr Gly Tyr Phe His Asp Ala Thr Arg Val Tyr Leu
        195                 200                 205

Ile Leu Glu Tyr Ala Pro Leu Gly Thr Val Tyr Arg Glu Leu Gln Lys
    210                 215                 220

Leu Ser Lys Phe Asp Glu Gln Arg Thr Ala Thr Tyr Ile Thr Glu Leu
225                 230                 235                 240

Ala Asn Ala Leu Ser Tyr Cys His Ser Lys Arg Val Ile His Arg Asp
                245                 250                 255

Ile Lys Pro Glu Asn Leu Leu Leu Gly Ser Ala Gly Glu Leu Lys
            260                 265                 270


<210> 7903
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<221> source
<223> /note="ENSP ID: ENSP00000401358"

<400> 7903
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1   5   10   15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20   25   30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35   40   45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50   55   60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu
65   70   75

<210> 7904
<211> 146
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
      aurora kinase A; "

<220>
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<400> 7904
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1   5   10   15

Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20   25   30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35   40   45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
50 55 60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65 70 75 80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
85 90 95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro Glu Asn Asn Pro Glu Glu
100 105 110

Glu Leu Ala Ser Lys Gln Lys Asn Glu Glu Ser Lys Lys Arg Gln Trp
115 120 125

Ala Leu Glu Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
130 135 140

Gly Asn
145

<210> 7905
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
aurora kinase A; "

<220>
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<223> /note="ENSP ID: ENSP00000405170"

<400> 7905
Met Asp Arg Ser Lys Glu Asn Cys Ile Ser Gly Pro Val Lys Ala Thr
1 5 10 15

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Ala Pro Val Gly Gly Pro Lys Arg Val Leu Val Thr Gln Gln Phe Pro
            20                  25                  30

Cys Gln Asn Pro Leu Pro Val Asn Ser Gly Gln Ala Gln Arg Val Leu
        35                  40                  45

Cys Pro Ser Asn Ser Ser Gln Arg Ile Pro Leu Gln Ala Gln Lys Leu
    50                  55                  60

Val Ser Ser His Lys Pro Val Gln Asn Gln Lys Gln Lys Gln Leu Gln
65                  70                  75                  80

Ala Thr Ser Val Pro His Pro Val Ser Arg Pro Leu Asn Asn Thr Gln
                85                  90                  95

Lys Ser Lys Gln Pro Leu Pro Ser Ala Pro
            100                 105


<210> 7906
<211> 357
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q9H7T9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363416"

<400> 7906
Met Arg Arg Thr Gly Pro Glu Glu Glu Ala Cys Gly Val Trp Leu Asp
1               5                   10                  15

Ala Ala Ala Leu Lys Arg Arg Lys Val Gln Thr His Leu Ile Lys Pro
            20                  25                  30
```

```
Gly Thr Lys Met Leu Thr Leu Leu Pro Gly Glu Arg Lys Ala Asn Ile
        35                  40                  45

Tyr Phe Thr Gln Arg Arg Ala Pro Ser Thr Gly Ile His Gln Arg Ser
    50                  55                  60

Ile Ala Ser Phe Phe Thr Leu Gln Pro Gly Lys Thr Asn Gly Ser Asp
65                  70                  75                  80

Gln Lys Ser Val Ser Ser His Thr Glu Ser Gln Ile Asn Lys Glu Ser
                85                  90                  95

Lys Lys Asn Ala Thr Gln Leu Asp His Leu Ile Pro Gly Leu Ala His
            100                 105                 110

Asp Cys Met Ala Ser Pro Leu Ala Thr Ser Thr Thr Ala Asp Ile Gln
        115                 120                 125

Glu Ala Gly Leu Ser Pro Gln Ser Leu Gln Thr Ser Gly His His Arg
    130                 135                 140

Met Lys Thr Pro Phe Ser Thr Glu Leu Ser Leu Leu Gln Pro Asp Thr
145                 150                 155                 160

Pro Asp Cys Ala Gly Asp Ser His Thr Pro Leu Ala Phe Ser Phe Thr
                165                 170                 175

Glu Asp Leu Glu Ser Ser Cys Leu Leu Asp Arg Lys Glu Glu Lys Gly
            180                 185                 190

Asp Ser Ala Arg Lys Trp Glu Trp Leu His Glu Ser Lys Lys Asn Tyr
        195                 200                 205

Gln Ser Met Glu Lys His Thr Lys Leu Pro Gly Asp Lys Cys Cys Gln
    210                 215                 220

Pro Leu Gly Lys Thr Lys Leu Glu Arg Lys Val Ser Ala Lys Glu Asn
225                 230                 235                 240

Arg Gln Ala Pro Val Leu Leu Gln Thr Tyr Arg Glu Ser Trp Asn Gly
                245                 250                 255
```

```
Glu Asn Ile Glu Ser Val Lys Gln Ser Arg Ser Pro Val Ser Val Phe
            260                 265                 270

Ser Trp Asp Asn Glu Lys Asn Asp Lys Asp Ser Trp Ser Gln Leu Phe
        275                 280                 285

Thr Glu Asp Ser Gln Gly Gln Arg Val Ile Ala His Asn Thr Arg Ala
    290                 295                 300

Pro Phe Gln Asp Val Thr Asn Asn Trp Asn Trp Asp Leu Gly Pro Phe
305                 310                 315                 320

Pro Asn Ser Pro Trp Ala Gln Cys Gln Glu Asp Gly Pro Thr Gln Asn
                325                 330                 335

Leu Lys Pro Asp Leu Leu Phe Thr Gln Asp Ser Glu Gly Asn Gln Val
            340                 345                 350

Ile Arg His Gln Phe
        355


<210> 7907
<211> 371
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1655; "

<220>
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<223> /note="Gene Symbol: AUNIP; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q9H7T9; "

<220>
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<223> /note="ENSP ID: ENSP00000443647"

<400> 7907
Met Arg Arg Thr Gly Pro Glu Glu Glu Ala Cys Gly Val Trp Leu Asp
```

```
1               5                   10                  15

Ala Ala Ala Leu Lys Arg Arg Lys Val Gln Thr His Leu Ile Lys Pro
            20                  25                  30

Gly Thr Lys Met Leu Thr Leu Leu Pro Gly Glu Arg Lys Ala Asn Ile
        35                  40                  45

Tyr Phe Thr Gln Arg Arg Ala Pro Ser Thr Gly Ile His Gln Arg Ser
    50                  55                  60

Ile Ala Ser Phe Phe Thr Leu Gln Pro Gly Lys Thr Asn Gly Ser Asp
65                  70                  75                  80

Gln Lys Ser Val Ser Ser His Thr Glu Ser Gln Ile Asn Lys Glu Ser
                85                  90                  95

Lys Lys Asn Ala Thr Gln Leu Asp His Leu Ile Pro Gly Leu Ala His
            100                 105                 110

Asp Cys Met Ala Ser Pro Leu Ala Thr Ser Thr Thr Ala Asp Ile Gln
        115                 120                 125

Glu Ala Gly Leu Ser Pro Gln Ser Leu Gln Thr Ser Gly His His Arg
    130                 135                 140

Met Lys Thr Pro Phe Ser Thr Glu Leu Ser Leu Leu Gln Pro Asp Thr
145                 150                 155                 160

Pro Asp Cys Ala Gly Asp Ser His Thr Pro Leu Ala Phe Ser Phe Thr
                165                 170                 175

Glu Asp Leu Glu Ser Ser Cys Leu Leu Asp Arg Lys Glu Glu Lys Gly
            180                 185                 190

Asp Ser Ala Arg Lys Trp Glu Trp Leu His Glu Ser Lys Lys Asn Tyr
        195                 200                 205

Gln Ser Met Glu Lys His Thr Lys Leu Pro Gly Asp Lys Cys Cys Gln
    210                 215                 220

Pro Leu Gly Lys Thr Lys Leu Glu Arg Lys Val Ser Ala Lys Glu Asn
225                 230                 235                 240
```

```
Arg Gln Ala Pro Val Leu Leu Gln Thr Tyr Arg Glu Ser Trp Asn Gly
                245                 250                 255

Glu Asn Ile Glu Ser Val Lys Gln Ser Arg Ser Pro Val Ser Val Phe
            260                 265                 270

Ser Trp Asp Asn Glu Lys Asn Asp Lys Asp Ser Trp Ser Gln Leu Phe
        275                 280                 285

Thr Glu Asp Ser Gln Gly Gln Arg Val Ile Ala His Asn Thr Arg Ala
    290                 295                 300

Pro Phe Gln Asp Val Thr Asn Asn Trp Asn Trp Asp Leu Gly Pro Phe
305                 310                 315                 320

Pro Asn Ser Pro Trp Ala Gln Cys Gln Glu Asp Gly Pro Thr Gln Asn
                325                 330                 335

Leu Lys Pro Asp Leu Leu Phe Thr Gln Asp Ser Glu Val Gln Ala Leu
            340                 345                 350

Ala Cys Gln Gln Asp Cys Cys Arg Arg Ser Ile Leu Lys Arg Gln Lys
        355                 360                 365

His Leu Arg
    370


<210> 7908
<211> 199
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1656; "

<220>
<221> source
<223> /note="Gene Symbol: AURKAIP1; "

<220>
<221> source
<223> /note="Gene Name:
      aurora kinase A
      interacting prt 1; "
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<220>
<221> source
<223> /note="Uniprot ID: Q9NWT8; "

<220>
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<400> 7908
Met Leu Leu Gly Arg Leu Thr Ser Gln Leu Leu Arg Ala Val Pro Trp
1   5   10   15

Ala Gly Gly Arg Pro Pro Trp Pro Val Ser Gly Val Leu Gly Ser Arg
            20   25   30

Val Cys Gly Pro Leu Tyr Ser Thr Ser Pro Ala Gly Pro Gly Arg Ala
        35   40   45

Ala Ser Leu Pro Arg Lys Gly Ala Gln Leu Glu Leu Glu Glu Met Leu
    50   55   60

Val Pro Arg Lys Met Ser Val Ser Pro Leu Glu Ser Trp Leu Thr Ala
65   70   75   80

Arg Cys Phe Leu Pro Arg Leu Asp Thr Gly Thr Ala Gly Thr Val Ala
                85   90   95

Pro Pro Gln Ser Tyr Gln Cys Pro Pro Ser Gln Ile Gly Glu Gly Ala
            100   105   110

Glu Gln Gly Asp Glu Gly Val Ala Asp Ala Pro Gln Ile Gln Cys Lys
        115   120   125

Asn Val Leu Lys Ile Arg Arg Arg Lys Met Asn His His Lys Tyr Arg
    130   135   140

Lys Leu Val Lys Lys Thr Arg Phe Leu Arg Arg Lys Val Gln Glu Gly
145   150   155   160

Arg Leu Arg Arg Lys Gln Ile Lys Phe Glu Lys Asp Leu Arg Arg Ile
                165   170   175

Trp Leu Lys Ala Gly Leu Lys Glu Ala Pro Glu Gly Trp Gln Thr Pro
            180   185   190

Lys Ile Tyr Leu Arg Gly Lys
195

<210> 7909
<211> 199
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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interacting prt 1; "

<220>
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<223> /note="Uniprot ID: Q9NWT8; "

<220>
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<223> /note="ENSP ID: ENSP00000340656"

<400> 7909
Met Leu Leu Gly Arg Leu Thr Ser Gln Leu Leu Arg Ala Val Pro Trp
1 5 10 15

Ala Gly Gly Arg Pro Pro Trp Pro Val Ser Gly Val Leu Gly Ser Arg
20 25 30

Val Cys Gly Pro Leu Tyr Ser Thr Ser Pro Ala Gly Pro Gly Arg Ala
35 40 45

Ala Ser Leu Pro Arg Lys Gly Ala Gln Leu Glu Leu Glu Glu Met Leu
50 55 60

Val Pro Arg Lys Met Ser Val Ser Pro Leu Glu Ser Trp Leu Thr Ala
65 70 75 80

Arg Cys Phe Leu Pro Arg Leu Asp Thr Gly Thr Ala Gly Thr Val Ala
85 90 95

Pro Pro Gln Ser Tyr Gln Cys Pro Pro Ser Gln Ile Gly Glu Gly Ala

```
            100                 105                 110

Glu Gln Gly Asp Glu Gly Val Ala Asp Ala Pro Gln Ile Gln Cys Lys
        115                 120                 125

Asn Val Leu Lys Ile Arg Arg Arg Lys Met Asn His His Lys Tyr Arg
    130                 135                 140

Lys Leu Val Lys Lys Thr Arg Phe Leu Arg Arg Lys Val Gln Glu Gly
145                 150                 155                 160

Arg Leu Arg Arg Lys Gln Ile Lys Phe Glu Lys Asp Leu Arg Arg Ile
                165                 170                 175

Trp Leu Lys Ala Gly Leu Lys Glu Ala Pro Glu Gly Trp Gln Thr Pro
            180                 185                 190

Lys Ile Tyr Leu Arg Gly Lys
        195


<210> 7910
<211> 199
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: AURKAIP1; "

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<223> /note="Uniprot ID:  Q9NWT8; "

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<400> 7910
Met Leu Leu Gly Arg Leu Thr Ser Gln Leu Leu Arg Ala Val Pro Trp
1               5                   10                  15
```

Ala Gly Gly Arg Pro Pro Trp Pro Val Ser Gly Val Leu Gly Ser Arg
20 25 30

Val Cys Gly Pro Leu Tyr Ser Thr Ser Pro Ala Gly Pro Gly Arg Ala
35 40 45

Ala Ser Leu Pro Arg Lys Gly Ala Gln Leu Glu Leu Glu Glu Met Leu
50 55 60

Val Pro Arg Lys Met Ser Val Ser Pro Leu Glu Ser Trp Leu Thr Ala
65 70 75 80

Arg Cys Phe Leu Pro Arg Leu Asp Thr Gly Thr Ala Gly Thr Val Ala
85 90 95

Pro Pro Gln Ser Tyr Gln Cys Pro Pro Ser Gln Ile Gly Glu Gly Ala
100 105 110

Glu Gln Gly Asp Glu Gly Val Ala Asp Ala Pro Gln Ile Gln Cys Lys
115 120 125

Asn Val Leu Lys Ile Arg Arg Arg Lys Met Asn His His Lys Tyr Arg
130 135 140

Lys Leu Val Lys Lys Thr Arg Phe Leu Arg Arg Lys Val Gln Glu Gly
145 150 155 160

Arg Leu Arg Arg Lys Gln Ile Lys Phe Glu Lys Asp Leu Arg Arg Ile
165 170 175

Trp Leu Lys Ala Gly Leu Lys Glu Ala Pro Glu Gly Trp Gln Thr Pro
180 185 190

Lys Ile Tyr Leu Arg Gly Lys
195

<210> 7911
<211> 199
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<400> 7911

```
Met Leu Leu Gly Arg Leu Thr Ser Gln Leu Leu Arg Ala Val Pro Trp
1               5                  10                  15

Ala Gly Gly Arg Pro Pro Trp Pro Val Ser Gly Val Leu Gly Ser Arg
            20                  25                  30

Val Cys Gly Pro Leu Tyr Ser Thr Ser Pro Ala Gly Pro Gly Arg Ala
        35                  40                  45

Ala Ser Leu Pro Arg Lys Gly Ala Gln Leu Glu Leu Glu Glu Met Leu
    50                  55                  60

Val Pro Arg Lys Met Ser Val Ser Pro Leu Glu Ser Trp Leu Thr Ala
65                  70                  75                  80

Arg Cys Phe Leu Pro Arg Leu Asp Thr Gly Thr Ala Gly Thr Val Ala
                85                  90                  95

Pro Pro Gln Ser Tyr Gln Cys Pro Pro Ser Gln Ile Gly Glu Gly Ala
            100                 105                 110

Glu Gln Gly Asp Glu Gly Val Ala Asp Ala Pro Gln Ile Gln Cys Lys
        115                 120                 125

Asn Val Leu Lys Ile Arg Arg Arg Lys Met Asn His His Lys Tyr Arg
    130                 135                 140
```

```
Lys Leu Val Lys Lys Thr Arg Phe Leu Arg Arg Lys Val Gln Glu Gly
145                 150                 155                 160


Arg Leu Arg Arg Lys Gln Ile Lys Phe Glu Lys Asp Leu Arg Arg Ile
                165                 170                 175


Trp Leu Lys Ala Gly Leu Lys Glu Ala Pro Glu Gly Trp Gln Thr Pro
            180                 185                 190


Lys Ile Tyr Leu Arg Gly Lys
        195


<210> 7912
<211> 345
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<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q96GD4; "

<220>
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<223> /note="ENSP ID: ENSP00000313950"

<400> 7912
Met Ala Gln Lys Glu Asn Ser Tyr Pro Trp Pro Tyr Gly Arg Gln Thr
1               5                   10                  15


Ala Pro Ser Gly Leu Ser Thr Leu Pro Gln Arg Val Leu Arg Lys Glu
            20                  25                  30


Pro Val Thr Pro Ser Ala Leu Val Leu Met Ser Arg Ser Asn Val Gln
        35                  40                  45


Pro Thr Ala Ala Pro Gly Gln Lys Val Met Glu Asn Ser Ser Gly Thr
    50                  55                  60
```

```
Pro Asp Ile Leu Thr Arg Arg His Phe Thr Ile Asp Asp Phe Glu Ile
65                  70                  75                  80

Gly Arg Pro Leu Gly Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg
                85                  90                  95

Glu Lys Lys Ser His Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser
            100                 105                 110

Gln Ile Glu Lys Glu Gly Val Glu His Gln Leu Arg Arg Glu Ile Glu
        115                 120                 125

Ile Gln Ala His Leu His His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr
    130                 135                 140

Phe Tyr Asp Arg Arg Arg Ile Tyr Leu Ile Leu Glu Tyr Ala Pro Arg
145                 150                 155                 160

Gly Glu Leu Tyr Lys Glu Leu Gln Lys Ser Cys Thr Phe Asp Glu Gln
                165                 170                 175

Arg Thr Ala Thr Ile Met Glu Glu Leu Ala Asp Ala Leu Met Tyr Cys
            180                 185                 190

His Gly Lys Lys Val Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu
        195                 200                 205

Leu Gly Leu Lys Gly Glu Leu Lys Ile Ala Asp Phe Gly Trp Ser Val
    210                 215                 220

His Ala Pro Ser Leu Arg Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr
225                 230                 235                 240

Leu Pro Pro Glu Met Ile Glu Gly Arg Met His Asn Glu Lys Val Asp
                245                 250                 255

Leu Trp Cys Ile Gly Val Leu Cys Tyr Glu Leu Leu Val Gly Asn Pro
            260                 265                 270

Pro Phe Glu Ser Ala Ser His Asn Glu Thr Tyr Arg Arg Ile Val Lys
        275                 280                 285
```

```
Val Asp Leu Lys Phe Pro Ala Ser Val Pro Met Gly Ala Gln Asp Leu
    290                 295                 300

Ile Ser Lys Leu Leu Arg His Asn Pro Ser Glu Arg Leu Pro Leu Ala
305                 310                 315                 320

Gln Val Ser Ala His Pro Trp Val Arg Ala Asn Ser Arg Arg Val Leu
                325                 330                 335

Pro Pro Ser Ala Leu Gln Ser Val Ala
            340                 345


<210> 7913
<211> 303
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID:  Q96GD4; "

<220>
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<223> /note="ENSP ID: ENSP00000443869"

<400> 7913
Met Ser Arg Ser Asn Val Gln Pro Thr Ala Ala Pro Gly Gln Lys Val
1               5                   10                  15

Met Glu Asn Ser Ser Gly Thr Pro Asp Ile Leu Thr Arg His Phe Thr
            20                  25                  30

Ile Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe Gly
        35                  40                  45

Asn Val Tyr Leu Ala Arg Glu Lys Lys Ser His Phe Ile Val Ala Leu
```

```
    50                  55                  60

Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu Gly Val Glu His Gln
65                  70                  75                  80

Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu His His Pro Asn Ile
                85                  90                  95

Leu Arg Leu Tyr Asn Tyr Phe Tyr Asp Arg Arg Arg Ile Tyr Leu Ile
            100                 105                 110

Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys Glu Leu Gln Lys Ser
        115                 120                 125

Cys Thr Phe Asp Glu Gln Arg Thr Ala Thr Ile Met Glu Glu Leu Ala
    130                 135                 140

Asp Ala Leu Met Tyr Cys His Gly Lys Lys Val Ile His Arg Asp Ile
145                 150                 155                 160

Lys Pro Glu Asn Leu Leu Leu Gly Leu Lys Gly Glu Leu Lys Ile Ala
                165                 170                 175

Asp Phe Gly Trp Ser Val His Ala Pro Ser Leu Arg Arg Lys Thr Met
            180                 185                 190

Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg Met
        195                 200                 205

His Asn Glu Lys Val Asp Leu Trp Cys Ile Gly Val Leu Cys Tyr Glu
    210                 215                 220

Leu Leu Val Gly Asn Pro Pro Phe Glu Ser Ala Ser His Asn Glu Thr
225                 230                 235                 240

Tyr Arg Arg Ile Val Lys Val Asp Leu Lys Phe Pro Ala Ser Val Pro
                245                 250                 255

Met Gly Ala Gln Asp Leu Ile Ser Lys Leu Leu Arg His Asn Pro Ser
            260                 265                 270

Glu Arg Leu Pro Leu Ala Gln Val Ser Ala His Pro Trp Val Arg Ala
        275                 280                 285
```

Asn Ser Arg Arg Val Leu Pro Pro Ser Ala Leu Gln Ser Val Ala
290 295 300

<210> 7914
<211> 123
<212> PRT
<213> Homo sapiens

<220>
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<400> 7914
Met Ala Gln Lys Glu Asn Ser Tyr Pro Trp Pro Tyr Gly Arg Gln Thr
1 5 10 15

Ala Pro Ser Gly Leu Ser Thr Leu Pro Gln Arg Val Leu Arg Lys Glu
20 25 30

Pro Val Thr Pro Ser Ala Leu Val Leu Met Ser Arg Ser Asn Val Gln
35 40 45

Pro Thr Ala Ala Pro Gly Gln Lys Val Met Glu Asn Ser Ser Gly Thr
50 55 60

Pro Asp Ile Leu Thr Arg His Phe Thr Ile Asp Asp Phe Glu Ile Gly
65 70 75 80

Arg Pro Leu Gly Lys Asp His Gly Gly Val Gly Arg Cys Ser Asn Val
85 90 95

Leu Pro Trp Glu Glu Gly Asp Ser Gln Arg His Lys Ala Arg Lys Ser
100 105 110

Ala Leu Arg Ala Gln Gly Arg Ala Glu Asp Cys
        115   120

<210> 7915
<211> 69
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1657; "

<220>
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<220>
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<223> /note="Gene Name:
      aurora kinase B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462027"

<400> 7915
Met Ser Arg Ser Asn Val Gln Pro Thr Ala Ala Pro Gly Gln Lys Val
1   5   10   15

Met Glu Asn Ser Ser Gly Thr Pro Asp Ile Leu Thr Arg His Phe Thr
            20   25   30

Ile Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe Gly
        35   40   45

Asn Val Tyr Leu Ala Arg Glu Lys Lys Ser His Phe Ile Val Ala Leu
    50   55   60

Lys Val Leu Phe Lys
65

<210> 7916
<211> 312
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Uniprot ID: Q96GD4; "

<220>
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<400> 7916

```
Met Ala Gln Lys Glu Asn Ser Tyr Pro Trp Pro Tyr Gly Arg Gln Thr
1               5                  10                  15

Ala Pro Ser Gly Leu Ser Thr Leu Pro Gln Arg Val Leu Arg Lys Glu
            20                  25                  30

Pro Val Thr Pro Ser Ala Leu Val Leu Met Ser Arg Ser Asn Val Gln
        35                  40                  45

Pro Thr Ala Ala Pro Gly Gln Lys Val Met Glu Asn Ser Ser Gly Thr
    50                  55                  60

Pro Asp Ile Leu Thr Arg His Phe Thr Ile Asp Asp Phe Glu Ile Gly
65                  70                  75                  80

Arg Pro Leu Gly Lys Ala Leu Leu Cys Leu Trp Pro Glu Ala Ser Ser
                85                  90                  95

Val Ser Ser Pro Ser His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe
            100                 105                 110

Tyr Asp Arg Arg Arg Ile Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly
        115                 120                 125

Glu Leu Tyr Lys Glu Leu Gln Lys Ser Cys Thr Phe Asp Glu Gln Arg
    130                 135                 140

Thr Ala Thr Ile Met Glu Glu Leu Ala Asp Ala Leu Met Tyr Cys His
145                 150                 155                 160
```

```
Gly Lys Lys Val Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu
                165                 170                 175

Gly Leu Lys Gly Glu Leu Lys Ile Ala Asp Phe Gly Trp Ser Val His
            180                 185                 190

Ala Pro Ser Leu Arg Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu
        195                 200                 205

Pro Pro Glu Met Ile Glu Gly Arg Met His Asn Glu Lys Val Asp Leu
    210                 215                 220

Trp Cys Ile Gly Val Leu Cys Tyr Glu Leu Leu Val Gly Asn Pro Pro
225                 230                 235                 240

Phe Glu Ser Ala Ser His Asn Glu Thr Tyr Arg Arg Ile Val Lys Val
                245                 250                 255

Asp Leu Lys Phe Pro Ala Ser Val Pro Met Gly Ala Gln Asp Leu Ile
            260                 265                 270

Ser Lys Leu Leu Arg His Asn Pro Ser Glu Arg Leu Pro Leu Ala Gln
        275                 280                 285

Val Ser Ala His Pro Trp Val Arg Ala Asn Ser Arg Arg Val Leu Pro
    290                 295                 300

Pro Ser Ala Leu Gln Ser Val Ala
305                 310


<210> 7917
<211> 242
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000462858"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7917
Xaa Arg His Phe Thr Ile Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly
1 5 10 15

Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Glu Lys Lys Ser His
20 25 30

Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu
35 40 45

Gly Val Glu His Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu
50 55 60

His His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe Tyr Asp Arg Arg
65 70 75 80

Arg Ile Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys
85 90 95

Glu Leu Gln Lys Ser Cys Thr Phe Asp Glu Gln Arg Thr Ala Thr Ile
100 105 110

Met Glu Glu Leu Ala Asp Ala Leu Met Tyr Cys His Gly Lys Lys Val
115 120 125

Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Gly Leu Lys Gly
130 135 140

Glu Leu Lys Ile Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Leu
145 150 155 160

Arg Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met
165 170 175

Ile Glu Gly Arg Met His Asn Glu Lys Val Asp Leu Lys Phe Pro Ala

```
            180                 185                 190

Ser Val Pro Met Gly Ala Gln Asp Leu Ile Ser Lys Leu Leu Arg His
        195                 200                 205

Asn Pro Ser Glu Arg Leu Pro Leu Ala Gln Val Ser Ala His Pro Trp
    210                 215                 220

Val Arg Ala Asn Ser Arg Arg Val Leu Pro Pro Ser Ala Leu Gln Ser
225                 230                 235                 240

Val Ala
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<210> 7918
<211> 228
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000462930"

<400> 7918

```
Met Ala Gln Lys Glu Asn Ser Tyr Pro Trp Pro Tyr Gly Arg Gln Thr
1               5                   10                  15

Ala Pro Ser Gly Leu Ser Thr Leu Pro Gln Arg Val Leu Arg Lys Glu
            20                  25                  30

Pro Val Thr Pro Ser Ala Leu Val Leu Met Ser Arg Ser Asn Val Gln
        35                  40                  45

Pro Thr Ala Ala Pro Gly Gln Lys Val Met Glu Asn Ser Ser Gly Thr
    50                  55                  60
```

```
Pro Asp Ile Leu Thr Arg His Phe Thr Ile Asp Asp Phe Glu Ile Gly
65                  70                  75                  80

Arg Pro Leu Gly Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Glu
                85                  90                  95

Lys Lys Ser His Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln
            100                 105                 110

Ile Glu Lys Glu Gly Val Glu His Gln Leu Arg Arg Glu Ile Glu Ile
        115                 120                 125

Gln Ala His Leu His His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe
    130                 135                 140

Tyr Asp Arg Arg Arg Ile Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly
145                 150                 155                 160

Glu Leu Tyr Lys Glu Leu Gln Lys Ser Cys Thr Phe Asp Glu Gln Arg
                165                 170                 175

Thr Ala Thr Ile Met Glu Glu Leu Ala Asp Ala Leu Met Tyr Cys His
            180                 185                 190

Gly Lys Lys Val Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu
        195                 200                 205

Gly Leu Lys Gly Glu Leu Lys Ile Ala Asp Phe Gly Trp Ser Val His
    210                 215                 220

Ala Pro Ser Leu
225
```

<210> 7919
<211> 230
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000463636"

<400> 7919
Met Ser Arg Ser Asn Val Gln Pro Thr Ala Ala Pro Gly Gln Lys Val
1 5 10 15

Met Glu Asn Ser Ser Gly Thr Pro Asp Ile Leu Thr Arg Arg His Phe
20 25 30

Thr Ile Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe
35 40 45

Gly Asn Val Tyr Leu Ala Arg Glu Lys Lys Ser His Phe Ile Val Ala
50 55 60

Leu Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu Gly Val Glu His
65 70 75 80

Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu His His Pro Asn
85 90 95

Ile Leu Arg Leu Tyr Asn Tyr Phe Tyr Asp Arg Arg Arg Ile Tyr Leu
100 105 110

Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys Glu Leu Gln Lys
115 120 125

Ser Cys Thr Phe Asp Glu Gln Arg Thr Ala Thr Ile Met Glu Glu Leu
130 135 140

Ala Asp Ala Leu Met Tyr Cys His Gly Lys Lys Val Ile His Arg Asp
145 150 155 160

Ile Lys Pro Glu Asn Leu Leu Leu Gly Leu Lys Gly Glu Leu Lys Ile
165 170 175

Ala Asp Phe Gly Trp Ser Val His Ala Pro Ser Leu Arg Arg Lys Thr
180 185 190

Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg
195 200 205

Met His Asn Glu Lys Val Asp Leu Trp Cys Ile Gly Val Leu Cys Tyr
210 215 220

Glu Leu Leu Val Gly Asn
225 230

<210> 7920
<211> 344
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Uniprot ID: Q96GD4; "

<220>
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<223> /note="ENSP ID: ENSP00000463999"

<400> 7920
Met Ala Gln Lys Glu Asn Ser Tyr Pro Trp Pro Tyr Gly Arg Gln Thr
1 5 10 15

Ala Pro Ser Gly Leu Ser Thr Leu Pro Gln Arg Val Leu Arg Lys Glu
20 25 30

Pro Val Thr Pro Ser Ala Leu Val Leu Met Ser Arg Ser Asn Val Gln
35 40 45

Pro Thr Ala Ala Pro Gly Gln Lys Val Met Glu Asn Ser Ser Gly Thr
50 55 60

```
Pro Asp Ile Leu Thr Arg His Phe Thr Ile Asp Asp Phe Glu Ile Gly
65                  70                  75                  80

Arg Pro Leu Gly Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Glu
                85                  90                  95

Lys Lys Ser His Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln
            100                 105                 110

Ile Glu Lys Glu Gly Val Glu His Gln Leu Arg Arg Glu Ile Glu Ile
        115                 120                 125

Gln Ala His Leu His His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe
    130                 135                 140

Tyr Asp Arg Arg Arg Ile Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly
145                 150                 155                 160

Glu Leu Tyr Lys Glu Leu Gln Lys Ser Cys Thr Phe Asp Glu Gln Arg
                165                 170                 175

Thr Ala Thr Ile Met Glu Glu Leu Ala Asp Ala Leu Met Tyr Cys His
            180                 185                 190

Gly Lys Lys Val Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu
        195                 200                 205

Gly Leu Lys Gly Glu Leu Lys Ile Ala Asp Phe Gly Trp Ser Val His
    210                 215                 220

Ala Pro Ser Leu Arg Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu
225                 230                 235                 240

Pro Pro Glu Met Ile Glu Gly Arg Met His Asn Glu Lys Val Asp Leu
                245                 250                 255

Trp Cys Ile Gly Val Leu Cys Tyr Glu Leu Leu Val Gly Asn Pro Pro
            260                 265                 270

Phe Glu Ser Ala Ser His Asn Glu Thr Tyr Arg Arg Ile Val Lys Val
        275                 280                 285

Asp Leu Lys Phe Pro Ala Ser Val Pro Met Gly Ala Gln Asp Leu Ile
```

290 295 300

Ser Lys Leu Leu Arg His Asn Pro Ser Glu Arg Leu Pro Leu Ala Gln
305 310 315 320

Val Ser Ala His Pro Trp Val Arg Ala Asn Ser Arg Arg Val Leu Pro
325 330 335

Pro Ser Ala Leu Gln Ser Val Ala
340

<210> 7921
<211> 172
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000464031"

<400> 7921
Met Ser Arg Ser Asn Val Gln Pro Thr Ala Ala Pro Gly Gln Lys Val
1 5 10 15

Met Glu Asn Ser Ser Gly Thr Pro Asp Ile Leu Thr Arg His Phe Thr
20 25 30

Ile Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys Gly Lys Phe Gly
35 40 45

Asn Val Tyr Leu Ala Arg Glu Lys Lys Ser His Phe Ile Val Ala Leu
50 55 60

Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu Gly Val Glu His Gln
65 70 75 80

```
Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu His His Pro Asn Ile
                85                  90                  95

Leu Arg Leu Tyr Asn Tyr Phe Tyr Asp Arg Arg Arg Ile Tyr Leu Ile
            100                 105                 110

Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys Glu Leu Gln Lys Ser
        115                 120                 125

Cys Thr Phe Asp Glu Gln Arg Thr Ala Thr Ile Met Glu Glu Leu Ala
    130                 135                 140

Asp Ala Leu Met Tyr Cys His Gly Lys Lys Val Ile His Arg Asp Ile
145                 150                 155                 160

Lys Pro Glu Asn Leu Leu Leu Gly Leu Lys Gly Glu
                165                 170


<210> 7922
<211> 309
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1658; "

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q9UQB9; "

<220>
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<223> /note="ENSP ID: ENSP00000302898"

<400> 7922
Met Ser Ser Pro Arg Ala Val Val Gln Leu Gly Lys Ala Gln Pro Ala
1               5                   10                  15

Gly Glu Glu Leu Ala Thr Ala Asn Gln Thr Ala Gln Gln Pro Ser Ser
```

```
            20                  25                  30

Pro Ala Met Arg Arg Leu Thr Val Asp Asp Phe Glu Ile Gly Arg Pro
        35                  40                  45

Leu Gly Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Leu Lys Glu
    50                  55                  60

Ser His Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln Ile Glu
65                  70                  75                  80

Lys Glu Gly Leu Glu His Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala
                85                  90                  95

His Leu Gln His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe His Asp
            100                 105                 110

Ala Arg Arg Val Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu
        115                 120                 125

Tyr Lys Glu Leu Gln Lys Ser Glu Lys Leu Asp Glu Gln Arg Thr Ala
    130                 135                 140

Thr Ile Ile Glu Glu Leu Ala Asp Ala Leu Thr Tyr Cys His Asp Lys
145                 150                 155                 160

Lys Val Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Gly Phe
                165                 170                 175

Arg Gly Glu Val Lys Ile Ala Asp Phe Gly Trp Ser Val His Thr Pro
            180                 185                 190

Ser Leu Arg Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro
        195                 200                 205

Glu Met Ile Glu Gly Arg Thr Tyr Asp Glu Lys Val Asp Leu Trp Cys
    210                 215                 220

Ile Gly Val Leu Cys Tyr Glu Leu Leu Val Gly Tyr Pro Pro Phe Glu
225                 230                 235                 240

Ser Ala Ser His Ser Glu Thr Tyr Arg Arg Ile Leu Lys Val Asp Val
                245                 250                 255
```

```
Arg Phe Pro Leu Ser Met Pro Leu Gly Ala Arg Asp Leu Ile Ser Arg
            260                 265                 270

Leu Leu Arg Tyr Gln Pro Leu Glu Arg Leu Pro Leu Ala Gln Ile Leu
        275                 280                 285

Lys His Pro Trp Val Gln Ala His Ser Arg Arg Val Leu Pro Pro Cys
    290                 295                 300

Ala Gln Met Ala Ser
305
```

<210> 7923
<211> 274
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1658; "

<220>
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<223> /note="Gene Symbol: AURKC; "

<220>
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<223> /note="Gene Name:
aurora kinase C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406798"

<400> 7923

```
Met Arg Arg Leu Thr Val Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly
1               5                   10                  15

Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Leu Lys Glu Ser His
            20                  25                  30

Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu
        35                  40                  45

Gly Leu Glu His Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu
    50                  55                  60
```

```
Gln His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe His Asp Ala Arg
65                  70                  75                  80

Arg Val Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys
                85                  90                  95

Glu Leu Gln Lys Ser Glu Lys Leu Asp Glu Gln Arg Thr Ala Thr Ile
            100                 105                 110

Ile Glu Glu Leu Ala Asp Ala Leu Thr Tyr Cys His Asp Lys Lys Val
        115                 120                 125

Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Gly Phe Arg Gly
    130                 135                 140

Glu Val Lys Ile Ala Asp Phe Gly Trp Ser Val His Pro Leu Pro Glu
145                 150                 155                 160

Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile
                165                 170                 175

Glu Gly Arg Thr Tyr Asp Glu Lys Val Asp Leu Trp Cys Ile Gly Val
            180                 185                 190

Leu Cys Tyr Glu Leu Leu Val Gly Tyr Pro Pro Phe Glu Ser Ala Ser
        195                 200                 205

His Ser Glu Thr Tyr Arg Arg Ile Leu Lys Val Asp Val Arg Phe Pro
    210                 215                 220

Leu Ser Met Pro Leu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Arg
225                 230                 235                 240

Tyr Gln Pro Leu Glu Arg Leu Pro Leu Ala Gln Ile Leu Lys His Pro
                245                 250                 255

Trp Val Gln Ala His Ser Arg Arg Val Leu Pro Pro Cys Ala Gln Met
            260                 265                 270

Ala Ser
```

<210> 7924

<211> 290
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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aurora kinase C; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UQB9; "

<220>
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<223> /note="ENSP ID: ENSP00000407162"

<400> 7924

Met	Ala	Thr	Ala	Asn	Gln	Thr	Ala	Gln	Gln	Pro	Ser	Ser	Pro	Ala	Met
1				5				10					15		

Arg	Arg	Leu	Thr	Val	Asp	Asp	Phe	Glu	Ile	Gly	Arg	Pro	Leu	Gly	Lys
			20				25				30				

Gly	Lys	Phe	Gly	Asn	Val	Tyr	Leu	Ala	Arg	Leu	Lys	Glu	Ser	His	Phe
		35				40				45					

Ile	Val	Ala	Leu	Lys	Val	Leu	Phe	Lys	Ser	Gln	Ile	Glu	Lys	Glu	Gly
	50				55				60						

Leu	Glu	His	Gln	Leu	Arg	Arg	Glu	Ile	Glu	Ile	Gln	Ala	His	Leu	Gln
65				70				75					80		

His	Pro	Asn	Ile	Leu	Arg	Leu	Tyr	Asn	Tyr	Phe	His	Asp	Ala	Arg	Arg
			85				90				95				

Val	Tyr	Leu	Ile	Leu	Glu	Tyr	Ala	Pro	Arg	Gly	Glu	Leu	Tyr	Lys	Glu
			100				105				110				

Leu	Gln	Lys	Ser	Glu	Lys	Leu	Asp	Glu	Gln	Arg	Thr	Ala	Thr	Ile	Ile
		115				120				125					

```
Glu Glu Leu Ala Asp Ala Leu Thr Tyr Cys His Asp Lys Lys Val Ile
    130                 135                 140

His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Gly Phe Arg Gly Glu
145                 150                 155                 160

Val Lys Ile Ala Asp Phe Gly Trp Ser Val His Thr Pro Ser Leu Arg
                165                 170                 175

Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile
            180                 185                 190

Glu Gly Arg Thr Tyr Asp Glu Lys Val Asp Leu Trp Cys Ile Gly Val
        195                 200                 205

Leu Cys Tyr Glu Leu Leu Val Gly Tyr Pro Pro Phe Glu Ser Ala Ser
    210                 215                 220

His Ser Glu Thr Tyr Arg Arg Ile Leu Lys Val Asp Val Arg Phe Pro
225                 230                 235                 240

Leu Ser Met Pro Leu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Arg
                245                 250                 255

Tyr Gln Pro Leu Glu Arg Leu Pro Leu Ala Gln Ile Leu Lys His Pro
            260                 265                 270

Trp Val Gln Ala His Ser Arg Arg Val Leu Pro Pro Cys Ala Gln Met
        275                 280                 285

Ala Ser
    290
```

<210> 7925
<211> 46
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000468918"

<400> 7925
Met Ser Ser Pro Arg Ala Val Val Gln Leu Gly Lys Ala Gln Pro Ala
1 5 10 15

Gly Glu Glu Cys Glu Ser Gln Arg Gln Arg Lys Asp Ala Gly Lys Ala
20 25 30

Gly Asp Trp Ala Arg Gly Arg Val His Arg Arg His Met Cys
35 40 45

<210> 7926
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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aurora kinase C; "

<220>
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<400> 7926
Arg Gly Glu Leu Tyr Lys Glu Leu Gln Lys Ser Glu Lys Leu Asp Glu
1 5 10 15

Gln Arg Thr Ala Thr Val Arg Arg Lys Thr Met Cys Gly Thr Leu Asp
20 25 30

Tyr Leu Pro Pro Glu Met Ile Glu Gly Arg Thr Tyr Asp Glu Lys Val
35 40 45

```
Asp Leu Trp Cys Ile Gly Val Leu Cys Tyr Glu Leu Leu Val Gly Tyr
    50                  55                  60

Pro Pro Phe Glu Ser Ala Ser His Ser Glu Thr Tyr Arg Arg Ile Leu
65                  70                  75                  80

Lys Val Asp Val Arg Phe Pro Leu Ser Met Pro Leu Gly Ala Arg Asp
                85                  90                  95

Leu Ile Ser Arg Leu Leu Arg Tyr Gln Pro Leu Glu Arg Leu Pro Leu
            100                 105                 110

Ala Gln Ile Leu Lys His Pro Trp Val Gln Ala His Ser Arg Arg Val
        115                 120                 125

Leu Pro Pro Cys Ala Gln Met Ala Ser
    130                 135


<210> 7927
<211> 306
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
      aurora kinase C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000469983"

<400> 7927
Met Ser Ser Pro Arg Ala Val Val Gln Leu Gly Lys Ala Gln Pro Ala
1               5                   10                  15

Gly Glu Glu Ser Asn Gln Thr Ala Gln Gln Pro Ser Ser Pro Ala Met
            20                  25                  30

Arg Arg Leu Thr Val Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly Lys
```

```
        35                  40                  45

Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Leu Lys Glu Ser His Phe
    50                  55                  60

Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu Gly
65                  70                  75                  80

Leu Glu His Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu Gln
                85                  90                  95

His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe His Asp Ala Arg Arg
            100                 105                 110

Val Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys Glu
        115                 120                 125

Leu Gln Lys Ser Glu Lys Leu Asp Glu Gln Arg Thr Ala Thr Ile Ile
    130                 135                 140

Glu Glu Leu Ala Asp Ala Leu Thr Tyr Cys His Asp Lys Lys Val Ile
145                 150                 155                 160

His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Gly Phe Arg Gly Glu
                165                 170                 175

Val Lys Ile Ala Asp Phe Gly Trp Ser Val His Thr Pro Ser Leu Arg
            180                 185                 190

Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met Ile
        195                 200                 205

Glu Gly Arg Thr Tyr Asp Glu Lys Val Asp Leu Trp Cys Ile Gly Val
    210                 215                 220

Leu Cys Tyr Glu Leu Leu Val Gly Tyr Pro Pro Phe Glu Ser Ala Ser
225                 230                 235                 240

His Ser Glu Thr Tyr Arg Arg Ile Leu Lys Val Asp Val Arg Phe Pro
                245                 250                 255

Leu Ser Met Pro Leu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu Arg
            260                 265                 270
```

Tyr Gln Pro Leu Glu Arg Leu Pro Leu Ala Gln Ile Leu Lys His Pro
275 280 285

Trp Val Gln Ala His Ser Arg Arg Val Leu Pro Pro Cys Ala Gln Met
290 295 300

Ala Ser
305

<210> 7928
<211> 113
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
aurora kinase C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470465"

<400> 7928
Met Arg Arg Leu Thr Val Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly
1 5 10 15

Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Leu Lys Glu Ser His
20 25 30

Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu
35 40 45

Gly Leu Glu His Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu
50 55 60

Gln His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe His Asp Ala Arg
65 70 75 80

```
Arg Val Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys
                85                  90                  95

Glu Leu Gln Lys Ser Glu Lys Leu Asp Glu Gln Arg Thr Ala Thr Val
            100                 105                 110

Arg
```

<210> 7929
<211> 275
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9UQB9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000471830"

<400> 7929

```
Met Arg Arg Leu Thr Val Asp Asp Phe Glu Ile Gly Arg Pro Leu Gly
1               5                   10                  15

Lys Gly Lys Phe Gly Asn Val Tyr Leu Ala Arg Leu Lys Glu Ser His
            20                  25                  30

Phe Ile Val Ala Leu Lys Val Leu Phe Lys Ser Gln Ile Glu Lys Glu
        35                  40                  45

Gly Leu Glu His Gln Leu Arg Arg Glu Ile Glu Ile Gln Ala His Leu
    50                  55                  60

Gln His Pro Asn Ile Leu Arg Leu Tyr Asn Tyr Phe His Asp Ala Arg
65                  70                  75                  80
```

Arg Val Tyr Leu Ile Leu Glu Tyr Ala Pro Arg Gly Glu Leu Tyr Lys
85 90 95

Glu Leu Gln Lys Ser Glu Lys Leu Asp Glu Gln Arg Thr Ala Thr Ile
100 105 110

Ile Glu Glu Leu Ala Asp Ala Leu Thr Tyr Cys His Asp Lys Lys Val
115 120 125

Ile His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Gly Phe Arg Gly
130 135 140

Glu Val Lys Ile Ala Asp Phe Gly Trp Ser Val His Thr Pro Ser Leu
145 150 155 160

Arg Arg Lys Thr Met Cys Gly Thr Leu Asp Tyr Leu Pro Pro Glu Met
165 170 175

Ile Glu Gly Arg Thr Tyr Asp Glu Lys Val Asp Leu Trp Cys Ile Gly
180 185 190

Val Leu Cys Tyr Glu Leu Leu Val Gly Tyr Pro Pro Phe Glu Ser Ala
195 200 205

Ser His Ser Glu Thr Tyr Arg Arg Ile Leu Lys Val Asp Val Arg Phe
210 215 220

Pro Leu Ser Met Pro Leu Gly Ala Arg Asp Leu Ile Ser Arg Leu Leu
225 230 235 240

Arg Tyr Gln Pro Leu Glu Arg Leu Pro Leu Ala Gln Ile Leu Lys His
245 250 255

Pro Trp Val Gln Ala His Ser Arg Arg Val Leu Pro Pro Cys Ala Gln
260 265 270

Met Ala Ser
275

<210> 7930
<211> 1259
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1659; "

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<223> /note="Gene Symbol: AUTS2; "

<220>
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<223> /note="Gene Name:
autism susceptibility candidate 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WXX7; "

<220>
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<223> /note="ENSP ID: ENSP00000344087"

<400> 7930

```
Met Asp Gly Pro Thr Arg Gly His Gly Leu Arg Lys Lys Arg Arg Ser
1               5                   10                  15


Arg Ser Gln Arg Asp Arg Glu Arg Arg Ser Arg Gly Gly Leu Gly Ala
            20                  25                  30


Gly Ala Ala Gly Gly Gly Gly Ala Gly Arg Thr Arg Ala Leu Ser Leu
        35                  40                  45


Ala Ser Ser Ser Gly Ser Asp Lys Glu Asp Asn Gly Lys Pro Pro Ser
    50                  55                  60


Ser Ala Pro Ser Arg Pro Arg Pro Pro Arg Arg Lys Arg Arg Glu Ser
65                  70                  75                  80


Thr Ser Ala Glu Glu Asp Ile Ile Asp Gly Phe Ala Met Thr Ser Phe
                85                  90                  95


Val Thr Phe Glu Ala Leu Glu Lys Asp Val Ala Leu Lys Pro Gln Glu
            100                 105                 110


Arg Val Glu Lys Arg Gln Thr Pro Leu Thr Lys Lys Lys Arg Glu Ala
        115                 120                 125


Leu Thr Asn Gly Leu Ser Phe His Ser Lys Lys Ser Arg Leu Ser His
```

```
    130                 135                 140

Pro His His Tyr Ser Ser Asp Arg Glu Asn Asp Arg Asn Leu Cys Gln
145                 150                 155                 160

His Leu Gly Lys Arg Lys Lys Met Pro Lys Ala Leu Arg Gln Leu Lys
                165                 170                 175

Pro Gly Gln Asn Ser Cys Arg Asp Ser Asp Ser Glu Ser Ala Ser Gly
            180                 185                 190

Glu Ser Lys Gly Phe His Arg Ser Ser Ser Arg Glu Arg Leu Ser Asp
        195                 200                 205

Ser Ser Ala Pro Ser Ser Leu Gly Thr Gly Tyr Phe Cys Asp Ser Asp
    210                 215                 220

Ser Asp Gln Glu Glu Lys Ala Ser Asp Ala Ser Ser Glu Lys Leu Phe
225                 230                 235                 240

Asn Thr Val Ile Val Asn Lys Asp Pro Glu Leu Gly Val Gly Thr Leu
                245                 250                 255

Pro Glu His Asp Ser Gln Asp Ala Gly Pro Ile Val Pro Lys Ile Ser
            260                 265                 270

Gly Leu Glu Arg Ser Gln Glu Lys Ser Gln Asp Cys Cys Lys Glu Pro
        275                 280                 285

Ile Phe Glu Pro Val Val Leu Lys Asp Pro Cys Pro Gln Val Ala Gln
    290                 295                 300

Pro Ile Pro Gln Pro Gln Thr Glu Pro Gln Leu Arg Ala Pro Ser Pro
305                 310                 315                 320

Asp Pro Asp Leu Val Gln Arg Thr Glu Ala Pro Pro Gln Pro Pro Pro
                325                 330                 335

Leu Ser Thr Gln Pro Pro Gln Gly Pro Pro Glu Ala Gln Leu Gln Pro
            340                 345                 350

Ala Pro Gln Pro Gln Val Gln Arg Pro Pro Arg Pro Gln Ser Pro Thr
        355                 360                 365
```

```
Gln Leu Leu His Gln Asn Leu Pro Pro Val Gln Ala His Pro Ser Ala
    370                 375                 380

Gln Ser Leu Ser Gln Pro Leu Ser Ala Tyr Asn Ser Ser Ser Leu Ser
385                 390                 395                 400

Leu Asn Ser Leu Ser Ser Ser Arg Ser Ser Thr Pro Ala Lys Thr Gln
                405                 410                 415

Pro Ala Pro Pro His Ile Ser His His Pro Ser Ala Ser Pro Phe Pro
            420                 425                 430

Leu Ser Leu Pro Asn His Ser Pro Leu His Ser Phe Thr Pro Thr Leu
        435                 440                 445

Gln Pro Pro Ala His Ser His His Pro Asn Met Phe Ala Pro Pro Thr
    450                 455                 460

Ala Leu Pro Pro Pro Pro Pro Leu Thr Ser Gly Ser Leu Gln Val Ala
465                 470                 475                 480

Gly His Pro Ala Gly Ser Thr Tyr Ser Glu Gln Asp Ile Leu Arg Gln
                485                 490                 495

Glu Leu Asn Thr Arg Phe Leu Ala Ser Gln Ser Ala Asp Arg Gly Ala
            500                 505                 510

Ser Leu Gly Pro Pro Pro Tyr Leu Arg Thr Glu Phe His Gln His Gln
        515                 520                 525

His Gln His Gln His Thr His Gln His Thr His Gln His Thr Phe Thr
    530                 535                 540

Pro Phe Pro His Ala Ile Pro Pro Thr Ala Ile Met Pro Thr Pro Ala
545                 550                 555                 560

Pro Pro Met Phe Asp Lys Tyr Pro Thr Lys Val Asp Pro Phe Tyr Arg
                565                 570                 575

His Ser Leu Phe His Ser Tyr Pro Pro Ala Val Ser Gly Ile Pro Pro
            580                 585                 590
```

```
Met Ile Pro Pro Thr Gly Pro Phe Gly Ser Leu Gln Gly Ala Phe Gln
        595                 600                 605

Pro Lys Thr Ser Asn Pro Ile Asp Val Ala Ala Arg Pro Gly Thr Val
    610                 615                 620

Pro His Thr Leu Leu Gln Lys Asp Pro Arg Leu Thr Asp Pro Phe Arg
625                 630                 635                 640

Pro Met Leu Arg Lys Pro Gly Lys Trp Cys Ala Met His Val His Ile
                645                 650                 655

Ala Trp Gln Ile Tyr His His Gln Gln Lys Val Lys Lys Gln Met Gln
            660                 665                 670

Ser Asp Pro His Lys Leu Asp Phe Gly Leu Lys Pro Glu Phe Leu Ser
        675                 680                 685

Arg Pro Pro Gly Pro Ser Leu Phe Gly Ala Ile His His Pro His Asp
    690                 695                 700

Leu Ala Arg Pro Ser Thr Leu Phe Ser Ala Ala Gly Ala Ala His Pro
705                 710                 715                 720

Thr Gly Thr Pro Phe Gly Pro Pro Pro His His Ser Asn Phe Leu Asn
                725                 730                 735

Pro Ala Ala His Leu Glu Pro Phe Asn Arg Pro Ser Thr Phe Thr Gly
            740                 745                 750

Leu Ala Ala Val Gly Gly Asn Ala Phe Gly Gly Leu Gly Asn Pro Ser
        755                 760                 765

Val Thr Pro Asn Ser Met Phe Gly His Lys Asp Gly Pro Ser Val Gln
    770                 775                 780

Asn Phe Ser Asn Pro His Glu Pro Trp Asn Arg Leu His Arg Thr Pro
785                 790                 795                 800

Pro Ser Phe Pro Thr Pro Pro Pro Trp Leu Lys Pro Gly Glu Leu Glu
                805                 810                 815
```

```
Arg Ser Ala Ser Ala Ala Ala His Asp Arg Asp Arg Asp Val Asp Lys
            820                 825                 830

Arg Asp Ser Ser Val Ser Lys Asp Asp Lys Glu Arg Glu Ser Val Glu
        835                 840                 845

Lys Arg His Ser Ser His Pro Ser Pro Ala Pro Val Leu Pro Val Asn
    850                 855                 860

Ala Leu Gly His Thr Arg Ser Ser Thr Glu Gln Ile Arg Ala His Leu
865                 870                 875                 880

Asn Thr Glu Ala Arg Glu Lys Asp Lys Pro Lys Glu Arg Glu Arg Asp
                885                 890                 895

His Ser Glu Ser Arg Lys Asp Leu Ala Ala Asp Glu His Lys Ala Lys
            900                 905                 910

Glu Gly His Leu Pro Glu Lys Asp Gly His Gly His Glu Gly Arg Ala
        915                 920                 925

Ala Gly Glu Glu Ala Lys Gln Leu Ala Arg Val Pro Ser Pro Tyr Val
    930                 935                 940

Arg Thr Pro Val Val Glu Ser Ala Arg Pro Asn Ser Thr Ser Ser Arg
945                 950                 955                 960

Glu Ala Glu Pro Arg Lys Gly Glu Pro Ala Tyr Glu Asn Pro Lys Lys
                965                 970                 975

Ser Ser Glu Val Lys Val Lys Glu Glu Arg Lys Glu Asp His Asp Leu
            980                 985                 990

Pro Pro Glu Ala Pro Gln Thr His  Arg Ala Ser Glu Pro  Pro Pro
Pro
        995                 1000                1005

Asn Ser  Ser Ser Ser Val His  Pro Gly Pro Leu Ala  Ser Met Pro
    1010                1015                1020

Met Thr  Val Gly Val Thr Gly  Ile His Pro Met Asn  Ser Ile Ser
    1025                1030                1035
```

Ser Leu Asp Arg Thr Arg Met Met Thr Pro Phe Met Gly Ile Ser
1040 1045 1050

Pro Leu Pro Gly Gly Glu Arg Phe Pro Tyr Pro Ser Phe His Trp
1055 1060 1065

Asp Pro Ile Arg Asp Pro Leu Arg Asp Pro Tyr Arg Glu Leu Asp
1070 1075 1080

Ile His Arg Arg Asp Pro Leu Gly Arg Asp Phe Leu Leu Arg Asn
1085 1090 1095

Asp Pro Leu His Arg Leu Ser Thr Pro Arg Leu Tyr Glu Ala Asp
1100 1105 1110

Arg Ser Phe Arg Asp Arg Glu Pro His Asp Tyr Ser His His His
1115 1120 1125

His His His His His Pro Leu Ser Val Asp Pro Arg Arg Glu His
1130 1135 1140

Glu Arg Gly Gly His Leu Asp Glu Arg Glu Arg Leu His Met Leu
1145 1150 1155

Arg Glu Asp Tyr Glu His Thr Arg Leu His Ser Val His Pro Ala
1160 1165 1170

Ser Leu Asp Gly His Leu Pro His Pro Ser Leu Ile Thr Pro Gly
1175 1180 1185

Leu Pro Ser Met His Tyr Pro Arg Ile Ser Pro Thr Ala Gly Asn
1190 1195 1200

Gln Asn Gly Leu Leu Asn Lys Thr Pro Pro Thr Ala Ala Leu Ser
1205 1210 1215

Ala Pro Pro Pro Leu Ile Ser Thr Leu Gly Gly Arg Pro Val Ser
1220 1225 1230

Pro Arg Arg Thr Thr Pro Leu Ser Ala Glu Ile Arg Glu Arg Pro
1235 1240 1245

Pro Ser His Thr Leu Lys Asp Ile Glu Ala Arg

1250 1255

<210> 7931
<211> 1235
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1659; "

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autism susceptibility candidate 2; "

<220>
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<223> /note="Uniprot ID: Q8WXX7; "

<220>
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<400> 7931
Met Asp Gly Pro Thr Arg Gly His Gly Leu Arg Lys Lys Arg Arg Ser
1 5 10 15

Arg Ser Gln Arg Asp Arg Glu Arg Arg Ser Arg Gly Gly Leu Gly Ala
20 25 30

Gly Ala Ala Gly Gly Gly Gly Ala Gly Arg Thr Arg Ala Leu Ser Leu
35 40 45

Ala Ser Ser Ser Gly Ser Asp Lys Glu Asp Asn Gly Lys Pro Pro Ser
50 55 60

Ser Ala Pro Ser Arg Pro Arg Pro Pro Arg Arg Lys Arg Arg Glu Ser
65 70 75 80

Thr Ser Ala Glu Glu Asp Ile Ile Asp Gly Phe Ala Met Thr Ser Phe
85 90 95

Val Thr Phe Glu Ala Leu Glu Lys Asp Val Ala Leu Lys Pro Gln Glu
100 105 110

```
Arg Val Glu Lys Arg Gln Thr Pro Leu Thr Lys Lys Lys Arg Glu Ala
        115                 120                 125

Leu Thr Asn Gly Leu Ser Phe His Ser Lys Lys Ser Arg Leu Ser His
    130                 135                 140

Pro His His Tyr Ser Ser Asp Arg Glu Asn Asp Arg Asn Leu Cys Gln
145                 150                 155                 160

His Leu Gly Lys Arg Lys Lys Met Pro Lys Ala Leu Arg Gln Leu Lys
                165                 170                 175

Pro Gly Gln Asn Ser Cys Arg Asp Ser Asp Ser Glu Ser Ala Ser Gly
            180                 185                 190

Glu Ser Lys Gly Phe His Arg Ser Ser Ser Arg Glu Arg Leu Ser Asp
        195                 200                 205

Ser Ser Ala Pro Ser Ser Leu Gly Thr Gly Tyr Phe Cys Asp Ser Asp
    210                 215                 220

Ser Asp Gln Glu Glu Lys Ala Ser Asp Ala Ser Ser Glu Lys Leu Phe
225                 230                 235                 240

Asn Thr Val Ile Val Asn Lys Asp Pro Glu Leu Gly Val Gly Thr Leu
                245                 250                 255

Pro Glu His Asp Ser Gln Asp Ala Gly Pro Ile Val Pro Lys Ile Ser
            260                 265                 270

Gly Leu Glu Arg Ser Gln Glu Lys Ser Gln Asp Cys Cys Lys Glu Pro
        275                 280                 285

Ile Phe Glu Pro Val Val Leu Lys Asp Pro Cys Pro Gln Val Ala Gln
    290                 295                 300

Pro Ile Pro Gln Pro Gln Thr Glu Pro Gln Leu Arg Ala Pro Ser Pro
305                 310                 315                 320

Asp Pro Asp Leu Val Gln Arg Thr Glu Ala Pro Pro Gln Pro Pro Pro
                325                 330                 335
```

```
Leu Ser Thr Gln Pro Pro Gln Gly Pro Pro Glu Ala Gln Leu Gln Pro
            340                 345                 350

Ala Pro Gln Pro Gln Val Gln Arg Pro Pro Arg Pro Gln Ser Pro Thr
        355                 360                 365

Gln Leu Leu His Gln Asn Leu Pro Pro Val Gln Ala His Pro Ser Ala
    370                 375                 380

Gln Ser Leu Ser Gln Pro Leu Ser Ala Tyr Asn Ser Ser Ser Leu Ser
385                 390                 395                 400

Leu Asn Ser Leu Ser Ser Ser Arg Ser Ser Thr Pro Ala Lys Thr Gln
                405                 410                 415

Pro Ala Pro Pro His Ile Ser His His Pro Ser Ala Ser Pro Phe Pro
            420                 425                 430

Leu Ser Leu Pro Asn His Ser Pro Leu His Ser Phe Thr Pro Thr Leu
        435                 440                 445

Gln Pro Pro Ala His Ser His His Pro Asn Met Phe Ala Pro Pro Thr
    450                 455                 460

Ala Leu Pro Pro Pro Pro Pro Leu Thr Ser Gly Ser Leu Gln Val Ala
465                 470                 475                 480

Gly His Pro Ala Gly Ser Thr Tyr Ser Glu Gln Asp Ile Leu Arg Gln
                485                 490                 495

Glu Leu Asn Thr Arg Phe Leu Ala Ser Gln Ser Ala Asp Arg Gly Ala
            500                 505                 510

Ser Leu Gly Pro Pro Pro Tyr Leu Arg Thr Glu Phe His Gln His Gln
        515                 520                 525

His Gln His Gln His Thr His Gln His Thr His Gln His Thr Phe Thr
    530                 535                 540

Pro Phe Pro His Ala Ile Pro Pro Thr Ala Ile Met Pro Thr Pro Ala
545                 550                 555                 560

Pro Pro Met Phe Asp Lys Tyr Pro Thr Lys Val Asp Pro Phe Tyr Arg
```

565 570 575

His Ser Leu Phe His Ser Tyr Pro Pro Ala Val Ser Gly Ile Pro Pro
580 585 590

Met Ile Pro Pro Thr Gly Pro Phe Gly Ser Leu Gln Gly Ala Phe Gln
595 600 605

Pro Lys Leu Thr Asp Pro Phe Arg Pro Met Leu Arg Lys Pro Gly Lys
610 615 620

Trp Cys Ala Met His Val His Ile Ala Trp Gln Ile Tyr His His Gln
625 630 635 640

Gln Lys Val Lys Lys Gln Met Gln Ser Asp Pro His Lys Leu Asp Phe
645 650 655

Gly Leu Lys Pro Glu Phe Leu Ser Arg Pro Pro Gly Pro Ser Leu Phe
660 665 670

Gly Ala Ile His His Pro His Asp Leu Ala Arg Pro Ser Thr Leu Phe
675 680 685

Ser Ala Ala Gly Ala Ala His Pro Thr Gly Thr Pro Phe Gly Pro Pro
690 695 700

Pro His His Ser Asn Phe Leu Asn Pro Ala Ala His Leu Glu Pro Phe
705 710 715 720

Asn Arg Pro Ser Thr Phe Thr Gly Leu Ala Ala Val Gly Gly Asn Ala
725 730 735

Phe Gly Gly Leu Gly Asn Pro Ser Val Thr Pro Asn Ser Met Phe Gly
740 745 750

His Lys Asp Gly Pro Ser Val Gln Asn Phe Ser Asn Pro His Glu Pro
755 760 765

Trp Asn Arg Leu His Arg Thr Pro Pro Ser Phe Pro Thr Pro Pro Pro
770 775 780

Trp Leu Lys Pro Gly Glu Leu Glu Arg Ser Ala Ser Ala Ala Ala His
785 790 795 800

```
Asp Arg Asp Arg Asp Val Asp Lys Arg Asp Ser Ser Val Ser Lys Asp
                805                 810                 815

Asp Lys Glu Arg Glu Ser Val Glu Lys Arg His Ser Ser His Pro Ser
            820                 825                 830

Pro Ala Pro Val Leu Pro Val Asn Ala Leu Gly His Thr Arg Ser Ser
        835                 840                 845

Thr Glu Gln Ile Arg Ala His Leu Asn Thr Glu Ala Arg Glu Lys Asp
    850                 855                 860

Lys Pro Lys Glu Arg Glu Arg Asp His Ser Glu Ser Arg Lys Asp Leu
865                 870                 875                 880

Ala Ala Asp Glu His Lys Ala Lys Glu Gly His Leu Pro Glu Lys Asp
                885                 890                 895

Gly His Gly His Glu Gly Arg Ala Ala Gly Glu Glu Ala Lys Gln Leu
            900                 905                 910

Ala Arg Val Pro Ser Pro Tyr Val Arg Thr Pro Val Val Glu Ser Ala
        915                 920                 925

Arg Pro Asn Ser Thr Ser Ser Arg Glu Ala Glu Pro Arg Lys Gly Glu
    930                 935                 940

Pro Ala Tyr Glu Asn Pro Lys Lys Ser Ser Glu Val Lys Val Lys Glu
945                 950                 955                 960

Glu Arg Lys Glu Asp His Asp Leu Pro Pro Glu Ala Pro Gln Thr His
                965                 970                 975

Arg Ala Ser Glu Pro Pro Pro Pro Asn Ser Ser Ser Ser Val His Pro
            980                 985                 990

Gly Pro Leu Ala Ser Met Pro Met  Thr Val Gly Val Thr  Gly Ile
His
        995                 1000                1005

Pro Met  Asn Ser Ile Ser Ser  Leu Asp Arg Thr Arg  Met Met Thr
    1010                1015                1020
```

```
Pro Phe  Met Gly Ile Ser Pro  Leu Pro Gly Gly Glu  Arg Phe Pro
    1025                1030                1035

Tyr Pro  Ser Phe His Trp Asp  Pro Ile Arg Asp Pro  Leu Arg Asp
    1040                1045                1050

Pro Tyr  Arg Glu Leu Asp Ile  His Arg Arg Asp Pro  Leu Gly Arg
    1055                1060                1065

Asp Phe  Leu Leu Arg Asn Asp  Pro Leu His Arg Leu  Ser Thr Pro
    1070                1075                1080

Arg Leu  Tyr Glu Ala Asp Arg  Ser Phe Arg Asp Arg  Glu Pro His
    1085                1090                1095

Asp Tyr  Ser His His His His  His His His His Pro  Leu Ser Val
    1100                1105                1110

Asp Pro  Arg Arg Glu His Glu  Arg Gly Gly His Leu  Asp Glu Arg
    1115                1120                1125

Glu Arg  Leu His Met Leu Arg  Glu Asp Tyr Glu His  Thr Arg Leu
    1130                1135                1140

His Ser  Val His Pro Ala Ser  Leu Asp Gly His Leu  Pro His Pro
    1145                1150                1155

Ser Leu  Ile Thr Pro Gly Leu  Pro Ser Met His Tyr  Pro Arg Ile
    1160                1165                1170

Ser Pro  Thr Ala Gly Asn Gln  Asn Gly Leu Leu Asn  Lys Thr Pro
    1175                1180                1185

Pro Thr  Ala Ala Leu Ser Ala  Pro Pro Pro Leu Ile  Ser Thr Leu
    1190                1195                1200

Gly Gly  Arg Pro Val Ser Pro  Arg Arg Thr Thr Pro  Leu Ser Ala
    1205                1210                1215

Glu Ile  Arg Glu Arg Pro Pro  Ser His Thr Leu Lys  Asp Ile Glu
    1220                1225                1230
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Ala Arg
1235

<210> 7932
<211> 266
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AUTS2; "

<220>
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<223> /note="Gene Name:
autism susceptibility candidate 2; "

<220>
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<223> /note="Uniprot ID: Q8WXX7; "

<220>
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<400> 7932
Met Asp Gly Pro Thr Arg Gly His Gly Leu Arg Lys Lys Arg Arg Ser
1 5 10 15

Arg Ser Gln Arg Asp Arg Glu Arg Arg Ser Arg Gly Gly Leu Gly Ala
20 25 30

Gly Ala Ala Gly Gly Gly Gly Ala Gly Arg Thr Arg Ala Leu Ser Leu
35 40 45

Ala Ser Ser Ser Gly Ser Asp Lys Glu Asp Asn Gly Lys Pro Pro Ser
50 55 60

Ser Ala Pro Ser Arg Pro Arg Pro Pro Arg Arg Lys Arg Arg Glu Ser
65 70 75 80

Thr Ser Ala Glu Glu Asp Ile Ile Asp Gly Phe Ala Met Thr Ser Phe
85 90 95

Val Thr Phe Glu Ala Leu Glu Lys Asp Val Ala Leu Lys Pro Gln Glu

```
            100                 105                 110

Arg Val Glu Lys Arg Gln Thr Pro Leu Thr Lys Lys Lys Arg Glu Ala
        115                 120                 125

Leu Thr Asn Gly Leu Ser Phe His Ser Lys Lys Ser Arg Leu Ser His
    130                 135                 140

Pro His His Tyr Ser Ser Asp Arg Glu Asn Asp Arg Asn Leu Cys Gln
145                 150                 155                 160

His Leu Gly Lys Arg Lys Lys Met Pro Lys Ala Leu Arg Gln Leu Lys
                165                 170                 175

Pro Gly Gln Asn Ser Cys Arg Asp Ser Asp Ser Glu Ser Ala Ser Gly
            180                 185                 190

Glu Ser Lys Gly Phe His Arg Ser Ser Ser Arg Glu Arg Leu Ser Asp
        195                 200                 205

Ser Ser Ala Pro Ser Ser Leu Gly Thr Gly Tyr Phe Arg Ser Gly Lys
    210                 215                 220

Met Cys Leu Gly Glu Glu Ala Cys Leu Lys Ser Gly Asn Asp Met Lys
225                 230                 235                 240

Arg Asp Val Ser Asn Thr Ser Ser Trp Ala Ser Asn Arg Glu Ser Phe
                245                 250                 255

Phe Ser Leu Val Lys Leu Leu Lys Gly Phe
            260                 265


<210> 7933
<211> 183
<212> PRT
<213> Homo sapiens

<220>
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<221> source
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<220>
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<400> 7933
Thr Leu Trp Arg Gly Val Ile Leu His Leu Thr Ala Pro Ile Asn Glu
1 5 10 15

Ser Leu Pro Asn Lys Glu Pro Phe Asn Arg Pro Ser Thr Phe Thr Gly
20 25 30

Leu Ala Ala Val Gly Gly Asn Ala Phe Gly Gly Leu Gly Asn Pro Ser
35 40 45

Val Thr Pro Asn Ser Met Phe Gly His Lys Asp Gly Pro Ser Val Gln
50 55 60

Asn Phe Ser Asn Pro His Glu Pro Trp Asn Arg Leu His Arg Thr Pro
65 70 75 80

Pro Ser Phe Pro Thr Pro Pro Pro Trp Leu Lys Pro Gly Glu Leu Glu
85 90 95

Arg Ser Ala Ser Ala Ala Ala His Asp Arg Asp Arg Asp Val Asp Lys
100 105 110

Arg Asp Ser Ser Val Ser Lys Asp Asp Lys Glu Arg Glu Ser Val Glu
115 120 125

Lys Arg His Ser Ser His Pro Ser Pro Ala Pro Val Leu Pro Val Asn
130 135 140

Ala Leu Gly His Thr Arg Ser Ser Thr Glu Gln Ile Arg Ala His Leu
145 150 155 160

Asn Thr Glu Ala Arg Glu Lys Asp Lys Pro Lys Glu Arg Glu Arg Asp
165 170 175

His Ser Glu Ser Arg Lys Asp
180

<210> 7934
<211> 181
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7934
Xaa Phe Ala Pro Pro Thr Ala Leu Pro Pro Pro Pro Pro Leu Thr Ser
1 5 10 15

Gly Ser Leu Gln Val Ala Gly His Pro Ala Gly Ser Thr Tyr Ser Glu
20 25 30

Gln Asp Ile Leu Arg Gln Glu Leu Asn Thr Arg Phe Leu Ala Ser Gln
35 40 45

Ser Ala Asp Arg Gly Ala Ser Leu Gly Pro Pro Pro Tyr Leu Arg Thr
50 55 60

Glu Phe His Gln His Gln His Gln His Gln His Thr His Gln His Thr
65 70 75 80

His Gln His Thr Phe Thr Pro Phe Pro His Ala Ile Pro Pro Thr Ala
85 90 95

Ile Met Pro Thr Pro Ala Pro Pro Met Leu Phe His Ser Tyr Pro Pro
100 105 110

Ala Val Ser Gly Ile Pro Pro Met Ile Pro Pro Thr Gly Pro Phe Gly
        115   120   125

Ser Leu Gln Gly Ala Phe Gln Pro Lys Thr Ser Asn Pro Ile Asp Val
    130   135   140

Ala Ala Arg Pro Gly Thr Val Pro His Thr Leu Leu Gln Lys Asp Pro
145   150   155   160

Arg Leu Thr Asp Pro Phe Arg Pro Met Leu Arg Lys Pro Gly Lys Trp
                165   170   175

Cys Ala Met His Val
            180

<210> 7935
<211> 199
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000394887"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7935
Xaa Ser Phe Ser Pro Gly Ala Phe Gln Ser Leu Trp Arg Pro Val Pro
1   5   10   15

Gly Val Gly Leu Gly Ala Pro Val Pro Met Val Lys Asp Pro Glu Leu
            20   25   30

```
Gly Val Gly Thr Leu Pro Glu His Asp Ser Gln Asp Ala Gly Pro Ile
        35                  40                  45

Val Pro Lys Ile Ser Gly Leu Glu Arg Ser Gln Glu Lys Ser Gln Asp
    50                  55                  60

Cys Cys Lys Glu Pro Ile Phe Glu Pro Val Val Leu Lys Asp Pro Cys
65                  70                  75                  80

Pro Gln Val Ala Gln Pro Ile Pro Gln Pro Gln Thr Glu Pro Gln Leu
                85                  90                  95

Arg Ala Pro Ser Pro Asp Pro Asp Leu Val Gln Arg Thr Glu Ala Pro
            100                 105                 110

Pro Gln Pro Pro Pro Leu Ser Thr Gln Pro Pro Gln Gly Pro Pro Glu
        115                 120                 125

Ala Gln Leu Gln Pro Ala Pro Gln Pro Gln Val Gln Arg Pro Pro Arg
    130                 135                 140

Pro Gln Ser Pro Thr Gln Leu Leu His Gln Asn Leu Pro Pro Val Gln
145                 150                 155                 160

Ala His Pro Ser Ala Gln Ser Leu Ser Gln Pro Leu Ser Ala Tyr Asn
                165                 170                 175

Ser Ser Ser Leu Ser Leu Asn Ser Leu Ser Ser Arg Ser Ser Thr Pro
            180                 185                 190

Ala Lys Thr Gln Pro Ala Pro
        195


<210> 7936
<211> 100
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000400227"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7936
Xaa Asp Phe Gly Leu Lys Pro Glu Phe Leu Ser Arg Pro Pro Gly Pro
1 5 10 15

Ser Leu Phe Gly Ala Ile His His Pro His Asp Leu Ala Arg Pro Ser
20 25 30

Thr Leu Phe Ser Ala Ala Gly Ala Ala His Pro Thr Gly Thr Pro Phe
35 40 45

Gly Pro Pro Pro His His Ser Asn Phe Leu Asn Pro Ala Ala His Leu
50 55 60

Glu Pro Phe Asn Arg Pro Ser Thr Phe Thr Gly Leu Ala Ala Val Gly
65 70 75 80

Gly Asn Ala Phe Gly Gly Leu Gly Asn Pro Ser Val Thr Pro Asn Asn
85 90 95

Met Tyr Ser Phe
100

<210> 7937
<211> 62
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
autism susceptibility candidate 2; "

<220>
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<223> /note="ENSP ID: ENSP00000407058"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7937
Xaa Asp Arg Ser Phe Gln Thr Tyr Val Lys Glu Thr Arg Glu Val Val
1 5 10 15

Cys Tyr Ala Cys Ser His Arg Leu Ala Asp Leu Pro Pro Pro Thr Glu
20 25 30

Ser Gln Gly Gln Ser Asp Leu Arg Gly Val Gly Lys Asn Gly Met His
35 40 45

Ile Asn Arg Cys Ser Gln Thr His Ile Ser Trp Thr Leu Asp
50 55 60

<210> 7938
<211> 1011
<212> PRT
<213> Homo sapiens

<220>
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<220>
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autism susceptibility candidate 2; "

<220>
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<223> /note="ENSP ID: ENSP00000478134"

<400> 7938
Pro Glu Leu Gly Val Gly Thr Leu Pro Glu His Asp Ser Gln Asp Ala
1 5 10 15

```
Gly Pro Ile Val Pro Lys Ile Ser Gly Leu Glu Arg Ser Gln Glu Lys
            20                  25                  30

Ser Gln Asp Cys Cys Lys Glu Pro Ile Phe Glu Pro Val Val Leu Lys
        35                  40                  45

Asp Pro Cys Pro Gln Val Ala Gln Pro Ile Pro Gln Pro Gln Thr Glu
    50                  55                  60

Pro Gln Leu Arg Ala Pro Ser Pro Asp Pro Asp Leu Val Gln Arg Thr
65                  70                  75                  80

Glu Ala Pro Pro Gln Pro Pro Pro Leu Ser Thr Gln Pro Pro Gln Gly
                85                  90                  95

Pro Pro Glu Ala Gln Leu Gln Pro Ala Pro Gln Pro Gln Val Gln Arg
            100                 105                 110

Pro Pro Arg Pro Gln Ser Pro Thr Gln Leu Leu His Gln Asn Leu Pro
        115                 120                 125

Pro Val Gln Ala His Pro Ser Ala Gln Ser Leu Ser Gln Pro Leu Ser
    130                 135                 140

Ala Tyr Asn Ser Ser Ser Leu Ser Leu Asn Ser Leu Ser Ser Ser Arg
145                 150                 155                 160

Ser Ser Thr Pro Ala Lys Thr Gln Pro Ala Pro Pro His Ile Ser His
                165                 170                 175

His Pro Ser Ala Ser Pro Phe Pro Leu Ser Leu Pro Asn His Ser Pro
            180                 185                 190

Leu His Ser Phe Thr Pro Thr Leu Gln Pro Pro Ala His Ser His His
        195                 200                 205

Pro Asn Met Phe Ala Pro Pro Thr Ala Leu Pro Pro Pro Pro Pro Leu
    210                 215                 220

Thr Ser Gly Ser Leu Gln Val Ala Gly His Pro Ala Gly Ser Thr Tyr
225                 230                 235                 240
```

```
Ser Glu Gln Asp Ile Leu Arg Gln Glu Leu Asn Thr Arg Phe Leu Ala
                245                 250                 255

Ser Gln Ser Ala Asp Arg Gly Ala Ser Leu Gly Pro Pro Pro Tyr Leu
            260                 265                 270

Arg Thr Glu Phe His Gln His Gln His Gln His Gln His Thr His Gln
        275                 280                 285

His Thr His Gln His Thr Phe Thr Pro Phe Pro His Ala Ile Pro Pro
    290                 295                 300

Thr Ala Ile Met Pro Thr Pro Ala Pro Pro Met Phe Asp Lys Tyr Pro
305                 310                 315                 320

Thr Lys Val Asp Pro Phe Tyr Arg His Ser Leu Phe His Ser Tyr Pro
                325                 330                 335

Pro Ala Val Ser Gly Ile Pro Pro Met Ile Pro Pro Thr Gly Pro Phe
            340                 345                 350

Gly Ser Leu Gln Gly Ala Phe Gln Pro Lys Thr Ser Asn Pro Ile Asp
        355                 360                 365

Val Ala Ala Arg Pro Gly Thr Val Pro His Thr Leu Leu Gln Lys Asp
    370                 375                 380

Pro Arg Leu Thr Asp Pro Phe Arg Pro Met Leu Arg Lys Pro Gly Lys
385                 390                 395                 400

Trp Cys Ala Met His Val His Ile Ala Trp Gln Ile Tyr His His Gln
                405                 410                 415

Gln Lys Val Lys Lys Gln Met Gln Ser Asp Pro His Lys Leu Asp Phe
            420                 425                 430

Gly Leu Lys Pro Glu Phe Leu Ser Arg Pro Pro Gly Pro Ser Leu Phe
        435                 440                 445

Gly Ala Ile His His Pro His Asp Leu Ala Arg Pro Ser Thr Leu Phe
    450                 455                 460
```

```
Ser Ala Ala Gly Ala Ala His Pro Thr Gly Thr Pro Phe Gly Pro Pro
465                 470                 475                 480

Pro His His Ser Asn Phe Leu Asn Pro Ala Ala His Leu Glu Pro Phe
                485                 490                 495

Asn Arg Pro Ser Thr Phe Thr Gly Leu Ala Ala Val Gly Gly Asn Ala
            500                 505                 510

Phe Gly Gly Leu Gly Asn Pro Ser Val Thr Pro Asn Ser Met Phe Gly
        515                 520                 525

His Lys Asp Gly Pro Ser Val Gln Asn Phe Ser Asn Pro His Glu Pro
    530                 535                 540

Trp Asn Arg Leu His Arg Thr Pro Pro Ser Phe Pro Thr Pro Pro Pro
545                 550                 555                 560

Trp Leu Lys Pro Gly Glu Leu Glu Arg Ser Ala Ser Ala Ala Ala His
                565                 570                 575

Asp Arg Asp Arg Asp Val Asp Lys Arg Asp Ser Ser Val Ser Lys Asp
            580                 585                 590

Asp Lys Glu Arg Glu Ser Val Glu Lys Arg His Ser Ser His Pro Ser
        595                 600                 605

Pro Ala Pro Val Leu Pro Val Asn Ala Leu Gly His Thr Arg Ser Ser
    610                 615                 620

Thr Glu Gln Ile Arg Ala His Leu Asn Thr Glu Ala Arg Glu Lys Asp
625                 630                 635                 640

Lys Pro Lys Glu Arg Glu Arg Asp His Ser Glu Ser Arg Lys Asp Leu
                645                 650                 655

Ala Ala Asp Glu His Lys Ala Lys Glu Gly His Leu Pro Glu Lys Asp
            660                 665                 670

Gly His Gly His Glu Gly Arg Ala Ala Gly Glu Glu Ala Lys Gln Leu
        675                 680                 685

Ala Arg Val Pro Ser Pro Tyr Val Arg Thr Pro Val Val Glu Ser Ala
```

690 695 700

Arg Pro Asn Ser Thr Ser Ser Arg Glu Ala Glu Pro Arg Lys Gly Glu
705 710 715 720

Pro Ala Tyr Glu Asn Pro Lys Lys Ser Ser Glu Val Lys Val Lys Glu
725 730 735

Glu Arg Lys Glu Asp His Asp Leu Pro Pro Glu Ala Pro Gln Thr His
740 745 750

Arg Ala Ser Glu Pro Pro Pro Pro Asn Ser Ser Ser Ser Val His Pro
755 760 765

Gly Pro Leu Ala Ser Met Pro Met Thr Val Gly Val Thr Gly Ile His
770 775 780

Pro Met Asn Ser Ile Ser Ser Leu Asp Arg Thr Arg Met Met Thr Pro
785 790 795 800

Phe Met Gly Ile Ser Pro Leu Pro Gly Gly Glu Arg Phe Pro Tyr Pro
805 810 815

Ser Phe His Trp Asp Pro Ile Arg Asp Pro Leu Arg Asp Pro Tyr Arg
820 825 830

Glu Leu Asp Ile His Arg Arg Asp Pro Leu Gly Arg Asp Phe Leu Leu
835 840 845

Arg Asn Asp Pro Leu His Arg Leu Ser Thr Pro Arg Leu Tyr Glu Ala
850 855 860

Asp Arg Ser Phe Arg Asp Arg Glu Pro His Asp Tyr Ser His His His
865 870 875 880

His His His His His Pro Leu Ser Val Asp Pro Arg Arg Glu His Glu
885 890 895

Arg Gly Gly His Leu Asp Glu Arg Glu Arg Leu His Met Leu Arg Glu
900 905 910

Asp Tyr Glu His Thr Arg Leu His Ser Val His Pro Ala Ser Leu Asp
915 920 925

```
Gly His Leu Pro His Pro Ser Leu Ile Thr Pro Gly Leu Pro Ser Met
    930                 935                 940

His Tyr Pro Arg Ile Ser Pro Thr Ala Gly Asn Gln Asn Gly Leu Leu
945                 950                 955                 960

Asn Lys Thr Pro Pro Thr Ala Ala Leu Ser Ala Pro Pro Pro Leu Ile
                965                 970                 975

Ser Thr Leu Gly Gly Arg Pro Val Ser Pro Arg Arg Thr Thr Pro Leu
            980                 985                 990

Ser Ala Glu Ile Arg Glu Arg Pro  Pro Ser His Thr Leu  Lys Asp
Ile
        995                 1000                1005

Glu Ala  Arg
    1010


<210> 7939
<211> 987
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1659; "

<220>
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<220>
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<223> /note="Gene Name:
      autism susceptibility candidate 2; "

<220>
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<400> 7939
Pro Glu Leu Gly Val Gly Thr Leu Pro Glu His Asp Ser Gln Asp Ala
1               5                   10                  15

Gly Pro Ile Val Pro Lys Ile Ser Gly Leu Glu Arg Ser Gln Glu Lys
            20                  25                  30
```

```
Ser Gln Asp Cys Cys Lys Glu Pro Ile Phe Glu Pro Val Val Leu Lys
        35                  40                  45

Asp Pro Cys Pro Gln Val Ala Gln Pro Ile Pro Gln Pro Gln Thr Glu
    50                  55                  60

Pro Gln Leu Arg Ala Pro Ser Pro Asp Pro Asp Leu Val Gln Arg Thr
65                  70                  75                  80

Glu Ala Pro Pro Gln Pro Pro Pro Leu Ser Thr Gln Pro Pro Gln Gly
                85                  90                  95

Pro Pro Glu Ala Gln Leu Gln Pro Ala Pro Gln Pro Gln Val Gln Arg
            100                 105                 110

Pro Pro Arg Pro Gln Ser Pro Thr Gln Leu Leu His Gln Asn Leu Pro
        115                 120                 125

Pro Val Gln Ala His Pro Ser Ala Gln Ser Leu Ser Gln Pro Leu Ser
    130                 135                 140

Ala Tyr Asn Ser Ser Ser Leu Ser Leu Asn Ser Leu Ser Ser Ser Arg
145                 150                 155                 160

Ser Ser Thr Pro Ala Lys Thr Gln Pro Ala Pro Pro His Ile Ser His
                165                 170                 175

His Pro Ser Ala Ser Pro Phe Pro Leu Ser Leu Pro Asn His Ser Pro
            180                 185                 190

Leu His Ser Phe Thr Pro Thr Leu Gln Pro Pro Ala His Ser His His
        195                 200                 205

Pro Asn Met Phe Ala Pro Pro Thr Ala Leu Pro Pro Pro Pro Pro Leu
    210                 215                 220

Thr Ser Gly Ser Leu Gln Val Ala Gly His Pro Ala Gly Ser Thr Tyr
225                 230                 235                 240

Ser Glu Gln Asp Ile Leu Arg Gln Glu Leu Asn Thr Arg Phe Leu Ala
                245                 250                 255
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```
Ser Gln Ser Ala Asp Arg Gly Ala Ser Leu Gly Pro Pro Pro Tyr Leu
            260                 265                 270

Arg Thr Glu Phe His Gln His Gln His Gln His Gln His Thr His Gln
        275                 280                 285

His Thr His Gln His Thr Phe Thr Pro Phe Pro His Ala Ile Pro Pro
    290                 295                 300

Thr Ala Ile Met Pro Thr Pro Ala Pro Pro Met Phe Asp Lys Tyr Pro
305                 310                 315                 320

Thr Lys Val Asp Pro Phe Tyr Arg His Ser Leu Phe His Ser Tyr Pro
                325                 330                 335

Pro Ala Val Ser Gly Ile Pro Pro Met Ile Pro Pro Thr Gly Pro Phe
            340                 345                 350

Gly Ser Leu Gln Gly Ala Phe Gln Pro Lys Leu Thr Asp Pro Phe Arg
        355                 360                 365

Pro Met Leu Arg Lys Pro Gly Lys Trp Cys Ala Met His Val His Ile
    370                 375                 380

Ala Trp Gln Ile Tyr His His Gln Gln Lys Val Lys Lys Gln Met Gln
385                 390                 395                 400

Ser Asp Pro His Lys Leu Asp Phe Gly Leu Lys Pro Glu Phe Leu Ser
                405                 410                 415

Arg Pro Pro Gly Pro Ser Leu Phe Gly Ala Ile His His Pro His Asp
            420                 425                 430

Leu Ala Arg Pro Ser Thr Leu Phe Ser Ala Ala Gly Ala Ala His Pro
        435                 440                 445

Thr Gly Thr Pro Phe Gly Pro Pro Pro His His Ser Asn Phe Leu Asn
    450                 455                 460

Pro Ala Ala His Leu Glu Pro Phe Asn Arg Pro Ser Thr Phe Thr Gly
465                 470                 475                 480

Leu Ala Ala Val Gly Gly Asn Ala Phe Gly Gly Leu Gly Asn Pro Ser
```

485 490 495

Val Thr Pro Asn Ser Met Phe Gly His Lys Asp Gly Pro Ser Val Gln
500 505 510

Asn Phe Ser Asn Pro His Glu Pro Trp Asn Arg Leu His Arg Thr Pro
515 520 525

Pro Ser Phe Pro Thr Pro Pro Pro Trp Leu Lys Pro Gly Glu Leu Glu
530 535 540

Arg Ser Ala Ser Ala Ala Ala His Asp Arg Asp Arg Asp Val Asp Lys
545 550 555 560

Arg Asp Ser Ser Val Ser Lys Asp Asp Lys Glu Arg Glu Ser Val Glu
565 570 575

Lys Arg His Ser Ser His Pro Ser Pro Ala Pro Val Leu Pro Val Asn
580 585 590

Ala Leu Gly His Thr Arg Ser Ser Thr Glu Gln Ile Arg Ala His Leu
595 600 605

Asn Thr Glu Ala Arg Glu Lys Asp Lys Pro Lys Glu Arg Glu Arg Asp
610 615 620

His Ser Glu Ser Arg Lys Asp Leu Ala Ala Asp Glu His Lys Ala Lys
625 630 635 640

Glu Gly His Leu Pro Glu Lys Asp Gly His Gly His Glu Gly Arg Ala
645 650 655

Ala Gly Glu Glu Ala Lys Gln Leu Ala Arg Val Pro Ser Pro Tyr Val
660 665 670

Arg Thr Pro Val Val Glu Ser Ala Arg Pro Asn Ser Thr Ser Ser Arg
675 680 685

Glu Ala Glu Pro Arg Lys Gly Glu Pro Ala Tyr Glu Asn Pro Lys Lys
690 695 700

Ser Ser Glu Val Lys Val Lys Glu Glu Arg Lys Glu Asp His Asp Leu
705 710 715 720

```
Pro Pro Glu Ala Pro Gln Thr His Arg Ala Ser Glu Pro Pro Pro Pro
                725                 730                 735

Asn Ser Ser Ser Ser Val His Pro Gly Pro Leu Ala Ser Met Pro Met
            740                 745                 750

Thr Val Gly Val Thr Gly Ile His Pro Met Asn Ser Ile Ser Ser Leu
        755                 760                 765

Asp Arg Thr Arg Met Met Thr Pro Phe Met Gly Ile Ser Pro Leu Pro
    770                 775                 780

Gly Gly Glu Arg Phe Pro Tyr Pro Ser Phe His Trp Asp Pro Ile Arg
785                 790                 795                 800

Asp Pro Leu Arg Asp Pro Tyr Arg Glu Leu Asp Ile His Arg Arg Asp
                805                 810                 815

Pro Leu Gly Arg Asp Phe Leu Leu Arg Asn Asp Pro Leu His Arg Leu
            820                 825                 830

Ser Thr Pro Arg Leu Tyr Glu Ala Asp Arg Ser Phe Arg Asp Arg Glu
        835                 840                 845

Pro His Asp Tyr Ser His His His His His His His His Pro Leu Ser
    850                 855                 860

Val Asp Pro Arg Arg Glu His Glu Arg Gly Gly His Leu Asp Glu Arg
865                 870                 875                 880

Glu Arg Leu His Met Leu Arg Glu Asp Tyr Glu His Thr Arg Leu His
                885                 890                 895

Ser Val His Pro Ala Ser Leu Asp Gly His Leu Pro His Pro Ser Leu
            900                 905                 910

Ile Thr Pro Gly Leu Pro Ser Met His Tyr Pro Arg Ile Ser Pro Thr
        915                 920                 925

Ala Gly Asn Gln Asn Gly Leu Leu Asn Lys Thr Pro Pro Thr Ala Ala
    930                 935                 940
```

```
Leu Ser Ala Pro Pro Pro Leu Ile Ser Thr Leu Gly Gly Arg Pro Val
945                 950                 955                 960


Ser Pro Arg Arg Thr Thr Pro Leu Ser Ala Glu Ile Arg Glu Arg Pro
                965                 970                 975


Pro Ser His Thr Leu Lys Asp Ile Glu Ala Arg
            980                 985


<210> 7940
<211> 643
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AMFR; "

<220>
<221> source
<223> /note="Gene Name:
      autocrine motility  factor
      receptor, E3
      ubiquitin prt ligase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9UKV5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000290649"

<400> 7940
Met Pro Leu Leu Phe Leu Glu Arg Phe Pro Trp Pro Ser Leu Arg Thr
1               5                   10                  15


Tyr Thr Gly Leu Ser Gly Leu Ala Leu Leu Gly Thr Ile Ile Ser Ala
            20                  25                  30


Tyr Arg Ala Leu Ser Gln Pro Glu Ala Gly Pro Gly Glu Pro Asp Gln
        35                  40                  45


Leu Thr Ala Ser Leu Gln Pro Glu Pro Pro Ala Pro Ala Arg Pro Ser
    50                  55                  60
```

```
Ala Gly Gly Pro Arg Ala Arg Asp Val Ala Gln Tyr Leu Leu Ser Asp
65                  70                  75                  80

Ser Leu Phe Val Trp Val Leu Val Asn Thr Ala Cys Cys Val Leu Met
                85                  90                  95

Leu Val Ala Lys Leu Ile Gln Cys Ile Val Phe Gly Pro Leu Arg Val
            100                 105                 110

Ser Glu Arg Gln His Leu Lys Asp Lys Phe Trp Asn Phe Ile Phe Tyr
        115                 120                 125

Lys Phe Ile Phe Ile Phe Gly Val Leu Asn Val Gln Thr Val Glu Glu
    130                 135                 140

Val Val Met Trp Cys Leu Trp Phe Ala Gly Leu Val Phe Leu His Leu
145                 150                 155                 160

Met Val Gln Leu Cys Lys Asp Arg Phe Glu Tyr Leu Ser Phe Ser Pro
                165                 170                 175

Thr Thr Pro Met Ser Ser His Gly Arg Val Leu Ser Leu Leu Val Ala
            180                 185                 190

Met Leu Leu Ser Cys Cys Gly Leu Ala Ala Val Cys Ser Ile Thr Gly
        195                 200                 205

Tyr Thr His Gly Met His Thr Leu Ala Phe Met Ala Ala Glu Ser Leu
    210                 215                 220

Leu Val Thr Val Arg Thr Ala His Val Ile Leu Arg Tyr Val Ile His
225                 230                 235                 240

Leu Trp Asp Leu Asn His Glu Gly Thr Trp Glu Gly Lys Gly Thr Tyr
                245                 250                 255

Val Tyr Tyr Thr Asp Phe Val Met Glu Leu Thr Leu Leu Ser Leu Asp
            260                 265                 270

Leu Met His His Ile His Met Leu Leu Phe Gly Asn Ile Trp Leu Ser
        275                 280                 285
```

```
Met Ala Ser Leu Val Ile Phe Met Gln Leu Arg Tyr Leu Phe His Glu
    290                 295                 300

Val Gln Arg Arg Ile Arg Arg His Lys Asn Tyr Leu Arg Val Val Gly
305                 310                 315                 320

Asn Met Glu Ala Arg Phe Ala Val Ala Thr Pro Glu Glu Leu Ala Val
                325                 330                 335

Asn Asn Asp Asp Cys Ala Ile Cys Trp Asp Ser Met Gln Ala Ala Arg
            340                 345                 350

Lys Leu Pro Cys Gly His Leu Phe His Asn Ser Cys Leu Arg Ser Trp
        355                 360                 365

Leu Glu Gln Asp Thr Ser Cys Pro Thr Cys Arg Met Ser Leu Asn Ile
    370                 375                 380

Ala Asp Asn Asn Arg Val Arg Glu Glu His Gln Gly Glu Asn Leu Asp
385                 390                 395                 400

Glu Asn Leu Val Pro Val Ala Ala Ala Glu Gly Arg Pro Arg Leu Asn
                405                 410                 415

Gln His Asn His Phe Phe His Phe Asp Gly Ser Arg Ile Ala Ser Trp
            420                 425                 430

Leu Pro Ser Phe Ser Val Glu Val Met His Thr Thr Asn Ile Leu Gly
        435                 440                 445

Ile Thr Gln Ala Ser Asn Ser Gln Leu Asn Ala Met Ala His Gln Ile
    450                 455                 460

Gln Glu Met Phe Pro Gln Val Pro Tyr His Leu Val Leu Gln Asp Leu
465                 470                 475                 480

Gln Leu Thr Arg Ser Val Glu Ile Thr Thr Asp Asn Ile Leu Glu Gly
                485                 490                 495

Arg Ile Gln Val Pro Phe Pro Thr Gln Arg Ser Asp Ser Ile Arg Pro
            500                 505                 510

Ala Leu Asn Ser Pro Val Glu Arg Pro Ser Ser Asp Gln Glu Glu Gly
```

```
        515                 520                 525

Glu Thr Ser Ala Gln Thr Glu Arg Val Pro Leu Asp Leu Ser Pro Arg
    530                 535                 540

Leu Glu Glu Thr Leu Asp Phe Gly Glu Val Glu Val Glu Pro Ser Glu
545                 550                 555                 560

Val Glu Asp Phe Glu Ala Arg Gly Ser Arg Phe Ser Lys Ser Ala Asp
                565                 570                 575

Glu Arg Gln Arg Met Leu Val Gln Arg Lys Asp Glu Leu Leu Gln Gln
            580                 585                 590

Ala Arg Lys Arg Phe Leu Asn Lys Ser Ser Glu Asp Asp Ala Ala Ser
        595                 600                 605

Glu Ser Phe Leu Pro Ser Glu Gly Ala Ser Ser Asp Pro Val Thr Leu
    610                 615                 620

Arg Arg Arg Met Leu Ala Ala Ala Ala Glu Arg Arg Leu Gln Lys Gln
625                 630                 635                 640

Gln Thr Ser
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<210> 7941
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1660; "

<220>
<221> source
<223> /note="Gene Symbol: AMFR; "

<220>
<221> source
<223> /note="Gene Name:
autocrine motility factor
receptor, E3
ubiquitin prt ligase; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000455842"

<400> 7941
Met Leu Val Ala Lys Leu Ile Gln Cys Ile Val Phe Gly Pro Leu Arg
1 5 10 15

Val Ser Glu Arg Gln His Leu Lys Asp Lys Phe Trp Asn Phe Ile Phe
20 25 30

Tyr Lys Phe Ile Phe Ile Phe Gly Val Leu Asn Val Gln Thr Val Glu
35 40 45

Glu Val Val Met Trp Cys Leu Trp Phe Ala Gly Leu Val Phe Leu His
50 55 60

Leu Met Val Gln Leu Cys Lys Asp Arg Phe Glu Tyr Leu Ser Phe Ser
65 70 75 80

Pro Thr Thr Pro Met Ser Ser His Gly Arg Val Leu Ser Leu Leu Val
85 90 95

Ala Met Leu Leu Ser Cys Cys Gly Leu Ala Ala Val Cys Ser Ile Thr
100 105 110

Gly Tyr Thr His Gly Met His Thr Leu Ala Phe Met Ala Ala Glu Ser
115 120 125

Leu Leu Val Thr Val Arg Thr Ala His Val Ile Leu Arg Tyr Val Ile
130 135 140

His Leu Trp Asp Leu Asn His Glu Gly Thr Trp Glu Gly Lys Gly Thr
145 150 155 160

Tyr Val Tyr Tyr Thr
165

<210> 7942
<211> 288
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1660; "

<220>

<221> source
<223> /note="Gene Symbol: AMFR; "

<220>
<221> source
<223> /note="Gene Name:
autocrine motility factor
receptor, E3
ubiquitin prt ligase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456288"

<400> 7942

```
Trp Leu Ser Met Ala Ser Leu Val Ile Phe Met Gln Leu Arg Tyr Leu
1               5                  10                  15

Phe His Glu Val Gln Arg Arg Ile Arg Arg His Lys Asn Tyr Leu Arg
            20                  25                  30

Val Val Gly Asn Met Glu Ala Arg Phe Ala Val Ala Thr Pro Glu Glu
        35                  40                  45

Leu Ala Val Asn Asn Asp Asp Cys Ala Ile Cys Trp Asp Ser Met Gln
    50                  55                  60

Ala Ala Arg Lys Leu Pro Cys Gly His Leu Phe His Asn Ser Cys Leu
65                  70                  75                  80

Arg Ser Trp Leu Glu Gln Asp Thr Ser Cys Pro Thr Cys Arg Met Ser
                85                  90                  95

Leu Asn Ile Ala Asp Asn Asn Arg Val Arg Glu Glu His Gln Gly Glu
            100                 105                 110

Asn Leu Asp Glu Asn Leu Val Pro Val Ala Ala Ala Glu Gly Arg Pro
        115                 120                 125

Arg Leu Asn Gln His Asn His Phe Phe His Phe Asp Gly Asp Asp Ser
    130                 135                 140

Ser Met Arg Val Thr Ala Pro Glu Asp Val Pro Val Gly Gln Glu Val
145                 150                 155                 160

Glu Val Val Asp Ser Asp Thr Asp Ala Pro Asp Leu Trp Ser Arg Ile
                165                 170                 175
```

```
Ala Ser Trp Leu Pro Ser Phe Ser Val Glu Val Met His Thr Thr Asn
            180                 185                 190

Ile Leu Gly Ile Thr Gln Ala Ser Asn Ser Gln Leu Asn Ala Met Ala
        195                 200                 205

His Gln Ile Gln Glu Met Phe Pro Gln Val Pro Tyr His Leu Val Leu
    210                 215                 220

Gln Asp Leu Gln Leu Thr Arg Ser Val Glu Ile Thr Thr Asp Asn Ile
225                 230                 235                 240

Leu Glu Gly Arg Ile Gln Val Pro Phe Pro Thr Gln Arg Ser Asp Ser
                245                 250                 255

Ile Arg Pro Ala Leu Asn Ser Pro Val Glu Arg Pro Ser Ser Asp Gln
            260                 265                 270

Glu Glu Gly Glu Thr Ser Ala Gln Thr Glu Arg Val Pro Leu Asp Leu
        275                 280                 285
```

<210> 7943
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1660; "

<220>
<221> source
<223> /note="Gene Symbol: AMFR; "

<220>
<221> source
<223> /note="Gene Name:
autocrine motility factor
receptor, E3
ubiquitin prt ligase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456745"

<400> 7943

```
Met Leu Val Ala Lys Leu Ile Gln Cys Ile Val Phe Gly Pro Leu Arg
1               5                   10                  15
```

Val Ser Glu Arg Gln His Leu Lys Asp Lys Phe Trp Asn Phe Ile Phe
20 25 30

Tyr Lys Phe Ile Phe Ile Phe Gly Val Leu Asn Val Gln Thr Val Glu
35 40 45

Glu Val Val Met Trp Cys Leu Trp Phe Ala Gly Leu Val Phe Leu His
50 55 60

Leu Met Val Gln Leu Cys Lys Asp Arg Phe Glu Tyr Leu Ser Phe Ser
65 70 75 80

Pro Thr Thr Pro Met Ser Ser His Gly Arg Val Leu Ser Leu Leu Val
85 90 95

Ala Met Leu Leu Ser Cys Cys Gly Leu Ala Ala Val Cys Ser Ile Thr
100 105 110

Gly Tyr Thr His Gly Met His Thr Leu Ala Phe Met Ala Ala Glu Ser
115 120 125

Leu Leu Val Thr Val Arg Thr Ala His Val Ile Leu Arg Tyr Val Ile
130 135 140

His Leu Trp Asp Leu Asn His Glu Gly Thr Trp Glu Gly Lys Gly Thr
145 150 155 160

Tyr Val Tyr Tyr Thr Asp Phe Val Met Glu Leu Thr Leu Leu Ser Leu
165 170 175

Asp Leu Met His His Ile His Met Leu Leu Phe Gly Asn Ile Trp Leu
180 185 190

Ser Met Ala Ser Leu Val Ile Phe Met Gln Leu Arg Tyr Leu Phe His
195 200 205

Glu Val Gln Arg Arg Ile Arg Arg His Lys Asn Tyr Leu Arg Val Val
210 215 220

Gly Asn Met Glu Ala
225

<210> 7944
<211> 299
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1660; "

<220>
<221> source
<223> /note="Gene Symbol: AMFR; "

<220>
<221> source
<223> /note="Gene Name:
autocrine motility factor
receptor, E3
ubiquitin prt ligase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473636"

<400> 7944
Tyr Leu Ala Thr Ser Gly Tyr Pro Trp Pro Ala Trp Ser Ser Leu Cys
1 5 10 15

Ser Cys Val Thr Cys Phe Met Arg Cys Asn Val Glu Phe Val Gly Thr
20 25 30

Arg Thr Ile Tyr Val Trp Leu Glu Thr Trp Arg Pro Gly Leu Gln Leu
35 40 45

Gln Leu Gln Arg Ser Trp Leu Ser Thr Met Thr Thr Val Pro Ser Val
50 55 60

Gly Thr Pro Cys Arg Leu Arg Gly Asn Cys Pro Val Asp Ile Phe Ser
65 70 75 80

Thr Arg Ser Arg Ile Ala Ser Trp Leu Pro Ser Phe Ser Val Glu Val
85 90 95

Met His Thr Thr Asn Ile Leu Gly Ile Thr Gln Ala Ser Asn Ser Gln
100 105 110

Leu Asn Ala Met Ala His Gln Ile Gln Glu Met Phe Pro Gln Val Pro
115 120 125

```
Tyr His Leu Val Leu Gln Asp Leu Gln Leu Thr Arg Ser Val Glu Ile
    130                 135                 140

Thr Thr Asp Asn Ile Leu Glu Gly Arg Ile Gln Val Pro Phe Pro Thr
145                 150                 155                 160

Gln Arg Ser Asp Ser Ile Arg Pro Ala Leu Asn Ser Pro Val Glu Arg
                165                 170                 175

Pro Ser Ser Asp Gln Glu Glu Gly Glu Thr Ser Ala Gln Thr Glu Arg
            180                 185                 190

Val Pro Leu Asp Leu Ser Pro Arg Leu Glu Glu Thr Leu Asp Phe Gly
        195                 200                 205

Glu Val Glu Val Glu Pro Ser Glu Val Glu Asp Phe Glu Ala Arg Gly
    210                 215                 220

Ser Arg Phe Ser Lys Ser Ala Asp Glu Arg Gln Arg Met Leu Val Gln
225                 230                 235                 240

Arg Lys Asp Glu Leu Leu Gln Gln Ala Arg Lys Arg Phe Leu Asn Lys
                245                 250                 255

Ser Ser Glu Asp Asp Ala Ala Ser Glu Ser Phe Leu Pro Ser Glu Gly
            260                 265                 270

Ala Ser Ser Asp Pro Val Thr Leu Arg Arg Arg Met Leu Ala Ala Ala
        275                 280                 285

Ala Glu Arg Arg Leu Gln Lys Gln Gln Thr Ser
    290                 295


<210> 7945
<211> 545
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1661; "

<220>
<221> source
<223> /note="Gene Symbol: AIRE; "
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<220>
<221> source
<223> /note="Gene Name:
autoimmune
regulator; "

<220>
<221> source
<223> /note="Uniprot ID: O43918; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000291582"

<400> 7945

```
Met Ala Thr Asp Ala Ala Leu Arg Arg Leu Leu Arg Leu His Arg Thr
1               5                   10                  15


Glu Ile Ala Val Ala Val Asp Ser Ala Phe Pro Leu Leu His Ala Leu
            20                  25                  30


Ala Asp His Asp Val Val Pro Glu Asp Lys Phe Gln Glu Thr Leu His
        35                  40                  45


Leu Lys Glu Lys Glu Gly Cys Pro Gln Ala Phe His Ala Leu Leu Ser
    50                  55                  60


Trp Leu Leu Thr Gln Asp Ser Thr Ala Ile Leu Asp Phe Trp Arg Val
65                  70                  75                  80


Leu Phe Lys Asp Tyr Asn Leu Glu Arg Tyr Gly Arg Leu Gln Pro Ile
                85                  90                  95


Leu Asp Ser Phe Pro Lys Asp Val Asp Leu Ser Gln Pro Arg Lys Gly
            100                 105                 110


Arg Lys Pro Pro Ala Val Pro Lys Ala Leu Val Pro Pro Pro Arg Leu
        115                 120                 125


Pro Thr Lys Arg Lys Ala Ser Glu Glu Ala Arg Ala Ala Ala Pro Ala
    130                 135                 140


Ala Leu Thr Pro Arg Gly Thr Ala Ser Pro Gly Ser Gln Leu Lys Ala
145                 150                 155                 160


Lys Pro Pro Lys Lys Pro Glu Ser Ser Ala Glu Gln Gln Arg Leu Pro
```

```
                165                 170                 175

Leu Gly Asn Gly Ile Gln Thr Met Ser Ala Ser Val Gln Arg Ala Val
            180                 185                 190

Ala Met Ser Ser Gly Asp Val Pro Gly Ala Arg Gly Ala Val Glu Gly
        195                 200                 205

Ile Leu Ile Gln Gln Val Phe Glu Ser Gly Gly Ser Lys Lys Cys Ile
    210                 215                 220

Gln Val Gly Gly Glu Phe Tyr Thr Pro Ser Lys Phe Glu Asp Ser Gly
225                 230                 235                 240

Ser Gly Lys Asn Lys Ala Arg Ser Ser Ser Gly Pro Lys Pro Leu Val
                245                 250                 255

Arg Ala Lys Gly Ala Gln Gly Ala Ala Pro Gly Gly Gly Glu Ala Arg
            260                 265                 270

Leu Gly Gln Gln Gly Ser Val Pro Ala Pro Leu Ala Leu Pro Ser Asp
        275                 280                 285

Pro Gln Leu His Gln Lys Asn Glu Asp Glu Cys Ala Val Cys Arg Asp
    290                 295                 300

Gly Gly Glu Leu Ile Cys Cys Asp Gly Cys Pro Arg Ala Phe His Leu
305                 310                 315                 320

Ala Cys Leu Ser Pro Pro Leu Arg Glu Ile Pro Ser Gly Thr Trp Arg
                325                 330                 335

Cys Ser Ser Cys Leu Gln Ala Thr Val Gln Glu Val Gln Pro Arg Ala
            340                 345                 350

Glu Glu Pro Arg Pro Gln Glu Pro Pro Val Glu Thr Pro Leu Pro Pro
        355                 360                 365

Gly Leu Arg Ser Ala Gly Glu Glu Val Arg Gly Pro Pro Gly Glu Pro
    370                 375                 380

Leu Ala Gly Met Asp Thr Thr Leu Val Tyr Lys His Leu Pro Ala Pro
385                 390                 395                 400
```

```
Pro Ser Ala Ala Pro Leu Pro Gly Leu Asp Ser Ser Ala Leu His Pro
                405                 410                 415

Leu Leu Cys Val Gly Pro Glu Gly Gln Gln Asn Leu Ala Pro Gly Ala
            420                 425                 430

Arg Cys Gly Val Cys Gly Asp Gly Thr Asp Val Leu Arg Cys Thr His
        435                 440                 445

Cys Ala Ala Ala Phe His Trp Arg Cys His Phe Pro Ala Gly Thr Ser
    450                 455                 460

Arg Pro Gly Thr Gly Leu Arg Cys Arg Ser Cys Ser Gly Asp Val Thr
465                 470                 475                 480

Pro Ala Pro Val Glu Gly Val Leu Ala Pro Ser Pro Ala Arg Leu Ala
                485                 490                 495

Pro Gly Pro Ala Lys Asp Asp Thr Ala Ser His Glu Pro Ala Leu His
            500                 505                 510

Arg Asp Asp Leu Glu Ser Leu Leu Ser Glu His Thr Phe Asp Gly Ile
        515                 520                 525

Leu Gln Trp Ala Ile Gln Ser Met Ala Arg Pro Ala Ala Pro Phe Pro
    530                 535                 540

Ser
545
```

<210> 7946
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source

<223> /note="Gene Name:
autophagy related 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H0Y0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000282185"

<400> 7946

```
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1               5                  10                  15

Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
            20                  25                  30

Arg Pro Ser Lys Asp Cys Ser Asp Gly Tyr Met Cys Lys Ile His Phe
        35                  40                  45

Gln Ile Lys Asn Gly Ser Val Met Ser His Leu Gly Ala Ser Thr His
    50                  55                  60

Gly Gln Thr Cys Leu Pro Met Glu Glu Ala Phe Glu Leu Pro Leu Asp
65                  70                  75                  80

Asp Cys Glu Val Ile Glu Thr Ala Ala Ala Ser Glu Val Ile Lys Tyr
                85                  90                  95

Glu Tyr His Val Leu Tyr Ser Cys Ser Tyr Gln Val Pro Val Leu Tyr
            100                 105                 110

Phe Arg Ala Ser Phe Leu Asp Gly Arg Pro Leu Thr Leu Lys Asp Ile
        115                 120                 125

Trp Glu Gly Val His Glu Cys Tyr Lys Met Arg Leu Leu Gln Gly Pro
    130                 135                 140

Trp Asp Thr Ile Thr Gln Gln Glu His Pro Ile Leu Gly Gln Pro Phe
145                 150                 155                 160

Phe Val Leu His Pro Cys Lys Thr Asn Glu Phe Met Thr Pro Val Leu
                165                 170                 175

Lys Asn Ser Gln Lys Ile Asn Lys Asn Val Asn Tyr Ile Thr Ser Trp
```

```
            180                 185                 190

Leu Ser Ile Val Gly Pro Val Val Gly Leu Asn Leu Pro Leu Ser Tyr
        195                 200                 205

Ala Lys Ala Thr Ser Gln Asp Glu Arg Asn Val Pro
    210                 215                 220


<210> 7947
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H0Y0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347309"

<400> 7947
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1               5                   10                  15

Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
            20                  25                  30

Arg Pro Ser Lys Asp Cys Ser Asp Gly Tyr Met Cys Lys Ile His Phe
        35                  40                  45

Gln Ile Lys Asn Gly Ser Val Met Ser His Leu Gly Ala Ser Thr His
    50                  55                  60

Gly Gln Thr Cys Leu Pro Met Glu Val Lys Ser Cys Ser Val Thr Gln
65                  70                  75                  80
```

```
Ala Gly Val Gln Leu Arg Asp Leu Ser Ser Leu Gln Pro Pro Pro Ser
                85                  90                  95

Gly Phe Lys Gln Phe Ser Cys Leu Ser Leu Pro Ser Asn Trp Asp Tyr
            100                 105                 110

Arg Gly Ser Pro Leu His Leu Ala Asn Phe Leu Tyr Phe
        115                 120                 125


<210> 7948
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H0Y0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404938"

<400> 7948
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1               5                  10                  15

Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
            20                  25                  30

Arg Pro Ser Lys Asp Cys Ser Asp Gly Tyr Met Cys Lys Ile His Phe
        35                  40                  45

Gln Ile Lys Asn Gly Ser Val Met Ser His Leu Gly Ala Ser Thr His
    50                  55                  60

Gly Gln Thr Cys Leu Pro Met Glu Glu Ala Phe Glu Leu Pro Leu Asp
```

```
65                  70                  75                  80

Asp Cys Glu Val Ile Glu Thr Ala Ala Ala Ser Glu Val Ile Lys Tyr
                85                  90                  95

Glu Tyr His Val Leu Tyr Ser Cys Ser Tyr Gln Val Pro Val Leu Tyr
            100                 105                 110

Phe Arg Ala Ser Phe Leu Asp Gly Arg Pro Leu Thr Leu Lys Asp Ile
        115                 120                 125

Trp Glu Gly Val His Glu Cys Tyr Lys Met Arg Leu Leu Gln Gly Pro
    130                 135                 140

Trp Asp Thr Ile Thr Gln Gln Glu His Pro Ile Leu Gly Gln Pro Phe
145                 150                 155                 160

Phe Val Leu His Pro Cys Lys Thr Asn Glu Phe Met Thr Pro Val Leu
                165                 170                 175

Lys Asn Ser Gln Lys Ile Asn Lys Asn Val Asn Tyr Ile Thr Ser Trp
            180                 185                 190

Leu Ser Ile Val Gly Pro Val Val Gly Leu Asn Leu Pro Leu Ser Tyr
        195                 200                 205

Ala Lys Ala Thr Ser Gln Asp Glu Arg Asn Val Pro
    210                 215                 220


<210> 7949
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 10; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000422340"

<400> 7949
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1   5   10   15

Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
            20   25   30

Arg Pro Ser Lys
        35

<210> 7950
<211> 171
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424236"

<400> 7950
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1   5   10   15

Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
            20   25   30

Arg Pro Ser Lys Asp Cys Ser Asp Gly Tyr Met Cys Lys Ile His Phe
        35   40   45

Gln Ile Lys Asn Gly Ser Val Met Ser His Leu Gly Ala Ser Thr His
    50   55   60

Gly Gln Thr Cys Leu Pro Met Glu Glu Ala Phe Glu Leu Pro Leu Asp

65 70 75 80

Asp Cys Glu Val Ile Glu Thr Ala Ala Ala Ser Glu Val Ile Lys Tyr
85 90 95

Glu Tyr His Val Leu Tyr Ser Cys Ser Tyr Gln Val Pro Val Leu Tyr
100 105 110

Phe Arg Ala Ser Phe Leu Asp Gly Arg Pro Leu Thr Leu Lys Asp Ile
115 120 125

Trp Glu Gly Val His Glu Cys Tyr Lys Met Arg Leu Leu Gln Gly Pro
130 135 140

Trp Asp Thr Ile Thr Gln Gln Ile Phe Thr Lys Arg Cys Ser Glu Gly
145 150 155 160

His Ile Ser Val Thr Lys Asn Ile Ile Pro Glu
165 170

<210> 7951
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H0Y0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425182"

<400> 7951
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1 5 10 15

```
Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
            20                  25                  30

Arg Pro Ser Lys Asp Cys Ser Asp Gly Tyr Met Cys Lys Ile His Phe
        35                  40                  45

Gln Ile Lys Asn Gly Ser Val Met Ser His Leu Gly Ala Ser Thr His
    50                  55                  60

Gly Gln Thr Cys Leu Pro Met Glu Val Lys Ser Cys Ser Val Thr Gln
65                  70                  75                  80

Ala Gly Val Gln Leu Arg Asp Leu Ser Ser Leu Gln Pro Pro Pro Ser
                85                  90                  95

Gly Phe Lys Gln Phe Ser Cys Leu Ser Leu Pro Ser Asn Trp Asp Tyr
            100                 105                 110

Arg Gly Ser Pro Leu His Leu Ala Asn Phe Leu Tyr Phe
        115                 120                 125


<210> 7952
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1662; "

<220>
<221> source
<223> /note="Gene Symbol: ATG10; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425225"

<400> 7952
Met Glu Glu Asp Glu Phe Ile Gly Glu Lys Thr Phe Gln Arg Tyr Cys
1               5                   10                  15

Ala Glu Phe Ile Lys His Ser Gln Gln Ile Gly Asp Ser Trp Glu Trp
```

```
            20                  25                  30

Arg Pro Ser Lys Asp Cys Ser Asp Gly Tyr Met Cys Lys Ile His Phe
        35                  40                  45

Gln Ile Lys Asn Gly Ser Val Met Ser His Leu Gly Ala Ser Thr His
    50                  55                  60

Gly Gln Thr Cys Leu Pro Met Glu Glu Ala Phe Glu Leu Pro Leu Asp
65                  70                  75                  80

Asp Cys Glu Val Ile Glu Thr Ala Ala Ala Ser Glu Val Ile Lys Tyr
                85                  90                  95

Glu Tyr His Val Leu Tyr Ser Cys Ser Tyr Gln Val Pro Val Leu Tyr
            100                 105                 110

Phe Arg Ala Ser Phe Leu Asp Gly Arg Pro Leu Thr Leu Lys Asp Ile
        115                 120                 125

Trp Glu Gly Val His Glu Cys Tyr Lys Met Arg Leu Leu Gln Gly Pro
    130                 135                 140

Trp Asp Thr Ile Thr Gln Gln Glu His Pro Ile Leu Gly Gln Pro Phe
145                 150                 155                 160

Phe Val Leu His Pro Cys Lys Thr Asn Glu Phe Met Thr Pro Val Leu
                165                 170                 175

Lys Asn Ser Gln Lys Ile Asn Lys
            180


<210> 7953
<211> 218
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1663; "

<220>
<221> source
<223> /note="Gene Symbol: ATG101; "

<220>
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<221> source
<223> /note="Gene Name:
autophagy related 101; "

<220>
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<223> /note="Uniprot ID: Q9BSB4; "

<220>
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<223> /note="ENSP ID: ENSP00000338990"

<400> 7953

```
Met Asn Cys Arg Ser Glu Val Leu Glu Val Ser Val Glu Gly Arg Gln
1               5                  10                  15

Val Glu Glu Ala Met Leu Ala Val Leu His Thr Val Leu Leu His Arg
            20                  25                  30

Ser Thr Gly Lys Phe His Tyr Lys Lys Glu Gly Thr Tyr Ser Ile Gly
        35                  40                  45

Thr Val Gly Thr Gln Asp Val Asp Cys Asp Phe Ile Asp Phe Thr Tyr
    50                  55                  60

Val Arg Val Ser Ser Glu Glu Leu Asp Arg Ala Leu Arg Lys Val Val
65                  70                  75                  80

Gly Glu Phe Lys Asp Ala Leu Arg Asn Ser Gly Gly Asp Gly Leu Gly
                85                  90                  95

Gln Met Ser Leu Glu Phe Tyr Gln Lys Lys Lys Ser Arg Trp Pro Phe
            100                 105                 110

Ser Asp Glu Cys Ile Pro Trp Glu Val Trp Thr Val Lys Val His Val
        115                 120                 125

Val Ala Leu Ala Thr Glu Gln Glu Arg Gln Ile Cys Arg Glu Lys Val
    130                 135                 140

Gly Glu Lys Leu Cys Glu Lys Ile Ile Asn Ile Val Glu Val Met Asn
145                 150                 155                 160

Arg His Glu Tyr Leu Pro Lys Met Pro Thr Gln Ser Glu Val Asp Asn
                165                 170                 175
```

```
Val Phe Asp Thr Gly Leu Arg Asp Val Gln Pro Tyr Leu Tyr Lys Ile
            180                 185                 190

Ser Phe Gln Ile Thr Asp Ala Leu Gly Thr Ser Val Thr Thr Thr Met
        195                 200                 205

Arg Arg Leu Ile Lys Asp Thr Leu Ala Leu
    210                 215


<210> 7954
<211> 141
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG101; "

<220>
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<223> /note="Gene Name:
      autophagy related 101; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449935"

<400> 7954
Met Asn Cys Arg Ser Glu Val Leu Glu Val Ser Val Glu Gly Arg Gln
1               5                   10                  15

Val Glu Glu Ala Met Leu Ala Val Leu His Thr Val Leu Leu His Arg
            20                  25                  30

Ser Thr Gly Lys Phe His Tyr Lys Lys Glu Gly Thr Tyr Ser Ile Gly
        35                  40                  45

Thr Val Gly Thr Gln Asp Val Asp Cys Asp Phe Ile Asp Phe Thr Tyr
    50                  55                  60

Val Arg Val Ser Ser Glu Glu Leu Asp Arg Ala Leu Arg Lys Val Val
65                  70                  75                  80

Gly Glu Phe Lys Asp Ala Leu Arg Asn Ser Gly Gly Asp Gly Leu Gly
                85                  90                  95
```

```
Gln Met Ser Leu Glu Phe Tyr Gln Lys Lys Lys Ser Arg Trp Pro Phe
            100                 105                 110

Ser Asp Glu Cys Ile Pro Trp Glu Val Trp Thr Val Lys Val His Val
        115                 120                 125

Val Ala Leu Ala Thr Glu Gln Glu Arg Gln Ile Cys Arg
    130                 135                 140
```

<210> 7955
<211> 190
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG101; "

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<223> /note="Gene Name:
autophagy related 101; "

<220>
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<223> /note="ENSP ID: ENSP00000450088"

<400> 7955

```
Met Asn Cys Arg Ser Glu Val Leu Glu Val Ser Val Glu Gly Arg Gln
1               5                   10                  15

Val Glu Glu Ala Met Leu Ala Val Leu His Thr Val Leu Leu His Arg
            20                  25                  30

Ser Thr Gly Lys Phe His Tyr Lys Lys Glu Gly Thr Tyr Ser Ile Gly
        35                  40                  45

Thr Val Gly Thr Gln Asp Val Asp Cys Asp Phe Ile Asp Phe Thr Tyr
    50                  55                  60

Val Arg Val Ser Ser Glu Glu Leu Asp Arg Ala Leu Arg Lys Val Val
65                  70                  75                  80
```

```
Gly Glu Phe Lys Asp Ala Leu Arg Asn Ser Gly Gly Asp Gly Leu Gly
                85                  90                  95

Gln Met Ser Leu Glu Phe Tyr Gln Lys Lys Lys Ser Arg Trp Pro Phe
            100                 105                 110

Ser Asp Glu Cys Ile Pro Trp Glu Val Trp Thr Val Lys Val His Val
        115                 120                 125

Val Ala Leu Ala Thr Glu Gln Glu Arg Gln Ile Cys Arg Glu Lys Val
    130                 135                 140

Gly Glu Lys Leu Cys Glu Lys Ile Ile Asn Ile Val Glu Val Met Asn
145                 150                 155                 160

Arg His Glu Tyr Leu Pro Lys Met Pro Thr Gln Ser Glu Val Asp Asn
                165                 170                 175

Val Phe Asp Thr Gly Leu Arg Asp Val Gln Pro Tyr Leu Tyr
            180                 185                 190


<210> 7956
<211> 84
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATG101; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 101; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454613"

<400> 7956
Met Asn Cys Arg Ser Glu Val Leu Glu Val Ser Val Glu Gly Arg Gln
1               5                   10                  15

Val Glu Glu Ala Met Leu Ala Val Leu His Thr Val Leu Leu His Arg
            20                  25                  30
```

Ser Thr Gly Lys Phe His Tyr Lys Lys Glu Gly Thr Tyr Ser Ile Gly
35 40 45

Thr Val Gly Thr Gln Asp Val Asp Cys Asp Phe Ile Asp Phe Thr Tyr
50 55 60

Val Arg Val Ser Ser Glu Glu Leu Asp Arg Ala Leu Arg Lys Val Val
65 70 75 80

Gly Glu Phe Lys

<210> 7957
<211> 75
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1664; "

<220>
<221> source
<223> /note="Gene Symbol: ATG12; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368913"

<400> 7957
Met Ala Glu Glu Pro Gln Ser Val Leu Gln Leu Pro Thr Ser Ile Ala
1 5 10 15

Ala Gly Gly Glu Gly Leu Thr Asp Val Ser Pro Glu Thr Thr Thr Pro
20 25 30

Glu Pro Pro Ser Ser Ala Ala Val Ser Pro Gly Thr Glu Glu Pro Ala
35 40 45

Gly Asp Thr Lys Lys Lys Asn Asp Ser Gly Leu Trp Pro Gly Ala Val
50 55 60

```
Ala His Ser Cys Asn Pro Ser Thr Leu Val Gly
65                  70                  75


<210> 7958
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1664; "

<220>
<221> source
<223> /note="Gene Symbol: ATG12; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424529"

<400> 7958
Met Ala Glu Glu Pro Gln Ser Val Leu Gln Leu Pro Thr Ser Ile Ala
1               5                   10                  15


Ala Gly Gly Glu Gly Leu Thr Asp Val Ser Pro Glu Thr Thr Thr Pro
            20                  25                  30


Glu Pro Pro Ser Ser Ala Ala Val Ser Pro Gly Thr Glu Glu Pro Ala
        35                  40                  45


Gly Asp Thr Lys Lys Lys Ser Asn
    50                  55


<210> 7959
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1664; "

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<221> source
<223> /note="Gene Symbol: ATG12; "

<220>
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<221> source
<223> /note="Gene Name:
autophagy related 12; "

<220>
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<223> /note="Uniprot ID: O94817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425107"

<400> 7959
Met Ala Glu Glu Pro Gln Ser Val Leu Gln Leu Pro Thr Ser Ile Ala
1   5   10   15

Ala Gly Gly Glu Gly Leu Thr Asp Val Ser Pro Glu Thr Thr Thr Pro
            20   25   30

Glu Pro Pro Ser Ser Ala Ala Val Ser Pro Gly Thr Glu Glu Pro Ala
        35   40   45

Gly Asp Thr Lys Lys Lys Ile Asp Ile Leu Leu Lys Ala Val Gly Asp
    50   55   60

Thr Pro Ile Met Lys Thr Lys Lys Trp Ala Val Glu Arg Thr Arg Thr
65   70   75   80

Ile Gln Gly Leu Ile Asp Phe Ile Lys Lys Phe Leu Lys Leu Val Ala
                85   90   95

Ser Glu Gln Leu Phe Ile Tyr Val Asn Gln Ser Phe Ala Pro Ser Pro
            100   105   110

Asp Gln Glu Val Gly Thr Leu Tyr Glu Cys Phe Gly Ser Asp Gly Lys
        115   120   125

Leu Val Leu His Tyr Cys Lys Ser Gln Ala Trp Gly
    130   135   140

<210> 7960
<211> 74
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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<223> /note="Gene Name:
autophagy related 12; "

<220>
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<223> /note="Uniprot ID: O94817; "

<220>
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<223> /note="ENSP ID: ENSP00000425164"

<400> 7960
Met Ala Glu Glu Pro Gln Ser Val Leu Gln Leu Pro Thr Ser Ile Ala
1   5   10   15

Ala Gly Gly Glu Gly Leu Thr Asp Val Ser Pro Glu Thr Thr Thr Pro
            20   25   30

Glu Pro Pro Ser Ser Ala Ala Val Ser Pro Gly Thr Glu Glu Pro Ala
        35   40   45

Gly Asp Thr Lys Lys Lys Ile Tyr Leu Cys Glu Ser Val Leu Cys Ser
    50   55   60

Phe Pro Arg Pro Arg Ser Trp Asn Ser Leu
65   70

<210> 7961
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1664; "

<220>
<221> source
<223> /note="Gene Symbol: ATG12; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425277"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7961
Xaa Glu Pro Gln Ser Val Leu Gln Leu Pro Thr Ser Ile Ala Ala Gly
1 5 10 15

Gly Glu Gly Leu Thr Asp Val Ser Pro Glu Thr Thr Thr Pro Glu Pro
20 25 30

Pro Ser Ser Ala Ala Val Ser Pro Gly Thr Glu Glu Pro Ala Gly Asp
35 40 45

Thr Lys Lys Lys Ile Gly Cys Glu Phe Thr Pro
50 55

<210> 7962
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1664; "

<220>
<221> source
<223> /note="Gene Symbol: ATG12; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425948"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7962
Xaa Ser Pro Ser Lys Met Ala Glu Glu Pro Gln Ser Val Leu Gln Leu

1 5 10 15

Pro Thr Ser Ile Ala Ala Gly Gly Glu Gly Leu Thr Asp Val Ser Pro
20 25 30

Glu Thr Thr Thr Pro Glu Pro Pro Ser Ser Ala Ala Val Ser Pro Gly
35 40 45

Thr Glu Glu Pro Ala Gly Asp Thr Lys Lys Lys Ile Gly Cys Glu Phe
50 55 60

Thr Pro
65

<210> 7963
<211> 517
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="Uniprot ID: O75143; "

<220>
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<223> /note="ENSP ID: ENSP00000352500"

<400> 7963
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
35 40 45

```
Asp Trp Phe Asn Leu Ala Ile Lys Asp Ile Pro Glu Val Thr His Glu
    50                  55                  60

Ala Lys Lys Ala Leu Ala Gly Gln Leu Pro Ala Val Gly Arg Ser Met
65                  70                  75                  80

Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu Leu
                85                  90                  95

Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile Lys
            100                 105                 110

Val Ser Tyr Thr Val Tyr Asn Arg Leu Ser Leu Leu Leu Lys Ser Leu
        115                 120                 125

Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys Gln
    130                 135                 140

Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val Gln
145                 150                 155                 160

Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr Val
                165                 170                 175

Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile Asn
            180                 185                 190

Leu Ala Phe Met Ser Thr Arg Gln Phe Glu Arg Thr Pro Pro Ile Met
        195                 200                 205

Gly Ile Ile Ile Asp His Phe Val Asp Arg Pro Tyr Pro Ser Ser Ser
    210                 215                 220

Pro Met His Pro Cys Asn Tyr Arg Thr Ala Gly Glu Asp Thr Gly Val
225                 230                 235                 240

Ile Tyr Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser Phe
                245                 250                 255

Ser Thr Ser Pro Pro Ser Gln Leu Ser Ser Ser Arg Leu Ser Tyr Gln
            260                 265                 270
```

```
Pro Ala Ala Leu Gly Val Gly Ser Ala Asp Leu Ala Tyr Pro Val Val
        275                 280                 285

Phe Ala Ala Gly Leu Asn Ala Thr His Pro His Gln Leu Met Val Pro
    290                 295                 300

Gly Lys Glu Gly Gly Val Pro Leu Ala Pro Asn Gln Pro Val His Gly
305                 310                 315                 320

Thr Gln Ala Asp Gln Glu Arg Leu Ala Thr Cys Thr Pro Ser Asp Arg
                325                 330                 335

Thr His Cys Ala Ala Thr Pro Ser Ser Ser Glu Asp Thr Glu Thr Val
            340                 345                 350

Ser Asn Ser Ser Glu Gly Arg Ala Ser Pro His Asp Val Leu Glu Thr
        355                 360                 365

Ile Phe Val Arg Lys Val Gly Ala Phe Val Asn Lys Pro Ile Asn Gln
    370                 375                 380

Val Thr Leu Thr Ser Leu Asp Ile Pro Phe Ala Met Phe Ala Pro Lys
385                 390                 395                 400

Asn Leu Glu Leu Glu Asp Thr Asp Pro Met Val Asn Pro Pro Asp Ser
                405                 410                 415

Pro Glu Thr Glu Ser Pro Leu Gln Gly Ser Leu His Ser Asp Gly Ser
            420                 425                 430

Ser Gly Gly Ser Ser Gly Asn Thr His Asp Asp Phe Val Met Ile Asp
        435                 440                 445

Phe Lys Pro Ala Phe Ser Lys Asp Asp Ile Leu Pro Met Asp Leu Gly
    450                 455                 460

Thr Phe Tyr Arg Glu Phe Gln Asn Pro Pro Gln Leu Ser Ser Leu Ser
465                 470                 475                 480

Ile Asp Ile Gly Ala Gln Ser Met Ala Glu Asp Leu Asp Ser Leu Pro
                485                 490                 495

Glu Lys Leu Ala Val His Glu Lys Asn Val Arg Glu Phe Asp Ala Phe
```

500 505 510

Val Glu Thr Leu Gln
515

<210> 7964
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
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<220>
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<223> /note="Gene Name:
autophagy related 13; "

<220>
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<223> /note="ENSP ID: ENSP00000378919"

<400> 7964
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
35 40 45

Asp Trp Phe Asn Leu Ala Ile Lys Asp Ile Pro Glu Val Thr His Glu
50 55 60

Ala Lys Lys Ala Leu Ala Gly Gln Leu Pro Ala Val Gly Arg Ser Met
65 70 75 80

Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu Leu
85 90 95

Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile Lys
100 105 110

```
Val Ser Tyr Thr Val Tyr Asn Arg Leu Ser Leu Leu Leu Lys Ser Leu
        115                 120                 125

Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys Gln
    130                 135                 140

Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val Gln
145                 150                 155                 160

Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr Val
                165                 170                 175

Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile Asn
            180                 185                 190

Leu Ala Phe Met Ser Thr
        195


<210> 7965
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
      autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431877"

<400> 7965
Pro Ser Ser Ser Glu Asp Thr Glu Thr Val Ser Asn Ser Ser Glu Gly
1               5                   10                  15

Arg Ala Ser Pro His Asp Val Leu Glu Thr Ile Phe Val Arg Lys Val
            20                  25                  30

Gly Ala Phe Val Asn Lys Pro Ile Asn Gln Val Thr Leu Thr Ser Leu
```

35 40 45

Asp Ile Pro Phe Ala Met Phe Ala Pro Lys Asn Leu Glu Leu Glu Asp
50 55 60

Thr Asp Pro Met Val Ser Pro Pro Leu Thr Thr Ser Ser Gln
65 70 75

<210> 7966
<211> 517
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="Uniprot ID: O75143; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431974"

<400> 7966
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
35 40 45

Asp Trp Phe Asn Leu Ala Ile Lys Asp Ile Pro Glu Val Thr His Glu
50 55 60

Ala Lys Lys Ala Leu Ala Gly Gln Leu Pro Ala Val Gly Arg Ser Met
65 70 75 80

```
Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu Leu
                85                  90                  95

Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile Lys
            100                 105                 110

Val Ser Tyr Thr Val Tyr Asn Arg Leu Ser Leu Leu Leu Lys Ser Leu
        115                 120                 125

Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys Gln
    130                 135                 140

Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val Gln
145                 150                 155                 160

Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr Val
                165                 170                 175

Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile Asn
            180                 185                 190

Leu Ala Phe Met Ser Thr Arg Gln Phe Glu Arg Thr Pro Pro Ile Met
        195                 200                 205

Gly Ile Ile Ile Asp His Phe Val Asp Arg Pro Tyr Pro Ser Ser Ser
    210                 215                 220

Pro Met His Pro Cys Asn Tyr Arg Thr Ala Gly Glu Asp Thr Gly Val
225                 230                 235                 240

Ile Tyr Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser Phe
                245                 250                 255

Ser Thr Ser Pro Pro Ser Gln Leu Ser Ser Ser Arg Leu Ser Tyr Gln
            260                 265                 270

Pro Ala Ala Leu Gly Val Gly Ser Ala Asp Leu Ala Tyr Pro Val Val
        275                 280                 285

Phe Ala Ala Gly Leu Asn Ala Thr His Pro His Gln Leu Met Val Pro
    290                 295                 300
```

```
Gly Lys Glu Gly Gly Val Pro Leu Ala Pro Asn Gln Pro Val His Gly
305                 310                 315                 320

Thr Gln Ala Asp Gln Glu Arg Leu Ala Thr Cys Thr Pro Ser Asp Arg
                325                 330                 335

Thr His Cys Ala Ala Thr Pro Ser Ser Ser Glu Asp Thr Glu Thr Val
            340                 345                 350

Ser Asn Ser Ser Glu Gly Arg Ala Ser Pro His Asp Val Leu Glu Thr
        355                 360                 365

Ile Phe Val Arg Lys Val Gly Ala Phe Val Asn Lys Pro Ile Asn Gln
    370                 375                 380

Val Thr Leu Thr Ser Leu Asp Ile Pro Phe Ala Met Phe Ala Pro Lys
385                 390                 395                 400

Asn Leu Glu Leu Glu Asp Thr Asp Pro Met Val Asn Pro Pro Asp Ser
                405                 410                 415

Pro Glu Thr Glu Ser Pro Leu Gln Gly Ser Leu His Ser Asp Gly Ser
            420                 425                 430

Ser Gly Gly Ser Ser Gly Asn Thr His Asp Asp Phe Val Met Ile Asp
        435                 440                 445

Phe Lys Pro Ala Phe Ser Lys Asp Asp Ile Leu Pro Met Asp Leu Gly
    450                 455                 460

Thr Phe Tyr Arg Glu Phe Gln Asn Pro Pro Gln Leu Ser Ser Leu Ser
465                 470                 475                 480

Ile Asp Ile Gly Ala Gln Ser Met Ala Glu Asp Leu Asp Ser Leu Pro
                485                 490                 495

Glu Lys Leu Ala Val His Glu Lys Asn Val Arg Glu Phe Asp Ala Phe
            500                 505                 510

Val Glu Thr Leu Gln
        515
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<210> 7967

<211> 550
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
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<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="Uniprot ID: O75143; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432412"

<400> 7967

Met	Glu	Thr	Asp	Leu	Asn	Ser	Gln	Asp	Arg	Lys	Asp	Leu	Asp	Lys	Phe
1				5				10					15		
Ile	Lys	Phe	Phe	Ala	Leu	Lys	Thr	Val	Gln	Val	Ile	Val	Gln	Ala	Arg
		20					25					30			
Leu	Gly	Glu	Lys	Ile	Cys	Thr	Arg	Ser	Ser	Ser	Ser	Pro	Thr	Gly	Ser
	35					40					45				
Asp	Trp	Phe	Asn	Leu	Ala	Ile	Lys	Asp	Ile	Pro	Glu	Val	Thr	His	Glu
50					55					60					
Ala	Lys	Lys	Ala	Leu	Ala	Gly	Gln	Leu	Pro	Ala	Val	Gly	Arg	Ser	Met
65				70					75					80	
Cys	Val	Glu	Ile	Ser	Leu	Lys	Thr	Ser	Glu	Gly	Asp	Ser	Met	Glu	Leu
			85					90					95		
Glu	Ile	Trp	Cys	Leu	Glu	Met	Asn	Glu	Lys	Cys	Asp	Lys	Glu	Ile	Lys
		100					105					110			
Val	Ser	Tyr	Thr	Val	Tyr	Asn	Arg	Leu	Ser	Leu	Leu	Leu	Lys	Ser	Leu
	115					120					125				

```
Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys Gln
    130                 135                 140

Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val Gln
145                 150                 155                 160

Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr Val
                165                 170                 175

Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile Asn
            180                 185                 190

Leu Ala Phe Met Ser Thr Arg Gln Phe Glu Arg Thr Pro Pro Ile Met
        195                 200                 205

Gly Ile Ile Ile Asp His Phe Val Asp Arg Pro Tyr Pro Ser Ser Ser
    210                 215                 220

Pro Met His Pro Cys Asn Tyr Arg Thr Ala Gly Glu Asp Thr Gly Val
225                 230                 235                 240

Ile Tyr Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser Phe
                245                 250                 255

Ser Thr Ser Pro Pro Ser Gln Cys Val Phe Thr Val Thr Lys Ala His
            260                 265                 270

Phe Gln Thr Pro Thr Pro Val Val Thr Asp Thr Leu Arg Val Pro Met
        275                 280                 285

Ala Gly Leu Ala Phe Ser His Gln Leu Ser Ser Ser Arg Leu Ser Tyr
    290                 295                 300

Gln Pro Ala Ala Leu Gly Val Gly Ser Ala Asp Leu Ala Tyr Pro Val
305                 310                 315                 320

Val Phe Ala Ala Gly Leu Asn Ala Thr His Pro His Gln Leu Met Val
                325                 330                 335

Pro Gly Lys Glu Gly Gly Val Pro Leu Ala Pro Asn Gln Pro Val His
            340                 345                 350
```

```
Gly Thr Gln Ala Asp Gln Glu Arg Leu Ala Thr Cys Thr Pro Ser Asp
        355                 360                 365

Arg Thr His Cys Ala Ala Thr Pro Ser Ser Ser Glu Asp Thr Glu Thr
    370                 375                 380

Val Ser Asn Ser Ser Glu Gly Arg Ala Ser Pro His Asp Val Leu Glu
385                 390                 395                 400

Thr Ile Phe Val Arg Lys Val Gly Ala Phe Val Asn Lys Pro Ile Asn
                405                 410                 415

Gln Val Thr Leu Thr Ser Leu Asp Ile Pro Phe Ala Met Phe Ala Pro
            420                 425                 430

Lys Asn Leu Glu Leu Glu Asp Thr Asp Pro Met Val Asn Pro Pro Asp
        435                 440                 445

Ser Pro Glu Thr Glu Ser Pro Leu Gln Gly Ser Leu His Ser Asp Gly
    450                 455                 460

Ser Ser Gly Gly Ser Ser Gly Asn Thr His Asp Asp Phe Val Met Ile
465                 470                 475                 480

Asp Phe Lys Pro Ala Phe Ser Lys Asp Asp Ile Leu Pro Met Asp Leu
                485                 490                 495

Gly Thr Phe Tyr Arg Glu Phe Gln Asn Pro Pro Gln Leu Ser Ser Leu
            500                 505                 510

Ser Ile Asp Ile Gly Ala Gln Ser Met Ala Glu Asp Leu Asp Ser Leu
        515                 520                 525

Pro Glu Lys Leu Ala Val His Glu Lys Asn Val Arg Glu Phe Asp Ala
    530                 535                 540

Phe Val Glu Thr Leu Gln
545                 550
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<210> 7968
<211> 480
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1665; "

<220>
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<223> /note="Gene Symbol: ATG13; "

<220>
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<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="Uniprot ID: O75143; "

<220>
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<400> 7968
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1   5   10   15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
            20   25   30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
        35   40   45

Asp Trp Phe Asn Leu Ala Ile Lys Asp Ile Pro Glu Val Thr His Glu
    50   55   60

Ala Lys Lys Ala Leu Ala Gly Gln Leu Pro Ala Val Gly Arg Ser Met
65   70   75   80

Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu Leu
                85   90   95

Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile Lys
            100   105   110

Val Ser Tyr Thr Val Tyr Asn Arg Leu Ser Leu Leu Leu Lys Ser Leu
        115   120   125

Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys Gln
    130   135   140

```
Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val Gln
145                 150                 155                 160

Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr Val
                165                 170                 175

Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile Asn
            180                 185                 190

Leu Ala Phe Met Ser Thr Arg Gln Phe Glu Arg Thr Pro Pro Ile Met
        195                 200                 205

Gly Ile Ile Ile Asp His Phe Val Asp Arg Pro Tyr Pro Ser Ser Ser
    210                 215                 220

Pro Met His Pro Cys Asn Tyr Arg Thr Ala Gly Glu Asp Thr Gly Val
225                 230                 235                 240

Ile Tyr Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser Phe
                245                 250                 255

Ser Thr Ser Pro Pro Ser Gln Leu Met Val Pro Gly Lys Glu Gly Gly
            260                 265                 270

Val Pro Leu Ala Pro Asn Gln Pro Val His Gly Thr Gln Ala Asp Gln
        275                 280                 285

Glu Arg Leu Ala Thr Cys Thr Pro Ser Asp Arg Thr His Cys Ala Ala
    290                 295                 300

Thr Pro Ser Ser Ser Glu Asp Thr Glu Thr Val Ser Asn Ser Ser Glu
305                 310                 315                 320

Gly Arg Ala Ser Pro His Asp Val Leu Glu Thr Ile Phe Val Arg Lys
                325                 330                 335

Val Gly Ala Phe Val Asn Lys Pro Ile Asn Gln Val Thr Leu Thr Ser
            340                 345                 350

Leu Asp Ile Pro Phe Ala Met Phe Ala Pro Lys Asn Leu Glu Leu Glu
        355                 360                 365
```

```
Asp Thr Asp Pro Met Val Asn Pro Pro Asp Ser Pro Glu Thr Glu Ser
    370                 375                 380

Pro Leu Gln Gly Ser Leu His Ser Asp Gly Ser Ser Gly Gly Ser Ser
385                 390                 395                 400

Gly Asn Thr His Asp Asp Phe Val Met Ile Asp Phe Lys Pro Ala Phe
                405                 410                 415

Ser Lys Asp Asp Ile Leu Pro Met Asp Leu Gly Thr Phe Tyr Arg Glu
            420                 425                 430

Phe Gln Asn Pro Pro Gln Leu Ser Ser Leu Ser Ile Asp Ile Gly Ala
        435                 440                 445

Gln Ser Met Ala Glu Asp Leu Asp Ser Leu Pro Glu Lys Leu Ala Val
    450                 455                 460

His Glu Lys Asn Val Arg Glu Phe Asp Ala Phe Val Glu Thr Leu Gln
465                 470                 475                 480


<210> 7969
<211> 480
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 13; "

<220>
<221> source
<223> /note="Uniprot ID:  O75143; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433756"

<400> 7969
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1               5                   10                  15
```

```
Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
            20                  25                  30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
        35                  40                  45

Asp Trp Phe Asn Leu Ala Ile Lys Asp Ile Pro Glu Val Thr His Glu
    50                  55                  60

Ala Lys Lys Ala Leu Ala Gly Gln Leu Pro Ala Val Gly Arg Ser Met
65                  70                  75                  80

Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu Leu
                85                  90                  95

Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile Lys
            100                 105                 110

Val Ser Tyr Thr Val Tyr Asn Arg Leu Ser Leu Leu Leu Lys Ser Leu
        115                 120                 125

Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys Gln
    130                 135                 140

Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val Gln
145                 150                 155                 160

Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr Val
                165                 170                 175

Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile Asn
            180                 185                 190

Leu Ala Phe Met Ser Thr Arg Gln Phe Glu Arg Thr Pro Pro Ile Met
        195                 200                 205

Gly Ile Ile Ile Asp His Phe Val Asp Arg Pro Tyr Pro Ser Ser Ser
    210                 215                 220

Pro Met His Pro Cys Asn Tyr Arg Thr Ala Gly Glu Asp Thr Gly Val
225                 230                 235                 240
```

```
Ile Tyr Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser Phe
                245                 250                 255

Ser Thr Ser Pro Pro Ser Gln Leu Met Val Pro Gly Lys Glu Gly Gly
            260                 265                 270

Val Pro Leu Ala Pro Asn Gln Pro Val His Gly Thr Gln Ala Asp Gln
        275                 280                 285

Glu Arg Leu Ala Thr Cys Thr Pro Ser Asp Arg Thr His Cys Ala Ala
    290                 295                 300

Thr Pro Ser Ser Ser Glu Asp Thr Glu Thr Val Ser Asn Ser Ser Glu
305                 310                 315                 320

Gly Arg Ala Ser Pro His Asp Val Leu Glu Thr Ile Phe Val Arg Lys
                325                 330                 335

Val Gly Ala Phe Val Asn Lys Pro Ile Asn Gln Val Thr Leu Thr Ser
            340                 345                 350

Leu Asp Ile Pro Phe Ala Met Phe Ala Pro Lys Asn Leu Glu Leu Glu
        355                 360                 365

Asp Thr Asp Pro Met Val Asn Pro Pro Asp Ser Pro Glu Thr Glu Ser
    370                 375                 380

Pro Leu Gln Gly Ser Leu His Ser Asp Gly Ser Ser Gly Gly Ser Ser
385                 390                 395                 400

Gly Asn Thr His Asp Asp Phe Val Met Ile Asp Phe Lys Pro Ala Phe
                405                 410                 415

Ser Lys Asp Asp Ile Leu Pro Met Asp Leu Gly Thr Phe Tyr Arg Glu
            420                 425                 430

Phe Gln Asn Pro Pro Gln Leu Ser Ser Leu Ser Ile Asp Ile Gly Ala
        435                 440                 445

Gln Ser Met Ala Glu Asp Leu Asp Ser Leu Pro Glu Lys Leu Ala Val
    450                 455                 460
```

```
His Glu Lys Asn Val Arg Glu Phe Asp Ala Phe Val Glu Thr Leu Gln
465                 470                 475                 480


<210> 7970
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434125"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7970
Xaa Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser Phe Ser
1               5                   10                  15


Thr Ser Pro Pro Ser Gln Asp Ser Leu Pro Glu Lys Leu Ala Val His
            20                  25                  30


Glu Lys Asn Val Arg Glu Phe Asp Ala Phe Val Glu Thr Leu Gln
        35                  40                  45


<210> 7971
<211> 401
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "
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<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="Uniprot ID: O75143; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434390"

<400> 7971
Met Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu
1   5   10   15

Leu Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile
            20   25   30

Lys Val Ser Tyr Thr Val Tyr Asn Arg Leu Ser Leu Leu Leu Lys Ser
        35   40   45

Leu Leu Ala Ile Thr Arg Val Thr Pro Ala Tyr Arg Leu Ser Arg Lys
    50   55   60

Gln Gly His Glu Tyr Val Ile Leu Tyr Arg Ile Tyr Phe Gly Glu Val
65   70   75   80

Gln Leu Ser Gly Leu Gly Glu Gly Phe Gln Thr Val Arg Val Gly Thr
                85   90   95

Val Gly Thr Pro Val Gly Thr Ile Thr Leu Ser Cys Ala Tyr Arg Ile
            100   105   110

Asn Leu Ala Phe Met Ser Thr Arg Gln Phe Glu Arg Thr Pro Pro Ile
        115   120   125

Met Gly Ile Ile Ile Asp His Phe Val Asp Arg Pro Tyr Pro Ser Ser
    130   135   140

Ser Pro Met His Pro Cys Asn Tyr Arg Thr Ala Gly Glu Asp Thr Gly
145   150   155   160

Val Ile Tyr Pro Ser Val Glu Asp Ser Gln Glu Val Cys Thr Thr Ser
                165   170   175

```
Phe Ser Thr Ser Pro Pro Ser Gln Leu Met Val Pro Gly Lys Glu Gly
            180                 185                 190

Gly Val Pro Leu Ala Pro Asn Gln Pro Val His Gly Thr Gln Ala Asp
        195                 200                 205

Gln Glu Arg Leu Ala Thr Cys Thr Pro Ser Asp Arg Thr His Cys Ala
    210                 215                 220

Ala Thr Pro Ser Ser Ser Glu Asp Thr Glu Thr Val Ser Asn Ser Ser
225                 230                 235                 240

Glu Gly Arg Ala Ser Pro His Asp Val Leu Glu Thr Ile Phe Val Arg
                245                 250                 255

Lys Val Gly Ala Phe Val Asn Lys Pro Ile Asn Gln Val Thr Leu Thr
            260                 265                 270

Ser Leu Asp Ile Pro Phe Ala Met Phe Ala Pro Lys Asn Leu Glu Leu
        275                 280                 285

Glu Asp Thr Asp Pro Met Val Asn Pro Pro Asp Ser Pro Glu Thr Glu
    290                 295                 300

Ser Pro Leu Gln Gly Ser Leu His Ser Asp Gly Ser Ser Gly Gly Ser
305                 310                 315                 320

Ser Gly Asn Thr His Asp Asp Phe Val Met Ile Asp Phe Lys Pro Ala
                325                 330                 335

Phe Ser Lys Asp Asp Ile Leu Pro Met Asp Leu Gly Thr Phe Tyr Arg
            340                 345                 350

Glu Phe Gln Asn Pro Pro Gln Leu Ser Ser Leu Ser Ile Asp Ile Gly
        355                 360                 365

Ala Gln Ser Met Ala Glu Asp Leu Asp Ser Leu Pro Glu Lys Leu Ala
    370                 375                 380

Val His Glu Lys Asn Val Arg Glu Phe Asp Ala Phe Val Glu Thr Leu
385                 390                 395                 400
```

Gln

<210> 7972
<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436174"

<400> 7972
Val Phe Thr Val Thr Lys Ala His Phe Gln Thr Pro Thr Pro Val Val
1 5 10 15

Thr Asp Thr Leu Arg Val Pro Met Ala Gly Leu Ala Phe Ser His Gln
20 25 30

Leu Met Val Pro Gly Lys Glu Gly Gly Val Pro Leu Ala Pro Asn Gln
35 40 45

Pro Val His Gly Thr Gln Ala Asp Gln Glu Arg Leu Ala Thr Cys Thr
50 55 60

Pro Ser Asp Arg Thr His Cys Ala Ala Thr Pro Ser Ser Ser Glu Asp
65 70 75 80

Thr Glu Thr Val Ser Asn Ser Ser Glu Gly Arg Ala Ser Pro His Asp
85 90 95

Val Leu Glu Thr Ile Phe Val Arg Lys Val Gly Ala Phe Val Asn Lys
100 105 110

Pro Ile Asn Gln Val Thr Leu Thr Ser Leu Asp Ile Pro Phe Ala Met

```
        115                 120                 125

Phe Ala Pro Lys Asn Leu Glu Leu Glu Asp Thr Asp Pro Met Val Asn
    130                 135                 140

Pro Pro Asp Ser Pro Glu Thr Glu Ser Pro Leu Gln Gly Ser Leu His
145                 150                 155                 160

Ser Asp Gly Ser Ser Gly Gly Ser Ser Gly Asn Thr His Asp Asp Phe
                165                 170                 175

Val Met Ile Asp Phe Lys Pro Ala Phe Ser Lys Asp Asp Ile Leu Pro
            180                 185                 190

Met
```

<210> 7973
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436931"

<400> 7973

```
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1               5                   10                  15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
            20                  25                  30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
        35                  40                  45
```

```
Asp Trp Phe Asn Leu Ala Ile Lys Asp Ile Pro Glu Val Thr His Glu
    50                  55                  60

Ala Lys Lys Ala Leu Ala Gly Gln Leu Pro Ala Val Gly Arg Ser Met
65                  70                  75                  80

Cys Val Glu Ile Ser Leu Lys Thr Ser Glu Gly Asp Ser Met Glu Leu
                85                  90                  95

Glu Ile Trp Cys Leu Glu Met Asn Glu Lys Cys Asp Lys Glu Ile Lys
            100                 105                 110

Val Ser Tyr Thr Val Tyr Asn
        115


<210> 7974
<211> 42
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437191"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7974
Xaa Lys Pro Ile Asn Gln Val Thr Leu Thr Ser Leu Asp Ile Pro Phe
1               5                   10                  15

Ala Met Phe Ala Pro Lys Asn Leu Glu Leu Glu Asp Thr Asp Pro Met
            20                  25                  30
```

Val Ser Pro Pro Leu Thr Thr Ser Ser Gln
35 40

<210> 7975
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462167"

<400> 7975
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
35 40 45

Asp Trp Phe Asn Leu Ala Ile Lys
50 55

<210> 7976
<211> 33
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462644"

<400> 7976
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

Leu

<210> 7977
<211> 13
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463550"

<400> 7977
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu
1 5 10

<210> 7978
<211> 32
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463808"

<400> 7978
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

<210> 7979
<211> 27
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463998"

<400> 7979
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val
20 25

<210> 7980
<211> 38
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464091"

<400> 7980
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
20 25 30

Leu Gly Glu Lys Ile Cys
35

<210> 7981
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1665; "

<220>
<221> source
<223> /note="Gene Symbol: ATG13; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464274"

<400> 7981
Met Glu Thr Asp Leu Asn Ser Gln Asp Arg Lys Asp Leu Asp Lys Phe
1 5 10 15

```
Ile Lys Phe Phe Ala Leu Lys Thr Val Gln Val Ile Val Gln Ala Arg
            20                  25                  30

Leu Gly Glu Lys Ile Cys Thr Arg Ser Ser Ser Ser Pro Thr Gly Ser
        35                  40                  45

Asp Trp
    50
```

<210> 7982
<211> 492
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1666; "

<220>
<221> source
<223> /note="Gene Symbol: ATG14; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 14; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZNE5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000247178"

<400> 7982

```
Met Ala Ser Pro Ser Gly Lys Gly Ala Arg Ala Leu Glu Ala Pro Gly
1               5                   10                  15

Cys Gly Pro Arg Pro Leu Ala Arg Asp Leu Val Asp Ser Val Asp Asp
            20                  25                  30

Ala Glu Gly Leu Tyr Val Ala Val Glu Arg Cys Pro Leu Cys Asn Thr
        35                  40                  45

Thr Arg Arg Arg Leu Thr Cys Ala Lys Cys Val Gln Ser Gly Asp Phe
    50                  55                  60
```

```
Val Tyr Phe Asp Gly Arg Asp Arg Glu Arg Phe Ile Asp Lys Lys Glu
65                  70                  75                  80

Arg Leu Ser Arg Leu Lys Ser Lys Gln Glu Glu Phe Gln Lys Glu Val
                85                  90                  95

Leu Lys Ala Met Glu Gly Lys Trp Ile Thr Asp Gln Leu Arg Trp Lys
            100                 105                 110

Ile Met Ser Cys Lys Met Arg Ile Glu Gln Leu Lys Gln Thr Ile Cys
        115                 120                 125

Lys Gly Asn Glu Glu Met Glu Lys Asn Ser Glu Gly Leu Leu Lys Thr
    130                 135                 140

Lys Glu Lys Asn Gln Lys Leu Tyr Ser Arg Ala Gln Arg His Gln Glu
145                 150                 155                 160

Lys Lys Glu Lys Ile Gln Arg His Asn Arg Lys Leu Gly Asp Leu Val
                165                 170                 175

Glu Lys Lys Thr Ile Asp Leu Arg Ser His Tyr Glu Arg Leu Ala Asn
            180                 185                 190

Leu Arg Arg Ser His Ile Leu Glu Leu Thr Ser Val Ile Phe Pro Ile
        195                 200                 205

Glu Glu Val Lys Thr Gly Val Arg Asp Pro Ala Asp Val Ser Ser Glu
    210                 215                 220

Ser Asp Ser Ala Met Thr Ser Ser Thr Val Ser Lys Leu Ala Glu Ala
225                 230                 235                 240

Arg Arg Thr Thr Tyr Leu Ser Gly Arg Trp Val Cys Asp Asp His Asn
                245                 250                 255

Gly Asp Thr Ser Ile Ser Ile Thr Gly Pro Trp Ile Ser Leu Pro Asn
            260                 265                 270

Asn Gly Asp Tyr Ser Ala Tyr Tyr Ser Trp Val Glu Glu Lys Lys Thr
        275                 280                 285

Thr Gln Gly Pro Asp Met Glu Gln Ser Asn Pro Ala Tyr Thr Ile Ser
```

290 295 300

Ala Ala Leu Cys Tyr Ala Thr Gln Leu Val Asn Ile Leu Ser His Ile
305 310 315 320

Leu Asp Val Asn Leu Pro Lys Lys Leu Cys Asn Ser Glu Phe Cys Gly
325 330 335

Glu Asn Leu Ser Lys Gln Lys Phe Thr Arg Ala Val Lys Lys Leu Asn
340 345 350

Ala Asn Ile Leu Tyr Leu Cys Phe Ser Gln His Val Asn Leu Asp Gln
355 360 365

Leu Gln Pro Leu His Thr Leu Arg Asn Leu Met Tyr Leu Val Ser Pro
370 375 380

Ser Ser Glu His Leu Gly Arg Ser Gly Pro Phe Glu Val Arg Ala Asp
385 390 395 400

Leu Glu Glu Ser Met Glu Phe Val Asp Pro Gly Val Ala Gly Glu Ser
405 410 415

Asp Glu Ser Gly Asp Glu Arg Val Ser Asp Glu Glu Thr Asp Leu Gly
420 425 430

Thr Asp Trp Glu Asn Leu Pro Ser Pro Arg Phe Cys Asp Ile Pro Ser
435 440 445

Gln Ser Val Glu Val Ser Gln Ser Gln Ser Thr Gln Ala Ser Pro Pro
450 455 460

Ile Ala Ser Ser Ser Ala Gly Gly Met Ile Ser Ser Ala Ala Ala Ser
465 470 475 480

Val Thr Ser Trp Phe Lys Ala Tyr Thr Gly His Arg
485 490

<210> 7983
<211> 444
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1667; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L1; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q676U5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318259"

<400> 7983

```
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                  10                  15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65                  70                  75                  80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85                  90                  95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100                 105                 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Arg Arg Ser Val Ser Ser Phe
        115                 120                 125

Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser Gly Lys Glu
    130                 135                 140
```

```
Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala His Asp Gly
145                 150                 155                 160

Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg Leu Leu Ala Thr
                165                 170                 175

Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val Phe Gly Glu Lys
            180                 185                 190

Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala Gly Ile Thr Ser
        195                 200                 205

Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala Ser Asn Asp
    210                 215                 220

Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu Arg His Thr
225                 230                 235                 240

Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe Leu Leu Asp
                245                 250                 255

Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu Lys Leu Trp
            260                 265                 270

Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala Gly Ser Ser
        275                 280                 285

Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser Gly His Phe
    290                 295                 300

Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser Ile Val Arg
305                 310                 315                 320

Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu Asn Pro Glu
                325                 330                 335

Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu Lys Val Ile
            340                 345                 350

Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala Pro Gly Phe
        355                 360                 365

Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro Asp Gly Ser
```

```
    370                 375                 380

Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile Trp Ser Val
385                 390                 395                 400

Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His Ser Ser Ser
                405                 410                 415

Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val Val Ser Val
            420                 425                 430

Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
        435                 440


<210> 7984
<211> 428
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<220>
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<223> /note="Uniprot ID:  Q676U5; "

<220>
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<400> 7984
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                   10                  15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45
```

```
His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65                  70                  75                  80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85                  90                  95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100                 105                 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
        115                 120                 125

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Arg Arg Ser Val
    130                 135                 140

Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser
145                 150                 155                 160

Gly Lys Glu Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala
                165                 170                 175

His Asp Gly Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ile Thr Ser
            180                 185                 190

Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala Ser Asn Asp
        195                 200                 205

Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu Arg His Thr
    210                 215                 220

Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe Leu Leu Asp
225                 230                 235                 240

Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu Lys Leu Trp
                245                 250                 255

Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala Gly Ser Ser
            260                 265                 270
```

```
Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser Gly His Phe
        275                 280                 285

Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser Ile Val Arg
    290                 295                 300

Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu Asn Pro Glu
305                 310                 315                 320

Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu Lys Val Ile
                325                 330                 335

Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala Pro Gly Phe
            340                 345                 350

Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro Asp Gly Ser
        355                 360                 365

Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile Trp Ser Val
    370                 375                 380

Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His Ser Ser Ser
385                 390                 395                 400

Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val Val Ser Val
                405                 410                 415

Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
            420                 425


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<400> 7985
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1   5   10   15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20   25   30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35   40   45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50   55   60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65   70   75   80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
                85   90   95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
            100   105   110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
        115   120   125

Ala Lys Ile Ala Glu Cys Leu Gln Thr Ile Ser Asp Leu Glu Thr Glu
    130   135   140

Cys Leu Asp Leu Arg Thr Lys Leu Cys Asp Leu Glu Arg Ala Asn Gln
145   150   155   160

Thr Leu Lys Asp Glu Tyr Asp Ala Leu Gln Ile Thr Phe Thr Ala Leu
                165   170   175

Glu Gly Lys Leu Arg Lys Thr Thr Glu Glu Asn Gln Glu Leu Val Thr
            180   185   190

```
Arg Trp Met Ala Glu Lys Ala Gln Glu Ala Asn Arg Leu Asn Ala Glu
        195                 200                 205

Asn Glu Lys Asp Ser Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
    210                 215                 220

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
225                 230                 235                 240

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
                245                 250                 255

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
            260                 265                 270

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Arg Arg Ser Val
        275                 280                 285

Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser
    290                 295                 300

Gly Lys Glu Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala
305                 310                 315                 320

His Asp Gly Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg Leu
                325                 330                 335

Leu Ala Thr Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val Phe
            340                 345                 350

Gly Glu Lys Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala Gly
        355                 360                 365

Ile Thr Ser Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala
    370                 375                 380

Ser Asn Asp Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu
385                 390                 395                 400

Arg His Thr Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe
                405                 410                 415
```

```
Leu Leu Asp Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu
            420                 425                 430

Lys Leu Trp Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala
        435                 440                 445

Gly Ser Ser Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser
    450                 455                 460

Gly His Phe Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser
465                 470                 475                 480

Ile Val Arg Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu
                485                 490                 495

Asn Pro Glu Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu
            500                 505                 510

Lys Val Ile Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala
        515                 520                 525

Pro Gly Phe Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro
    530                 535                 540

Asp Gly Ser Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile
545                 550                 555                 560

Trp Ser Val Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His
                565                 570                 575

Ser Ser Ser Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val
            580                 585                 590

Val Ser Val Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
        595                 600                 605


<210> 7986
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<220>
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<400> 7986
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
35 40 45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
50 55 60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65 70 75 80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
85 90 95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
100 105 110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
115 120 125

Ala Lys Ile Ala Glu Cys Leu Gln Thr Ile Ser Asp Leu Glu Thr Glu
130 135 140

Cys Leu Asp Leu Arg Thr Lys Leu Cys Asp Leu Glu Arg Ala Asn Gln
145 150 155 160

Thr Leu Lys Asp Glu Tyr Asp Ala Leu Gln Ile Thr Phe Thr Ala Leu
165 170 175

```
Glu Gly Lys Leu Arg Lys Thr Thr Glu Glu Asn Gln Glu Leu Val Thr
            180                 185                 190

Arg Trp Met Ala Glu Lys Ala Gln Glu Ala Asn Arg Leu Asn Ala Glu
        195                 200                 205

Asn Glu Lys Asp Ser Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
    210                 215                 220

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
225                 230                 235                 240

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
                245                 250                 255

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
            260                 265                 270

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Leu Ser Glu Ser
        275                 280                 285

Pro Leu Leu Gly His His Ser Ser Ser Asp Ala Ala Arg Arg Arg Ser
    290                 295                 300

Val Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly
305                 310                 315                 320

Ser Gly Lys Glu Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp
                325                 330                 335

Ala His Asp Gly Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg
            340                 345                 350

Leu Leu Ala Thr Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val
        355                 360                 365

Phe Gly Glu Lys Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala
    370                 375                 380

Gly Ile Thr Ser Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala
385                 390                 395                 400
```

```
Ala Ser Asn Asp Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg
                405                 410                 415

Leu Arg His Thr Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys
            420                 425                 430

Phe Leu Leu Asp Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr
        435                 440                 445

Leu Lys Leu Trp Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe
    450                 455                 460

Ala Gly Ser Ser Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met
465                 470                 475                 480

Ser Gly His Phe Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu
                485                 490                 495

Ser Ile Val Arg Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp
            500                 505                 510

Leu Asn Pro Glu Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu
        515                 520                 525

Leu Lys Val Ile Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser
    530                 535                 540

Ala Pro Gly Phe Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser
545                 550                 555                 560

Pro Asp Gly Ser Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr
                565                 570                 575

Ile Trp Ser Val Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln
            580                 585                 590

His Ser Ser Ser Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His
        595                 600                 605

Val Val Ser Val Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
    610                 615                 620
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<210> 7987

<211> 588
<212> PRT
<213> Homo sapiens

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<400> 7987

Met	Ser	Ser	Gly	Leu	Arg	Ala	Ala	Asp	Phe	Pro	Arg	Trp	Lys	Arg	His
1				5				10					15		

Ile	Ser	Glu	Gln	Leu	Arg	Arg	Arg	Asp	Arg	Leu	Gln	Arg	Gln	Ala	Phe
		20					25					30			

Glu	Glu	Ile	Ile	Leu	Gln	Tyr	Asn	Lys	Leu	Leu	Glu	Lys	Ser	Asp	Leu
		35					40					45			

His	Ser	Val	Leu	Ala	Gln	Lys	Leu	Gln	Ala	Glu	Lys	His	Asp	Val	Pro
	50					55					60				

Asn	Arg	His	Glu	Ile	Ser	Pro	Gly	His	Asp	Gly	Thr	Trp	Asn	Asp	Asn
65				70					75						80

Gln	Leu	Gln	Glu	Met	Ala	Gln	Leu	Arg	Ile	Lys	His	Gln	Glu	Glu	Leu
				85					90					95	

Thr	Glu	Leu	His	Lys	Lys	Arg	Gly	Glu	Leu	Ala	Gln	Leu	Val	Ile	Asp
			100					105					110		

Leu	Asn	Asn	Gln	Met	Gln	Arg	Lys	Asp	Arg	Glu	Met	Gln	Met	Asn	Glu
		115					120					125			

```
Ala Lys Ile Ala Glu Cys Leu Gln Thr Ile Ser Asp Leu Glu Thr Glu
    130                 135                 140

Cys Leu Asp Leu Arg Thr Lys Leu Cys Asp Leu Glu Arg Ala Asn Gln
145                 150                 155                 160

Thr Leu Lys Asp Glu Tyr Asp Ala Leu Gln Ile Thr Phe Thr Ala Leu
                165                 170                 175

Glu Gly Lys Leu Arg Lys Thr Thr Glu Glu Asn Gln Glu Leu Val Thr
            180                 185                 190

Arg Trp Met Ala Glu Lys Ala Gln Glu Ala Asn Arg Leu Asn Ala Glu
        195                 200                 205

Asn Glu Lys Asp Ser Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
    210                 215                 220

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
225                 230                 235                 240

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
                245                 250                 255

Val Arg Ala Ile Ser Arg Ala Ala Thr Arg Arg Ser Val Ser Ser Phe
            260                 265                 270

Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser Gly Lys Glu
        275                 280                 285

Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala His Asp Gly
    290                 295                 300

Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg Leu Leu Ala Thr
305                 310                 315                 320

Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val Phe Gly Glu Lys
                325                 330                 335

Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala Gly Ile Thr Ser
            340                 345                 350
```

```
Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala Ser Asn Asp
        355                 360                 365

Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu Arg His Thr
    370                 375                 380

Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe Leu Leu Asp
385                 390                 395                 400

Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu Lys Leu Trp
                405                 410                 415

Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala Gly Ser Ser
            420                 425                 430

Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser Gly His Phe
        435                 440                 445

Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser Ile Val Arg
    450                 455                 460

Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu Asn Pro Glu
465                 470                 475                 480

Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu Lys Val Ile
                485                 490                 495

Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala Pro Gly Phe
            500                 505                 510

Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro Asp Gly Ser
        515                 520                 525

Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile Trp Ser Val
    530                 535                 540

Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His Ser Ser Ser
545                 550                 555                 560

Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val Val Ser Val
                565                 570                 575

Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
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580 585

<210> 7988
<211> 38
<212> PRT
<213> Homo sapiens

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<220>
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<400> 7988
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln
35

<210> 7989
<211> 55
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="ENSP ID: ENSP00000397512"

<400> 7989
Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu Thr Glu Leu His
1   5   10   15

Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp Leu Asn Asn Gln
            20   25   30

Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu Ala Lys Ile Ala
        35   40   45

Glu Cys Leu Gln Thr Ile Ser
    50   55

<210> 7990
<211> 164
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000398773"

<400> 7990
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1   5   10   15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20   25   30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35   40   45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50   55   60

```
Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65                  70                  75                  80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85                  90                  95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100                 105                 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Arg Arg Ser Val Ser Ser Phe
        115                 120                 125

Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser Gly Lys Glu
    130                 135                 140

Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala His Asp Gly
145                 150                 155                 160

Glu Val Asn Ala
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<210> 7991
<211> 177
<212> PRT
<213> Homo sapiens

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<400> 7991
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Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                   10                  15
```

```
Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65                  70                  75                  80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85                  90                  95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100                 105                 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
        115                 120                 125

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Leu Ser Glu Ser
    130                 135                 140

Pro Leu Leu Gly His His Ser Ser Ser Asp Ala Ala Arg Arg Arg Ser
145                 150                 155                 160

Val Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly
                165                 170                 175

Ser
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<210> 7992
<211> 187
<212> PRT
<213> Homo sapiens

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<400> 7992
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
35 40 45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
50 55 60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65 70 75 80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
85 90 95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
100 105 110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
115 120 125

Ala Lys Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu Ala Glu Ala Ala
130 135 140

Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile Glu Val Ile Val
145 150 155 160

Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro Val Arg Ala Ile
165 170 175

Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro
180 185

<210> 7993
<211> 38
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000485758"

<400> 7993
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln
35

<210> 7994
<211> 187
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATG16L1; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486453"

<400> 7994
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
35 40 45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
50 55 60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65 70 75 80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
85 90 95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
100 105 110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
115 120 125

Ala Lys Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu Ala Glu Ala Ala
130 135 140

Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile Glu Val Ile Val
145 150 155 160

Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro Val Arg Ala Ile
165 170 175

Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro
180 185

<210> 7995
<211> 624
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1667; "

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<220>
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<400> 7995

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Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                  10                  15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65                  70                  75                  80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
                85                  90                  95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
            100                 105                 110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
        115                 120                 125

Ala Lys Ile Ala Glu Cys Leu Gln Thr Ile Ser Asp Leu Glu Thr Glu
    130                 135                 140

Cys Leu Asp Leu Arg Thr Lys Leu Cys Asp Leu Glu Arg Ala Asn Gln
145                 150                 155                 160

Thr Leu Lys Asp Glu Tyr Asp Ala Leu Gln Ile Thr Phe Thr Ala Leu
```

```
                165                 170                 175

Glu Gly Lys Leu Arg Lys Thr Thr Glu Glu Asn Gln Glu Leu Val Thr
            180                 185                 190

Arg Trp Met Ala Glu Lys Ala Gln Glu Ala Asn Arg Leu Asn Ala Glu
        195                 200                 205

Asn Glu Lys Asp Ser Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
    210                 215                 220

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
225                 230                 235                 240

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
                245                 250                 255

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
            260                 265                 270

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Leu Ser Glu Ser
        275                 280                 285

Pro Leu Leu Gly His His Ser Ser Ser Asp Ala Ala Arg Arg Arg Ser
    290                 295                 300

Val Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly
305                 310                 315                 320

Ser Gly Lys Glu Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp
                325                 330                 335

Ala His Asp Gly Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg
            340                 345                 350

Leu Leu Ala Thr Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val
        355                 360                 365

Phe Gly Glu Lys Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala
    370                 375                 380

Gly Ile Thr Ser Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala
385                 390                 395                 400
```

```
Ala Ser Asn Asp Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg
                405                 410                 415

Leu Arg His Thr Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys
            420                 425                 430

Phe Leu Leu Asp Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr
        435                 440                 445

Leu Lys Leu Trp Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe
    450                 455                 460

Ala Gly Ser Ser Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met
465                 470                 475                 480

Ser Gly His Phe Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu
                485                 490                 495

Ser Ile Val Arg Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp
            500                 505                 510

Leu Asn Pro Glu Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu
        515                 520                 525

Leu Lys Val Ile Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser
    530                 535                 540

Ala Pro Gly Phe Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser
545                 550                 555                 560

Pro Asp Gly Ser Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr
                565                 570                 575

Ile Trp Ser Val Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln
            580                 585                 590

His Ser Ser Ser Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His
        595                 600                 605

Val Val Ser Val Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
    610                 615                 620
```

<210> 7996
<211> 177
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 7996
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
35 40 45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
50 55 60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65 70 75 80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
85 90 95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
100 105 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
115 120 125

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Leu Ser Glu Ser

130 135 140

Pro Leu Leu Gly His His Ser Ser Ser Asp Ala Ala Arg Arg Arg Ser
145 150 155 160

Val Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly
165 170 175

Ser

<210> 7997
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000487252"

<400> 7997
Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu Thr Glu Leu His
1 5 10 15

Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp Leu Asn Asn Gln
20 25 30

Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu Ala Lys Ile Ala
35 40 45

Glu Cys Leu Gln Thr Ile Ser
50 55

<210> 7998
<211> 444
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATG16L1; "

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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q676U5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487298"

<400> 7998

```
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                  10                  15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65                  70                  75                  80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85                  90                  95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100                 105                 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Arg Arg Ser Val Ser Ser Phe
        115                 120                 125

Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser Gly Lys Glu
```

```
    130                 135                 140

Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala His Asp Gly
145                 150                 155                 160

Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg Leu Leu Ala Thr
                165                 170                 175

Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val Phe Gly Glu Lys
            180                 185                 190

Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala Gly Ile Thr Ser
        195                 200                 205

Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala Ser Asn Asp
    210                 215                 220

Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu Arg His Thr
225                 230                 235                 240

Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe Leu Leu Asp
                245                 250                 255

Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu Lys Leu Trp
            260                 265                 270

Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala Gly Ser Ser
        275                 280                 285

Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser Gly His Phe
    290                 295                 300

Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser Ile Val Arg
305                 310                 315                 320

Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu Asn Pro Glu
                325                 330                 335

Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu Lys Val Ile
            340                 345                 350

Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala Pro Gly Phe
        355                 360                 365
```

```
Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro Asp Gly Ser
    370                 375                 380

Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile Trp Ser Val
385                 390                 395                 400

Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His Ser Ser Ser
                405                 410                 415

Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val Val Ser Val
            420                 425                 430

Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
        435                 440
```

<210> 7999
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1667; "

<220>
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<223> /note="Gene Symbol: ATG16L1; "

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000487407"

<400> 7999

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Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                   10                  15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45
```

```
His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65                  70                  75                  80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85                  90                  95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100                 105                 110

Val Arg Ala Ile Ser Arg Ala Ala Thr Arg Arg Ser Val Ser Ser Phe
        115                 120                 125

Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser Gly Lys Glu
    130                 135                 140

Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala His Asp Gly
145                 150                 155                 160

Glu Val Asn Ala
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<210> 8000
<211> 588
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1667; "

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<223> /note="Gene Symbol: ATG16L1; "

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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q676U5; "

<220>
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<223> /note="ENSP ID: ENSP00000487446"

<400> 8000
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1 5 10 15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
20 25 30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
35 40 45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
50 55 60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65 70 75 80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
85 90 95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
100 105 110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
115 120 125

Ala Lys Ile Ala Glu Cys Leu Gln Thr Ile Ser Asp Leu Glu Thr Glu
130 135 140

Cys Leu Asp Leu Arg Thr Lys Leu Cys Asp Leu Glu Arg Ala Asn Gln
145 150 155 160

Thr Leu Lys Asp Glu Tyr Asp Ala Leu Gln Ile Thr Phe Thr Ala Leu
165 170 175

Glu Gly Lys Leu Arg Lys Thr Thr Glu Glu Asn Gln Glu Leu Val Thr
180 185 190

Arg Trp Met Ala Glu Lys Ala Gln Glu Ala Asn Arg Leu Asn Ala Glu
195 200 205

Asn Glu Lys Asp Ser Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
210 215 220

```
Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
225                 230                 235                 240

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
                245                 250                 255

Val Arg Ala Ile Ser Arg Ala Ala Thr Arg Arg Ser Val Ser Ser Phe
            260                 265                 270

Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser Gly Lys Glu
        275                 280                 285

Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala His Asp Gly
    290                 295                 300

Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg Leu Leu Ala Thr
305                 310                 315                 320

Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val Phe Gly Glu Lys
                325                 330                 335

Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala Gly Ile Thr Ser
            340                 345                 350

Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala Ser Asn Asp
        355                 360                 365

Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu Arg His Thr
    370                 375                 380

Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe Leu Leu Asp
385                 390                 395                 400

Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu Lys Leu Trp
                405                 410                 415

Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala Gly Ser Ser
            420                 425                 430

Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser Gly His Phe
        435                 440                 445
```

```
Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser Ile Val Arg
    450                 455                 460

Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu Asn Pro Glu
465                 470                 475                 480

Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu Lys Val Ile
                485                 490                 495

Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala Pro Gly Phe
            500                 505                 510

Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro Asp Gly Ser
        515                 520                 525

Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile Trp Ser Val
    530                 535                 540

Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His Ser Ser Ser
545                 550                 555                 560

Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val Val Ser Val
                565                 570                 575

Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
            580                 585


<210> 8001
<211> 428
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q676U5; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000487455"

<400> 8001
Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1   5   10   15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20   25   30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35   40   45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50   55   60

Asn Arg His Glu Ile Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
65   70   75   80

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
                85   90   95

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
            100   105   110

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
        115   120   125

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Arg Arg Ser Val
    130   135   140

Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser
145   150   155   160

Gly Lys Glu Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala
                165   170   175

His Asp Gly Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ile Thr Ser
            180   185   190

Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala Ser Asn Asp
        195   200   205

```
Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu Arg His Thr
    210                 215                 220

Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe Leu Leu Asp
225                 230                 235                 240

Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu Lys Leu Trp
                245                 250                 255

Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala Gly Ser Ser
            260                 265                 270

Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser Gly His Phe
        275                 280                 285

Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser Ile Val Arg
    290                 295                 300

Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu Asn Pro Glu
305                 310                 315                 320

Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu Lys Val Ile
                325                 330                 335

Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala Pro Gly Phe
            340                 345                 350

Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro Asp Gly Ser
        355                 360                 365

Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile Trp Ser Val
    370                 375                 380

Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His Ser Ser Ser
385                 390                 395                 400

Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val Val Ser Val
                405                 410                 415

Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
            420                 425
```

<210> 8002
<211> 607
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG16L1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q676U5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487542"

<400> 8002

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Met Ser Ser Gly Leu Arg Ala Ala Asp Phe Pro Arg Trp Lys Arg His
1               5                  10                  15

Ile Ser Glu Gln Leu Arg Arg Arg Asp Arg Leu Gln Arg Gln Ala Phe
            20                  25                  30

Glu Glu Ile Ile Leu Gln Tyr Asn Lys Leu Leu Glu Lys Ser Asp Leu
        35                  40                  45

His Ser Val Leu Ala Gln Lys Leu Gln Ala Glu Lys His Asp Val Pro
    50                  55                  60

Asn Arg His Glu Ile Ser Pro Gly His Asp Gly Thr Trp Asn Asp Asn
65                  70                  75                  80

Gln Leu Gln Glu Met Ala Gln Leu Arg Ile Lys His Gln Glu Glu Leu
                85                  90                  95

Thr Glu Leu His Lys Lys Arg Gly Glu Leu Ala Gln Leu Val Ile Asp
            100                 105                 110

Leu Asn Asn Gln Met Gln Arg Lys Asp Arg Glu Met Gln Met Asn Glu
        115                 120                 125
```

```
Ala Lys Ile Ala Glu Cys Leu Gln Thr Ile Ser Asp Leu Glu Thr Glu
    130                 135                 140

Cys Leu Asp Leu Arg Thr Lys Leu Cys Asp Leu Glu Arg Ala Asn Gln
145                 150                 155                 160

Thr Leu Lys Asp Glu Tyr Asp Ala Leu Gln Ile Thr Phe Thr Ala Leu
                165                 170                 175

Glu Gly Lys Leu Arg Lys Thr Thr Glu Glu Asn Gln Glu Leu Val Thr
            180                 185                 190

Arg Trp Met Ala Glu Lys Ala Gln Glu Ala Asn Arg Leu Asn Ala Glu
        195                 200                 205

Asn Glu Lys Asp Ser Arg Arg Arg Gln Ala Arg Leu Gln Lys Glu Leu
    210                 215                 220

Ala Glu Ala Ala Lys Glu Pro Leu Pro Val Glu Gln Asp Asp Asp Ile
225                 230                 235                 240

Glu Val Ile Val Asp Glu Thr Ser Asp His Thr Glu Glu Thr Ser Pro
                245                 250                 255

Val Arg Ala Ile Ser Arg Ala Ala Thr Lys Arg Leu Ser Gln Pro Ala
            260                 265                 270

Gly Gly Leu Leu Asp Ser Ile Thr Asn Ile Phe Gly Arg Arg Ser Val
        275                 280                 285

Ser Ser Phe Pro Val Pro Gln Asp Asn Val Asp Thr His Pro Gly Ser
    290                 295                 300

Gly Lys Glu Val Arg Val Pro Ala Thr Ala Leu Cys Val Phe Asp Ala
305                 310                 315                 320

His Asp Gly Glu Val Asn Ala Val Gln Phe Ser Pro Gly Ser Arg Leu
                325                 330                 335

Leu Ala Thr Gly Gly Met Asp Arg Arg Val Lys Leu Trp Glu Val Phe
            340                 345                 350
```

```
Gly Glu Lys Cys Glu Phe Lys Gly Ser Leu Ser Gly Ser Asn Ala Gly
        355                 360                 365

Ile Thr Ser Ile Glu Phe Asp Ser Ala Gly Ser Tyr Leu Leu Ala Ala
    370                 375                 380

Ser Asn Asp Phe Ala Ser Arg Ile Trp Thr Val Asp Asp Tyr Arg Leu
385                 390                 395                 400

Arg His Thr Leu Thr Gly His Ser Gly Lys Val Leu Ser Ala Lys Phe
                405                 410                 415

Leu Leu Asp Asn Ala Arg Ile Val Ser Gly Ser His Asp Arg Thr Leu
            420                 425                 430

Lys Leu Trp Asp Leu Arg Ser Lys Val Cys Ile Lys Thr Val Phe Ala
        435                 440                 445

Gly Ser Ser Cys Asn Asp Ile Val Cys Thr Glu Gln Cys Val Met Ser
    450                 455                 460

Gly His Phe Asp Lys Lys Ile Arg Phe Trp Asp Ile Arg Ser Glu Ser
465                 470                 475                 480

Ile Val Arg Glu Met Glu Leu Leu Gly Lys Ile Thr Ala Leu Asp Leu
                485                 490                 495

Asn Pro Glu Arg Thr Glu Leu Leu Ser Cys Ser Arg Asp Asp Leu Leu
            500                 505                 510

Lys Val Ile Asp Leu Arg Thr Asn Ala Ile Lys Gln Thr Phe Ser Ala
        515                 520                 525

Pro Gly Phe Lys Cys Gly Ser Asp Trp Thr Arg Val Val Phe Ser Pro
    530                 535                 540

Asp Gly Ser Tyr Val Ala Ala Gly Ser Ala Glu Gly Ser Leu Tyr Ile
545                 550                 555                 560

Trp Ser Val Leu Thr Gly Lys Val Glu Lys Val Leu Ser Lys Gln His
                565                 570                 575
```

```
Ser Ser Ser Ile Asn Ala Val Ala Trp Ser Pro Ser Gly Ser His Val
            580                 585                 590

Val Ser Val Asp Lys Gly Cys Lys Ala Val Leu Trp Ala Gln Tyr
        595                 600                 605


<210> 8003
<211> 619
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
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<223> /note="Gene Name:
      autophagy related 16-like 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NAA4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000326340"

<400> 8003
Met Ala Gly Pro Gly Val Pro Gly Ala Pro Ala Ala Arg Trp Lys Arg
1               5                   10                  15

His Ile Val Arg Gln Leu Arg Leu Arg Asp Arg Thr Gln Lys Ala Leu
            20                  25                  30

Phe Leu Glu Leu Val Pro Ala Tyr Asn His Leu Leu Glu Lys Ala Glu
        35                  40                  45

Leu Leu Asp Lys Phe Ser Lys Lys Leu Gln Pro Glu Pro Asn Ser Val
    50                  55                  60

Thr Pro Thr Thr His Gln Gly Pro Trp Glu Glu Ser Glu Leu Asp Ser
65                  70                  75                  80

Asp Gln Val Pro Ser Leu Val Ala Leu Arg Val Lys Trp Gln Glu Glu
                85                  90                  95
```

```
Glu Glu Gly Leu Arg Leu Val Cys Gly Glu Met Ala Tyr Gln Val Val
            100                 105                 110

Glu Lys Gly Ala Ala Leu Gly Thr Leu Glu Ser Glu Leu Gln Gln Arg
        115                 120                 125

Gln Ser Arg Leu Ala Ala Leu Glu Ala Arg Val Ala Gln Leu Arg Glu
    130                 135                 140

Ala Arg Ala Gln Gln Ala Gln Gln Val Glu Glu Trp Arg Ala Gln Asn
145                 150                 155                 160

Ala Val Gln Arg Ala Ala Tyr Glu Ala Leu Arg Ala His Val Gly Leu
                165                 170                 175

Arg Glu Ala Ala Leu Arg Arg Leu Gln Glu Glu Ala Arg Asp Leu Leu
            180                 185                 190

Glu Arg Leu Val Gln Arg Lys Ala Arg Ala Ala Ala Glu Arg Asn Leu
        195                 200                 205

Arg Asn Glu Arg Arg Glu Arg Ala Lys Gln Ala Arg Val Ser Gln Glu
    210                 215                 220

Leu Lys Lys Ala Ala Lys Arg Thr Val Ser Ile Ser Glu Gly Pro Asp
225                 230                 235                 240

Thr Leu Gly Asp Gly Met Arg Glu Arg Arg Glu Thr Leu Ala Leu Ala
                245                 250                 255

Pro Glu Pro Glu Pro Leu Glu Lys Glu Ala Cys Glu Lys Trp Lys Arg
            260                 265                 270

Pro Phe Arg Ser Ala Ser Ala Thr Ser Leu Thr Leu Ser His Cys Val
        275                 280                 285

Asp Val Val Lys Gly Leu Leu Asp Phe Lys Lys Arg Arg Gly His Ser
    290                 295                 300

Ile Gly Gly Ala Pro Glu Gln Arg Tyr Gln Ile Ile Pro Val Cys Val
305                 310                 315                 320
```

```
Ala Ala Arg Leu Pro Thr Arg Ala Gln Asp Val Leu Asp Ala His Leu
                325                 330                 335

Ser Glu Val Asn Ala Val Arg Phe Gly Pro Asn Ser Ser Leu Leu Ala
            340                 345                 350

Thr Gly Gly Ala Asp Arg Leu Ile His Leu Trp Asn Val Val Gly Ser
        355                 360                 365

Arg Leu Glu Ala Asn Gln Thr Leu Glu Gly Ala Gly Gly Ser Ile Thr
    370                 375                 380

Ser Val Asp Phe Asp Pro Ser Gly Tyr Gln Val Leu Ala Ala Thr Tyr
385                 390                 395                 400

Asn Gln Ala Ala Gln Leu Trp Lys Val Gly Glu Ala Gln Ser Lys Glu
                405                 410                 415

Thr Leu Ser Gly His Lys Asp Lys Val Thr Ala Ala Lys Phe Lys Leu
            420                 425                 430

Thr Arg His Gln Ala Val Thr Gly Ser Arg Asp Arg Thr Val Lys Glu
        435                 440                 445

Trp Asp Leu Gly Arg Ala Tyr Cys Ser Arg Thr Ile Asn Val Leu Ser
    450                 455                 460

Tyr Cys Asn Asp Val Val Cys Gly Asp His Ile Ile Ile Ser Gly His
465                 470                 475                 480

Asn Asp Gln Lys Ile Arg Phe Trp Asp Ser Arg Gly Pro His Cys Thr
                485                 490                 495

Gln Val Ile Pro Val Gln Gly Arg Val Thr Ser Leu Ser Leu Ser His
            500                 505                 510

Asp Gln Leu His Leu Leu Ser Cys Ser Arg Asp Asn Thr Leu Lys Val
        515                 520                 525

Ile Asp Leu Arg Val Ser Asn Ile Arg Gln Val Phe Arg Ala Asp Gly
    530                 535                 540
```

```
Phe Lys Cys Gly Ser Asp Trp Thr Lys Ala Val Phe Ser Pro Asp Arg
545                 550                 555                 560


Ser Tyr Ala Leu Ala Gly Ser Cys Asp Gly Ala Leu Tyr Ile Trp Asp
                565                 570                 575


Val Asp Thr Gly Lys Leu Glu Ser Arg Leu Gln Gly Pro His Cys Ala
            580                 585                 590


Ala Val Asn Ala Val Ala Trp Cys Tyr Ser Gly Ser His Met Val Ser
        595                 600                 605


Val Asp Gln Gly Arg Lys Val Val Leu Trp Gln
    610                 615


<210> 8004
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 16-like 2; "

<220>
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<223> /note="ENSP ID: ENSP00000400705"

<400> 8004
Met Ala Gly Pro Gly Val Pro Gly Ala Pro Ala Ala Arg Trp Lys Arg
1               5                   10                  15


His Ile Val Arg Gln Leu Arg Leu Arg Asp Arg Thr Gln Lys Ala Leu
            20                  25                  30


Phe Leu Glu Leu Val Pro Ala Tyr Asn His Leu Leu Glu Lys Ala Glu
        35                  40                  45


Leu Leu Asp Lys Phe Ser Lys Lys Leu Gln Pro Glu Pro Asn Ser Val
    50                  55                  60
```

```
Thr Pro Thr Thr His Gln Gly Pro Trp Glu Glu Ser Glu Leu Asp Ser
65                  70                  75                  80


Asp Gln Val Pro Ser Leu Val Ala Leu Arg Val Lys Trp Gln Glu Glu
                85                  90                  95


Glu Glu Gly Leu Arg Leu Val Cys Gly Glu Leu Ala Phe Gln Glu Gly
            100                 105                 110


Gly Gly Gln Val Ser Ser Arg Leu Pro
        115                 120


<210> 8005
<211> 450
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
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<223> /note="Gene Name:
      autophagy related 16-like 2; "

<220>
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<223> /note="ENSP ID: ENSP00000437412"

<400> 8005
Ala Gly Arg Ser Arg Ala Ser Pro Val Ser Gly Arg Glu Gly Gly Ser
1               5                   10                  15


Ser Arg Pro Leu Glu Glu Gly Thr Gly Ser Ser Pro Ala Cys Val Arg
            20                  25                  30


Gly Ala Ala Pro Gly Ser Gln Asp Ala Phe Tyr Pro Thr Arg Ala Lys
        35                  40                  45


Gln Ala Arg Val Ser Gln Glu Leu Lys Lys Ala Ala Lys Arg Thr Val
    50                  55                  60
```

```
Ser Ile Ser Glu Gly Pro Asp Thr Leu Gly Asp Gly Met Arg Glu Arg
65                  70                  75                  80

Arg Glu Thr Leu Ala Leu Ala Pro Glu Pro Glu Pro Leu Glu Lys Glu
                85                  90                  95

Ala Cys Glu Lys Trp Lys Arg Pro Phe Arg Ser Ala Ser Ala Thr Ser
            100                 105                 110

Leu Thr Leu Ser His Cys Val Asp Val Val Lys Gly Leu Leu Asp Phe
        115                 120                 125

Lys Lys Arg Arg Gly His Ser Ile Gly Gly Ala Pro Glu Gln Arg Tyr
    130                 135                 140

Gln Ile Ile Pro Val Cys Val Ala Ala Arg Leu Pro Thr Arg Ala Gln
145                 150                 155                 160

Asp Val Leu Asp Ala His Leu Ser Glu Val Asn Ala Val Arg Phe Gly
                165                 170                 175

Pro Asn Ser Ser Leu Leu Ala Thr Gly Gly Ala Asp Arg Leu Ile His
            180                 185                 190

Leu Trp Asn Val Val Gly Ser Arg Leu Glu Ala Asn Gln Thr Leu Glu
        195                 200                 205

Gly Ala Gly Gly Ser Ile Thr Ser Val Asp Phe Asp Pro Ser Gly Tyr
    210                 215                 220

Gln Val Leu Ala Ala Thr Tyr Asn Gln Ala Ala Gln Leu Trp Lys Val
225                 230                 235                 240

Gly Glu Ala Gln Ser Lys Glu Thr Leu Ser Gly His Lys Asp Lys Val
                245                 250                 255

Thr Ala Ala Lys Phe Lys Leu Thr Arg His Gln Ala Val Thr Gly Ser
            260                 265                 270

Arg Asp Arg Thr Val Lys Glu Trp Asp Leu Gly Arg Ala Tyr Cys Ser
        275                 280                 285

Arg Thr Ile Asn Val Leu Ser Tyr Cys Asn Asp Val Val Cys Gly Asp
```

```
    290                 295                 300

His Ile Ile Ile Ser Gly His Asn Asp Gln Lys Ile Arg Phe Trp Asp
305                 310                 315                 320

Ser Arg Gly Pro His Cys Thr Gln Val Ile Pro Val Gln Gly Arg Val
                325                 330                 335

Thr Ser Leu Ser Leu Ser His Asp Gln Leu His Leu Leu Ser Cys Ser
            340                 345                 350

Arg Asp Asn Thr Leu Lys Val Ile Asp Leu Arg Val Ser Asn Ile Arg
        355                 360                 365

Gln Val Phe Arg Ala Asp Gly Phe Lys Cys Gly Ser Asp Trp Thr Lys
    370                 375                 380

Ala Val Phe Ser Pro Asp Arg Ser Tyr Ala Leu Ala Gly Ser Cys Asp
385                 390                 395                 400

Gly Ala Leu Tyr Ile Trp Asp Val Asp Thr Gly Lys Leu Glu Ser Arg
                405                 410                 415

Leu Gln Gly Pro His Cys Ala Ala Val Asn Ala Val Ala Trp Cys Tyr
            420                 425                 430

Ser Gly Ser His Met Val Ser Val Asp Gln Gly Arg Lys Val Val Leu
        435                 440                 445

Trp Gln
    450


<210> 8006
<211> 74
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
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<221> source
<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437932"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8006
Xaa Ala Lys Gln Ala Arg Val Ser Gln Glu Leu Lys Lys Ala Ala Lys
1 5 10 15

Arg Thr Val Ser Ile Ser Glu Gly Pro Asp Thr Leu Gly Asp Gly Met
20 25 30

Arg Glu Arg Arg Glu Thr Leu Ala Leu Ala Pro Glu Pro Glu Pro Leu
35 40 45

Glu Lys Glu Ala Cys Glu Lys Trp Lys Arg Pro Phe Ser Leu Ser Leu
50 55 60

Gln Val Pro Gly Val Gln Ala Leu Gly Gln
65 70

<210> 8007
<211> 321
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
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<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438474"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8007
Xaa Arg Lys Gly Pro Ala Pro Ala Gly Arg Ser Arg Ala Ser Pro Val
1 5 10 15

Ser Gly Arg Glu Gly Gly Ser Ser Arg Pro Leu Glu Glu Gly Thr Gly
20 25 30

Ser Ser Pro Ala Cys Val Arg Gly Ala Ala Pro Gly Ser Gln Asp Ala
35 40 45

Phe Tyr Pro Thr Arg Ala Lys Gln Ala Arg Val Ser Gln Glu Leu Lys
50 55 60

Lys Ala Ala Lys Arg Thr Val Ser Ile Ser Glu Gly Pro Asp Thr Leu
65 70 75 80

Gly Asp Gly Met Arg Glu Arg Arg Glu Thr Leu Ala Leu Ala Pro Glu
85 90 95

Pro Glu Pro Leu Glu Lys Glu Ala Cys Glu Lys Trp Lys Arg Pro Phe
100 105 110

Arg Ser Ala Ser Ala Thr Ser Leu Thr Leu Ser His Cys Val Asp Val
115 120 125

Val Lys Gly Leu Leu Asp Phe Lys Lys Arg Arg Gly His Ser Ile Gly
130 135 140

Gly Ala Pro Glu Gln Arg Tyr Gln Ile Ile Pro Val Cys Val Ala Ala
145 150 155 160

Arg Leu Pro Thr Arg Ala Gln Asp Val Leu Asp Ala His Leu Ser Glu
165 170 175

Val Asn Ala Val Arg Phe Gly Pro Asn Ser Ser Leu Leu Ala Thr Gly
180 185 190

Gly Ala Asp Arg Leu Ile His Leu Trp Asn Val Val Gly Ser Arg Leu
195 200 205

```
Glu Ala Asn Gln Thr Leu Glu Gly Ala Gly Gly Ser Ile Thr Ser Val
    210                 215                 220

Asp Phe Asp Pro Ser Gly Tyr Gln Val Leu Ala Ala Thr Tyr Asn Gln
225                 230                 235                 240

Ala Ala Gln Leu Trp Lys Val Gly Glu Ala Gln Ser Lys Glu Thr Leu
                245                 250                 255

Ser Gly His Lys Asp Lys Val Thr Ala Ala Lys Phe Lys Leu Thr Arg
            260                 265                 270

His Gln Ala Val Thr Gly Ser Arg Asp Arg Thr Val Lys Glu Trp Asp
        275                 280                 285

Leu Gly Arg Ala Tyr Cys Ser Arg Thr Ile Asn Val Leu Ser Tyr Cys
    290                 295                 300

Asn Asp Val Val Cys Gly Asp His Ile Ile Ile Ser Gly His Asn Asp
305                 310                 315                 320

Gln
```

<210> 8008
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
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<223> /note="Gene Symbol: ATG16L2; "

<220>
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<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441132"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8008
Xaa Gln Ala Arg Val Ser Gln Glu Leu Lys Lys Ala Ala Lys Arg Thr
1   5   10   15

Val Ser Ile Ser Glu Gly Pro Asp Thr Leu Gly Asp Gly Met Arg Glu
            20   25   30

Arg Arg Glu Thr Leu Ala Leu Ala Pro Glu Pro Glu Pro Leu Glu Lys
        35   40   45

Glu Ala Cys Glu Lys Trp Lys Arg Pro Phe Arg Gly Pro His Cys Thr
    50   55   60

Gln Val Ile Pro Val Gln Gly Arg Val Thr Ser Leu Ser Leu Ser His
65   70   75   80

Asp Gln Leu His Leu Leu Ser Cys Ser Arg Asp Asn Thr Leu Lys Val
                85   90   95

Ile Asp

<210> 8009
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441189"

<400> 8009

```
Met Ala Gly Pro Gly Val Pro Gly Ala Pro Ala Ala Arg Trp Lys Arg
1               5                  10                  15

His Ile Val Arg Gln Leu Arg Leu Arg Asp Arg Thr Gln Lys Ala Leu
            20                  25                  30

Phe Leu Glu Leu Val Pro Ala Tyr Asn His Leu Leu Glu Lys Ala Glu
        35                  40                  45

Leu Leu Asp Lys Phe Ser Lys Lys Leu Gln Pro Glu Pro Asn Ser Val
    50                  55                  60

Thr Pro Thr Thr His Gln Gly Pro Trp Glu Glu Ser Glu Leu Asp Ser
65                  70                  75                  80

Asp Gln Val Pro Ser Leu Val Ala Leu Arg Val Lys Trp Gln Glu Glu
                85                  90                  95

Glu Glu Gly Leu Arg Leu Val Cys Gly Glu Gly Ala Pro Leu His Pro
            100                 105                 110

Gly His Pro Cys Ala Gly Pro Gly His Leu Pro Glu Pro Gln Pro Arg
        115                 120                 125

Pro Thr Ala Pro Ala Gln Leu Phe Pro Arg Gln His Thr Gln Gly His
    130                 135                 140

Arg Pro Ala Cys Gln Gln His Pro Pro Gly Val Gln Gly Arg Trp Leu
145                 150                 155                 160

Gln Val Trp Phe
```

<210> 8010
<211> 397
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441747"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8010
Xaa Ala Ala Pro Gly Ser Gln Asp Ala Phe Tyr Pro Thr Arg Ala Lys
1 5 10 15

Gln Ala Arg Val Ser Gln Glu Leu Lys Lys Ala Ala Lys Arg Thr Val
20 25 30

Ser Ile Ser Glu Gly Pro Asp Thr Leu Gly Asp Gly Met Arg Glu Arg
35 40 45

Arg Glu Thr Leu Ala Leu Ala Pro Glu Pro Glu Pro Leu Glu Lys Glu
50 55 60

Ala Cys Glu Lys Trp Lys Arg Pro Phe Ser Phe Lys Lys Arg Arg Gly
65 70 75 80

His Ser Ile Gly Gly Ala Pro Glu Gln Arg Tyr Gln Ile Ile Pro Val
85 90 95

Cys Val Ala Ala Arg Leu Pro Thr Arg Ala Gln Asp Val Leu Asp Ala
100 105 110

His Leu Ser Glu Val Asn Ala Val Arg Phe Gly Pro Asn Ser Ser Leu
115 120 125

Leu Ala Thr Gly Gly Ala Asp Arg Leu Ile His Leu Trp Asn Val Val
130 135 140

Gly Ser Arg Leu Glu Ala Asn Gln Thr Leu Glu Gly Ala Gly Gly Ser
145 150 155 160

Ile Thr Ser Val Asp Phe Asp Pro Ser Gly Tyr Gln Val Leu Ala Ala

```
                165                 170                 175

Thr Tyr Asn Gln Ala Ala Gln Leu Trp Lys Val Gly Glu Ala Gln Ser
            180                 185                 190

Lys Glu Thr Leu Ser Gly His Lys Asp Lys Val Thr Ala Ala Lys Phe
        195                 200                 205

Lys Leu Thr Arg His Gln Ala Val Thr Gly Ser Arg Asp Arg Thr Val
    210                 215                 220

Lys Glu Trp Asp Leu Gly Arg Ala Tyr Cys Ser Arg Thr Ile Asn Val
225                 230                 235                 240

Leu Ser Tyr Cys Asn Asp Val Val Cys Gly Asp His Ile Ile Ile Ser
                245                 250                 255

Gly His Asn Asp Gln Lys Ile Arg Phe Trp Asp Ser Arg Gly Pro His
            260                 265                 270

Cys Thr Gln Val Ile Pro Val Gln Gly Arg Val Thr Ser Leu Ser Leu
        275                 280                 285

Ser His Asp Gln Leu His Leu Leu Ser Cys Ser Arg Asp Asn Thr Leu
    290                 295                 300

Lys Val Ile Asp Leu Arg Val Ser Asn Ile Arg Gln Val Phe Arg Ala
305                 310                 315                 320

Asp Gly Phe Lys Cys Gly Ser Asp Trp Thr Lys Ala Val Phe Ser Pro
                325                 330                 335

Asp Arg Ser Tyr Ala Leu Ala Gly Ser Cys Asp Gly Ala Leu Tyr Ile
            340                 345                 350

Trp Asp Val Asp Thr Gly Lys Leu Glu Ser Arg Leu Gln Gly Pro His
        355                 360                 365

Cys Ala Ala Val Asn Ala Val Ala Trp Cys Tyr Ser Gly Ser His Met
    370                 375                 380

Val Ser Val Asp Gln Gly Arg Lys Val Val Leu Trp Gln
385                 390                 395
```

<210> 8011
<211> 416
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441989"

<400> 8011
Ala Gly Arg Ser Arg Ala Ser Pro Val Ser Gly Arg Glu Gly Gly Ser
1 5 10 15

Ser Arg Pro Leu Glu Glu Gly Thr Gly Ser Ser Pro Ala Cys Val Arg
20 25 30

Gly Ala Ala Pro Gly Ser Gln Asp Ala Phe Tyr Pro Thr Arg Ala Lys
35 40 45

Gln Ala Arg Val Ser Gln Glu Leu Lys Lys Ala Ala Lys Arg Thr Val
50 55 60

Ser Ile Ser Glu Gly Pro Asp Thr Leu Gly Asp Gly Met Arg Glu Arg
65 70 75 80

Arg Glu Thr Leu Ala Leu Ala Pro Glu Pro Glu Pro Leu Glu Lys Glu
85 90 95

Ala Cys Glu Lys Trp Lys Arg Pro Phe Arg Ser Ala Ser Ala Thr Ser
100 105 110

Leu Thr Leu Ser His Cys Val Asp Val Val Lys Gly Leu Leu Asp Phe
115 120 125

```
Lys Lys Arg Arg Gly His Ser Ile Gly Gly Ala Pro Glu Gln Arg Tyr
    130                 135                 140

Gln Ile Ile Pro Val Cys Val Ala Ala Arg Leu Pro Thr Arg Ala Gln
145                 150                 155                 160

Asp Val Leu Asp Ala His Leu Ser Glu Val Asn Ala Val Arg Phe Gly
                165                 170                 175

Pro Asn Ser Ser Leu Leu Ala Thr Gly Gly Ala Asp Arg Leu Ile His
            180                 185                 190

Leu Trp Asn Val Val Gly Ser Arg Leu Glu Ala Asn Gln Thr Leu Glu
        195                 200                 205

Gly Ala Gly Gly Ser Ile Thr Ser Val Asp Phe Asp Pro Ser Gly Tyr
    210                 215                 220

Gln Val Leu Ala Ala Thr Tyr Asn Gln Ala Ala Gln Leu Trp Lys Val
225                 230                 235                 240

Gly Glu Ala Gln Ser Lys Glu Thr Leu Ser Gly His Lys Asp Lys Val
                245                 250                 255

Thr Ala Ala Lys Phe Lys Leu Thr Arg His Gln Ala Val Thr Gly Ser
            260                 265                 270

Arg Asp Arg Thr Val Lys Glu Trp Asp Leu Gly Arg Ala Tyr Cys Ser
        275                 280                 285

Arg Thr Ile Asn Val Leu Ser Tyr Cys Asn Asp Val Val Cys Gly Asp
    290                 295                 300

His Ile Ile Ile Ser Gly His Asn Asp Gln Lys Ile Arg Phe Trp Asp
305                 310                 315                 320

Ser Arg Gly Pro His Cys Thr Gln Val Ile Pro Val Gln Gly Arg Val
                325                 330                 335

Thr Ser Leu Ser Leu Ser His Asp Gln Leu His Leu Leu Ser Cys Ser
            340                 345                 350

Arg Asp Asn Thr Leu Lys Val Ile Asp Leu Arg Val Ser Asn Ile Arg
```

355 360 365

Gln Val Phe Arg Ala Asp Gly Phe Lys Cys Gly Ser Asp Trp Thr Lys
370 375 380

Ala Val Phe Ser Ala Ala Val Asn Ala Val Ala Trp Cys Tyr Ser Gly
385 390 395 400

Ser His Met Val Ser Val Asp Gln Gly Arg Lys Val Val Leu Trp Gln
405 410 415

<210> 8012
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
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<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442635"

<400> 8012
Met Ala Gly Pro Gly Val Pro Gly Ala Pro Ala Ala Arg Trp Lys Arg
1 5 10 15

His Ile Val Arg Gln Leu Arg Leu Arg Asp Arg Thr Gln Lys Ala Leu
20 25 30

Phe Leu Glu Leu Val Pro Ala Tyr Asn His Leu Leu Glu Lys Ala Glu
35 40 45

Leu Leu Asp Lys Phe Ser Lys Lys Leu Gln Pro Glu Pro Asn Ser Val
50 55 60

Thr Pro Thr Thr His Gln Gly Pro Trp Glu Glu Ser Glu Leu Asp Ser
65 70 75 80

```
Asp Gln Val Pro Ser Leu Val Ala Leu Arg Val Lys Trp Gln Glu Glu
                85                  90                  95


Glu Glu Gly Leu Arg Leu Val Cys Gly Glu
            100                 105


<210> 8013
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
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<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442931"

<400> 8013
Leu Val Gln Arg Lys Ala Arg Ala Ala Ala Glu Arg Asn Leu Arg Asn
1               5                   10                  15


Glu Arg Arg Glu Arg Ala Lys Gln Ala Arg Val Ser Gln Glu Leu Lys
            20                  25                  30


Lys Ala Ala Lys Arg Thr Val Ser Ile Ser Glu Gly Pro Asp Thr Leu
        35                  40                  45


Gly Asp Gly Met Arg Glu Arg Arg Glu Thr Leu Ala Leu Ala Pro Glu
    50                  55                  60


Pro Glu Pro Leu Glu Lys Glu Ala Cys Glu Lys Trp Lys Arg Pro Phe
65                  70                  75                  80


Arg Pro Arg Leu Ser Phe Pro Gly Thr Phe Val Gly Leu Pro Gln Pro
                85                  90                  95


Pro Pro
```

<210> 8014
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1668; "

<220>
<221> source
<223> /note="Gene Symbol: ATG16L2; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 16-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443569"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8014
Xaa Glu Ser Ala Ala Met Ala Gly Pro Gly Val Pro Gly Ala Pro Ala
1 5 10 15

Ala Arg Trp Lys Arg His Ile Val Arg Gln Leu Arg Leu Arg Asp Arg
20 25 30

Thr Gln Lys Ala Leu Phe Leu Glu Leu Val Pro Ala Tyr Asn His Leu
35 40 45

Leu Glu Lys Ala Glu Leu Leu Asp Lys Phe Ser Lys Lys Leu Gln Pro
50 55 60

Glu Pro Asn Ser Val Thr Pro Thr Thr His Gln Gly Pro Trp Glu Glu
65 70 75 80

Ser Glu Leu Asp Ser Asp Gln Val Pro Ser Leu Val Ala Leu Arg Val
85 90 95

Lys Trp Gln Glu Glu Glu Glu Gly Leu Arg Leu Val Cys Gly Glu Val

100 105 110

Ser Trp Glu Gly Val
115

<210> 8015
<211> 1938
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1669; "

<220>
<221> source
<223> /note="Gene Symbol: ATG2A; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 2A; "

<220>
<221> source
<223> /note="Uniprot ID: Q2TAZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366475"

<400> 8015
Met Ser Arg Trp Leu Trp Pro Trp Ser Asn Cys Val Lys Glu Arg Val
1 5 10 15

Cys Arg Tyr Leu Leu His His Tyr Leu Gly His Phe Phe Gln Glu His
20 25 30

Leu Ser Leu Asp Gln Leu Ser Leu Asp Leu Tyr Lys Gly Ser Val Ala
35 40 45

Leu Arg Asp Ile His Leu Glu Ile Trp Ser Val Asn Glu Val Leu Glu
50 55 60

Ser Met Glu Ser Pro Leu Glu Leu Val Glu Gly Phe Val Gly Ser Ile
65 70 75 80

Glu Val Ala Val Pro Trp Ala Ala Leu Leu Thr Asp His Cys Thr Val
85 90 95

```
Arg Val Ser Gly Leu Gln Leu Thr Leu Gln Pro Arg Arg Gly Pro Ala
            100                 105                 110

Pro Gly Ala Ala Asp Ser Gln Ser Trp Ala Ser Cys Met Thr Thr Ser
        115                 120                 125

Leu Gln Leu Ala Gln Glu Cys Leu Arg Asp Gly Leu Pro Glu Pro Ser
    130                 135                 140

Glu Pro Pro Gln Pro Leu Glu Gly Leu Glu Met Phe Ala Gln Thr Ile
145                 150                 155                 160

Glu Thr Val Leu Arg Arg Ile Lys Val Thr Phe Leu Asp Thr Val Val
                165                 170                 175

Arg Val Glu His Ser Pro Gly Asp Gly Glu Arg Gly Val Ala Val Glu
            180                 185                 190

Val Arg Val Gln Arg Leu Glu Tyr Cys Asp Glu Ala Val Arg Asp Pro
        195                 200                 205

Ser Gln Ala Pro Pro Val Asp Val His Gln Pro Pro Ala Phe Leu His
    210                 215                 220

Lys Leu Leu Gln Leu Ala Gly Val Arg Leu His Tyr Glu Glu Leu Pro
225                 230                 235                 240

Ala Gln Glu Glu Pro Pro Glu Pro Pro Leu Gln Ile Gly Ser Cys Ser
                245                 250                 255

Gly Tyr Met Glu Leu Met Val Lys Leu Lys Gln Asn Glu Ala Phe Pro
            260                 265                 270

Gly Pro Lys Leu Glu Val Ala Gly Gln Leu Gly Ser Leu His Leu Leu
        275                 280                 285

Leu Thr Pro Arg Gln Leu Gln Gln Leu Gln Glu Leu Leu Ser Ala Val
    290                 295                 300

Ser Leu Thr Asp His Glu Gly Leu Ala Asp Lys Leu Asn Lys Ser Arg
305                 310                 315                 320
```

```
Pro Leu Gly Ala Glu Asp Leu Trp Leu Ile Glu Gln Asp Leu Asn Gln
                325                 330                 335

Gln Leu Gln Ala Gly Ala Val Ala Glu Pro Leu Ser Pro Asp Pro Leu
            340                 345                 350

Thr Asn Pro Leu Leu Asn Leu Asp Asn Thr Asp Leu Phe Phe Ser Met
        355                 360                 365

Ala Gly Leu Thr Ser Ser Val Ala Ser Ala Leu Ser Glu Leu Ser Leu
    370                 375                 380

Ser Asp Val Asp Leu Ala Ser Ser Val Arg Ser Asp Met Ala Ser Arg
385                 390                 395                 400

Arg Leu Ser Ala Gln Ala His Pro Ala Gly Lys Met Ala Pro Asn Pro
                405                 410                 415

Leu Leu Asp Thr Met Arg Pro Asp Ser Leu Leu Lys Met Thr Leu Gly
            420                 425                 430

Gly Val Thr Leu Thr Leu Leu Gln Thr Ser Ala Pro Ser Ser Gly Pro
        435                 440                 445

Pro Asp Leu Ala Thr His Phe Phe Thr Glu Phe Asp Ala Thr Lys Asp
    450                 455                 460

Gly Pro Phe Gly Ser Arg Asp Phe His His Leu Arg Pro Arg Phe Gln
465                 470                 475                 480

Arg Ala Cys Pro Cys Ser His Val Arg Leu Thr Gly Thr Ala Val Gln
                485                 490                 495

Leu Ser Trp Glu Leu Arg Thr Gly Ser Arg Gly Arg Arg Thr Thr Ser
            500                 505                 510

Met Glu Val His Phe Gly Gln Leu Glu Val Leu Glu Cys Leu Trp Pro
        515                 520                 525

Arg Gly Thr Ser Glu Pro Glu Tyr Thr Glu Ile Leu Thr Phe Pro Gly
    530                 535                 540

Thr Leu Gly Ser Gln Ala Ser Ala Arg Pro Cys Ala His Leu Arg His
```

545 550 555 560

Thr Gln Ile Leu Arg Arg Val Pro Lys Ser Arg Pro Arg Arg Ser Val
565 570 575

Ala Cys His Cys His Ser Glu Leu Ala Leu Asp Leu Ala Asn Phe Gln
580 585 590

Ala Asp Val Glu Leu Gly Ala Leu Asp Arg Leu Ala Ala Leu Leu Arg
595 600 605

Leu Ala Thr Val Pro Ala Glu Pro Pro Ala Gly Leu Leu Thr Glu Pro
610 615 620

Leu Pro Ala Met Glu Gln Gln Thr Val Phe Arg Leu Ser Ala Pro Arg
625 630 635 640

Ala Thr Leu Arg Leu Arg Phe Pro Ile Ala Asp Leu Arg Pro Glu Pro
645 650 655

Asp Pro Trp Ala Gly Gln Ala Val Arg Ala Glu Gln Leu Arg Leu Glu
660 665 670

Leu Ser Glu Pro Gln Phe Arg Ser Glu Leu Ser Ser Gly Pro Gly Pro
675 680 685

Pro Val Pro Thr His Leu Glu Leu Thr Cys Ser Asp Leu His Gly Ile
690 695 700

Tyr Glu Asp Gly Gly Lys Pro Pro Val Pro Cys Leu Arg Val Ser Lys
705 710 715 720

Ala Leu Asp Pro Lys Ser Thr Gly Arg Lys Tyr Phe Leu Pro Gln Val
725 730 735

Val Val Thr Val Asn Pro Gln Ser Ser Ser Thr Gln Trp Glu Val Ala
740 745 750

Pro Glu Lys Gly Glu Glu Leu Glu Leu Ser Val Glu Ser Pro Cys Glu
755 760 765

Leu Arg Glu Pro Glu Pro Ser Pro Phe Ser Ser Lys Arg Thr Met Tyr
770 775 780

```
Glu Thr Glu Glu Met Val Ile Pro Gly Asp Pro Glu Glu Met Arg Thr
785                 790                 795                 800

Phe Gln Ser Arg Thr Leu Ala Leu Ser Arg Cys Ser Leu Glu Val Ile
                805                 810                 815

Leu Pro Ser Val His Ile Phe Leu Pro Ser Lys Glu Val Tyr Glu Ser
            820                 825                 830

Ile Tyr Asn Arg Ile Asn Asn Asp Leu Leu Met Trp Glu Pro Ala Asp
        835                 840                 845

Leu Leu Pro Thr Pro Asp Pro Ala Ala Gln Pro Ser Gly Phe Pro Gly
    850                 855                 860

Pro Ser Gly Phe Trp His Asp Ser Phe Lys Met Cys Lys Ser Ala Phe
865                 870                 875                 880

Lys Leu Ala Asn Cys Phe Asp Leu Thr Pro Asp Ser Asp Ser Asp Asp
                885                 890                 895

Glu Asp Ala His Phe Phe Ser Val Gly Ala Ser Gly Gly Pro Gln Ala
            900                 905                 910

Ala Ala Pro Glu Ala Pro Ser Leu His Leu Gln Ser Thr Phe Ser Thr
        915                 920                 925

Leu Val Thr Val Leu Lys Gly Arg Ile Thr Ala Leu Cys Glu Thr Lys
    930                 935                 940

Asp Glu Gly Gly Lys Arg Leu Glu Ala Val His Gly Glu Leu Val Leu
945                 950                 955                 960

Asp Met Glu His Gly Thr Leu Phe Ser Val Ser Gln Tyr Cys Gly Gln
                965                 970                 975

Pro Gly Leu Gly Tyr Phe Cys Leu Glu Ala Glu Lys Ala Thr Leu Tyr
            980                 985                 990

His Arg Ala Ala Val Asp Asp Tyr  Pro Leu Pro Ser His  Leu Asp
Leu
        995                 1000                1005
```

```
Pro Ser  Phe Ala Pro Pro Ala  Gln Leu Ala Pro Thr  Ile Tyr Pro
    1010                1015                1020

Ser Glu  Glu Gly Val Thr Glu  Arg Gly Ala Ser Gly  Arg Lys Gly
    1025                1030                1035

Gln Gly  Arg Gly Pro His Met  Leu Ser Thr Ala Val  Arg Ile His
    1040                1045                1050

Leu Asp  Pro His Lys Asn Val  Lys Glu Phe Leu Val  Thr Leu Arg
    1055                1060                1065

Leu His  Lys Ala Thr Leu Arg  His Tyr Met Ala Leu  Pro Glu Gln
    1070                1075                1080

Ser Trp  His Ser Gln Leu Leu  Glu Phe Leu Asp Val  Leu Asp Asp
    1085                1090                1095

Pro Val  Leu Gly Tyr Leu Pro  Pro Thr Val Ile Thr  Ile Leu His
    1100                1105                1110

Thr His  Leu Phe Ser Cys Ser  Val Asp Tyr Arg Pro  Leu Tyr Leu
    1115                1120                1125

Pro Val  Arg Val Leu Ile Thr  Ala Glu Thr Phe Thr  Leu Ser Ser
    1130                1135                1140

Asn Ile  Ile Met Asp Thr Ser  Thr Phe Leu Leu Arg  Phe Ile Leu
    1145                1150                1155

Asp Asp  Ser Ala Leu Tyr Leu  Ser Asp Lys Cys Glu  Val Glu Thr
    1160                1165                1170

Leu Asp  Leu Arg Arg Asp Tyr  Val Cys Val Leu Asp  Val Asp Leu
    1175                1180                1185

Leu Glu  Leu Val Ile Lys Thr  Trp Lys Gly Ser Thr  Glu Gly Lys
    1190                1195                1200

Leu Ser  Gln Pro Leu Phe Glu  Leu Arg Cys Ser Asn  Asn Val Val
    1205                1210                1215
```

```
His Val  His Ser Cys Ala Asp  Ser Cys Ala Leu Leu  Val Asn Leu
    1220                1225                1230

Leu Gln  Tyr Val Met Ser Thr  Gly Asp Leu His Pro  Pro Pro Arg
    1235                1240                1245

Pro Pro  Ser Pro Thr Glu Ile  Ala Gly Gln Lys Leu  Ser Glu Ser
    1250                1255                1260

Pro Ala  Ser Leu Pro Ser Cys  Pro Pro Val Glu Thr  Ala Leu Ile
    1265                1270                1275

Asn Gln  Arg Asp Leu Ala Asp  Ala Leu Leu Asp Thr  Glu Arg Ser
    1280                1285                1290

Leu Arg  Glu Leu Ala Gln Pro  Ser Gly Gly His Leu  Pro Gln Ala
    1295                1300                1305

Ser Pro  Ile Ser Val Tyr Leu  Phe Pro Gly Glu Arg  Ser Gly Ala
    1310                1315                1320

Pro Pro  Pro Ser Pro Pro Val  Gly Gly Pro Ala Gly  Ser Leu Gly
    1325                1330                1335

Ser Cys  Ser Glu Glu Lys Glu  Asp Glu Arg Glu Glu  Glu Gly Asp
    1340                1345                1350

Gly Asp  Thr Leu Asp Ser Asp  Glu Phe Cys Ile Leu  Asp Ala Pro
    1355                1360                1365

Gly Leu  Gly Ile Pro Pro Arg  Asp Gly Glu Pro Val  Val Thr Gln
    1370                1375                1380

Leu His  Pro Gly Pro Ile Val  Val Arg Asp Gly Tyr  Phe Ser Arg
    1385                1390                1395

Pro Ile  Gly Ser Thr Asp Leu  Leu Arg Ala Pro Ala  His Phe Pro
    1400                1405                1410

Val Pro  Ser Thr Arg Val Val  Leu Arg Glu Val Ser  Leu Val Trp
    1415                1420                1425
```

```
His Leu  Tyr Gly Gly Arg Asp  Phe Gly Pro His Pro  Gly His Arg
    1430                1435                1440

Ala Arg  Thr Gly Leu Ser Gly  Pro Arg Ser Ser Pro  Ser Arg Cys
    1445                1450                1455

Ser Gly  Pro Asn Arg Pro Gln  Asn Ser Trp Arg Thr  Gln Gly Gly
    1460                1465                1470

Ser Gly  Arg Gln His His Val  Leu Met Glu Ile Gln  Leu Ser Lys
    1475                1480                1485

Val Ser  Phe Gln His Glu Val  Tyr Pro Ala Glu Pro  Ala Thr Gly
    1490                1495                1500

Pro Ala  Ala Pro Ser Gln Glu  Leu Glu Glu Arg Pro  Leu Ser Arg
    1505                1510                1515

Gln Val  Phe Ile Val Gln Glu  Leu Glu Val Arg Asp  Arg Leu Ala
    1520                1525                1530

Ser Ser  Gln Ile Asn Lys Phe  Leu Tyr Leu His Thr  Ser Glu Arg
    1535                1540                1545

Met Pro  Arg Arg Ala His Ser  Asn Met Leu Thr Ile  Lys Ala Leu
    1550                1555                1560

His Val  Ala Pro Thr Thr Asn  Leu Gly Gly Pro Glu  Cys Cys Leu
    1565                1570                1575

Arg Val  Ser Leu Met Pro Leu  Arg Leu Asn Val Asp  Gln Asp Ala
    1580                1585                1590

Leu Phe  Phe Leu Lys Asp Phe  Phe Thr Ser Leu Val  Ala Gly Ile
    1595                1600                1605

Asn Pro  Val Val Pro Gly Glu  Thr Ser Ala Glu Ala  Arg Pro Glu
    1610                1615                1620

Thr Arg  Ala Gln Pro Ser Ser  Pro Leu Glu Gly Gln  Ala Glu Gly
    1625                1630                1635

Val Glu  Thr Thr Gly Ser Gln  Glu Ala Pro Gly Gly  Gly His Ser
```

1640 1645 1650

Pro Ser Pro Pro Asp Gln Gln Pro Ile Tyr Phe Arg Glu Phe Arg
1655 1660 1665

Phe Thr Ser Glu Val Pro Ile Trp Leu Asp Tyr His Gly Lys His
1670 1675 1680

Val Thr Met Asp Gln Val Gly Thr Phe Ala Gly Leu Leu Ile Gly
1685 1690 1695

Leu Ala Gln Leu Asn Cys Ser Glu Leu Lys Leu Lys Arg Leu Cys
1700 1705 1710

Cys Arg His Gly Leu Leu Gly Val Asp Lys Val Leu Gly Tyr Ala
1715 1720 1725

Leu Asn Glu Trp Leu Gln Asp Ile Arg Lys Asn Gln Leu Pro Gly
1730 1735 1740

Leu Leu Gly Gly Val Gly Pro Met His Ser Val Val Gln Leu Phe
1745 1750 1755

Gln Gly Phe Arg Asp Leu Leu Trp Leu Pro Ile Glu Gln Tyr Arg
1760 1765 1770

Lys Asp Gly Arg Leu Met Arg Gly Leu Gln Arg Gly Ala Ala Ser
1775 1780 1785

Phe Gly Ser Ser Thr Ala Ser Ala Ala Leu Glu Leu Ser Asn Arg
1790 1795 1800

Leu Val Gln Ala Ile Gln Ala Thr Ala Glu Thr Val Tyr Asp Ile
1805 1810 1815

Leu Ser Pro Ala Ala Pro Val Ser Arg Ser Leu Gln Asp Lys Arg
1820 1825 1830

Ser Ala Arg Arg Leu Arg Arg Gly Gln Gln Pro Ala Asp Leu Arg
1835 1840 1845

Glu Gly Val Ala Lys Ala Tyr Asp Thr Val Arg Glu Gly Ile Leu
1850 1855 1860

```
Asp Thr  Ala Gln Thr Ile Cys  Asp Val Ala Ser Arg  Gly His Glu
    1865                 1870                 1875


Gln Lys  Gly Leu Thr Gly Ala  Val Gly Gly Val Ile  Arg Gln Leu
    1880                 1885                 1890


Pro Pro  Thr Val Val Lys Pro  Leu Ile Leu Ala Thr  Glu Ala Thr
    1895                 1900                 1905


Ser Ser  Leu Leu Gly Gly Met  Arg Asn Gln Ile Val  Pro Asp Ala
    1910                 1915                 1920


His Lys  Asp His Ala Leu Lys  Trp Arg Ser Asp Ser  Ala Gln Asp
    1925                 1930                 1935


<210> 8016
<211> 331
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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<220>
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<400> 8016
Met Ala Val Ala Met Val Lys Leu Cys Glu Arg Ala Gly Leu Pro Leu
1               5                  10                  15


Leu Ala Ala Pro Leu Leu Arg Ser Leu Leu Pro Arg Ala Pro Gln Pro
            20                  25                  30
```

```
Gly Pro Ala Gln Pro Arg Ser Val Gln Gly Gln Arg Cys Pro Ala Arg
        35                  40                  45

His Pro Pro Gly Asn Leu Val Cys Glu Arg Gly Ala Gly Val Asn Gly
    50                  55                  60

Val Thr Ala Gly Ala Gly Gly Arg Leu Arg Gly Leu His Arg Gly Gly
65                  70                  75                  80

Arg Ala Leu Gly Cys Ser Ala His Arg Pro Leu His Ser Ala Arg Val
                85                  90                  95

Arg Pro Pro Ala His Leu Ala Ala Pro Pro Gly Ser Ser Ala Arg Gly
            100                 105                 110

Cys Arg Leu Thr Glu Leu Gly Tyr Ala Leu Asn Glu Trp Leu Gln Asp
        115                 120                 125

Ile Arg Lys Asn Gln Leu Pro Gly Leu Leu Gly Gly Val Gly Pro Met
    130                 135                 140

His Ser Val Val Gln Leu Phe Gln Gly Phe Arg Asp Leu Leu Trp Leu
145                 150                 155                 160

Pro Ile Glu Gln Tyr Arg Lys Asp Gly Arg Leu Met Arg Gly Leu Gln
                165                 170                 175

Arg Gly Ala Ala Ser Phe Gly Ser Ser Thr Ala Ser Ala Ala Leu Glu
            180                 185                 190

Leu Ser Asn Arg Leu Val Gln Ala Ile Gln Ala Thr Ala Glu Thr Val
        195                 200                 205

Tyr Asp Ile Leu Ser Pro Ala Ala Pro Val Ser Arg Ser Leu Gln Asp
    210                 215                 220

Lys Arg Ser Ala Arg Arg Leu Arg Arg Gly Gln Gln Pro Ala Asp Leu
225                 230                 235                 240

Arg Glu Gly Val Ala Lys Ala Tyr Asp Thr Val Arg Glu Gly Ile Leu
                245                 250                 255

Asp Thr Ala Gln Thr Ile Cys Asp Val Ala Ser Arg Gly His Glu Gln
```

260 265 270

Lys Gly Leu Thr Gly Ala Val Gly Gly Val Ile Arg Gln Leu Pro Pro
275 280 285

Thr Val Val Lys Pro Leu Ile Leu Ala Thr Glu Ala Thr Ser Ser Leu
290 295 300

Leu Gly Gly Met Arg Asn Gln Ile Val Pro Asp Ala His Lys Asp His
305 310 315 320

Ala Leu Lys Trp Arg Ser Asp Ser Ala Gln Asp
325 330

<210> 8017
<211> 1742
<212> PRT
<213> Homo sapiens

<220>
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autophagy related 2A; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8017
Xaa Tyr Cys Asp Glu Ala Val Arg Asp Pro Ser Gln Ala Pro Pro Val
1 5 10 15

Asp Val His Gln Pro Pro Ala Phe Leu His Lys Leu Leu Gln Leu Ala
20 25 30

Gly Val Arg Leu His Tyr Glu Glu Leu Pro Ala Gln Glu Glu Pro Pro

```
        35                  40                  45

Glu Pro Pro Leu Gln Ile Gly Ser Cys Ser Gly Tyr Met Glu Leu Met
    50                  55                  60

Val Lys Leu Lys Gln Asn Glu Ala Phe Pro Gly Pro Lys Leu Glu Val
65                  70                  75                  80

Ala Gly Gln Leu Gly Ser Leu His Leu Leu Leu Thr Pro Arg Gln Leu
                85                  90                  95

Gln Gln Leu Gln Glu Leu Leu Ser Ala Val Ser Leu Thr Asp His Glu
            100                 105                 110

Gly Leu Ala Asp Lys Leu Asn Lys Ser Arg Pro Leu Gly Ala Glu Asp
        115                 120                 125

Leu Trp Leu Ile Glu Gln Asp Leu Asn Gln Gln Leu Gln Ala Gly Ala
    130                 135                 140

Val Ala Glu Pro Leu Ser Pro Asp Pro Leu Thr Asn Pro Leu Leu Asn
145                 150                 155                 160

Leu Asp Asn Thr Asp Leu Phe Phe Ser Met Ala Gly Leu Thr Ser Ser
                165                 170                 175

Val Ala Ser Ala Leu Ser Glu Leu Ser Leu Ser Asp Val Asp Leu Ala
            180                 185                 190

Ser Ser Val Arg Ser Asp Met Ala Ser Arg Arg Leu Ser Ala Gln Ala
        195                 200                 205

His Pro Ala Gly Lys Met Ala Pro Asn Pro Leu Leu Asp Thr Met Arg
    210                 215                 220

Pro Asp Ser Leu Leu Lys Met Thr Leu Gly Gly Val Thr Leu Thr Leu
225                 230                 235                 240

Leu Gln Thr Ser Ala Pro Ser Ser Gly Pro Pro Asp Leu Ala Thr His
                245                 250                 255

Phe Phe Thr Glu Phe Asp Ala Thr Lys Asp Gly Pro Phe Gly Ser Arg
            260                 265                 270
```

```
Asp Phe His His Leu Arg Pro Arg Phe Gln Arg Ala Cys Pro Cys Ser
        275                 280                 285

His Val Arg Leu Thr Gly Thr Ala Val Gln Leu Ser Trp Glu Leu Arg
    290                 295                 300

Thr Gly Ser Arg Gly Arg Arg Thr Thr Ser Met Glu Val His Phe Gly
305                 310                 315                 320

Gln Leu Glu Val Leu Glu Cys Leu Trp Pro Arg Gly Thr Ser Glu Pro
                325                 330                 335

Glu Tyr Thr Glu Ile Leu Thr Phe Pro Gly Thr Leu Gly Ser Gln Ala
            340                 345                 350

Ser Ala Arg Pro Cys Ala His Leu Arg His Thr Gln Ile Leu Arg Arg
        355                 360                 365

Val Pro Lys Ser Arg Pro Arg Arg Ser Val Ala Cys His Cys His Ser
    370                 375                 380

Glu Leu Ala Leu Asp Leu Ala Asn Phe Gln Ala Asp Val Glu Leu Gly
385                 390                 395                 400

Ala Leu Asp Arg Leu Ala Ala Leu Leu Arg Leu Ala Thr Val Pro Ala
                405                 410                 415

Glu Pro Pro Ala Gly Leu Leu Thr Glu Pro Leu Pro Ala Met Glu Gln
            420                 425                 430

Gln Thr Val Phe Arg Leu Ser Ala Pro Arg Ala Thr Leu Arg Leu Arg
        435                 440                 445

Phe Pro Ile Ala Asp Leu Arg Pro Glu Pro Asp Pro Trp Ala Gly Gln
    450                 455                 460

Ala Val Arg Ala Glu Gln Leu Arg Leu Glu Leu Ser Glu Pro Gln Phe
465                 470                 475                 480

Arg Ser Glu Leu Ser Ser Gly Pro Gly Pro Pro Val Pro Thr His Leu
                485                 490                 495
```

Glu Leu Thr Cys Ser Asp Leu His Gly Ile Tyr Glu Asp Gly Gly Lys
500 505 510

Pro Pro Val Pro Cys Leu Arg Val Ser Lys Ala Leu Asp Pro Lys Ser
515 520 525

Thr Gly Arg Lys Tyr Phe Leu Pro Gln Val Val Val Thr Val Asn Pro
530 535 540

Gln Ser Ser Ser Thr Gln Trp Glu Val Ala Pro Glu Lys Gly Glu Glu
545 550 555 560

Leu Glu Leu Ser Val Glu Ser Pro Cys Glu Leu Arg Glu Pro Glu Pro
565 570 575

Ser Pro Phe Ser Ser Lys Arg Thr Met Tyr Glu Thr Glu Glu Met Val
580 585 590

Ile Pro Gly Asp Pro Glu Glu Met Arg Thr Phe Gln Ser Arg Thr Leu
595 600 605

Ala Leu Ser Arg Cys Ser Leu Glu Val Ile Leu Pro Ser Val His Ile
610 615 620

Phe Leu Pro Ser Lys Glu Val Tyr Glu Ser Ile Tyr Asn Arg Ile Asn
625 630 635 640

Asn Asp Leu Leu Met Trp Glu Pro Ala Asp Leu Leu Pro Thr Pro Asp
645 650 655

Pro Ala Ala Gln Pro Ser Gly Phe Pro Gly Pro Ser Gly Phe Trp His
660 665 670

Asp Ser Phe Lys Met Cys Lys Ser Ala Phe Lys Leu Ala Asn Cys Phe
675 680 685

Asp Leu Thr Pro Asp Ser Asp Ser Asp Asp Glu Asp Ala His Phe Phe
690 695 700

Ser Val Gly Ala Ser Gly Gly Pro Gln Ala Ala Ala Pro Glu Ala Pro
705 710 715 720

```
Ser Leu His Leu Gln Ser Thr Phe Ser Thr Leu Val Thr Val Leu Lys
                725                 730                 735

Gly Arg Ile Thr Ala Leu Cys Glu Thr Lys Asp Glu Gly Gly Lys Arg
            740                 745                 750

Leu Glu Ala Val His Gly Glu Leu Val Leu Asp Met Glu His Gly Thr
        755                 760                 765

Leu Phe Ser Val Ser Gln Tyr Cys Gly Gln Pro Gly Leu Gly Tyr Phe
    770                 775                 780

Cys Leu Glu Ala Glu Lys Ala Thr Leu Tyr His Arg Ala Ala Val Asp
785                 790                 795                 800

Asp Tyr Pro Leu Pro Ser His Leu Asp Leu Pro Ser Phe Ala Pro Pro
                805                 810                 815

Ala Gln Leu Ala Pro Thr Ile Tyr Pro Ser Glu Glu Gly Val Thr Glu
            820                 825                 830

Arg Gly Ala Ser Gly Arg Lys Gly Gln Gly Arg Gly Pro His Met Leu
        835                 840                 845

Ser Thr Ala Val Arg Ile His Leu Asp Pro His Lys Asn Val Lys Glu
    850                 855                 860

Phe Leu Val Thr Leu Arg Leu His Lys Ala Thr Leu Arg His Tyr Met
865                 870                 875                 880

Ala Leu Pro Glu Gln Ser Trp His Ser Gln Leu Leu Glu Phe Leu Asp
                885                 890                 895

Val Leu Asp Asp Pro Val Leu Gly Tyr Leu Pro Pro Thr Val Ile Thr
            900                 905                 910

Ile Leu His Thr His Leu Phe Ser Cys Ser Val Asp Tyr Arg Pro Leu
        915                 920                 925

Tyr Leu Pro Val Arg Val Leu Ile Thr Ala Glu Thr Phe Thr Leu Ser
    930                 935                 940

Ser Asn Ile Ile Met Asp Thr Ser Thr Phe Leu Leu Arg Phe Ile Leu
```

945 950 955 960

Asp Asp Ser Ala Leu Tyr Leu Ser Asp Lys Cys Glu Val Glu Thr Leu
965 970 975

Asp Leu Arg Arg Asp Tyr Val Cys Val Leu Asp Val Asp Leu Leu Glu
980 985 990

Leu Val Ile Lys Thr Trp Lys Gly Ser Thr Glu Gly Lys Leu Ser
Gln
995 1000 1005

Pro Leu Phe Glu Leu Arg Cys Ser Asn Asn Val Val His Val His
1010 1015 1020

Ser Cys Ala Asp Ser Cys Ala Leu Leu Val Asn Leu Leu Gln Tyr
1025 1030 1035

Val Met Ser Thr Gly Asp Leu His Pro Pro Pro Arg Pro Pro Ser
1040 1045 1050

Pro Thr Glu Ile Ala Gly Gln Lys Val Gln Leu Ser Glu Ser Pro
1055 1060 1065

Ala Ser Leu Pro Ser Cys Pro Pro Val Glu Thr Ala Leu Ile Asn
1070 1075 1080

Gln Arg Asp Leu Ala Asp Ala Leu Leu Asp Thr Glu Arg Ser Leu
1085 1090 1095

Arg Glu Leu Ala Gln Pro Ser Gly Gly His Leu Pro Gln Ala Ser
1100 1105 1110

Pro Ile Ser Val Tyr Leu Phe Pro Gly Glu Arg Ser Gly Ala Pro
1115 1120 1125

Pro Pro Ser Pro Pro Val Gly Gly Pro Ala Gly Ser Leu Gly Ser
1130 1135 1140

Cys Ser Glu Glu Lys Glu Asp Glu Arg Glu Glu Glu Gly Asp Gly
1145 1150 1155

Asp Thr Leu Asp Ser Asp Glu Phe Cys Ile Leu Asp Ala Pro Gly

1160 1165 1170

Leu Gly Ile Pro Pro Arg Asp Gly Glu Pro Val Val Thr Gln Leu
1175 1180 1185

His Pro Gly Pro Ile Val Val Arg Asp Gly Tyr Phe Ser Arg Pro
1190 1195 1200

Ile Gly Ser Thr Asp Leu Leu Arg Ala Pro Ala His Phe Pro Val
1205 1210 1215

Pro Ser Thr Arg Val Val Leu Arg Glu Val Ser Leu Val Trp His
1220 1225 1230

Leu Tyr Gly Gly Arg Asp Phe Gly Pro His Pro Gly His Arg Ala
1235 1240 1245

Arg Thr Gly Leu Ser Gly Pro Arg Ser Ser Pro Ser Arg Cys Ser
1250 1255 1260

Gly Pro Asn Arg Pro Gln Asn Ser Trp Arg Thr Gln Gly Gly Ser
1265 1270 1275

Gly Arg Gln His His Val Leu Met Glu Ile Gln Leu Ser Lys Val
1280 1285 1290

Ser Phe Gln His Glu Val Tyr Pro Ala Glu Pro Ala Thr Gly Pro
1295 1300 1305

Ala Ala Pro Ser Gln Glu Leu Glu Glu Arg Pro Leu Ser Arg Gln
1310 1315 1320

Val Phe Ile Val Gln Glu Leu Glu Val Arg Asp Arg Leu Ala Ser
1325 1330 1335

Ser Gln Ile Asn Lys Phe Leu Tyr Leu His Thr Ser Glu Arg Met
1340 1345 1350

Pro Arg Arg Ala His Ser Asn Met Leu Thr Ile Lys Ala Leu His
1355 1360 1365

Val Ala Pro Thr Thr Asn Leu Gly Gly Pro Glu Cys Cys Leu Arg
1370 1375 1380

```
Val Ser  Leu Met Pro Leu Arg  Leu Asn Val Asp Gln  Asp Ala Leu
    1385                 1390                 1395

Phe Phe  Leu Lys Asp Phe Phe  Thr Ser Leu Val Ala  Gly Ile Asn
    1400                 1405                 1410

Pro Val  Val Pro Gly Glu Thr  Ser Ala Glu Ala Arg  Pro Glu Thr
    1415                 1420                 1425

Arg Ala  Gln Pro Ser Ser Pro  Leu Glu Gly Gln Ala  Glu Gly Val
    1430                 1435                 1440

Glu Thr  Thr Gly Ser Gln Glu  Ala Pro Gly Gly Gly  His Ser Pro
    1445                 1450                 1455

Ser Pro  Pro Asp Gln Gln Pro  Ile Tyr Phe Arg Glu  Phe Arg Phe
    1460                 1465                 1470

Thr Ser  Glu Val Pro Ile Trp  Leu Asp Tyr His Gly  Lys His Val
    1475                 1480                 1485

Thr Met  Asp Gln Val Gly Thr  Phe Ala Gly Leu Leu  Ile Gly Leu
    1490                 1495                 1500

Ala Gln  Leu Asn Cys Ser Glu  Leu Lys Leu Lys Arg  Leu Cys Cys
    1505                 1510                 1515

Arg His  Gly Leu Leu Gly Val  Asp Lys Val Leu Gly  Tyr Ala Leu
    1520                 1525                 1530

Asn Glu  Trp Leu Gln Asp Ile  Arg Lys Asn Gln Leu  Pro Gly Leu
    1535                 1540                 1545

Leu Gly  Gly Val Gly Pro Met  His Ser Val Val Gln  Leu Phe Gln
    1550                 1555                 1560

Gly Phe  Arg Asp Leu Leu Trp  Leu Pro Ile Glu Gln  Tyr Arg Lys
    1565                 1570                 1575

Asp Gly  Arg Leu Met Arg Gly  Leu Gln Arg Gly Ala  Ala Ser Phe
    1580                 1585                 1590
```

```
Gly Ser  Ser Thr Ala Ser Ala  Ala Leu Glu Leu Ser  Asn Arg Leu
    1595                1600                1605

Val Gln  Ala Ile Gln Ala Thr  Ala Glu Thr Val Tyr  Asp Ile Leu
    1610                1615                1620

Ser Pro  Ala Ala Pro Val Ser  Arg Ser Leu Gln Asp  Lys Arg Ser
    1625                1630                1635

Ala Arg  Arg Leu Arg Arg Gly  Gln Gln Pro Ala Asp  Leu Arg Glu
    1640                1645                1650

Gly Val  Ala Lys Ala Tyr Asp  Thr Val Arg Glu Gly  Ile Leu Asp
    1655                1660                1665

Thr Ala  Gln Thr Ile Cys Asp  Val Ala Ser Arg Gly  His Glu Gln
    1670                1675                1680

Lys Gly  Leu Thr Gly Ala Val  Gly Gly Val Ile Arg  Gln Leu Pro
    1685                1690                1695

Pro Thr  Val Val Lys Pro Leu  Ile Leu Ala Thr Glu  Ala Thr Ser
    1700                1705                1710

Ser Leu  Leu Gly Gly Met Arg  Asn Gln Ile Val Pro  Asp Ala His
    1715                1720                1725

Lys Asp  His Ala Leu Lys Trp  Arg Ser Asp Ser Ala  Gln Asp
    1730                1735                1740


<210> 8018
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<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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autophagy related 2B; "

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<223> /note="Uniprot ID: Q96BY7; "

<220>
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<223> /note="ENSP ID: ENSP00000353010"

<400> 8018
Met Pro Trp Pro Phe Ser Glu Ser Ile Lys Lys Arg Ala Cys Arg Tyr
1   5   10   15

Leu Leu Gln Arg Tyr Leu Gly His Phe Leu Gln Glu Lys Leu Ser Leu
            20   25   30

Glu Gln Leu Ser Leu Asp Leu Tyr Gln Gly Thr Gly Ser Leu Ala Gln
        35   40   45

Val Pro Leu Asp Lys Trp Cys Leu Asn Glu Ile Leu Glu Ser Ala Asp
    50   55   60

Ala Pro Leu Glu Val Thr Glu Gly Phe Ile Gln Ser Ile Ser Leu Ser
65   70   75   80

Val Pro Trp Gly Ser Leu Leu Gln Asp Asn Cys Ala Leu Glu Val Arg
                85   90   95

Gly Leu Glu Met Val Phe Arg Pro Arg Pro Arg Pro Ala Thr Gly Ser
            100   105   110

Glu Pro Met Tyr Trp Ser Ser Phe Met Thr Ser Ser Met Gln Leu Ala
        115   120   125

Lys Glu Cys Leu Ser Gln Lys Leu Thr Asp Glu Gln Gly Glu Gly Ser
    130   135   140

Gln Pro Phe Glu Gly Leu Glu Lys Phe Ala Glu Thr Ile Glu Thr Val
145   150   155   160

Leu Arg Arg Val Lys Val Thr Phe Ile Asp Thr Val Leu Arg Ile Glu
                165   170   175

His Val Pro Glu Asn Ser Lys Thr Gly Thr Ala Leu Glu Ile Arg Ile
            180   185   190

```
Glu Arg Thr Val Tyr Cys Asp Glu Thr Ala Asp Glu Ser Ser Gly Ile
        195                 200                 205

Asn Val His Gln Pro Thr Ala Phe Ala His Lys Leu Leu Gln Leu Ser
    210                 215                 220

Gly Val Ser Leu Phe Trp Asp Glu Phe Ser Ala Ser Ala Lys Ser Ser
225                 230                 235                 240

Pro Val Cys Ser Thr Ala Pro Val Glu Thr Glu Pro Lys Leu Ser Pro
                245                 250                 255

Ser Trp Asn Pro Lys Ile Ile Tyr Glu Pro His Pro Gln Leu Thr Arg
            260                 265                 270

Asn Leu Pro Glu Ile Ala Pro Ser Asp Pro Val Gln Ile Gly Arg Leu
        275                 280                 285

Ile Gly Arg Leu Glu Leu Ser Leu Thr Leu Lys Gln Asn Glu Val Leu
    290                 295                 300

Pro Gly Ala Lys Leu Asp Val Asp Gly Gln Ile Asp Ser Ile His Leu
305                 310                 315                 320

Leu Leu Ser Pro Arg Gln Val His Leu Leu Leu Asp Met Leu Ala Ala
                325                 330                 335

Ile Ala Gly Pro Glu Asn Ser Ser Lys Ile Gly Leu Ala Asn Lys Asp
            340                 345                 350

Arg Lys Asn Arg Pro Met Gln Gln Glu Asp Glu Tyr Arg Ile Gln Met
        355                 360                 365

Glu Leu Asn Arg Tyr Tyr Leu Arg Lys Asp Ser Leu Ser Val Gly Val
    370                 375                 380

Ser Ser Glu Gln Ser Phe Tyr Glu Thr Glu Thr Ala Arg Thr Pro Ser
385                 390                 395                 400

Ser Arg Glu Glu Glu Val Phe Phe Ser Met Ala Asp Met Asp Met Ser
                405                 410                 415
```

```
His Ser Leu Ser Ser Leu Pro Pro Leu Gly Asp Pro Pro Asn Met Asp
            420                 425                 430

Leu Glu Leu Ser Leu Thr Ser Thr Tyr Thr Asn Thr Pro Ala Gly Ser
        435                 440                 445

Pro Leu Ser Ala Thr Val Leu Gln Pro Thr Trp Gly Glu Phe Leu Asp
    450                 455                 460

His His Lys Glu Gln Pro Val Arg Gly Ser Thr Phe Pro Ser Asn Leu
465                 470                 475                 480

Val His Pro Thr Pro Leu Gln Lys Thr Ser Leu Pro Ser Arg Ser Val
                485                 490                 495

Ser Val Asp Glu Ser Arg Pro Glu Leu Ile Phe Arg Leu Ala Val Gly
            500                 505                 510

Thr Phe Ser Ile Ser Val Leu His Ile Asp Pro Leu Ser Pro Pro Glu
        515                 520                 525

Thr Ser Gln Asn Leu Asn Pro Leu Thr Pro Met Ala Val Ala Phe Phe
    530                 535                 540

Thr Cys Ile Glu Lys Ile Asp Pro Ala Arg Phe Ser Thr Glu Asp Phe
545                 550                 555                 560

Lys Ser Phe Arg Ala Val Phe Ala Glu Ala Cys Ser His Asp His Leu
                565                 570                 575

Arg Phe Ile Gly Thr Gly Ile Lys Val Ser Tyr Glu Gln Arg Gln Arg
            580                 585                 590

Ser Ala Ser Arg Tyr Phe Ser Thr Asp Met Ser Ile Gly Gln Met Glu
        595                 600                 605

Phe Leu Glu Cys Leu Phe Pro Thr Asp Phe His Ser Val Pro Pro His
    610                 615                 620

Tyr Thr Glu Leu Leu Thr Phe His Ser Lys Glu Glu Thr Gly Ser His
625                 630                 635                 640
```

```
Ser Pro Val Cys Leu Gln Leu His Tyr Lys His Ser Glu Asn Arg Gly
                645                 650                 655

Pro Gln Gly Asn Gln Ala Arg Leu Ser Ser Val Pro His Lys Ala Glu
            660                 665                 670

Leu Gln Ile Lys Leu Asn Pro Val Cys Cys Glu Leu Asp Ile Ser Ile
        675                 680                 685

Val Asp Arg Leu Asn Ser Leu Leu Gln Pro Gln Lys Leu Ala Thr Val
    690                 695                 700

Glu Met Met Ala Ser His Met Tyr Thr Ser Tyr Asn Lys His Ile Ser
705                 710                 715                 720

Leu His Lys Ala Phe Thr Glu Val Phe Leu Asp Asp Ser His Ser Pro
                725                 730                 735

Ala Asn Cys Arg Ile Ser Val Gln Val Ala Thr Pro Ala Leu Asn Leu
            740                 745                 750

Ser Val Arg Phe Pro Ile Pro Asp Leu Arg Ser Asp Gln Glu Arg Gly
        755                 760                 765

Pro Trp Phe Lys Lys Ser Leu Gln Lys Glu Ile Leu Tyr Leu Ala Phe
    770                 775                 780

Thr Asp Leu Glu Phe Lys Thr Glu Phe Ile Gly Gly Ser Thr Pro Glu
785                 790                 795                 800

Gln Ile Lys Leu Glu Leu Thr Phe Arg Glu Leu Ile Gly Ser Phe Gln
                805                 810                 815

Glu Glu Lys Gly Asp Pro Ser Ile Lys Phe Phe His Val Ser Ser Gly
            820                 825                 830

Val Asp Gly Asp Thr Thr Ser Ser Asp Asp Phe Asp Trp Pro Arg Ile
        835                 840                 845

Val Leu Lys Ile Asn Pro Pro Ala Met His Ser Ile Leu Glu Arg Ile
    850                 855                 860

Ala Ala Glu Glu Glu Glu Glu Asn Asp Gly His Tyr Gln Glu Glu Glu
```

865 870 875 880

Glu Gly Gly Ala His Ser Leu Lys Asp Val Cys Asp Leu Arg Arg Pro
885 890 895

Ala Pro Ser Pro Phe Ser Ser Arg Arg Val Met Phe Glu Asn Glu Gln
900 905 910

Met Val Met Pro Gly Asp Pro Val Glu Met Thr Glu Phe Gln Asp Lys
915 920 925

Ala Ile Ser Asn Ser His Tyr Val Leu Glu Leu Thr Leu Pro Asn Ile
930 935 940

Tyr Val Thr Leu Pro Asn Lys Ser Phe Tyr Glu Lys Leu Tyr Asn Arg
945 950 955 960

Ile Phe Asn Asp Leu Leu Leu Trp Glu Pro Thr Ala Pro Ser Pro Val
965 970 975

Glu Thr Phe Glu Asn Ile Ser Tyr Gly Ile Gly Leu Ser Val Ala Ser
980 985 990

Gln Leu Ile Asn Thr Phe Asn Lys Asp Ser Phe Ser Ala Phe Lys Ser
995 1000 1005

Ala Val His Tyr Asp Glu Glu Ser Gly Ser Glu Glu Glu Thr Leu
1010 1015 1020

Gln Tyr Phe Ser Thr Val Asp Pro Asn Tyr Arg Ser Arg Arg Lys
1025 1030 1035

Lys Lys Leu Asp Ser Gln Asn Lys Asn Ser Gln Ser Phe Leu Ser
1040 1045 1050

Val Leu Leu Asn Ile Asn His Gly Leu Ile Ala Val Phe Thr Asp
1055 1060 1065

Val Lys Gln Asp Asn Gly Asp Leu Leu Glu Asn Lys His Gly Glu
1070 1075 1080

Phe Trp Leu Glu Phe Asn Ser Gly Ser Leu Phe Cys Val Thr Lys

```
    1085                1090                1095

Tyr Glu  Gly Phe Asp Asp Lys  His Tyr Ile Cys Leu  His Ser Ser
    1100                1105                1110

Ser Phe  Ser Leu Tyr His Lys  Gly Ile Val Asn Gly  Val Ile Leu
    1115                1120                1125

Pro Thr  Glu Thr Arg Leu Pro  Ser Ser Thr Arg Pro  His Trp Leu
    1130                1135                1140

Glu Pro  Thr Ile Tyr Ser Ser  Glu Glu Asp Gly Leu  Ser Lys Thr
    1145                1150                1155

Ser Ser  Asp Gly Val Gly Gly  Asp Ser Leu Asn Met  Leu Ser Val
    1160                1165                1170

Ala Val  Lys Ile Leu Ser Asp  Lys Ser Glu Ser Asn  Thr Lys Glu
    1175                1180                1185

Phe Leu  Ile Ala Val Gly Leu  Lys Gly Ala Thr Leu  Gln His Arg
    1190                1195                1200

Met Leu  Pro Ser Gly Leu Ser  Trp His Glu Gln Ile  Leu Tyr Phe
    1205                1210                1215

Leu Asn  Ile Ala Asp Glu Pro  Val Leu Gly Tyr Asn  Pro Pro Thr
    1220                1225                1230

Ser Phe  Thr Thr Phe His Val  His Leu Trp Ser Cys  Ala Leu Asp
    1235                1240                1245

Tyr Arg  Pro Leu Tyr Leu Pro  Ile Arg Ser Leu Leu  Thr Val Glu
    1250                1255                1260

Thr Phe  Ser Val Ser Ser Ser  Val Ala Leu Asp Lys  Ser Ser Ser
    1265                1270                1275

Thr Leu  Arg Ile Ile Leu Asp  Glu Ala Ala Leu His  Leu Ser Asp
    1280                1285                1290

Lys Cys  Asn Thr Val Thr Ile  Asn Leu Ser Arg Asp  Tyr Val Arg
    1295                1300                1305
```

```
Val Met  Asp Met Gly Leu Leu  Glu Leu Thr Ile Thr  Ala Val Lys
    1310                1315                1320

Ser Asp  Ser Asp Gly Glu Gln  Thr Glu Pro Arg Phe  Glu Leu His
    1325                1330                1335

Cys Ser  Ser Asp Val Val His  Ile Arg Thr Cys Ser  Asp Ser Cys
    1340                1345                1350

Ala Ala  Leu Met Asn Leu Ile  Gln Tyr Ile Ala Ser  Tyr Gly Asp
    1355                1360                1365

Leu Gln  Thr Pro Asn Lys Ala  Asp Met Lys Pro Gly  Ala Phe Gln
    1370                1375                1380

Arg Arg  Ser Lys Val Asp Ser  Ser Gly Arg Ser Ser  Ser Arg Gly
    1385                1390                1395

Pro Val  Leu Pro Glu Ala Asp  Gln Gln Met Leu Arg  Asp Leu Met
    1400                1405                1410

Ser Asp  Ala Met Glu Glu Ile  Asp Met Gln Gln Gly  Thr Ser Ser
    1415                1420                1425

Val Lys  Pro Gln Ala Asn Gly  Val Leu Asp Glu Lys  Ser Gln Ile
    1430                1435                1440

Gln Glu  Pro Cys Cys Ser Asp  Leu Phe Leu Phe Pro  Asp Glu Ser
    1445                1450                1455

Gly Asn  Val Ser Gln Glu Ser  Gly Pro Thr Tyr Ala  Ser Phe Ser
    1460                1465                1470

His His  Phe Ile Ser Asp Ala  Met Thr Gly Val Pro  Thr Glu Asn
    1475                1480                1485

Asp Asp  Phe Cys Ile Leu Phe  Ala Pro Lys Ala Ala  Met Gln Glu
    1490                1495                1500

Lys Glu  Glu Glu Pro Val Ile  Lys Ile Met Val Asp  Asp Ala Ile
    1505                1510                1515
```

```
Val Ile  Arg Asp Asn Tyr Phe  Ser Leu Pro Val Asn  Lys Thr Asp
    1520                1525                1530

Thr Ser  Lys Ala Pro Leu His  Phe Pro Ile Pro Val  Ile Arg Tyr
    1535                1540                1545

Val Val  Lys Glu Val Ser Leu  Val Trp His Leu Tyr  Gly Gly Lys
    1550                1555                1560

Asp Phe  Gly Ile Val Pro Pro  Thr Ser Pro Ala Lys  Ser Tyr Ile
    1565                1570                1575

Ser Pro  His Ser Ser Pro Ser  His Thr Pro Thr Arg  His Gly Arg
    1580                1585                1590

Asn Thr  Val Cys Gly Gly Lys  Gly Arg Asn His Asp  Phe Leu Met
    1595                1600                1605

Glu Ile  Gln Leu Ser Lys Val  Lys Phe Gln His Glu  Val Tyr Pro
    1610                1615                1620

Pro Cys  Lys Pro Asp Cys Asp  Ser Ser Leu Ser Glu  His Pro Val
    1625                1630                1635

Ser Arg  Gln Val Phe Ile Val  Gln Asp Leu Glu Ile  Arg Asp Arg
    1640                1645                1650

Leu Ala  Thr Ser Gln Met Asn  Lys Phe Leu Tyr Leu  Tyr Cys Ser
    1655                1660                1665

Lys Glu  Met Pro Arg Lys Ala  His Ser Asn Met Leu  Thr Val Lys
    1670                1675                1680

Ala Leu  His Val Cys Pro Glu  Ser Gly Arg Ser Pro  Gln Glu Cys
    1685                1690                1695

Cys Leu  Arg Val Ser Leu Met  Pro Leu Arg Leu Asn  Ile Asp Gln
    1700                1705                1710

Asp Ala  Leu Phe Phe Leu Lys  Asp Phe Phe Thr Ser  Leu Ser Ala
    1715                1720                1725
```

```
Glu Val  Glu Leu Gln Met Thr  Pro Asp Pro Glu Val  Lys Lys Ser
    1730                1735                1740

Pro Gly  Ala Asp Val Thr Cys  Ser Leu Pro Arg His  Leu Ser Thr
    1745                1750                1755

Ser Lys  Glu Pro Asn Leu Val  Ile Ser Phe Ser Gly  Pro Lys Gln
    1760                1765                1770

Pro Ser  Gln Asn Asp Ser Ala  Asn Ser Val Glu Val  Val Asn Gly
    1775                1780                1785

Met Glu  Glu Lys Asn Phe Ser  Ala Glu Glu Ala Ser  Phe Arg Asp
    1790                1795                1800

Gln Pro  Val Phe Phe Arg Glu  Phe Arg Phe Thr Ser  Glu Val Pro
    1805                1810                1815

Ile Arg  Leu Asp Tyr His Gly  Lys His Val Ser Met  Asp Gln Gly
    1820                1825                1830

Thr Leu  Ala Gly Ile Leu Ile  Gly Leu Ala Gln Leu  Asn Cys Ser
    1835                1840                1845

Glu Leu  Lys Leu Lys Arg Leu  Ser Tyr Arg His Gly  Leu Leu Gly
    1850                1855                1860

Val Asp  Lys Leu Phe Ser Tyr  Ala Ile Thr Glu Trp  Leu Asn Asp
    1865                1870                1875

Ile Lys  Lys Asn Gln Leu Pro  Gly Ile Leu Gly Gly  Val Gly Pro
    1880                1885                1890

Met His  Ser Leu Val Gln Leu  Val Gln Gly Leu Lys  Asp Leu Val
    1895                1900                1905

Trp Leu  Pro Ile Glu Gln Tyr  Arg Lys Asp Gly Arg  Ile Val Arg
    1910                1915                1920

Gly Phe  Gln Arg Gly Ala Ala  Ser Phe Gly Thr Ser  Thr Ala Met
    1925                1930                1935

Ala Ala  Leu Glu Leu Thr Asn  Arg Met Val Gln Thr  Ile Gln Ala
```

```
    1940                1945                1950

Ala Ala  Glu Thr Ala Tyr Asp  Met Val Ser Pro Gly  Thr Leu Ser
    1955                1960                1965

Ile Glu  Pro Lys Lys Thr Lys  Arg Phe Pro His His  Arg Leu Ala
    1970                1975                1980

His Gln  Pro Val Asp Leu Arg  Glu Gly Val Ala Lys  Ala Tyr Ser
    1985                1990                1995

Val Val  Lys Glu Gly Ile Thr  Asp Thr Ala Gln Thr  Ile Tyr Glu
    2000                2005                2010

Thr Ala  Ala Arg Glu His Glu  Ser Arg Gly Val Thr  Gly Ala Val
    2015                2020                2025

Gly Glu  Val Leu Arg Gln Ile  Pro Pro Ala Val Val  Lys Pro Leu
    2030                2035                2040

Ile Val  Ala Thr Glu Ala Thr  Ser Asn Val Leu Gly  Gly Met Arg
    2045                2050                2055

Asn Gln  Ile Arg Pro Asp Val  Arg Gln Asp Glu Ser  Gln Lys Trp
    2060                2065                2070

Arg His  Gly Asp Asp
    2075


<210> 8019
<211> 314
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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Met Gln Asn Val Ile Asn Thr Val Lys Gly Lys Ala Leu Glu Val Ala
1   5   10   15

Glu Tyr Leu Thr Pro Val Leu Lys Glu Ser Lys Phe Lys Glu Thr Gly
            20   25   30

Val Ile Thr Pro Glu Glu Phe Val Ala Ala Gly Asp His Leu Val His
        35   40   45

His Cys Pro Thr Trp Gln Trp Ala Thr Gly Glu Glu Leu Lys Val Lys
    50   55   60

Ala Tyr Leu Pro Thr Gly Lys Gln Phe Leu Val Thr Lys Asn Val Pro
65   70   75   80

Cys Tyr Lys Arg Cys Lys Gln Met Glu Tyr Ser Asp Glu Leu Glu Ala
                85   90   95

Ile Ile Glu Glu Asp Asp Gly Asp Gly Gly Trp Val Asp Thr Tyr His
            100   105   110

Asn Thr Gly Ile Thr Gly Ile Thr Glu Ala Val Lys Glu Ile Thr Leu
        115   120   125

Glu Asn Lys Asp Asn Ile Arg Leu Gln Asp Cys Ser Ala Leu Cys Glu
    130   135   140

Glu Glu Glu Asp Glu Asp Glu Gly Glu Ala Ala Asp Met Glu Glu Tyr
145   150   155   160

Glu Glu Ser Gly Leu Leu Glu Thr Asp Glu Ala Thr Leu Asp Thr Arg
                165   170   175

Lys Ile Val Glu Ala Cys Lys Ala Lys Thr Asp Ala Gly Gly Glu Asp
            180   185   190

```
Ala Ile Leu Gln Thr Arg Thr Tyr Asp Leu Tyr Ile Thr Tyr Asp Lys
        195                 200                 205

Tyr Tyr Gln Thr Pro Arg Leu Trp Leu Phe Gly Tyr Asp Glu Gln Arg
    210                 215                 220

Gln Pro Leu Thr Val Glu His Met Tyr Glu Asp Ile Ser Gln Asp His
225                 230                 235                 240

Val Lys Lys Thr Val Thr Ile Glu Asn His Pro His Leu Pro Pro Pro
                245                 250                 255

Pro Met Cys Ser Val His Pro Cys Arg His Ala Glu Val Met Lys Lys
            260                 265                 270

Ile Ile Glu Thr Val Ala Glu Gly Gly Gly Glu Leu Gly Val His Met
        275                 280                 285

Tyr Leu Leu Ile Phe Leu Lys Phe Val Gln Ala Val Ile Pro Thr Ile
    290                 295                 300

Glu Tyr Asp Tyr Thr Arg His Phe Thr Met
305                 310


<210> 8020
<211> 311
<212> PRT
<213> Homo sapiens

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Met Gln Asn Val Ile Asn Thr Val Lys Gly Lys Ala Leu Glu Val Ala
1 5 10 15

Glu Tyr Leu Thr Pro Val Leu Lys Glu Ser Lys Phe Lys Glu Thr Gly
20 25 30

Val Ile Thr Pro Glu Glu Phe Val Ala Ala Gly Asp His Leu Val His
35 40 45

His Cys Pro Thr Trp Gln Trp Ala Thr Gly Glu Glu Leu Lys Val Lys
50 55 60

Ala Tyr Leu Pro Thr Gly Lys Gln Phe Leu Val Thr Lys Asn Val Pro
65 70 75 80

Cys Tyr Lys Arg Cys Lys Gln Met Glu Tyr Ser Asp Glu Leu Glu Ala
85 90 95

Ile Ile Glu Glu Asp Asp Gly Asp Gly Gly Trp Val Asp Thr Tyr His
100 105 110

Asn Thr Gly Ile Thr Gly Ile Thr Glu Ala Val Lys Glu Ile Thr Leu
115 120 125

Glu Asn Lys Asp Asn Ile Arg Leu Gln Asp Cys Ser Ala Leu Cys Glu
130 135 140

Glu Glu Glu Asp Glu Asp Glu Gly Glu Ala Ala Asp Met Glu Glu Tyr
145 150 155 160

Glu Glu Ser Gly Leu Leu Glu Thr Asp Glu Ala Thr Leu Asp Thr Arg
165 170 175

Lys Ile Val Glu Ala Cys Lys Ala Lys Thr Asp Ala Gly Gly Glu Asp
180 185 190

Ala Ile Leu Gln Thr Arg Thr Tyr Asp Leu Tyr Ile Thr Tyr Asp Lys
195 200 205

Tyr Tyr Gln Thr Pro Arg Leu Trp Leu Phe Gly Tyr Asp Glu Gln Arg
210 215 220

```
Gln Pro Leu Thr Val Glu His Met Tyr Glu Asp Ile Ser Gln Asp His
225                 230                 235                 240

Val Lys Lys Thr Val Thr Ile Glu Asn His Pro His Leu Pro Pro Pro
                245                 250                 255

Pro Met Cys Ser Val His Pro Cys Arg His Ala Glu Val Met Lys Lys
            260                 265                 270

Ile Ile Glu Thr Val Ala Glu Gly Gly Gly Glu Leu Gly Val His Met
        275                 280                 285

Tyr Pro Ser Leu Tyr Val Arg Leu Val Ala Lys Trp Leu Leu Thr Ile
    290                 295                 300

Phe Phe Leu Arg Asn Leu Val
305                 310
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<210> 8021
<211> 74
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<400> 8021

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Met Gln Asn Val Ile Asn Thr Val Lys Gly Lys Ala Leu Glu Val Ala
1               5                   10                  15

Glu Tyr Leu Thr Pro Val Leu Lys Glu Ser Lys Phe Lys Glu Thr Gly
            20                  25                  30

Val Ile Thr Pro Glu Glu Phe Val Ala Ala Gly Asp His Leu Val His
```

```
        35                  40                  45

His Cys Pro Thr Trp Gln Trp Ala Thr Gly Glu Glu Leu Lys Val Lys
    50                  55                  60

Ala Tyr Leu Pro Thr Asp Gly Ile Phe Arg
65                  70


<210> 8022
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<213> Homo sapiens

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<400> 8022
Met Glu Tyr Ser Asp Glu Leu Glu Ala Ile Ile Glu Glu Asp Asp Gly
1               5                  10                  15

Asp Gly Gly Trp Val Asp Thr Tyr His Asn Thr Gly Ile Thr Gly Ile
            20                  25                  30

Thr Glu Ala Val Lys Glu Ile Thr Leu Glu Asn Lys Asp Asn Ile Arg
        35                  40                  45

Leu Gln Asp Cys Ser Ala Leu Cys Glu Glu Glu Glu Asp Glu Asp Glu
    50                  55                  60

Gly Glu Ala Ala Asp Met Glu Glu Tyr Glu Glu Ser Gly Leu Leu Glu
65                  70                  75                  80

Thr Asp Glu
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<210> 8023
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<220>
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<223> /note="Gene Name:
autophagy related 4A, cysteine peptidase; "

<220>
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<223> /note="Uniprot ID: Q8WYN0; "

<220>
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<223> /note="ENSP ID: ENSP00000298131"

<400> 8023
Met Glu Ser Val Leu Ser Lys Tyr Glu Asp Gln Ile Thr Ile Phe Thr
1   5   10   15

Asp Tyr Leu Glu Glu Tyr Pro Asp Thr Asp Glu Leu Val Trp Ile Leu
            20   25   30

Gly Lys Gln His Leu Leu Lys Thr Glu Lys Ser Lys Leu Leu Ser Asp
        35   40   45

Ile Ser Ala Arg Leu Trp Phe Thr Tyr Arg Arg Lys Phe Ser Pro Ile
    50   55   60

Gly Gly Thr Gly Pro Ser Ser Asp Ala Gly Trp Gly Cys Met Leu Arg
65   70   75   80

Cys Gly Gln Met Met Leu Ala Gln Ala Leu Ile Cys Arg His Leu Gly
                85   90   95

Arg Asp Trp Ser Trp Glu Lys Gln Lys Glu Gln Pro Lys Glu Tyr Gln
            100   105   110

Arg Ile Leu Gln Cys Phe Leu Asp Arg Lys Asp Cys Cys Tyr Ser Ile

```
        115                 120                 125

His Gln Met Ala Gln Met Gly Val Gly Glu Gly Lys Ser Ile Gly Glu
    130                 135                 140

Trp Phe Gly Pro Asn Thr Val Ala Gln Val Leu Lys Lys Leu Ala Leu
145                 150                 155                 160

Phe Asp Glu Trp Asn Ser Leu Ala Val Tyr Val Ser Met Asp Asn Thr
                165                 170                 175

Val Val Ile Glu Asp Ile Lys Lys Met Cys Arg Val Leu Pro Leu Ser
            180                 185                 190

Ala Asp Thr Ala Gly Asp Arg Pro Pro Asp Ser Leu Thr Ala Ser Asn
        195                 200                 205

Gln Ser Asp Glu Leu Ile Phe Leu Asp Pro His Thr Thr Gln Thr Phe
    210                 215                 220

Val Asp Thr Glu Glu Asn Gly Thr Val Asn Asp Gln Thr Phe His Cys
225                 230                 235                 240

Leu Gln Ser Pro Gln Arg Met Asn Ile Leu Asn Leu Asp Pro Ser Val
                245                 250                 255

Ala Leu Gly Phe Phe Cys Lys Glu Glu Lys Asp Phe Asp Asn Trp Cys
            260                 265                 270

Ser Leu Val Gln Lys Glu Ile Leu Lys Glu Asn Leu Arg Met Phe Glu
        275                 280                 285

Leu Val Gln Lys His Pro Ser His Trp Pro Pro Phe Val Pro Pro Ala
    290                 295                 300

Lys Pro Glu Val Thr Thr Thr Gly Ala Glu Phe Ile Asp Ser Thr Glu
305                 310                 315                 320

Gln Leu Glu Glu Phe Asp Leu Glu Glu Asp Phe Glu Ile Leu Ser Val
                325                 330                 335
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<210> 8024
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<212> PRT
<213> Homo sapiens

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autophagy related 4A, cysteine peptidase; "

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<223> /note="ENSP ID: ENSP00000341833"

<400> 8024

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Met Glu Ser Val Leu Ser Lys Tyr Glu Asp Gln Ile Thr Ile Phe Thr
1               5                  10                  15

Asp Tyr Leu Glu Glu Tyr Pro Asp Thr Asp Glu Leu Val Trp Ile Leu
            20                  25                  30

Gly Lys Gln His Leu Leu Lys Thr Glu Lys Ser Lys Leu Leu Ser Asp
        35                  40                  45

Ile Ser Ala Arg Leu Trp Phe Thr Tyr Arg Arg Lys Phe Ser Pro Ile
    50                  55                  60

Gly Gly Thr Gly Pro Ser Ser Asp Ala Gly Trp Gly Cys Met Leu Arg
65                  70                  75                  80

Cys Gly Gln Met Met Leu Ala Gln Ala Leu Ile Cys Arg His Leu Gly
                85                  90                  95

Arg Asp Trp Ser Trp Glu Lys Gln Lys Glu Gln Pro Lys Glu Tyr Gln
            100                 105                 110

Arg Ile Leu Gln Cys Phe Leu Asp Arg Lys Asp Cys Cys Tyr Ser Ile
        115                 120                 125

His Gln Met Glu Lys Met Cys Arg Val Leu Pro Leu Ser Ala Asp Thr
    130                 135                 140
```

```
Ala Gly Asp Arg Pro Pro Asp Ser Leu Thr Ala Ser Asn Gln Ser Lys
145                 150                 155                 160


Gly Thr Ser Ala Tyr Cys Ser Ala Trp Lys Pro Leu Leu Leu Ile Val
                165                 170                 175


Pro Leu Arg Leu Gly Ile Asn Gln Ile Asn Pro Val Tyr Val Asp Ala
            180                 185                 190


Phe Lys Val Thr Ser Ser Ser Ser Trp Thr Leu Ile Gln Pro Arg Pro
        195                 200                 205


Leu Leu Thr Leu Lys Arg Met Glu Arg Leu Met Thr Arg Leu Ser Ile
    210                 215                 220


Ala Cys Ser Pro His Ser Glu
225                 230


<210> 8025
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<213> Homo sapiens

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<220>
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<400> 8025
Met Glu Ser Val Leu Ser Lys Tyr Glu Asp Gln Ile Thr Ile Phe Thr
1               5                   10                  15


Asp Tyr Leu Glu Glu Tyr Pro Asp Thr Asp Glu Leu Val Trp Ile Leu
            20                  25                  30
```

```
Gly Lys Gln His Leu Leu Lys Thr Glu Lys Ser Lys Leu Leu Ser Asp
        35                  40                  45

Ile Ser Ala Arg Leu Trp Phe Thr Tyr Arg Arg Lys Phe Ser Pro Ile
    50                  55                  60

Gly Gly Thr Gly Pro Ser Ser Asp Ala Gly Trp Gly Cys Met Leu Arg
65                  70                  75                  80

Cys Gly Gln Met Met Leu Ala Gln Ala Leu Ile Cys Arg His Leu Gly
                85                  90                  95

Arg Asp Trp Ser Trp Glu Lys Gln Lys Glu Gln Pro Lys Glu Tyr Gln
            100                 105                 110

Arg Ile Leu Gln Cys Phe Leu Asp Arg Lys Asp Cys Cys Tyr Ser Ile
        115                 120                 125

His Gln Met Ala Gln Met Gly Val Gly Glu Gly Lys Ser Ile Gly Glu
    130                 135                 140

Trp Phe Gly Pro Asn Thr Val Ala Gln Val Leu Lys Lys Leu Ala Leu
145                 150                 155                 160

Phe Asp Glu Trp Asn Ser Leu Ala Val Tyr Val Ser Met Asp Asn Thr
                165                 170                 175

Val Val Ile Glu Asp Ile Lys Lys Met Cys Arg Val Leu Pro Leu Ser
            180                 185                 190

Ala Asp Thr Ala Gly Asp Arg Pro Pro Asp Ser Leu Thr Ala Ser Asn
        195                 200                 205

Gln Ser Lys Gly Thr Ser Ala Tyr Cys Ser Ala Trp Lys Pro Leu Leu
    210                 215                 220

Leu Ile Val Pro Leu Arg Leu Gly Ile Asn Gln Ile Asn Pro Val Tyr
225                 230                 235                 240

Val Asp Ala Phe Lys Glu Cys Phe Lys Met Pro Gln Ser Leu Gly Ala
                245                 250                 255
```

```
Leu Gly Gly Lys Pro Asn Asn Ala Tyr Tyr Phe Ile Gly Phe Leu Gly
            260                 265                 270

Asp Glu Leu Ile Phe Leu Asp Pro His Thr Thr Gln Thr Phe Val Asp
        275                 280                 285

Thr Glu Glu Asn Gly Thr Val Asn Asp Gln Thr Phe His Cys Leu Gln
    290                 295                 300

Ser Pro Gln Arg Met Asn Ile Leu Asn Leu Asp Pro Ser Val Ala Leu
305                 310                 315                 320

Gly Phe Phe Cys Lys Glu Glu Lys Asp Phe Asp Asn Trp Cys Ser Leu
                325                 330                 335

Val Gln Lys Glu Ile Leu Lys Glu Asn Leu Arg Met Phe Glu Leu Val
            340                 345                 350

Gln Lys His Pro Ser His Trp Pro Pro Phe Val Pro Pro Ala Lys Pro
        355                 360                 365

Glu Val Thr Thr Thr Gly Ala Glu Phe Ile Asp Ser Thr Glu Gln Leu
    370                 375                 380

Glu Glu Phe Asp Leu Glu Glu Asp Phe Glu Ile Leu Ser Val
385                 390                 395


<210> 8026
<211> 47
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATG4A; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000361320"

<400> 8026
Met Glu Ser Val Leu Ser Lys Tyr Glu Asp Gln Ile Thr Ile Phe Thr
1 5 10 15

Asp Tyr Leu Glu Glu Tyr Pro Asp Thr Asp Glu Leu Val Trp Ile Leu
20 25 30

Gly Lys Gln His Leu Leu Lys Thr Asp Trp Glu Arg Lys Thr Phe
35 40 45

<210> 8027
<211> 312
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8027
Xaa Leu Ser Lys Tyr Glu Asp Gln Ile Thr Ile Phe Thr Asp Tyr Leu
1 5 10 15

Glu Glu Tyr Pro Asp Thr Asp Glu Leu Val Trp Ile Leu Gly Lys Gln
20 25 30

His Leu Leu Lys Thr Gly Gly Thr Gly Pro Ser Ser Asp Ala Gly Trp
35 40 45

Gly Cys Met Leu Arg Cys Gly Gln Met Met Leu Ala Gln Ala Leu Ile

```
    50                  55                  60

Cys Arg His Leu Gly Arg Asp Trp Ser Trp Glu Lys Gln Lys Glu Gln
65                  70                  75                  80

Pro Lys Glu Tyr Gln Arg Ile Leu Gln Cys Phe Leu Asp Arg Lys Asp
                85                  90                  95

Cys Cys Tyr Ser Ile His Gln Met Ala Gln Met Gly Val Gly Glu Gly
            100                 105                 110

Lys Ser Ile Gly Glu Trp Phe Gly Pro Asn Thr Val Ala Gln Val Leu
        115                 120                 125

Lys Lys Leu Ala Leu Phe Asp Glu Trp Asn Ser Leu Ala Val Tyr Val
    130                 135                 140

Ser Met Asp Asn Thr Val Val Ile Glu Asp Ile Lys Lys Met Cys Arg
145                 150                 155                 160

Val Leu Pro Leu Ser Ala Asp Thr Ala Gly Asp Arg Pro Pro Asp Ser
                165                 170                 175

Leu Thr Ala Ser Asn Gln Ser Lys Gly Thr Ser Ala Tyr Cys Ser Ala
            180                 185                 190

Trp Lys Pro Leu Leu Leu Ile Val Pro Leu Arg Leu Gly Ile Asn Gln
        195                 200                 205

Ile Asn Pro Val Tyr Val Asp Ala Phe Lys Glu Cys Phe Lys Met Pro
    210                 215                 220

Gln Ser Leu Gly Ala Leu Gly Gly Lys Pro Asn Asn Ala Tyr Tyr Phe
225                 230                 235                 240

Ile Gly Phe Leu Gly Asp Glu Leu Ile Phe Leu Asp Pro His Thr Thr
                245                 250                 255

Gln Thr Phe Val Asp Thr Glu Glu Asn Gly Thr Val Asn Asp Gln Thr
            260                 265                 270

Phe His Cys Leu Gln Ser Pro Gln Arg Met Asn Ile Leu Asn Leu Asp
        275                 280                 285
```

```
Pro Ser Val Ala Leu Gly Phe Phe Cys Lys Glu Glu Lys Asp Phe Asp
    290                 295                 300

Asn Trp Cys Ser Leu Val Gln Lys
305                 310
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<210> 8028
<211> 202
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8028

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Met Leu Arg Cys Gly Gln Met Met Leu Ala Gln Ala Leu Ile Cys Arg
1               5                   10                  15

His Leu Gly Arg Asp Trp Ser Trp Glu Lys Gln Lys Glu Gln Pro Lys
            20                  25                  30

Glu Tyr Gln Arg Ile Leu Gln Cys Phe Leu Asp Arg Lys Asp Cys Cys
        35                  40                  45

Tyr Ser Ile His Gln Met Ala Gln Met Gly Val Gly Glu Gly Lys Ser
    50                  55                  60

Ile Gly Glu Trp Phe Gly Pro Asn Thr Val Ala Gln Val Leu Lys Lys
65                  70                  75                  80

Leu Ala Leu Phe Asp Glu Trp Asn Ser Leu Ala Val Tyr Val Ser Met
                85                  90                  95
```

```
Asp Asn Thr Val Val Ile Glu Asp Ile Lys Lys Met Cys Arg Val Leu
            100                 105                 110

Pro Leu Ser Ala Asp Thr Ala Gly Asp Arg Pro Pro Asp Ser Leu Thr
        115                 120                 125

Ala Ser Asn Gln Ser Lys Gly Thr Ser Ala Tyr Cys Ser Ala Trp Lys
    130                 135                 140

Pro Leu Leu Leu Ile Val Pro Leu Arg Leu Gly Ile Asn Gln Ile Asn
145                 150                 155                 160

Pro Val Tyr Val Asp Ala Phe Lys Glu Cys Phe Lys Met Pro Gln Ser
                165                 170                 175

Leu Gly Ala Leu Gly Gly Lys Pro Asn Asn Ala Tyr Tyr Phe Ile Gly
            180                 185                 190

Phe Leu Gly Asp Glu Leu Ile Phe Leu Asp
        195                 200


<210> 8029
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATG4B; "

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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8029
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Xaa Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe Glu Asp
1   5   10   15

Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys Tyr Ser
            20   25   30

Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser Arg Leu
        35   40   45

Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Gly Gly Cys Arg Asp
    50   55   60

Ile Ser Leu Ser Ser Lys Cys Gly Pro Trp Arg Tyr
65   70   75

<210> 8030
<211> 219
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000383582"

<400> 8030
Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1   5   10   15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
            20   25   30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
        35   40   45

Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Gly Gly Thr
    50   55   60

```
Gly Pro Thr Ser Asp Thr Gly Trp Gly Cys Met Leu Arg Cys Gly Gln
65                  70                  75                  80

Met Ile Phe Ala Gln Ala Leu Val Cys Arg His Leu Gly Arg Asp Trp
                85                  90                  95

Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp Ser Tyr Phe Ser Val Leu
            100                 105                 110

Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr Tyr Ser Ile His Gln Ile
        115                 120                 125

Gly Arg Leu Cys Arg Thr Ser Val Pro Cys Ala Gly Ala Thr Ala Phe
    130                 135                 140

Pro Ala Asp Ser Asp Arg His Cys Asn Gly Phe Pro Ala Gly Ala Glu
145                 150                 155                 160

Val Thr Asn Arg Pro Ser Pro Trp Arg Pro Leu Val Leu Leu Ile Pro
                165                 170                 175

Leu Arg Leu Gly Leu Thr Asp Ile Asn Glu Ala Tyr Val Glu Thr Leu
            180                 185                 190

Lys His Cys Phe Met Met Pro Gln Ser Leu Gly Val Ile Gly Gly Lys
        195                 200                 205

Pro Asn Ser Ala His Tyr Phe Ile Gly Tyr Val
    210                 215


<210> 8031
<211> 88
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG4B; "

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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000383583"

<400> 8031
Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1 5 10 15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
20 25 30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
35 40 45

Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Ala Ile His
50 55 60

His Cys Cys Ile Pro Trp Ser Trp Lys Glu Met Gly Thr Gly Ser Gln
65 70 75 80

Pro Cys Leu Ser Pro Ala Glu Asn
85

<210> 8032
<211> 380
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q9Y4P1; "

<220>
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<223> /note="ENSP ID: ENSP00000383964"

<400> 8032
Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1 5 10 15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
20 25 30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
35 40 45

Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Gly Gly Thr
50 55 60

Gly Pro Thr Ser Asp Thr Gly Trp Gly Cys Met Leu Arg Cys Gly Gln
65 70 75 80

Met Ile Phe Ala Gln Ala Leu Val Cys Arg His Leu Gly Arg Asp Trp
85 90 95

Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp Ser Tyr Phe Ser Val Leu
100 105 110

Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr Tyr Ser Ile His Gln Ile
115 120 125

Ala Gln Met Gly Val Gly Glu Gly Lys Ser Ile Gly Gln Trp Tyr Gly
130 135 140

Pro Asn Thr Val Ala Gln Val Leu Lys Lys Leu Ala Val Phe Asp Thr
145 150 155 160

Trp Ser Ser Leu Ala Val His Ile Ala Met Asp Asn Thr Val Val Met
165 170 175

Glu Glu Ile Arg Arg Leu Cys Arg Thr Ser Val Pro Cys Ala Gly Ala
180 185 190

Thr Ala Phe Pro Ala Asp Ser Asp Arg His Cys Asn Gly Phe Pro Ala
195 200 205

Gly Ala Glu Val Thr Asn Arg Pro Ser Pro Trp Arg Pro Leu Val Leu
210 215 220

```
Leu Ile Pro Leu Arg Leu Gly Leu Thr Asp Ile Asn Glu Ala Tyr Val
225                 230                 235                 240

Glu Thr Leu Lys His Cys Phe Met Met Pro Gln Ser Leu Gly Val Ile
                245                 250                 255

Gly Gly Lys Pro Asn Ser Ala His Tyr Phe Ile Gly Tyr Val Gly Glu
            260                 265                 270

Glu Leu Ile Tyr Leu Asp Pro His Thr Thr Gln Pro Ala Val Glu Pro
        275                 280                 285

Thr Asp Gly Cys Phe Ile Pro Asp Glu Ser Phe His Cys Gln His Pro
    290                 295                 300

Pro Cys Arg Met Ser Ile Ala Glu Leu Asp Pro Ser Ile Ala Val Gly
305                 310                 315                 320

Phe Phe Cys Lys Thr Glu Asp Asp Phe Asn Asp Trp Cys Gln Gln Val
                325                 330                 335

Lys Lys Leu Ser Leu Leu Gly Gly Ala Leu Pro Met Phe Glu Leu Val
            340                 345                 350

Glu Leu Gln Pro Ser His Leu Ala Cys Pro Asp Val Leu Asn Leu Ser
        355                 360                 365

Leu Gly Glu Ser Cys Gln Val Gln Ile Leu Leu Met
    370                 375                 380


<210> 8033
<211> 393
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATG4B; "

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autophagy related 4B, cysteine peptidase; "

<220>
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<223> /note="Uniprot ID: Q9Y4P1; "

<220>
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<223> /note="ENSP ID: ENSP00000384259"

<400> 8033

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Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1               5                  10                  15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
            20                  25                  30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
        35                  40                  45

Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Gly Gly Thr
    50                  55                  60

Gly Pro Thr Ser Asp Thr Gly Trp Gly Cys Met Leu Arg Cys Gly Gln
65                  70                  75                  80

Met Ile Phe Ala Gln Ala Leu Val Cys Arg His Leu Gly Arg Asp Trp
                85                  90                  95

Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp Ser Tyr Phe Ser Val Leu
            100                 105                 110

Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr Tyr Ser Ile His Gln Ile
        115                 120                 125

Ala Gln Met Gly Val Gly Glu Gly Lys Ser Ile Gly Gln Trp Tyr Gly
    130                 135                 140

Pro Asn Thr Val Ala Gln Val Leu Lys Lys Leu Ala Val Phe Asp Thr
145                 150                 155                 160

Trp Ser Ser Leu Ala Val His Ile Ala Met Asp Asn Thr Val Val Met
                165                 170                 175

Glu Glu Ile Arg Arg Leu Cys Arg Thr Ser Val Pro Cys Ala Gly Ala
            180                 185                 190
```

```
Thr Ala Phe Pro Ala Asp Ser Asp Arg His Cys Asn Gly Phe Pro Ala
        195                 200                 205

Gly Ala Glu Val Thr Asn Arg Pro Ser Pro Trp Arg Pro Leu Val Leu
    210                 215                 220

Leu Ile Pro Leu Arg Leu Gly Leu Thr Asp Ile Asn Glu Ala Tyr Val
225                 230                 235                 240

Glu Thr Leu Lys His Cys Phe Met Met Pro Gln Ser Leu Gly Val Ile
                245                 250                 255

Gly Gly Lys Pro Asn Ser Ala His Tyr Phe Ile Gly Tyr Val Gly Glu
            260                 265                 270

Glu Leu Ile Tyr Leu Asp Pro His Thr Thr Gln Pro Ala Val Glu Pro
        275                 280                 285

Thr Asp Gly Cys Phe Ile Pro Asp Glu Ser Phe His Cys Gln His Pro
    290                 295                 300

Pro Cys Arg Met Ser Ile Ala Glu Leu Asp Pro Ser Ile Ala Val Gly
305                 310                 315                 320

Phe Phe Cys Lys Thr Glu Asp Asp Phe Asn Asp Trp Cys Gln Gln Val
                325                 330                 335

Lys Lys Leu Ser Leu Leu Gly Gly Ala Leu Pro Met Phe Glu Leu Val
            340                 345                 350

Glu Leu Gln Pro Ser His Leu Ala Cys Pro Asp Val Leu Asn Leu Ser
        355                 360                 365

Leu Asp Ser Ser Asp Val Glu Arg Leu Glu Arg Phe Phe Asp Ser Glu
    370                 375                 380

Asp Glu Asp Phe Glu Ile Leu Ser Leu
385                 390
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<210> 8034
<211> 331
<212> PRT

<213> Homo sapiens

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9Y4P1; "

<220>
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<223> /note="ENSP ID: ENSP00000384661"

<400> 8034

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Met Leu Arg Cys Gly Gln Met Ile Phe Ala Gln Ala Leu Val Cys Arg
1               5                   10                  15

His Leu Gly Arg Asp Trp Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp
            20                  25                  30

Ser Tyr Phe Ser Val Leu Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr
        35                  40                  45

Tyr Ser Ile His Gln Ile Ala Gln Met Gly Val Gly Glu Gly Lys Ser
    50                  55                  60

Ile Gly Gln Trp Tyr Gly Pro Asn Thr Val Ala Gln Val Leu Lys Lys
65                  70                  75                  80

Leu Ala Val Phe Asp Thr Trp Ser Ser Leu Ala Val His Ile Ala Met
                85                  90                  95

Asp Asn Thr Val Val Met Glu Glu Ile Arg Arg Leu Cys Arg Thr Ser
            100                 105                 110

Val Pro Cys Ala Gly Ala Thr Ala Phe Pro Ala Asp Ser Asp Arg His
        115                 120                 125

Cys Asn Gly Phe Pro Ala Gly Ala Glu Val Thr Asn Arg Pro Ser Pro
```

130 135 140

Trp Arg Pro Leu Val Leu Leu Ile Pro Leu Arg Leu Gly Leu Thr Asp
145 150 155 160

Ile Asn Glu Ala Tyr Val Glu Thr Leu Lys His Cys Phe Met Met Pro
165 170 175

Gln Ser Leu Gly Val Ile Gly Gly Lys Pro Asn Ser Ala His Tyr Phe
180 185 190

Ile Gly Tyr Val Gly Glu Glu Leu Ile Tyr Leu Asp Pro His Thr Thr
195 200 205

Gln Pro Ala Val Glu Pro Thr Asp Gly Cys Phe Ile Pro Asp Glu Ser
210 215 220

Phe His Cys Gln His Pro Pro Cys Arg Met Ser Ile Ala Glu Leu Asp
225 230 235 240

Pro Ser Ile Ala Val Gly Phe Phe Cys Lys Thr Glu Asp Asp Phe Asn
245 250 255

Asp Trp Cys Gln Gln Val Lys Lys Leu Ser Leu Leu Gly Gly Ala Leu
260 265 270

Pro Met Phe Glu Leu Val Glu Leu Gln Pro Ser His Leu Ala Cys Pro
275 280 285

Asp Val Leu Asn Leu Ser Leu Gly Glu Ser Cys Gln Val Gln Val Gly
290 295 300

Ser Leu Gly Asp Ser Ser Asp Val Glu Arg Leu Glu Arg Phe Phe Asp
305 310 315 320

Ser Glu Asp Glu Asp Phe Glu Ile Leu Ser Leu
325 330

<210> 8035
<211> 88
<212> PRT
<213> Homo sapiens

<220>

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autophagy related 4B, cysteine peptidase; "

<220>
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<223> /note="ENSP ID: ENSP00000390597"

<400> 8035
Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1 5 10 15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
20 25 30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
35 40 45

Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Ala Ile His
50 55 60

His Cys Cys Ile Pro Trp Ser Trp Lys Glu Met Gly Thr Gly Ser Gln
65 70 75 80

Pro Cys Leu Ser Pro Ala Glu Asn
85

<210> 8036
<211> 66
<212> PRT
<213> Homo sapiens

<220>
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autophagy related 4B, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400050"

<400> 8036
Met Leu Arg Cys Gly Gln Met Ile Phe Ala Gln Ala Leu Val Cys Arg
1 5 10 15

His Leu Gly Arg Asp Trp Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp
20 25 30

Ser Tyr Phe Ser Val Leu Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr
35 40 45

Tyr Ser Ile His Gln Ile Ala Gln Met Gly Val Gly Glu Gly Lys Ser
50 55 60

Ile Gly
65

<210> 8037
<211> 193
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000404783"

<400> 8037
Thr Phe Ala Gln Val Cys Leu Val Ser Glu Ser Met Ser Pro Phe Leu
1 5 10 15

Gly Arg Leu Cys Arg Thr Ser Val Pro Cys Ala Gly Ala Thr Ala Phe
20 25 30

```
Pro Ala Asp Ser Asp Arg His Cys Asn Gly Phe Pro Ala Gly Ala Glu
        35                  40                  45

Val Thr Asn Arg Pro Ser Pro Trp Arg Pro Leu Val Leu Leu Ile Pro
    50                  55                  60

Leu Arg Leu Gly Leu Thr Asp Ile Asn Glu Ala Tyr Val Glu Thr Leu
65                  70                  75                  80

Lys His Cys Phe Met Met Pro Gln Ser Leu Gly Val Ile Gly Gly Lys
                85                  90                  95

Pro Asn Ser Ala His Tyr Phe Ile Gly Tyr Val Gly Glu Glu Leu Ile
            100                 105                 110

Tyr Leu Asp Pro His Thr Thr Gln Pro Ala Val Glu Pro Thr Asp Gly
        115                 120                 125

Cys Phe Ile Pro Asp Glu Ser Phe His Cys Gln His Pro Pro Cys Arg
    130                 135                 140

Met Ser Ile Ala Glu Leu Asp Pro Ser Ile Ala Val Gly Phe Phe Cys
145                 150                 155                 160

Lys Thr Glu Asp Asp Phe Asn Asp Trp Cys Gln Gln Val Lys Lys Leu
                165                 170                 175

Ser Leu Leu Gly Gly Ala Leu Pro Met Phe Glu Leu Val Glu Leu Gln
            180                 185                 190

Pro
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<210> 8038
<211> 105
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000407389"

<400> 8038
Met Leu Arg Cys Gly Gln Met Ile Phe Ala Gln Ala Leu Val Cys Arg
1 5 10 15

His Leu Gly Arg Asp Trp Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp
20 25 30

Ser Tyr Phe Ser Val Leu Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr
35 40 45

Tyr Ser Ile His Gln Ile Ala Gln Met Gly Val Gly Glu Gly Lys Ser
50 55 60

Ile Gly Gln Trp Tyr Gly Pro Asn Thr Val Ala Gln Val Leu Lys Lys
65 70 75 80

Leu Ala Val Phe Asp Thr Trp Ser Ser Leu Ala Val His Ile Ala Met
85 90 95

Asp Asn Thr Val Val Met Glu Glu Ile
100 105

<210> 8039
<211> 266
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000409895"

<400> 8039
Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1   5   10   15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
            20   25   30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
        35   40   45

Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Gly Gly Thr
    50   55   60

Gly Pro Thr Ser Asp Thr Gly Trp Gly Cys Met Leu Arg Cys Gly Gln
65   70   75   80

Met Ile Phe Ala Gln Ala Leu Val Cys Arg His Leu Gly Arg Asp Trp
                85   90   95

Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp Ser Tyr Phe Ser Val Leu
            100   105   110

Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr Tyr Ser Ile His Gln Ile
        115   120   125

Ala Gln Met Gly Val Gly Glu Gly Lys Ser Ile Gly Gln Trp Tyr Gly
    130   135   140

Pro Asn Thr Val Ala Gln Val Leu Lys Lys Leu Ala Val Phe Asp Thr
145   150   155   160

Trp Ser Ser Leu Ala Val His Ile Ala Met Asp Asn Thr Val Val Met
                165   170   175

Glu Glu Ile Ser Lys Trp Leu Arg Val Ser Met Asp Lys Lys Val Glu
            180   185   190

Ile Thr Gly Asn Ile His Thr Ser Ser Pro Glu Ser Pro Arg Glu Pro
        195   200   205

```
Arg Arg Val Leu Ser Val Ala Pro Cys Arg Ala Gly Ala Pro Trp Gly
    210                 215                 220

Leu Cys Ala Lys Pro Asp Ala Arg Trp Pro Arg Ser Pro Ile Pro Ala
225                 230                 235                 240

Val Ile Pro Arg Glu Glu Ser Pro Gly Cys Leu Glu Ala Ala Thr Trp
                245                 250                 255

Tyr Leu Thr Ser Cys Phe Val Ser Trp Leu
            260                 265
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<210> 8040
<211> 147
<212> PRT
<213> Homo sapiens

<220>
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autophagy related 4B, cysteine peptidase; "

<220>
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<223> /note="ENSP ID: ENSP00000410526"

<400> 8040

```
Met Leu Arg Cys Gly Gln Met Ile Phe Ala Gln Ala Leu Val Cys Arg
1               5                   10                  15

His Leu Gly Arg Asp Trp Arg Trp Thr Gln Arg Lys Arg Gln Pro Asp
            20                  25                  30

Ser Tyr Phe Ser Val Leu Asn Ala Phe Ile Asp Arg Lys Asp Ser Tyr
        35                  40                  45

Tyr Ser Ile His Gln Ile Ala Gln Met Gly Val Gly Glu Gly Lys Ser
    50                  55                  60

Ile Gly Gln Trp Tyr Gly Pro Asn Thr Val Ala Gln Val Leu Lys Lys
65                  70                  75                  80
```

```
Leu Ala Val Phe Asp Thr Trp Ser Ser Leu Ala Val His Ile Ala Met
                85                  90                  95

Asp Asn Thr Val Val Met Glu Glu Ile Arg Arg Leu Cys Arg Thr Ser
            100                 105                 110

Val Pro Cys Ala Gly Ala Thr Ala Phe Pro Ala Asp Ser Asp Arg His
        115                 120                 125

Cys Asn Gly Phe Pro Ala Gly Ala Glu Val Thr Asn Arg Pro Ser Pro
    130                 135                 140

Trp Arg Pro
145
```

<210> 8041
<211> 88
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1673; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4B; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4B, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487133"

<400> 8041

```
Met Asp Ala Ala Thr Leu Thr Tyr Asp Thr Leu Arg Phe Ala Glu Phe
1               5                   10                  15

Glu Asp Phe Pro Glu Thr Ser Glu Pro Val Trp Ile Leu Gly Arg Lys
            20                  25                  30

Tyr Ser Ile Phe Thr Glu Lys Asp Glu Ile Leu Ser Asp Val Ala Ser
        35                  40                  45
```

```
Arg Leu Trp Phe Thr Tyr Arg Lys Asn Phe Pro Ala Ile Ala Ile His
    50                  55                  60

His Cys Cys Ile Pro Trp Ser Trp Lys Glu Met Gly Thr Gly Ser Gln
65                  70                  75                  80

Pro Cys Leu Ser Pro Ala Glu Asn
                85
```

<210> 8042
<211> 458
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1674; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4C; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4C, cysteine peptidase; "

<220>
<221> source
<223> /note="Uniprot ID: Q96DT6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000322159"

<400> 8042

```
Met Glu Ala Thr Gly Thr Asp Glu Val Asp Lys Leu Lys Thr Lys Phe
1               5                   10                  15

Ile Ser Ala Trp Asn Asn Met Lys Tyr Ser Trp Val Leu Lys Thr Lys
            20                  25                  30

Thr Tyr Phe Ser Arg Asn Ser Pro Val Leu Leu Leu Gly Lys Cys Tyr
        35                  40                  45

His Phe Lys Tyr Glu Asp Glu Asp Lys Thr Leu Pro Ala Glu Ser Gly
    50                  55                  60

Cys Thr Ile Glu Asp His Val Ile Ala Gly Asn Val Glu Glu Phe Arg
65                  70                  75                  80
```

```
Lys Asp Phe Ile Ser Arg Ile Trp Leu Thr Tyr Arg Glu Glu Phe Pro
                85                  90                  95

Gln Ile Glu Gly Ser Ala Leu Thr Thr Asp Cys Gly Trp Gly Cys Thr
            100                 105                 110

Leu Arg Thr Gly Gln Met Leu Leu Ala Gln Gly Leu Ile Leu His Phe
        115                 120                 125

Leu Gly Arg Ala Trp Thr Trp Pro Asp Ala Leu Asn Ile Glu Asn Ser
    130                 135                 140

Asp Ser Glu Ser Trp Thr Ser His Thr Val Lys Lys Phe Thr Ala Ser
145                 150                 155                 160

Phe Glu Ala Ser Leu Ser Gly Glu Arg Glu Phe Lys Thr Pro Thr Ile
                165                 170                 175

Ser Leu Lys Glu Thr Ile Gly Lys Tyr Ser Asp Asp His Glu Met Arg
            180                 185                 190

Asn Glu Val Tyr His Arg Lys Ile Ile Ser Trp Phe Gly Asp Ser Pro
        195                 200                 205

Leu Ala Leu Phe Gly Leu His Gln Leu Ile Glu Tyr Gly Lys Lys Ser
    210                 215                 220

Gly Lys Lys Ala Gly Asp Trp Tyr Gly Pro Ala Val Val Ala His Ile
225                 230                 235                 240

Leu Arg Lys Ala Val Glu Glu Ala Arg His Pro Asp Leu Gln Gly Ile
                245                 250                 255

Thr Ile Tyr Val Ala Gln Asp Cys Thr Val Tyr Asn Ser Asp Val Ile
            260                 265                 270

Asp Lys Gln Ser Ala Ser Met Thr Ser Asp Asn Ala Asp Asp Lys Ala
        275                 280                 285

Val Ile Ile Leu Val Pro Val Arg Leu Gly Gly Glu Arg Thr Asn Thr
    290                 295                 300
```

```
Asp Tyr Leu Glu Phe Val Lys Gly Ile Leu Ser Leu Glu Tyr Cys Val
305                 310                 315                 320

Gly Ile Ile Gly Gly Lys Pro Lys Gln Ser Tyr Tyr Phe Ala Gly Phe
                325                 330                 335

Gln Asp Asp Ser Leu Ile Tyr Met Asp Pro His Tyr Cys Gln Ser Phe
            340                 345                 350

Val Asp Val Ser Ile Lys Asp Phe Pro Leu Glu Thr Phe His Cys Pro
        355                 360                 365

Ser Pro Lys Lys Met Ser Phe Arg Lys Met Asp Pro Ser Cys Thr Ile
    370                 375                 380

Gly Phe Tyr Cys Arg Asn Val Gln Asp Phe Lys Arg Ala Ser Glu Glu
385                 390                 395                 400

Ile Thr Lys Met Leu Lys Phe Ser Ser Lys Glu Lys Tyr Pro Leu Phe
                405                 410                 415

Thr Phe Val Asn Gly His Ser Arg Asp Tyr Asp Phe Thr Ser Thr Thr
            420                 425                 430

Thr Asn Glu Glu Asp Leu Phe Ser Glu Asp Glu Lys Lys Gln Leu Lys
        435                 440                 445

Arg Phe Ser Thr Glu Glu Phe Val Leu Leu
    450                 455


<210> 8043
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1674; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4C; "

<220>
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<223> /note="Gene Name:
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autophagy related 4C, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360159"

<400> 8043
Met Glu Ala Thr Gly Thr Asp Glu Val Asp Lys Leu Lys Thr Lys Phe
1 5 10 15

Ile Ser Ala Trp Asn Asn Met Lys Tyr Ser Trp Val Leu Lys Thr Lys
20 25 30

Thr Tyr Phe Ser Arg Asn Ser Pro Val Leu Leu Leu Gly Lys Cys Tyr
35 40 45

His Phe Lys Tyr Glu Asp Glu Asp Lys Thr Leu Pro Ala Glu Ser Gly
50 55 60

Cys Thr Ile Glu Asp His Val Ile Ala Gly Asn Val Glu Glu Phe Arg
65 70 75 80

Lys Asp Phe Ile Ser Arg Ile Trp Leu Thr Tyr Arg Glu Glu Phe Pro
85 90 95

Gln Ile Glu Gly Ser Ala Leu Thr Thr Asp Cys Gly Trp Gly Cys Thr
100 105 110

Leu Arg Thr Gly Gln Met Leu Leu Ala Gln Gly Leu Ile Leu His Phe
115 120 125

Leu Gly Arg Ala Trp Thr Trp Pro Asp Ala Leu Asn Ile Glu Asn Ser
130 135 140

Asp Ser Glu Ser Trp Thr Ser His Thr Val Lys Lys Phe Thr Ala Ser
145 150 155 160

Phe Glu Ala Ser Leu Ser Gly Glu Arg Glu Phe Lys Thr Pro Thr Ile
165 170 175

Ser Leu Lys Glu Thr Ile Gly Lys Tyr Ser Asp Asp His
180 185

<210> 8044
<211> 458

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1674; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4C; "

<220>
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<223> /note="Gene Name:
autophagy related 4C, cysteine peptidase; "

<220>
<221> source
<223> /note="Uniprot ID: Q96DT6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360161"

<400> 8044

```
Met Glu Ala Thr Gly Thr Asp Glu Val Asp Lys Leu Lys Thr Lys Phe
1               5                  10                  15

Ile Ser Ala Trp Asn Asn Met Lys Tyr Ser Trp Val Leu Lys Thr Lys
            20                  25                  30

Thr Tyr Phe Ser Arg Asn Ser Pro Val Leu Leu Leu Gly Lys Cys Tyr
        35                  40                  45

His Phe Lys Tyr Glu Asp Glu Asp Lys Thr Leu Pro Ala Glu Ser Gly
    50                  55                  60

Cys Thr Ile Glu Asp His Val Ile Ala Gly Asn Val Glu Glu Phe Arg
65                  70                  75                  80

Lys Asp Phe Ile Ser Arg Ile Trp Leu Thr Tyr Arg Glu Glu Phe Pro
                85                  90                  95

Gln Ile Glu Gly Ser Ala Leu Thr Thr Asp Cys Gly Trp Gly Cys Thr
            100                 105                 110

Leu Arg Thr Gly Gln Met Leu Leu Ala Gln Gly Leu Ile Leu His Phe
        115                 120                 125
```

```
Leu Gly Arg Ala Trp Thr Trp Pro Asp Ala Leu Asn Ile Glu Asn Ser
    130                 135                 140

Asp Ser Glu Ser Trp Thr Ser His Thr Val Lys Lys Phe Thr Ala Ser
145                 150                 155                 160

Phe Glu Ala Ser Leu Ser Gly Glu Arg Glu Phe Lys Thr Pro Thr Ile
                165                 170                 175

Ser Leu Lys Glu Thr Ile Gly Lys Tyr Ser Asp Asp His Glu Met Arg
            180                 185                 190

Asn Glu Val Tyr His Arg Lys Ile Ile Ser Trp Phe Gly Asp Ser Pro
        195                 200                 205

Leu Ala Leu Phe Gly Leu His Gln Leu Ile Glu Tyr Gly Lys Lys Ser
    210                 215                 220

Gly Lys Lys Ala Gly Asp Trp Tyr Gly Pro Ala Val Val Ala His Ile
225                 230                 235                 240

Leu Arg Lys Ala Val Glu Glu Ala Arg His Pro Asp Leu Gln Gly Ile
                245                 250                 255

Thr Ile Tyr Val Ala Gln Asp Cys Thr Val Tyr Asn Ser Asp Val Ile
            260                 265                 270

Asp Lys Gln Ser Ala Ser Met Thr Ser Asp Asn Ala Asp Asp Lys Ala
        275                 280                 285

Val Ile Ile Leu Val Pro Val Arg Leu Gly Gly Glu Arg Thr Asn Thr
    290                 295                 300

Asp Tyr Leu Glu Phe Val Lys Gly Ile Leu Ser Leu Glu Tyr Cys Val
305                 310                 315                 320

Gly Ile Ile Gly Gly Lys Pro Lys Gln Ser Tyr Tyr Phe Ala Gly Phe
                325                 330                 335

Gln Asp Asp Ser Leu Ile Tyr Met Asp Pro His Tyr Cys Gln Ser Phe
            340                 345                 350

Val Asp Val Ser Ile Lys Asp Phe Pro Leu Glu Thr Phe His Cys Pro
```

```
        355                 360                 365

Ser Pro Lys Lys Met Ser Phe Arg Lys Met Asp Pro Ser Cys Thr Ile
    370                 375                 380

Gly Phe Tyr Cys Arg Asn Val Gln Asp Phe Lys Arg Ala Ser Glu Glu
385                 390                 395                 400

Ile Thr Lys Met Leu Lys Phe Ser Ser Lys Glu Lys Tyr Pro Leu Phe
                405                 410                 415

Thr Phe Val Asn Gly His Ser Arg Asp Tyr Asp Phe Thr Ser Thr Thr
            420                 425                 430

Thr Asn Glu Glu Asp Leu Phe Ser Glu Asp Glu Lys Lys Gln Leu Lys
        435                 440                 445

Arg Phe Ser Thr Glu Glu Phe Val Leu Leu
    450                 455


<210> 8045
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1674; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4C; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 4C, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391820"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8045
Xaa Ile Tyr Val Ala Gln Asp Cys Thr Val Tyr Asn Ser Asp Val Ile
```

1 5 10 15

Asp Lys Gln Ser Ala Ser Met Thr Ser Asp Asn Ala Asp Asp Lys Ala
20 25 30

Val Ile Ile Leu Val Pro Val Arg Leu Gly Gly Glu Arg Thr Asn Thr
35 40 45

Asp Tyr Leu Glu Phe Val Lys Gly Ile Leu Ser Leu Glu Tyr Cys Val
50 55 60

Gly Ile Ile Gly Gly Lys Pro Lys Gln Ser Tyr Tyr Phe Ala Gly Phe
65 70 75 80

Gln Asp Asp Ser Leu Ile Tyr Met Asp Pro His Tyr Cys Gln Ser Phe
85 90 95

Val Asp Val Ser Ile Lys Asp Phe Pro Leu Glu Val Ile Leu
100 105 110

<210> 8046
<211> 151
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1674; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4C; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4C, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396614"

<400> 8046
Met Glu Ala Thr Gly Thr Asp Glu Val Asp Lys Leu Lys Thr Lys Phe
1 5 10 15

Ile Ser Ala Trp Asn Asn Met Lys Tyr Ser Trp Val Leu Lys Thr Lys
20 25 30

```
Thr Tyr Phe Ser Arg Asn Ser Pro Val Leu Leu Leu Gly Lys Cys Tyr
        35                  40                  45

His Phe Lys Tyr Glu Asp Glu Asp Lys Thr Leu Pro Ala Glu Ser Gly
    50                  55                  60

Cys Thr Ile Glu Asp His Val Ile Ala Gly Asn Val Glu Glu Phe Arg
65                  70                  75                  80

Lys Asp Phe Ile Ser Arg Ile Trp Leu Thr Tyr Arg Glu Glu Phe Pro
                85                  90                  95

Gln Ile Glu Gly Ser Ala Leu Thr Thr Asp Cys Gly Trp Gly Cys Thr
            100                 105                 110

Leu Arg Thr Gly Gln Met Leu Leu Ala Gln Gly Leu Ile Leu His Phe
        115                 120                 125

Leu Gly Arg Ala Trp Thr Trp Pro Asp Ala Leu Asn Ile Glu Asn Ser
    130                 135                 140

Asp Ser Glu Ser Trp Thr Ser
145                 150


<210> 8047
<211> 474
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q86TL0; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000311318"

<400> 8047

```
Met Asn Ser Val Ser Pro Ala Ala Ala Gln Tyr Arg Ser Ser Ser Pro
1               5                  10                  15

Glu Asp Ala Arg Arg Arg Pro Glu Ala Arg Arg Pro Arg Gly Pro Arg
            20                  25                  30

Gly Pro Asp Pro Asn Gly Leu Gly Pro Ser Gly Ala Ser Gly Pro Ala
        35                  40                  45

Leu Gly Ser Pro Gly Ala Gly Pro Ser Glu Pro Asp Glu Val Asp Lys
    50                  55                  60

Phe Lys Ala Lys Phe Leu Thr Ala Trp Asn Asn Val Lys Tyr Gly Trp
65                  70                  75                  80

Val Val Lys Ser Arg Thr Ser Phe Ser Lys Ile Ser Ser Ile His Leu
                85                  90                  95

Cys Gly Arg Arg Tyr Arg Phe Glu Gly Glu Gly Asp Ile Gln Arg Phe
            100                 105                 110

Gln Arg Asp Phe Val Ser Arg Leu Trp Leu Thr Tyr Arg Arg Asp Phe
        115                 120                 125

Pro Pro Leu Pro Gly Gly Cys Leu Thr Ser Asp Cys Gly Trp Gly Cys
    130                 135                 140

Met Leu Arg Ser Gly Gln Met Met Leu Ala Gln Gly Leu Leu Leu His
145                 150                 155                 160

Phe Leu Pro Arg Asp Trp Thr Trp Ala Glu Gly Met Gly Leu Gly Pro
                165                 170                 175

Pro Glu Leu Ser Gly Ser Ala Ser Pro Ser Arg Tyr His Gly Pro Ala
            180                 185                 190

Arg Trp Met Pro Pro Arg Trp Ala Gln Gly Ala Pro Glu Leu Glu Gln
        195                 200                 205

Glu Arg Arg His Arg Gln Ile Val Ser Trp Phe Ala Asp His Pro Arg
    210                 215                 220
```

```
Ala Pro Phe Gly Leu His Arg Leu Val Glu Leu Gly Gln Ser Ser Gly
225                 230                 235                 240

Lys Lys Ala Gly Asp Trp Tyr Gly Pro Ser Leu Val Ala His Ile Leu
                245                 250                 255

Arg Lys Ala Val Glu Ser Cys Ser Asp Val Thr Arg Leu Val Val Tyr
            260                 265                 270

Val Ser Gln Asp Cys Thr Val Tyr Lys Ala Asp Val Ala Arg Leu Val
        275                 280                 285

Ala Arg Pro Asp Pro Thr Ala Glu Trp Lys Ser Val Val Ile Leu Val
    290                 295                 300

Pro Val Arg Leu Gly Gly Glu Thr Leu Asn Pro Val Tyr Val Pro Cys
305                 310                 315                 320

Val Lys Glu Leu Leu Arg Cys Glu Leu Cys Leu Gly Ile Met Gly Gly
                325                 330                 335

Lys Pro Arg His Ser Leu Tyr Phe Ile Gly Tyr Gln Asp Asp Phe Leu
            340                 345                 350

Leu Tyr Leu Asp Pro His Tyr Cys Gln Pro Thr Val Asp Val Ser Gln
        355                 360                 365

Ala Asp Phe Pro Leu Glu Ser Phe His Cys Thr Ser Pro Arg Lys Met
    370                 375                 380

Ala Phe Ala Lys Met Asp Pro Ser Cys Thr Val Gly Phe Tyr Ala Gly
385                 390                 395                 400

Asp Arg Lys Glu Phe Glu Thr Leu Cys Ser Glu Leu Thr Arg Val Leu
                405                 410                 415

Ser Ser Ser Ser Ala Thr Glu Arg Tyr Pro Met Phe Thr Leu Ala Glu
            420                 425                 430

Gly His Ala Gln Asp His Ser Leu Asp Asp Leu Cys Ser Gln Leu Ala
        435                 440                 445
```

```
Gln Pro Thr Leu Arg Leu Pro Arg Thr Gly Arg Leu Leu Arg Ala Lys
    450                 455                 460

Arg Pro Ser Ser Glu Asp Phe Val Phe Leu
465                 470
```

<210> 8048
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465089"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8048

```
Xaa Asn Asn Val Lys Tyr Gly Trp Val Val Lys Ser Arg Thr Ser Phe
1               5                   10                  15

Ser Lys Ile Ser Ser Ile His Leu Cys Gly Arg Arg Tyr Arg Phe Glu
            20                  25                  30

Gly Glu Gly Asp Ile Gln Arg Phe Gln Arg Asp Phe Val Ser Arg Leu
        35                  40                  45

Trp Leu Thr Tyr Arg Arg Asp Phe Pro Pro Leu Pro Gly Gly Cys Leu
    50                  55                  60

Thr Ser Asp Cys Gly Trp Gly Cys Met Leu Arg Ser Gly Gln Met Met
65                  70                  75                  80
```

```
Leu Ala Gln Gly Leu Leu Leu His Phe Leu Pro Arg Val Tyr Lys Ala
                85                  90                  95

Asp Val Ala Arg Leu Val Ala Arg Pro Asp Pro Thr Ala Glu Trp Lys
            100                 105                 110

Ser Val Val Ile Leu Val Pro Val Arg Leu Gly Gly Glu Thr Leu Asn
        115                 120                 125

Pro Val Tyr Val Pro Cys Val Lys Glu Leu Leu Arg Cys Glu Leu Cys
    130                 135                 140

Leu Gly Ile Met Gly Gly Lys Pro Arg His Ser Leu Tyr Phe Ile Gly
145                 150                 155                 160

Tyr Gln Gly Arg Pro Thr Pro Ser Ser Leu Leu Pro Pro Pro Thr Ala
                165                 170                 175

Pro
```

<210> 8049
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465716"

<400> 8049

```
Met Asn Ser Val Ser Pro Ala Ala Ala Gln Tyr Arg Ser Ser Ser Pro
1               5                   10                  15

Glu Asp Ala Arg Arg Arg Pro Glu Ala Arg Arg Pro Arg Gly Pro Arg
```

```
            20                  25                  30

Gly Pro Asp Pro Asn Gly Leu Gly Pro Ser Gly Ala Ser Gly Pro Ala
        35                  40                  45

Leu Gly Ser Pro Gly Ala Gly Pro Ser Glu Pro Asp Glu Val Asp Lys
    50                  55                  60

Phe Lys Ala Lys Phe Leu Thr Ala Trp Asn Asn Val Lys Tyr Gly Trp
65                  70                  75                  80

Val Val Lys Ser Arg Thr Ser Phe Ser Lys Ile Ser Ser Ile His Leu
                85                  90                  95

Cys Gly Arg Arg Tyr Arg Phe Glu Gly Glu Gly Asp Ile Gln Arg Phe
            100                 105                 110

Gln Arg Asp Phe Val Ser Arg Leu
        115                 120


<210> 8050
<211> 67
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466439"

<400> 8050
Arg Arg Asp Phe Pro Pro Leu Pro Gly Gly Cys Leu Thr Ser Asp Cys
1               5                   10                  15

Gly Trp Gly Cys Met Leu Arg Ser Gly Gln Met Met Leu Ala Gln Gly
            20                  25                  30
```

Leu Leu Leu His Phe Leu Pro Arg Gly Thr Pro Ala Leu Arg Ala Val
        35   40   45

Pro Gly His His Gly Trp Glu Thr Ala Thr Leu Thr Val Leu His Trp
    50   55   60

Leu Pro Arg
65

<210> 8051
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466759"

<400> 8051
Val Lys Glu Leu Leu Arg Cys Glu Leu Cys Leu Gly Ile Met Gly Gly
1   5   10   15

Lys Pro Arg His Ser Leu Tyr Phe Ile Gly Tyr Gln Gly Arg Pro Thr
            20   25   30

Pro Ser Ser Leu Leu Pro Pro Pro Thr Ala Pro Pro Leu Thr Pro Ala
        35   40   45

Pro Pro Ala Asp Asp Phe Leu Leu Tyr Leu Asp Pro His Tyr Cys Gln
    50   55   60

Pro Thr Val Asp Val Ser Gln Ala Asp Phe Pro Leu Glu Ser Phe His
65   70   75   80

Cys Thr Ser Pro Arg Lys Met Ala Phe Ala Lys Met Asp Pro Ser Cys

85 90 95

Thr Val Gly Phe Tyr Ala Gly Asp Arg Lys Glu Phe Glu Thr Leu Cys
100 105 110

Ser Glu Leu Thr Arg Val Leu Ser Ser Ser Ser Ala Thr Glu Arg Tyr
115 120 125

Pro Met Phe Thr Leu Ala Glu Gly His Ala Gln Asp His Ser Leu Asp
130 135 140

Asp Leu Cys Ser Gln Leu Ala Gln Pro Thr Leu Arg Leu Pro Arg Thr
145 150 155 160

Gly Arg Leu Leu Arg Ala Lys Arg Pro Ser Ser Glu Asp Phe Val Phe
165 170 175

Leu

<210> 8052
<211> 209
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467223"

<400> 8052
Phe Lys Ala Lys Phe Leu Thr Ala Trp Asn Asn Val Lys Tyr Gly Trp
1 5 10 15

Val Val Lys Ser Arg Thr Ser Phe Ser Lys Ile Ser Ser Ile His Leu
20 25 30

```
Cys Gly Arg Arg Tyr Arg Phe Glu Gly Glu Gly Glu Leu Val Val Gly
        35                  40                  45

Thr Arg Ala Gly Gly Gly Leu Ser Thr Pro Ala Gly Val Ser Leu Val
    50                  55                  60

Ala Ala Asp Arg Pro Ala Leu Val Gly Asp Ile Gln Arg Phe Gln Arg
65                  70                  75                  80

Asp Phe Val Ser Arg Leu Trp Leu Thr Tyr Arg Arg Asp Phe Pro Pro
                85                  90                  95

Leu Pro Gly Gly Cys Leu Thr Ser Asp Cys Gly Trp Gly Cys Met Leu
            100                 105                 110

Arg Ser Gly Gln Met Met Leu Ala Gln Gly Leu Leu Leu His Phe Leu
        115                 120                 125

Pro Arg Asp Trp Thr Trp Ala Glu Gly Met Gly Leu Gly Pro Pro Glu
    130                 135                 140

Leu Ser Gly Ser Ala Ser Pro Ser Arg Tyr His Gly Pro Ala Arg Trp
145                 150                 155                 160

Met Pro Pro Arg Trp Ala Gln Gly Ala Pro Glu Leu Glu Gln Glu Arg
                165                 170                 175

Arg His Arg Gln Ile Val Ser Trp Phe Ala Asp His Pro Arg Ala Pro
            180                 185                 190

Phe Gly Leu His Arg Leu Val Glu Leu Gly Gln Ser Ser Gly Lys Lys
        195                 200                 205

Ala
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<210> 8053
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467407"

<400> 8053
Met Asn Ser Val Ser Pro Ala Ala Ala Gln Tyr Arg Ser Ser Ser Pro
1 5 10 15

Glu Asp Ala Arg Arg Arg Pro Glu Ala Arg Arg Pro Arg Gly Pro Arg
20 25 30

Gly Pro Asp Pro Asn Gly Leu Gly Pro Ser Gly Ala Ser Gly Pro Ala
35 40 45

Leu Gly Ser Pro Gly Ala Gly Pro Ser Glu Pro Asp Glu Val Asp Lys
50 55 60

Phe Lys Ala Lys Phe Leu Thr Ala Trp Asn Asn Val Lys Tyr Gly Trp
65 70 75 80

Val Val Lys Ser Arg Thr Ser Phe Ser Lys Ile Ser Ser Ile His Leu
85 90 95

Cys Gly Arg Arg Tyr Arg Phe Glu Gly Glu Gly Asp Ile Gln Arg Phe
100 105 110

Gln Arg Asp Phe Val Ser Arg Leu Trp Leu Thr Tyr Arg Arg Asp Phe
115 120 125

Pro Pro Leu Pro Gly Gly Cys Leu Thr Ser Asp Cys Gly Trp Gly Cys
130 135 140

Met Leu Arg Ser Gly Gln Met Met Leu Ala Gln Gly Leu Leu Leu His
145 150 155 160

Phe Leu Pro Arg Gly Lys Pro Trp Arg Ala Ala Pro Thr Ser Pro Ala
165 170 175

```
Trp Trp Cys Thr Phe Leu Arg Thr Ala Gln Cys Thr Arg Arg Met Trp
            180                 185                 190

His Ala Trp Trp Pro Gly Gln Thr Pro Gln Pro Ser Gly Ser Leu Trp
        195                 200                 205

Ser Ser Trp Cys Pro Cys Asp Trp Val Ala Arg Leu Ser Thr Pro Cys
    210                 215                 220

Met Cys Pro Ala
225
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<210> 8054
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467694"

<400> 8054

```
Gly Lys Pro Arg His Ser Leu Tyr Phe Ile Gly Tyr Gln Asp Asp Phe
1               5                   10                  15

Leu Leu Tyr Leu Asp Pro His Tyr Cys Gln Pro Thr Val Asp Val Ser
            20                  25                  30

Gln Ala Asp Phe Pro Leu Glu Val Leu Ser Ser Ser Ser Ala Thr Glu
        35                  40                  45

Arg Tyr Pro Met Phe Thr Leu Ala Glu Gly His Ala Gln Asp His Ser
    50                  55                  60
```

```
Leu Asp Asp Leu Cys Ser Gln Leu Ala Gln Pro Thr Leu Arg Leu Pro
65                  70                  75                  80

Arg Thr Gly Arg Leu Leu Arg Ala Lys Arg Pro Ser Ser Glu Asp Phe
                85                  90                  95

Val Phe Leu



<210> 8055
<211> 160
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467906"

<400> 8055
Met Asn Ser Val Ser Pro Ala Ala Ala Gln Tyr Arg Ser Ser Ser Pro
1               5                  10                  15

Glu Asp Ala Arg Arg Arg Pro Glu Ala Arg Arg Pro Arg Gly Pro Arg
            20                  25                  30

Gly Pro Asp Pro Asn Gly Leu Gly Pro Ser Gly Ala Ser Gly Pro Ala
        35                  40                  45

Leu Gly Ser Pro Gly Ala Gly Pro Ser Glu Pro Asp Glu Val Asp Lys
    50                  55                  60

Phe Lys Ala Lys Phe Leu Thr Ala Trp Asn Asn Val Lys Tyr Asp Gly
65                  70                  75                  80

Gly Met Glu Ala Leu Leu Leu Ser Cys Lys Cys Phe Ile Ser Leu Gly
                85                  90                  95
```

```
Ala Ala Pro Thr Ser Pro Gln Val Gly Trp Leu Lys Ala Gly Pro Ala
            100                 105                 110

Leu Ala Arg Ser Pro Ala Ser Thr Ser Val Ala Ala Ala Thr Val Ser
        115                 120                 125

Arg Ala Arg Val Thr Tyr Ser Val Ser Ser Gly Thr Leu Cys Pro Ala
    130                 135                 140

Cys Gly Ser His Thr Ala Gly Thr Ser Arg Pro Phe Leu Gly Ala Ala
145                 150                 155                 160
```

<210> 8056
<211> 334
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468290"

<400> 8056

```
Met Asn Ser Val Ser Pro Ala Ala Ala Gln Tyr Arg Ser Ser Ser Pro
1               5                   10                  15

Glu Asp Ala Arg Arg Arg Pro Glu Ala Arg Arg Pro Arg Gly Pro Arg
            20                  25                  30

Gly Pro Asp Pro Asn Gly Leu Gly Pro Ser Gly Ala Ser Gly Pro Ala
        35                  40                  45

Leu Gly Ser Pro Gly Ala Gly Pro Ser Glu Pro Asp Glu Val Asp Lys
    50                  55                  60
```

```
Phe Lys Ala Lys Phe Leu Thr Ala Trp Asn Asn Val Lys Tyr Gly Trp
65                  70                  75                  80

Val Val Lys Ser Arg Thr Ser Phe Ser Lys Ile Ser Ser Ile His Leu
                85                  90                  95

Cys Gly Arg Arg Tyr Arg Phe Glu Gly Glu Gly Asp Ile Gln Arg Phe
            100                 105                 110

Gln Arg Asp Phe Val Ser Arg Leu Trp Leu Thr Tyr Arg Arg Asp Phe
        115                 120                 125

Pro Pro Leu Pro Gly Gly Cys Leu Thr Ser Asp Cys Gly Trp Gly Cys
    130                 135                 140

Met Leu Arg Ser Gly Gln Met Met Leu Ala Gln Gly Leu Leu Leu His
145                 150                 155                 160

Phe Leu Pro Arg Asp Trp Thr Trp Ala Glu Gly Met Gly Leu Gly Pro
                165                 170                 175

Pro Glu Leu Ser Gly Ser Ala Ser Pro Ser Arg Tyr His Gly Pro Ala
            180                 185                 190

Arg Trp Met Pro Pro Arg Trp Ala Gln Gly Ala Pro Glu Leu Glu Gln
        195                 200                 205

Glu Arg Arg His Arg Gln Ile Val Ser Trp Phe Ala Asp His Pro Arg
    210                 215                 220

Ala Pro Phe Gly Leu His Arg Leu Val Glu Leu Gly Gln Ser Ser Gly
225                 230                 235                 240

Lys Lys Glu Ser Arg Gly Glu Leu Leu Arg Arg His Pro Pro Gly Gly
                245                 250                 255

Val Arg Phe Ser Gly Leu His Ser Val Gln Gly Gly Cys Gly Thr Pro
            260                 265                 270

Gly Gly Gln Ala Arg Pro His Ser Arg Val Glu Val Cys Gly His Pro
        275                 280                 285

Gly Ala Arg Ala Thr Gly Trp Arg Asp Ser Gln Pro Arg Val Cys Ala
```

290 295 300

Leu Arg Glu Gly Thr Pro Ala Leu Arg Ala Val Pro Gly His His Gly
305 310 315 320

Trp Glu Thr Ala Thr Leu Thr Val Leu His Trp Leu Pro Arg
325 330

<210> 8057
<211> 203
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1675; "

<220>
<221> source
<223> /note="Gene Symbol: ATG4D; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 4D, cysteine peptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468780"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8057
Xaa Leu Pro Arg Asp Trp Thr Trp Ala Glu Gly Met Gly Leu Gly Pro
1 5 10 15

Pro Glu Leu Ser Gly Ser Ala Ser Pro Ser Arg Tyr His Gly Pro Ala
20 25 30

Arg Trp Met Pro Pro Arg Trp Ala Gln Gly Ala Pro Glu Leu Glu Gln
35 40 45

Glu Arg Arg His Arg Gln Ile Val Ser Trp Phe Ala Asp His Pro Arg
50 55 60

Ala Pro Phe Gly Leu His Arg Leu Val Glu Leu Gly Gln Ser Ser Gly

```
65                  70                  75                  80

Lys Lys Ala Gly Asp Trp Lys Ala Val Glu Ser Cys Ser Asp Val Thr
                85                  90                  95

Arg Leu Val Val Tyr Val Ser Gln Asp Cys Thr Val Tyr Lys Ala Asp
            100                 105                 110

Val Ala Arg Leu Val Ala Arg Pro Asp Pro Thr Ala Glu Trp Lys Ser
        115                 120                 125

Val Val Ile Leu Val Pro Val Arg Leu Gly Gly Glu Thr Leu Asn Pro
    130                 135                 140

Val Tyr Val Pro Cys Val Lys Glu Leu Leu Arg Cys Glu Leu Cys Leu
145                 150                 155                 160

Gly Ile Met Gly Gly Lys Pro Arg His Ser Leu Tyr Phe Ile Gly Tyr
                165                 170                 175

Gln Asp Asp Phe Leu Leu Tyr Leu Asp Pro His Tyr Cys Gln Pro Thr
            180                 185                 190

Val Asp Val Ser Gln Ala Asp Phe Pro Leu Glu
        195                 200


<210> 8058
<211> 275
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1676; "

<220>
<221> source
<223> /note="Gene Symbol: ATG5; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H1Y0; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000343313"

<400> 8058
Met Thr Asp Asp Lys Asp Val Leu Arg Asp Val Trp Phe Gly Arg Ile
1 5 10 15

Pro Thr Cys Phe Thr Leu Tyr Gln Asp Glu Ile Thr Glu Arg Glu Ala
20 25 30

Glu Pro Tyr Tyr Leu Leu Leu Pro Arg Val Ser Tyr Leu Thr Leu Val
35 40 45

Thr Asp Lys Val Lys Lys His Phe Gln Lys Val Met Arg Gln Glu Asp
50 55 60

Ile Ser Glu Ile Trp Phe Glu Tyr Glu Gly Thr Pro Leu Lys Trp His
65 70 75 80

Tyr Pro Ile Gly Leu Leu Phe Asp Leu Leu Ala Ser Ser Ser Ala Leu
85 90 95

Pro Trp Asn Ile Thr Val His Phe Lys Ser Phe Pro Glu Lys Asp Leu
100 105 110

Leu His Cys Pro Ser Lys Asp Ala Ile Glu Ala His Phe Met Ser Cys
115 120 125

Met Lys Glu Ala Asp Ala Leu Lys His Lys Ser Gln Val Ile Asn Glu
130 135 140

Met Gln Lys Lys Asp His Lys Gln Leu Trp Met Gly Leu Gln Asn Asp
145 150 155 160

Arg Phe Asp Gln Phe Trp Ala Ile Asn Arg Lys Leu Met Glu Tyr Pro
165 170 175

Ala Glu Glu Asn Gly Phe Arg Tyr Ile Pro Phe Arg Ile Tyr Gln Thr
180 185 190

Thr Thr Glu Arg Pro Phe Ile Gln Lys Leu Phe Arg Pro Val Ala Ala
195 200 205

```
Asp Gly Gln Leu His Thr Leu Gly Asp Leu Leu Lys Glu Val Cys Pro
    210                 215                 220

Ser Ala Ile Asp Pro Glu Asp Gly Glu Lys Lys Asn Gln Val Met Ile
225                 230                 235                 240

His Gly Ile Glu Pro Met Leu Glu Thr Pro Leu Gln Trp Leu Ser Glu
                245                 250                 255

His Leu Ser Tyr Pro Asp Asn Phe Leu His Ile Ser Ile Ile Pro Gln
            260                 265                 270

Pro Thr Asp
        275


<210> 8059
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1676; "

<220>
<221> source
<223> /note="Gene Symbol: ATG5; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353884"

<400> 8059
Met Thr Asp Asp Lys Asp Val Leu Arg Asp Val Trp Phe Gly Arg Ile
1               5                   10                  15

Pro Thr Cys Phe Thr Leu Tyr Gln Asp Glu Ile Thr Glu Arg Glu Ala
            20                  25                  30

Glu Pro Tyr Tyr Thr Asp Leu Thr Ser Phe Gly Pro Ser Ile Gly Asn
        35                  40                  45

Ser Trp Asn Ile Leu Gln Lys Lys Met Asp Phe Val Ile Ser Pro Leu
    50                  55                  60
```

```
Glu Tyr Ile Arg Gln Arg Leu Lys Asp Leu Ser Phe Arg Ser Cys Phe
65                  70                  75                  80


Val Leu Trp Leu Gln Met Asp Ser Cys Thr His
                85                  90


<210> 8060
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1676; "

<220>
<221> source
<223> /note="Gene Symbol: ATG5; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H1Y0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358066"

<400> 8060
Met His Tyr Pro Ile Gly Leu Leu Phe Asp Leu Leu Ala Ser Ser Ser
1               5                   10                  15


Ala Leu Pro Trp Asn Ile Thr Val His Phe Lys Ser Phe Pro Glu Lys
            20                  25                  30


Asp Leu Leu His Cys Pro Ser Lys Asp Ala Ile Glu Ala His Phe Met
        35                  40                  45


Ser Cys Met Lys Glu Ala Asp Ala Leu Lys His Lys Ser Gln Val Ile
    50                  55                  60


Asn Glu Met Gln Lys Lys Asp His Lys Gln Leu Trp Met Gly Leu Gln
65                  70                  75                  80
```

```
Asn Asp Arg Phe Asp Gln Phe Trp Ala Ile Asn Arg Lys Leu Met Glu
                85                  90                  95

Tyr Pro Ala Glu Glu Asn Gly Phe Arg Tyr Ile Pro Phe Arg Ile Tyr
            100                 105                 110

Gln Thr Thr Thr Glu Arg Pro Phe Ile Gln Lys Leu Phe Arg Pro Val
        115                 120                 125

Ala Ala Asp Gly Gln Leu His Thr Leu Gly Asp Leu Leu Lys Glu Val
    130                 135                 140

Cys Pro Ser Ala Ile Asp Pro Glu Asp Gly Glu Lys Lys Asn Gln Val
145                 150                 155                 160

Met Ile His Gly Ile Glu Pro Met Leu Glu Thr Pro Leu Gln Trp Leu
                165                 170                 175

Ser Glu His Leu Ser Tyr Pro Asp Asn Phe Leu His Ile Ser Ile Ile
            180                 185                 190

Pro Gln Pro Thr Asp
        195


<210> 8061
<211> 275
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1676; "

<220>
<221> source
<223> /note="Gene Symbol: ATG5; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H1Y0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358072"
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<400> 8061
Met Thr Asp Asp Lys Asp Val Leu Arg Asp Val Trp Phe Gly Arg Ile
1 5 10 15

Pro Thr Cys Phe Thr Leu Tyr Gln Asp Glu Ile Thr Glu Arg Glu Ala
20 25 30

Glu Pro Tyr Tyr Leu Leu Leu Pro Arg Val Ser Tyr Leu Thr Leu Val
35 40 45

Thr Asp Lys Val Lys Lys His Phe Gln Lys Val Met Arg Gln Glu Asp
50 55 60

Ile Ser Glu Ile Trp Phe Glu Tyr Glu Gly Thr Pro Leu Lys Trp His
65 70 75 80

Tyr Pro Ile Gly Leu Leu Phe Asp Leu Leu Ala Ser Ser Ser Ala Leu
85 90 95

Pro Trp Asn Ile Thr Val His Phe Lys Ser Phe Pro Glu Lys Asp Leu
100 105 110

Leu His Cys Pro Ser Lys Asp Ala Ile Glu Ala His Phe Met Ser Cys
115 120 125

Met Lys Glu Ala Asp Ala Leu Lys His Lys Ser Gln Val Ile Asn Glu
130 135 140

Met Gln Lys Lys Asp His Lys Gln Leu Trp Met Gly Leu Gln Asn Asp
145 150 155 160

Arg Phe Asp Gln Phe Trp Ala Ile Asn Arg Lys Leu Met Glu Tyr Pro
165 170 175

Ala Glu Glu Asn Gly Phe Arg Tyr Ile Pro Phe Arg Ile Tyr Gln Thr
180 185 190

Thr Thr Glu Arg Pro Phe Ile Gln Lys Leu Phe Arg Pro Val Ala Ala
195 200 205

Asp Gly Gln Leu His Thr Leu Gly Asp Leu Leu Lys Glu Val Cys Pro
210 215 220

```
Ser Ala Ile Asp Pro Glu Asp Gly Glu Lys Lys Asn Gln Val Met Ile
225                 230                 235                 240


His Gly Ile Glu Pro Met Leu Glu Thr Pro Leu Gln Trp Leu Ser Glu
                245                 250                 255


His Leu Ser Tyr Pro Asp Asn Phe Leu His Ile Ser Ile Ile Pro Gln
            260                 265                 270


Pro Thr Asp
        275


<210> 8062
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1676; "

<220>
<221> source
<223> /note="Gene Symbol: ATG5; "

<220>
<221> source
<223> /note="Gene Name:
      autophagy related 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483135"

<400> 8062
Met Thr Asp Asp Lys Asp Val Leu Arg Asp Val Trp Phe Gly Arg Ile
1               5                   10                  15


Pro Thr Cys Phe Thr Leu Tyr Gln Asp Glu Ile Thr Glu Arg Glu Ala
            20                  25                  30


Glu Pro Tyr Tyr Leu Leu Leu Pro Arg Val Ser Tyr Leu Thr Leu Val
        35                  40                  45


Thr Asp Lys Val Lys Lys His Phe Gln Lys Val Met Arg Gln Glu Asp
    50                  55                  60


Ile Ser Glu Ile Trp Phe Glu Tyr Glu Gly Thr Pro Leu Lys Trp His
```

```
65                  70                  75                  80

Tyr Pro Ile Gly Leu Leu Phe Asp Leu Leu Ala Ser Ser Ser Ala Leu
                85                  90                  95

Pro Trp Asn Ile Thr Val His Phe Lys Ser Phe Pro Glu Lys Asp Leu
            100                 105                 110

Leu His Cys Pro Ser Lys Asp Ala Ile Glu Ala His Phe Met Ser Cys
        115                 120                 125

Met Lys Glu Ala Asp Ala Leu Lys His Lys Ser Gln Val Ile Asn Glu
    130                 135                 140

Met Gln Lys Lys Asp His Lys Gln Leu Trp Met Gly Leu Gln Asn Asp
145                 150                 155                 160

Asn Asp
```

<210> 8063
<211> 703
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>
<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source
<223> /note="Uniprot ID: O95352; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000346437"

<400> 8063

```
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1               5                   10                  15
```

```
Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
            20                  25                  30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
        35                  40                  45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
    50                  55                  60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65                  70                  75                  80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu Glu Ser Phe
                85                  90                  95

Lys Thr Ala Asp Lys Lys Leu Leu Leu Glu Gln Ala Ala Asn Glu Ile
            100                 105                 110

Trp Glu Ser Ile Lys Ser Gly Thr Ala Leu Glu Asn Pro Val Leu Leu
        115                 120                 125

Asn Lys Phe Leu Leu Leu Thr Phe Ala Asp Leu Lys Lys Tyr His Phe
    130                 135                 140

Tyr Tyr Trp Phe Cys Tyr Pro Ala Leu Cys Leu Pro Glu Ser Leu Pro
145                 150                 155                 160

Leu Ile Gln Gly Pro Val Gly Leu Asp Gln Arg Phe Ser Leu Lys Gln
                165                 170                 175

Ile Glu Ala Leu Glu Cys Ala Tyr Asp Asn Leu Cys Gln Thr Glu Gly
            180                 185                 190

Val Thr Ala Leu Pro Tyr Phe Leu Ile Lys Tyr Asp Glu Asn Met Val
        195                 200                 205

Leu Val Ser Leu Leu Lys His Tyr Ser Asp Phe Phe Gln Gly Gln Arg
    210                 215                 220

Thr Lys Ile Thr Ile Gly Val Tyr Asp Pro Cys Asn Leu Ala Gln Tyr
225                 230                 235                 240
```

```
Pro Gly Trp Pro Leu Arg Asn Phe Leu Val Leu Ala Ala His Arg Trp
                245                 250                 255

Ser Ser Ser Phe Gln Ser Val Glu Val Val Cys Phe Arg Asp Arg Thr
            260                 265                 270

Met Gln Gly Ala Arg Asp Val Ala His Ser Ile Ile Phe Glu Val Lys
        275                 280                 285

Leu Pro Glu Met Ala Phe Ser Pro Asp Cys Pro Lys Ala Val Gly Trp
    290                 295                 300

Glu Lys Asn Gln Lys Gly Gly Met Gly Pro Arg Met Val Asn Leu Ser
305                 310                 315                 320

Glu Cys Met Asp Pro Lys Arg Leu Ala Glu Ser Ser Val Asp Leu Asn
                325                 330                 335

Leu Lys Leu Met Cys Trp Arg Leu Val Pro Thr Leu Asp Leu Asp Lys
            340                 345                 350

Val Val Ser Val Lys Cys Leu Leu Leu Gly Ala Gly Thr Leu Gly Cys
        355                 360                 365

Asn Val Ala Arg Thr Leu Met Gly Trp Gly Val Arg His Ile Thr Phe
    370                 375                 380

Val Asp Asn Ala Lys Ile Ser Tyr Ser Asn Pro Val Arg Gln Pro Leu
385                 390                 395                 400

Tyr Glu Phe Glu Asp Cys Leu Gly Gly Gly Lys Pro Lys Ala Leu Ala
                405                 410                 415

Ala Ala Asp Arg Leu Gln Lys Ile Phe Pro Gly Val Asn Ala Arg Gly
            420                 425                 430

Phe Asn Met Ser Ile Pro Met Pro Gly His Pro Val Asn Phe Ser Ser
        435                 440                 445

Val Thr Leu Glu Gln Ala Arg Arg Asp Val Glu Gln Leu Glu Gln Leu
    450                 455                 460

Ile Glu Ser His Asp Val Val Phe Leu Leu Met Asp Thr Arg Glu Ser
```

```
465                 470                 475                 480

Arg Trp Leu Pro Ala Val Ile Ala Ala Ser Lys Arg Lys Leu Val Ile
                485                 490                 495

Asn Ala Ala Leu Gly Phe Asp Thr Phe Val Val Met Arg His Gly Leu
            500                 505                 510

Lys Lys Pro Lys Gln Gln Gly Ala Gly Asp Leu Cys Pro Asn His Pro
        515                 520                 525

Val Ala Ser Ala Asp Leu Leu Gly Ser Ser Leu Phe Ala Asn Ile Pro
    530                 535                 540

Gly Tyr Lys Leu Gly Cys Tyr Phe Cys Asn Asp Val Val Ala Pro Gly
545                 550                 555                 560

Asp Ser Thr Arg Asp Arg Thr Leu Asp Gln Gln Cys Thr Val Ser Arg
                565                 570                 575

Pro Gly Leu Ala Val Ile Ala Gly Ala Leu Ala Val Glu Leu Met Val
            580                 585                 590

Ser Val Leu Gln His Pro Glu Gly Gly Tyr Ala Ile Ala Ser Ser Ser
        595                 600                 605

Asp Asp Arg Met Asn Glu Pro Pro Thr Ser Leu Gly Leu Val Pro His
    610                 615                 620

Gln Ile Arg Gly Phe Leu Ser Arg Phe Asp Asn Val Leu Pro Val Ser
625                 630                 635                 640

Leu Ala Phe Asp Lys Cys Thr Ala Cys Ser Ser Lys Val Leu Asp Gln
                645                 650                 655

Tyr Glu Arg Glu Gly Phe Asn Phe Leu Ala Lys Val Phe Asn Ser Ser
            660                 665                 670

His Ser Phe Leu Glu Asp Leu Thr Gly Leu Thr Leu Leu His Gln Glu
        675                 680                 685

Thr Gln Ala Ala Glu Ile Trp Asp Met Ser Asp Asp Glu Thr Ile
    690                 695                 700
```

<210> 8064
<211> 676
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>
<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source
<223> /note="Uniprot ID: O95352; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347042"

<400> 8064
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1   5   10   15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
            20   25   30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
        35   40   45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
    50   55   60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65   70   75   80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu Glu Ser Phe
                85   90   95

Lys Thr Ala Asp Lys Lys Leu Leu Leu Glu Gln Ala Ala Asn Glu Ile
            100   105   110

```
Trp Glu Ser Ile Lys Ser Gly Thr Ala Leu Glu Asn Pro Val Leu Leu
        115                 120                 125

Asn Lys Phe Leu Leu Leu Thr Phe Ala Asp Leu Lys Lys Tyr His Phe
    130                 135                 140

Tyr Tyr Trp Phe Cys Tyr Pro Ala Leu Cys Leu Pro Glu Ser Leu Pro
145                 150                 155                 160

Leu Ile Gln Gly Pro Val Gly Leu Asp Gln Arg Phe Ser Leu Lys Gln
                165                 170                 175

Ile Glu Ala Leu Glu Cys Ala Tyr Asp Asn Leu Cys Gln Thr Glu Gly
            180                 185                 190

Val Thr Ala Leu Pro Tyr Phe Leu Ile Lys Tyr Asp Glu Asn Met Val
        195                 200                 205

Leu Val Ser Leu Leu Lys His Tyr Ser Asp Phe Phe Gln Gly Gln Arg
    210                 215                 220

Thr Lys Ile Thr Ile Gly Val Tyr Asp Pro Cys Asn Leu Ala Gln Tyr
225                 230                 235                 240

Pro Gly Trp Pro Leu Arg Asn Phe Leu Val Leu Ala Ala His Arg Trp
                245                 250                 255

Ser Ser Ser Phe Gln Ser Val Glu Val Val Cys Phe Arg Asp Arg Thr
            260                 265                 270

Met Gln Gly Ala Arg Asp Val Ala His Ser Ile Ile Phe Glu Val Lys
        275                 280                 285

Leu Pro Glu Met Ala Phe Ser Pro Asp Cys Pro Lys Ala Val Gly Trp
    290                 295                 300

Glu Lys Asn Gln Lys Gly Gly Met Gly Pro Arg Met Val Asn Leu Ser
305                 310                 315                 320

Glu Cys Met Asp Pro Lys Arg Leu Ala Glu Ser Ser Val Asp Leu Asn
                325                 330                 335

Leu Lys Leu Met Cys Trp Arg Leu Val Pro Thr Leu Asp Leu Asp Lys
```

```
            340                 345                 350

Val Val Ser Val Lys Cys Leu Leu Leu Gly Ala Gly Thr Leu Gly Cys
        355                 360                 365

Asn Val Ala Arg Thr Leu Met Gly Trp Gly Val Arg His Ile Thr Phe
    370                 375                 380

Val Asp Asn Ala Lys Ile Ser Tyr Ser Asn Pro Val Arg Gln Pro Leu
385                 390                 395                 400

Tyr Glu Phe Glu Asp Cys Leu Gly Gly Gly Lys Pro Lys Ala Leu Ala
                405                 410                 415

Ala Ala Asp Arg Leu Gln Lys Ile Phe Pro Gly Val Asn Ala Arg Gly
            420                 425                 430

Phe Asn Met Ser Ile Pro Met Pro Gly His Pro Val Asn Phe Ser Ser
        435                 440                 445

Val Thr Leu Glu Gln Ala Arg Arg Asp Val Glu Gln Leu Glu Gln Leu
    450                 455                 460

Ile Glu Ser His Asp Val Val Phe Leu Leu Met Asp Thr Arg Glu Ser
465                 470                 475                 480

Arg Trp Leu Pro Ala Val Ile Ala Ala Ser Lys Arg Lys Leu Val Ile
                485                 490                 495

Asn Ala Ala Leu Gly Phe Asp Thr Phe Val Val Met Arg His Gly Leu
            500                 505                 510

Lys Lys Pro Lys Gln Gln Gly Ala Gly Asp Leu Cys Pro Asn His Pro
        515                 520                 525

Val Ala Ser Ala Asp Leu Leu Gly Ser Ser Leu Phe Ala Asn Ile Pro
    530                 535                 540

Gly Tyr Lys Leu Gly Cys Tyr Phe Cys Asn Asp Val Val Ala Pro Gly
545                 550                 555                 560

Asp Ser Thr Arg Asp Arg Thr Leu Asp Gln Gln Cys Thr Val Ser Arg
                565                 570                 575
```

Pro Gly Leu Ala Val Ile Ala Gly Ala Leu Ala Val Glu Leu Met Val
580 585 590

Ser Val Leu Gln His Pro Glu Gly Gly Tyr Ala Ile Ala Ser Ser Ser
595 600 605

Asp Asp Arg Met Asn Glu Pro Pro Thr Ser Leu Gly Leu Val Pro His
610 615 620

Gln Val Leu Asp Gln Tyr Glu Arg Glu Gly Phe Asn Phe Leu Ala Lys
625 630 635 640

Val Phe Asn Ser Ser His Ser Phe Leu Glu Asp Leu Thr Gly Leu Thr
645 650 655

Leu Leu His Gln Glu Thr Gln Ala Ala Glu Ile Trp Asp Met Ser Asp
660 665 670

Asp Glu Thr Ile
675

<210> 8065
<211> 96
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>
<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388295"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8065
Xaa Gly Tyr Ala Ile Ala Ser Ser Ser Asp Asp Arg Met Asn Glu Pro
1 5 10 15

Pro Thr Ser Leu Gly Leu Val Pro His Gln Ile Arg Gly Phe Leu Ser
20 25 30

Arg Phe Asp Asn Val Leu Pro Val Ser Leu Ala Phe Asp Lys Cys Thr
35 40 45

Ala Cys Ser Ser Lys Val Leu Asp Gln Tyr Glu Arg Glu Gly Phe Asn
50 55 60

Phe Leu Ala Lys Val Phe Asn Ser Ser His Ser Phe Leu Glu Asp Leu
65 70 75 80

Thr Gly Leu Thr Leu Leu His Gln Glu Thr Gln Ala Ala Glu His Leu
85 90 95

<210> 8066
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
autophagy related 7; "

<220>
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<223> /note="ENSP ID: ENSP00000389012"

<400> 8066
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1 5 10 15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
20 25 30

```
Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
        35                  40                  45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
    50                  55                  60

Leu Glu Phe Ser Ala Phe Asp Ile Tyr Gly Asn Pro
65                  70                  75


<210> 8067
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
      autophagy related 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389996"

<400> 8067
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1               5                   10                  15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
            20                  25                  30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
        35                  40                  45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
    50                  55                  60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65                  70                  75                  80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu
                85                  90
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<210> 8068
<211> 66
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
autophagy related 7; "

<220>
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<223> /note="ENSP ID: ENSP00000390547"

<400> 8068
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1 5 10 15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
20 25 30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
35 40 45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
50 55 60

Leu Glu
65

<210> 8069
<211> 105
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
autophagy related 7; "

<220>
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<223> /note="ENSP ID: ENSP00000393075"

<400> 8069
Pro Ala Leu Cys Leu Pro Glu Ser Leu Pro Leu Ile Gln Gly Pro Val
1 5 10 15

Gly Leu Asp Gln Arg Phe Ser Leu Lys Gln Ile Glu Ala Leu Glu Cys
20 25 30

Ala Tyr Asp Asn Leu Cys Gln Thr Glu Gly Val Thr Ala Leu Pro Tyr
35 40 45

Phe Leu Ile Lys Tyr Asp Glu Asn Met Val Leu Val Ser Leu Leu Lys
50 55 60

His Tyr Ser Asp Phe Phe Gln Gly Gln Arg Thr Lys Ile Thr Ile Gly
65 70 75 80

Val Tyr Asp Pro Cys Asn Leu Ala Gln Tyr Pro Gly Trp Pro Leu Arg
85 90 95

Asn Phe Leu Val Leu Ala Ala His Arg
100 105

<210> 8070
<211> 139
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG7; "

<220>
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autophagy related 7; "

<220>
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<223> /note="ENSP ID: ENSP00000406398"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8070
Xaa Gly Tyr Ala Ile Ala Ser Ser Ser Asp Asp Arg Met Asn Glu Pro
1 5 10 15

Pro Thr Ser Leu Gly Leu Val Pro His Gln Ile Arg Gly Phe Leu Ser
20 25 30

Arg Phe Asp Asn Val Leu Pro Val Ser Leu Ala Phe Asp Lys Cys Thr
35 40 45

Ala Cys Ser Ser Lys Val Leu Asp Gln Tyr Glu Arg Glu Gly Phe Asn
50 55 60

Phe Leu Ala Lys Val Phe Asn Ser Ser His Ser Phe Leu Glu Asp Leu
65 70 75 80

Thr Gly Leu Thr Leu Leu His Gln Glu Thr Gln Ala Ala Glu Asp His
85 90 95

Leu Ser Phe Ile Arg Pro Lys Asn Gly Thr Phe Pro Ala His Gln Ala
100 105 110

Thr Cys Thr Gln Glu Ser Ala Ala Cys Pro Glu Ile Asp Leu Tyr Gln
115 120 125

Leu Ser Ser Arg Thr Ile Pro Cys Ile His Thr
130 135

<210> 8071
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

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<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407340"

<400> 8071
Arg Gly Tyr Ala Ile Ala Ser Ser Ser Asp Asp Arg Met Asn Glu Pro
1 5 10 15

Pro Thr Ser Leu Gly Leu Val Pro His Gln Ile Arg Gly Phe Leu Ser
20 25 30

Arg Phe Asp Asn Val Leu Pro Val Ser Leu Ala Phe Asp Lys Cys Thr
35 40 45

Ala Cys Ser Ser Lys Val Leu Asp Gln Tyr Glu Arg Glu Gly Phe Asn
50 55 60

Phe Leu Ala Lys Val Phe Asn Ser Ser His Ser Phe Leu Glu Asp Leu
65 70 75 80

Thr Gly Leu Thr Leu Leu His Gln Glu Thr Gln Ala Ala Glu His
85 90 95

<210> 8072
<211> 89
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1677; "

<220>
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<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000408303"

<400> 8072
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1   5   10   15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
            20   25   30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
        35   40   45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
    50   55   60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65   70   75   80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn
                85

<210> 8073
<211> 77
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>
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<223> /note="Gene Symbol: ATG7; "

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<221> source
<223> /note="Gene Name:
      autophagy related 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409844"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8073
Xaa Ala Leu Glu Asn Pro Val Leu Leu Asn Lys Phe Leu Leu Leu Thr

1 5 10 15

Phe Ala Asp Leu Lys Lys Tyr His Phe Tyr Tyr Trp Phe Cys Tyr Pro
20 25 30

Ala Leu Cys Leu Pro Glu Ser Leu Pro Leu Ile Gln Gly Pro Val Gly
35 40 45

Leu Asp Gln Arg Phe Ser Leu Lys Gln Ile Val Leu Lys Gln Leu Asp
50 55 60

Gly Lys Arg Thr Arg Lys Glu Ala Trp Asp Gln Gly Trp
65 70 75

<210> 8074
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>
<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411880"

<400> 8074
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1 5 10 15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
20 25 30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
35 40 45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
50 55 60

```
Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65                  70                  75                  80


Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu Glu Ser Phe
                85                  90                  95


Lys Thr Ala Asp Lys Lys Leu Leu Leu Glu Gln Ala Ala Asn Glu Ile
            100                 105                 110


Trp Glu Ser Ile Lys Ser Gly Thr Ala Leu Glu Asn Pro Val Leu Leu
        115                 120                 125


Asn Lys Phe Leu Leu Leu Thr Phe Ala Ile Glu Ala Leu Glu Cys Ala
    130                 135                 140


Tyr Asp Asn Leu Cys Gln Thr Glu
145                 150


<210> 8075
<211> 623
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1677; "

<220>
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<220>
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<223> /note="Gene Name:
      autophagy related 7; "

<220>
<221> source
<223> /note="Uniprot ID:  O95352; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412580"

<400> 8075
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1               5                   10                  15


Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
```

```
            20                  25                  30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
        35                  40                  45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
    50                  55                  60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65                  70                  75                  80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu Glu Ser Phe
                85                  90                  95

Lys Thr Ala Asp Lys Lys Leu Leu Leu Glu Gln Ala Ala Asn Glu Ile
            100                 105                 110

Trp Glu Ser Ile Lys Ser Gly Thr Ala Leu Glu Asn Pro Val Leu Leu
        115                 120                 125

Asn Lys Phe Leu Leu Leu Thr Phe Ala Ile Glu Ala Leu Glu Cys Ala
    130                 135                 140

Tyr Asp Asn Leu Cys Gln Thr Glu Gly Val Thr Ala Leu Pro Tyr Phe
145                 150                 155                 160

Leu Ile Lys Tyr Asp Glu Asn Met Val Leu Val Ser Leu Leu Lys His
                165                 170                 175

Tyr Ser Asp Phe Phe Gln Gly Gln Arg Thr Lys Ile Thr Ile Gly Val
            180                 185                 190

Tyr Asp Pro Cys Asn Leu Ala Gln Tyr Pro Gly Trp Pro Leu Arg Asn
        195                 200                 205

Phe Leu Val Leu Ala Ala His Arg Trp Ser Ser Ser Phe Gln Ser Val
    210                 215                 220

Glu Val Val Cys Phe Arg Asp Arg Thr Met Gln Gly Ala Arg Asp Val
225                 230                 235                 240

Ala His Ser Ile Ile Phe Glu Val Lys Leu Pro Glu Met Ala Phe Ser
                245                 250                 255
```

```
Pro Asp Cys Pro Lys Ala Val Gly Trp Glu Lys Asn Gln Lys Gly Gly
            260                 265                 270

Met Gly Pro Arg Met Val Asn Leu Ser Glu Cys Met Asp Pro Lys Arg
        275                 280                 285

Leu Ala Glu Ser Ser Val Asp Leu Asn Leu Lys Leu Met Cys Trp Arg
    290                 295                 300

Leu Val Pro Thr Leu Asp Leu Asp Lys Val Val Ser Val Lys Cys Leu
305                 310                 315                 320

Leu Leu Gly Ala Gly Thr Leu Gly Cys Asn Val Ala Arg Thr Leu Met
                325                 330                 335

Gly Trp Gly Val Arg His Ile Thr Phe Val Asp Asn Ala Lys Ile Ser
            340                 345                 350

Tyr Ser Asn Pro Val Arg Gln Pro Leu Tyr Glu Phe Glu Asp Cys Leu
        355                 360                 365

Gly Gly Gly Lys Pro Lys Ala Leu Ala Ala Ala Asp Arg Leu Gln Lys
    370                 375                 380

Ile Phe Pro Gly Val Asn Ala Arg Gly Phe Asn Met Ser Ile Pro Met
385                 390                 395                 400

Pro Gly His Pro Val Asn Phe Ser Ser Val Thr Leu Glu Gln Ala Arg
                405                 410                 415

Arg Asp Val Glu Gln Leu Glu Gln Leu Ile Glu Ser His Asp Val Val
            420                 425                 430

Phe Leu Leu Met Asp Thr Arg Glu Ser Arg Trp Leu Pro Ala Val Ile
        435                 440                 445

Ala Ala Ser Lys Arg Lys Leu Val Ile Asn Ala Ala Leu Gly Phe Asp
    450                 455                 460

Thr Phe Val Val Met Arg His Gly Leu Lys Lys Pro Lys Gln Gln Gly
465                 470                 475                 480
```

```
Ala Gly Asp Leu Cys Pro Asn His Pro Val Ala Ser Ala Asp Leu Leu
                485                 490                 495

Gly Ser Ser Leu Phe Ala Asn Ile Pro Gly Tyr Lys Leu Gly Cys Tyr
            500                 505                 510

Phe Cys Asn Asp Val Val Ala Pro Gly Asp Ser Thr Arg Asp Arg Thr
        515                 520                 525

Leu Asp Gln Gln Cys Thr Val Ser Arg Pro Gly Leu Ala Val Ile Ala
    530                 535                 540

Gly Ala Leu Ala Val Glu Leu Met Val Ser Val Leu Gln His Pro Glu
545                 550                 555                 560

Gly Gly Tyr Ala Ile Ala Ser Ser Ser Asp Asp Arg Met Asn Glu Pro
                565                 570                 575

Pro Thr Ser Leu Gly Leu Val Pro His Gln Ile Arg Gly Phe Leu Ser
            580                 585                 590

Arg Phe Asp Asn Val Leu Pro Val Ser Leu Ala Phe Asp Lys Cys Thr
        595                 600                 605

Ala Cys Ser Ser Lys Ile Trp Asp Met Ser Asp Asp Glu Thr Ile
    610                 615                 620


<210> 8076
<211> 176
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>
<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
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<223> /note="ENSP ID: ENSP00000415223"

<400> 8076
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1 5 10 15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
20 25 30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
35 40 45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
50 55 60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65 70 75 80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu Glu Ser Phe
85 90 95

Lys Thr Ala Asp Lys Lys Leu Leu Leu Glu Gln Ala Ala Asn Glu Ile
100 105 110

Trp Glu Ser Ile Lys Ser Gly Thr Ala Leu Glu Asn Pro Val Leu Leu
115 120 125

Asn Lys Phe Leu Leu Leu Thr Phe Ala Asp Leu Lys Lys Tyr His Phe
130 135 140

Tyr Tyr Trp Phe Cys Tyr Pro Ala Leu Cys Leu Pro Glu Ser Leu Pro
145 150 155 160

Leu Ile Gln Gly Pro Val Gly Leu Asp Gln Arg Phe Ser Leu Lys Gln
165 170 175

<210> 8077
<211> 126
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1677; "

<220>

<221> source
<223> /note="Gene Symbol: ATG7; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416644"

<400> 8077
Met Ala Ala Ala Thr Gly Asp Pro Gly Leu Ser Lys Leu Gln Phe Ala
1 5 10 15

Pro Phe Ser Ser Ala Leu Asp Val Gly Phe Trp His Glu Leu Thr Gln
20 25 30

Lys Lys Leu Asn Glu Tyr Arg Leu Asp Glu Ala Pro Lys Asp Ile Lys
35 40 45

Gly Tyr Tyr Tyr Asn Gly Asp Ser Ala Gly Leu Pro Ala Arg Leu Thr
50 55 60

Leu Glu Phe Ser Ala Phe Asp Met Ser Ala Pro Thr Pro Ala Arg Cys
65 70 75 80

Cys Pro Ala Ile Gly Thr Leu Tyr Asn Thr Asn Thr Leu Glu Ser Phe
85 90 95

Lys Thr Ala Asp Lys Lys Leu Leu Leu Glu Gln Ala Ala Asn Glu Ile
100 105 110

Trp Glu Ser Ile Lys Ser Gly Thr Ala Leu Glu Asn Pro Val
115 120 125

<210> 8078
<211> 839
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1678; "

<220>
<221> source
<223> /note="Gene Symbol: ATG9A; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z3C6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355173"

<400> 8078

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Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1               5                  10                  15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
            20                  25                  30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
        35                  40                  45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
    50                  55                  60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65                  70                  75                  80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
            100                 105                 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
145                 150                 155                 160

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser Ala Leu Pro
                165                 170                 175
```

```
Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile Val Gln Thr Gln Lys
            180                 185                 190

Glu His Gln Ile Cys Ile His Lys Arg Glu Leu Thr Glu Leu Asp Ile
        195                 200                 205

Tyr His Arg Ile Leu Arg Phe Gln Asn Tyr Met Val Ala Leu Val Asn
    210                 215                 220

Lys Ser Leu Leu Pro Leu Arg Phe Arg Leu Pro Gly Leu Gly Glu Ala
225                 230                 235                 240

Val Phe Phe Thr Arg Gly Leu Lys Tyr Asn Phe Glu Leu Ile Leu Phe
                245                 250                 255

Trp Gly Pro Gly Ser Leu Phe Leu Asn Glu Trp Ser Leu Lys Ala Glu
            260                 265                 270

Tyr Lys Arg Gly Gly Gln Arg Leu Glu Leu Ala Gln Arg Leu Ser Asn
        275                 280                 285

Arg Ile Leu Trp Ile Gly Ile Ala Asn Phe Leu Leu Cys Pro Leu Ile
    290                 295                 300

Leu Ile Trp Gln Ile Leu Tyr Ala Phe Phe Ser Tyr Ala Glu Val Leu
305                 310                 315                 320

Lys Arg Glu Pro Gly Ala Leu Gly Ala Arg Cys Trp Ser Leu Tyr Gly
                325                 330                 335

Arg Cys Tyr Leu Arg His Phe Asn Glu Leu Glu His Glu Leu Gln Ser
            340                 345                 350

Arg Leu Asn Arg Gly Tyr Lys Pro Ala Ser Lys Tyr Met Asn Cys Phe
        355                 360                 365

Leu Ser Pro Leu Leu Thr Leu Leu Ala Lys Asn Gly Ala Phe Phe Ala
    370                 375                 380

Gly Ser Ile Leu Ala Val Leu Ile Ala Leu Thr Ile Tyr Asp Glu Asp
385                 390                 395                 400
```

```
Val Leu Ala Val Glu His Val Leu Thr Thr Val Thr Leu Leu Gly Val
                405                 410                 415

Thr Val Thr Val Cys Arg Ser Phe Ile Pro Asp Gln His Met Val Phe
            420                 425                 430

Cys Pro Glu Gln Leu Leu Arg Val Ile Leu Ala His Ile His Tyr Met
        435                 440                 445

Pro Asp His Trp Gln Gly Asn Ala His Arg Ser Gln Thr Arg Asp Glu
    450                 455                 460

Phe Ala Gln Leu Phe Gln Tyr Lys Ala Val Phe Ile Leu Glu Glu Leu
465                 470                 475                 480

Leu Ser Pro Ile Val Thr Pro Leu Ile Leu Ile Phe Cys Leu Arg Pro
                485                 490                 495

Arg Ala Leu Glu Ile Ile Asp Phe Phe Arg Asn Phe Thr Val Glu Val
            500                 505                 510

Val Gly Val Gly Asp Thr Cys Ser Phe Ala Gln Met Asp Val Arg Gln
        515                 520                 525

His Gly His Pro Gln Trp Leu Ser Ala Gly Gln Thr Glu Ala Ser Val
    530                 535                 540

Tyr Gln Gln Ala Glu Asp Gly Lys Thr Glu Leu Ser Leu Met His Phe
545                 550                 555                 560

Ala Ile Thr Asn Pro Gly Trp Gln Pro Pro Arg Glu Ser Thr Ala Phe
                565                 570                 575

Leu Gly Phe Leu Lys Glu Gln Val Gln Arg Asp Gly Ala Ala Ala Ser
            580                 585                 590

Leu Ala Gln Gly Gly Leu Leu Pro Glu Asn Ala Leu Phe Thr Ser Ile
        595                 600                 605

Gln Ser Leu Gln Ser Glu Ser Glu Pro Leu Ser Leu Ile Ala Asn Val
    610                 615                 620
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Val Ala Gly Ser Ser Cys Arg Gly Pro Pro Leu Pro Arg Asp Leu Gln
625 630 635 640

Gly Ser Arg His Arg Ala Glu Val Ala Ser Ala Leu Arg Ser Phe Ser
645 650 655

Pro Leu Gln Pro Gly Gln Ala Pro Thr Gly Arg Ala His Ser Thr Met
660 665 670

Thr Gly Ser Gly Val Asp Ala Arg Thr Ala Ser Ser Gly Ser Ser Val
675 680 685

Trp Glu Gly Gln Leu Gln Ser Leu Val Leu Ser Glu Tyr Ala Ser Thr
690 695 700

Glu Met Ser Leu His Ala Leu Tyr Met His Gln Leu His Lys Gln Gln
705 710 715 720

Ala Gln Ala Glu Pro Glu Arg His Val Trp His Arg Arg Glu Ser Asp
725 730 735

Glu Ser Gly Glu Ser Ala Pro Asp Glu Gly Gly Glu Gly Ala Arg Ala
740 745 750

Pro Gln Ser Ile Pro Arg Ser Ala Ser Tyr Pro Cys Ala Ala Pro Arg
755 760 765

Pro Gly Ala Pro Glu Thr Thr Ala Leu His Gly Gly Phe Gln Arg Arg
770 775 780

Tyr Gly Gly Ile Thr Asp Pro Gly Thr Val Pro Arg Val Pro Ser His
785 790 795 800

Phe Ser Arg Leu Pro Leu Gly Gly Trp Ala Glu Asp Gly Gln Ser Ala
805 810 815

Ser Arg His Pro Glu Pro Val Pro Glu Glu Gly Ser Glu Asp Glu Leu
820 825 830

Pro Pro Gln Val His Lys Val
835

<210> 8079

<211> 839
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1678; "

<220>
<221> source
<223> /note="Gene Symbol: ATG9A; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z3C6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379983"

<400> 8079

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Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1               5                  10                  15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
            20                  25                  30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
        35                  40                  45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
    50                  55                  60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65                  70                  75                  80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
            100                 105                 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125
```

```
Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
145                 150                 155                 160

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser Ala Leu Pro
                165                 170                 175

Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile Val Gln Thr Gln Lys
            180                 185                 190

Glu His Gln Ile Cys Ile His Lys Arg Glu Leu Thr Glu Leu Asp Ile
        195                 200                 205

Tyr His Arg Ile Leu Arg Phe Gln Asn Tyr Met Val Ala Leu Val Asn
    210                 215                 220

Lys Ser Leu Leu Pro Leu Arg Phe Arg Leu Pro Gly Leu Gly Glu Ala
225                 230                 235                 240

Val Phe Phe Thr Arg Gly Leu Lys Tyr Asn Phe Glu Leu Ile Leu Phe
                245                 250                 255

Trp Gly Pro Gly Ser Leu Phe Leu Asn Glu Trp Ser Leu Lys Ala Glu
            260                 265                 270

Tyr Lys Arg Gly Gly Gln Arg Leu Glu Leu Ala Gln Arg Leu Ser Asn
        275                 280                 285

Arg Ile Leu Trp Ile Gly Ile Ala Asn Phe Leu Leu Cys Pro Leu Ile
    290                 295                 300

Leu Ile Trp Gln Ile Leu Tyr Ala Phe Phe Ser Tyr Ala Glu Val Leu
305                 310                 315                 320

Lys Arg Glu Pro Gly Ala Leu Gly Ala Arg Cys Trp Ser Leu Tyr Gly
                325                 330                 335

Arg Cys Tyr Leu Arg His Phe Asn Glu Leu Glu His Glu Leu Gln Ser
            340                 345                 350
```

```
Arg Leu Asn Arg Gly Tyr Lys Pro Ala Ser Lys Tyr Met Asn Cys Phe
        355                 360                 365

Leu Ser Pro Leu Leu Thr Leu Leu Ala Lys Asn Gly Ala Phe Phe Ala
    370                 375                 380

Gly Ser Ile Leu Ala Val Leu Ile Ala Leu Thr Ile Tyr Asp Glu Asp
385                 390                 395                 400

Val Leu Ala Val Glu His Val Leu Thr Thr Val Thr Leu Leu Gly Val
                405                 410                 415

Thr Val Thr Val Cys Arg Ser Phe Ile Pro Asp Gln His Met Val Phe
            420                 425                 430

Cys Pro Glu Gln Leu Leu Arg Val Ile Leu Ala His Ile His Tyr Met
        435                 440                 445

Pro Asp His Trp Gln Gly Asn Ala His Arg Ser Gln Thr Arg Asp Glu
    450                 455                 460

Phe Ala Gln Leu Phe Gln Tyr Lys Ala Val Phe Ile Leu Glu Glu Leu
465                 470                 475                 480

Leu Ser Pro Ile Val Thr Pro Leu Ile Leu Ile Phe Cys Leu Arg Pro
                485                 490                 495

Arg Ala Leu Glu Ile Ile Asp Phe Phe Arg Asn Phe Thr Val Glu Val
            500                 505                 510

Val Gly Val Gly Asp Thr Cys Ser Phe Ala Gln Met Asp Val Arg Gln
        515                 520                 525

His Gly His Pro Gln Trp Leu Ser Ala Gly Gln Thr Glu Ala Ser Val
    530                 535                 540

Tyr Gln Gln Ala Glu Asp Gly Lys Thr Glu Leu Ser Leu Met His Phe
545                 550                 555                 560

Ala Ile Thr Asn Pro Gly Trp Gln Pro Pro Arg Glu Ser Thr Ala Phe
                565                 570                 575

Leu Gly Phe Leu Lys Glu Gln Val Gln Arg Asp Gly Ala Ala Ala Ser
```

580 585 590

Leu Ala Gln Gly Gly Leu Leu Pro Glu Asn Ala Leu Phe Thr Ser Ile
595 600 605

Gln Ser Leu Gln Ser Glu Ser Glu Pro Leu Ser Leu Ile Ala Asn Val
610 615 620

Val Ala Gly Ser Ser Cys Arg Gly Pro Pro Leu Pro Arg Asp Leu Gln
625 630 635 640

Gly Ser Arg His Arg Ala Glu Val Ala Ser Ala Leu Arg Ser Phe Ser
645 650 655

Pro Leu Gln Pro Gly Gln Ala Pro Thr Gly Arg Ala His Ser Thr Met
660 665 670

Thr Gly Ser Gly Val Asp Ala Arg Thr Ala Ser Ser Gly Ser Ser Val
675 680 685

Trp Glu Gly Gln Leu Gln Ser Leu Val Leu Ser Glu Tyr Ala Ser Thr
690 695 700

Glu Met Ser Leu His Ala Leu Tyr Met His Gln Leu His Lys Gln Gln
705 710 715 720

Ala Gln Ala Glu Pro Glu Arg His Val Trp His Arg Arg Glu Ser Asp
725 730 735

Glu Ser Gly Glu Ser Ala Pro Asp Glu Gly Gly Glu Gly Ala Arg Ala
740 745 750

Pro Gln Ser Ile Pro Arg Ser Ala Ser Tyr Pro Cys Ala Ala Pro Arg
755 760 765

Pro Gly Ala Pro Glu Thr Thr Ala Leu His Gly Gly Phe Gln Arg Arg
770 775 780

Tyr Gly Gly Ile Thr Asp Pro Gly Thr Val Pro Arg Val Pro Ser His
785 790 795 800

Phe Ser Arg Leu Pro Leu Gly Gly Trp Ala Glu Asp Gly Gln Ser Ala
805 810 815

Ser Arg His Pro Glu Pro Val Pro Glu Glu Gly Ser Glu Asp Glu Leu
820 825 830

Pro Pro Gln Val His Lys Val
835

<210> 8080
<211> 528
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q7Z3C6; "

<220>
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<400> 8080
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
50 55 60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65 70 75 80

```
Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
            100                 105                 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
145                 150                 155                 160

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser Ala Leu Pro
                165                 170                 175

Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile Val Gln Thr Gln Lys
            180                 185                 190

Glu His Gln Ile Cys Ile His Lys Arg Glu Leu Thr Glu Leu Asp Ile
        195                 200                 205

Tyr His Arg Ile Leu Arg Phe Gln Asn Tyr Met Val Ala Leu Val Asn
    210                 215                 220

Lys Ser Leu Leu Pro Leu Arg Phe Arg Leu Pro Gly Leu Gly Glu Ala
225                 230                 235                 240

Val Phe Phe Thr Arg Gly Leu Lys Tyr Asn Phe Glu Leu Ile Leu Phe
                245                 250                 255

Trp Gly Pro Gly Ser Leu Phe Leu Asn Glu Trp Ser Leu Lys Ala Glu
            260                 265                 270

Tyr Lys Arg Gly Gly Gln Arg Leu Glu Leu Ala Gln Arg Leu Ser Asn
        275                 280                 285

Arg Ile Leu Trp Ile Gly Ile Ala Asn Phe Leu Leu Cys Pro Leu Ile
    290                 295                 300

Leu Ile Trp Gln Ile Leu Tyr Ala Phe Phe Ser Tyr Ala Glu Val Leu
```

305 310 315 320

Lys Arg Glu Pro Gly Ala Leu Gly Ala Arg Cys Trp Ser Leu Tyr Gly
325 330 335

Arg Cys Tyr Leu Arg His Phe Asn Glu Leu Glu His Glu Leu Gln Ser
340 345 350

Arg Leu Asn Arg Gly Tyr Lys Pro Ala Ser Lys Tyr Met Asn Cys Phe
355 360 365

Leu Ser Pro Leu Leu Thr Leu Leu Ala Lys Asn Gly Ala Phe Phe Ala
370 375 380

Gly Ser Ile Leu Ala Val Leu Ile Ala Leu Thr Ile Tyr Asp Glu Asp
385 390 395 400

Val Leu Ala Val Glu His Val Leu Thr Thr Val Thr Leu Leu Gly Val
405 410 415

Thr Val Thr Val Cys Arg Ser Phe Ile Pro Asp Gln His Met Val Phe
420 425 430

Cys Pro Glu Gln Leu Leu Arg Val Ile Leu Ala His Ile His Tyr Met
435 440 445

Pro Asp His Trp Gln Gly Val His Phe Gly Arg Val Ala Glu Pro His
450 455 460

Cys His Thr Pro His Pro His Leu Leu Pro Ala Pro Thr Gly Pro Gly
465 470 475 480

Asp Tyr Arg Leu Leu Pro Lys Leu His Arg Gly Gly Arg Trp Cys Gly
485 490 495

Arg Tyr Leu Leu Leu Cys Ser Asp Gly Cys Ser Pro Ala Trp Ser Ser
500 505 510

Pro Val Ala Ile Cys Trp Ala Asp Arg Gly Leu Ser Val Pro Ala Ser
515 520 525

<210> 8081
<211> 778

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: Q7Z3C6; "

<220>
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<223> /note="ENSP ID: ENSP00000386535"

<400> 8081

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Met Leu Ile Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val
1               5                  10                  15

Ala Phe Thr Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe
            20                  25                  30

Ala Asn Lys Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys
        35                  40                  45

Val Thr Leu Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg
    50                  55                  60

Ile Gln Glu Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val
65                  70                  75                  80

Phe Trp Ile His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr
                85                  90                  95

Trp Glu Ile His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser
            100                 105                 110

Ala Leu Pro Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile Val Gln
        115                 120                 125
```

```
Thr Gln Lys Glu His Gln Ile Cys Ile His Lys Arg Glu Leu Thr Glu
    130                 135                 140

Leu Asp Ile Tyr His Arg Ile Leu Arg Phe Gln Asn Tyr Met Val Ala
145                 150                 155                 160

Leu Val Asn Lys Ser Leu Leu Pro Leu Arg Phe Arg Leu Pro Gly Leu
                165                 170                 175

Gly Glu Ala Val Phe Phe Thr Arg Gly Leu Lys Tyr Asn Phe Glu Leu
            180                 185                 190

Ile Leu Phe Trp Gly Pro Gly Ser Leu Phe Leu Asn Glu Trp Ser Leu
        195                 200                 205

Lys Ala Glu Tyr Lys Arg Gly Gly Gln Arg Leu Glu Leu Ala Gln Arg
    210                 215                 220

Leu Ser Asn Arg Ile Leu Trp Ile Gly Ile Ala Asn Phe Leu Leu Cys
225                 230                 235                 240

Pro Leu Ile Leu Ile Trp Gln Ile Leu Tyr Ala Phe Phe Ser Tyr Ala
                245                 250                 255

Glu Val Leu Lys Arg Glu Pro Gly Ala Leu Gly Ala Arg Cys Trp Ser
            260                 265                 270

Leu Tyr Gly Arg Cys Tyr Leu Arg His Phe Asn Glu Leu Glu His Glu
        275                 280                 285

Leu Gln Ser Arg Leu Asn Arg Gly Tyr Lys Pro Ala Ser Lys Tyr Met
    290                 295                 300

Asn Cys Phe Leu Ser Pro Leu Leu Thr Leu Leu Ala Lys Asn Gly Ala
305                 310                 315                 320

Phe Phe Ala Gly Ser Ile Leu Ala Val Leu Ile Ala Leu Thr Ile Tyr
                325                 330                 335

Asp Glu Asp Val Leu Ala Val Glu His Val Leu Thr Thr Val Thr Leu
            340                 345                 350

Leu Gly Val Thr Val Thr Val Cys Arg Ser Phe Ile Pro Asp Gln His
```

```
        355                 360                 365

Met Val Phe Cys Pro Glu Gln Leu Leu Arg Val Ile Leu Ala His Ile
    370                 375                 380

His Tyr Met Pro Asp His Trp Gln Gly Asn Ala His Arg Ser Gln Thr
385                 390                 395                 400

Arg Asp Glu Phe Ala Gln Leu Phe Gln Tyr Lys Ala Val Phe Ile Leu
                405                 410                 415

Glu Glu Leu Leu Ser Pro Ile Val Thr Pro Leu Ile Leu Ile Phe Cys
            420                 425                 430

Leu Arg Pro Arg Ala Leu Glu Ile Ile Asp Phe Phe Arg Asn Phe Thr
        435                 440                 445

Val Glu Val Val Gly Val Gly Asp Thr Cys Ser Phe Ala Gln Met Asp
    450                 455                 460

Val Arg Gln His Gly His Pro Gln Trp Leu Ser Ala Gly Gln Thr Glu
465                 470                 475                 480

Ala Ser Val Tyr Gln Gln Ala Glu Asp Gly Lys Thr Glu Leu Ser Leu
                485                 490                 495

Met His Phe Ala Ile Thr Asn Pro Gly Trp Gln Pro Pro Arg Glu Ser
            500                 505                 510

Thr Ala Phe Leu Gly Phe Leu Lys Glu Gln Val Gln Arg Asp Gly Ala
        515                 520                 525

Ala Ala Ser Leu Ala Gln Gly Gly Leu Leu Pro Glu Asn Ala Leu Phe
    530                 535                 540

Thr Ser Ile Gln Ser Leu Gln Ser Glu Ser Glu Pro Leu Ser Leu Ile
545                 550                 555                 560

Ala Asn Val Val Ala Gly Ser Ser Cys Arg Gly Pro Pro Leu Pro Arg
                565                 570                 575

Asp Leu Gln Gly Ser Arg His Arg Ala Glu Val Ala Ser Ala Leu Arg
            580                 585                 590
```

```
Ser Phe Ser Pro Leu Gln Pro Gly Gln Ala Pro Thr Gly Arg Ala His
        595                 600                 605

Ser Thr Met Thr Gly Ser Gly Val Asp Ala Arg Thr Ala Ser Ser Gly
    610                 615                 620

Ser Ser Val Trp Glu Gly Gln Leu Gln Ser Leu Val Leu Ser Glu Tyr
625                 630                 635                 640

Ala Ser Thr Glu Met Ser Leu His Ala Leu Tyr Met His Gln Leu His
                645                 650                 655

Lys Gln Gln Ala Gln Ala Glu Pro Glu Arg His Val Trp His Arg Arg
            660                 665                 670

Glu Ser Asp Glu Ser Gly Glu Ser Ala Pro Asp Glu Gly Gly Glu Gly
        675                 680                 685

Ala Arg Ala Pro Gln Ser Ile Pro Arg Ser Ala Ser Tyr Pro Cys Ala
    690                 695                 700

Ala Pro Arg Pro Gly Ala Pro Glu Thr Thr Ala Leu His Gly Gly Phe
705                 710                 715                 720

Gln Arg Arg Tyr Gly Gly Ile Thr Asp Pro Gly Thr Val Pro Arg Val
                725                 730                 735

Pro Ser His Phe Ser Arg Leu Pro Leu Gly Gly Trp Ala Glu Asp Gly
            740                 745                 750

Gln Ser Ala Ser Arg His Pro Glu Pro Val Pro Glu Glu Gly Ser Glu
        755                 760                 765

Asp Glu Leu Pro Pro Gln Val His Lys Val
    770                 775
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<210> 8082
<211> 839
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1678; "

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<223> /note="Gene Symbol: ATG9A; "

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<223> /note="Gene Name:
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<223> /note="Uniprot ID: Q7Z3C6; "

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<223> /note="ENSP ID: ENSP00000386710"

<400> 8082

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Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1               5                  10                  15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
            20                  25                  30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
        35                  40                  45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
    50                  55                  60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65                  70                  75                  80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
            100                 105                 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
```

145 150 155 160

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser Ala Leu Pro
165 170 175

Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile Val Gln Thr Gln Lys
180 185 190

Glu His Gln Ile Cys Ile His Lys Arg Glu Leu Thr Glu Leu Asp Ile
195 200 205

Tyr His Arg Ile Leu Arg Phe Gln Asn Tyr Met Val Ala Leu Val Asn
210 215 220

Lys Ser Leu Leu Pro Leu Arg Phe Arg Leu Pro Gly Leu Gly Glu Ala
225 230 235 240

Val Phe Phe Thr Arg Gly Leu Lys Tyr Asn Phe Glu Leu Ile Leu Phe
245 250 255

Trp Gly Pro Gly Ser Leu Phe Leu Asn Glu Trp Ser Leu Lys Ala Glu
260 265 270

Tyr Lys Arg Gly Gly Gln Arg Leu Glu Leu Ala Gln Arg Leu Ser Asn
275 280 285

Arg Ile Leu Trp Ile Gly Ile Ala Asn Phe Leu Leu Cys Pro Leu Ile
290 295 300

Leu Ile Trp Gln Ile Leu Tyr Ala Phe Phe Ser Tyr Ala Glu Val Leu
305 310 315 320

Lys Arg Glu Pro Gly Ala Leu Gly Ala Arg Cys Trp Ser Leu Tyr Gly
325 330 335

Arg Cys Tyr Leu Arg His Phe Asn Glu Leu Glu His Glu Leu Gln Ser
340 345 350

Arg Leu Asn Arg Gly Tyr Lys Pro Ala Ser Lys Tyr Met Asn Cys Phe
355 360 365

Leu Ser Pro Leu Leu Thr Leu Leu Ala Lys Asn Gly Ala Phe Phe Ala
370 375 380

```
Gly Ser Ile Leu Ala Val Leu Ile Ala Leu Thr Ile Tyr Asp Glu Asp
385                 390                 395                 400

Val Leu Ala Val Glu His Val Leu Thr Thr Val Thr Leu Leu Gly Val
                405                 410                 415

Thr Val Thr Val Cys Arg Ser Phe Ile Pro Asp Gln His Met Val Phe
            420                 425                 430

Cys Pro Glu Gln Leu Leu Arg Val Ile Leu Ala His Ile His Tyr Met
        435                 440                 445

Pro Asp His Trp Gln Gly Asn Ala His Arg Ser Gln Thr Arg Asp Glu
    450                 455                 460

Phe Ala Gln Leu Phe Gln Tyr Lys Ala Val Phe Ile Leu Glu Glu Leu
465                 470                 475                 480

Leu Ser Pro Ile Val Thr Pro Leu Ile Leu Ile Phe Cys Leu Arg Pro
                485                 490                 495

Arg Ala Leu Glu Ile Ile Asp Phe Phe Arg Asn Phe Thr Val Glu Val
            500                 505                 510

Val Gly Val Gly Asp Thr Cys Ser Phe Ala Gln Met Asp Val Arg Gln
        515                 520                 525

His Gly His Pro Gln Trp Leu Ser Ala Gly Gln Thr Glu Ala Ser Val
    530                 535                 540

Tyr Gln Gln Ala Glu Asp Gly Lys Thr Glu Leu Ser Leu Met His Phe
545                 550                 555                 560

Ala Ile Thr Asn Pro Gly Trp Gln Pro Pro Arg Glu Ser Thr Ala Phe
                565                 570                 575

Leu Gly Phe Leu Lys Glu Gln Val Gln Arg Asp Gly Ala Ala Ala Ser
            580                 585                 590

Leu Ala Gln Gly Gly Leu Leu Pro Glu Asn Ala Leu Phe Thr Ser Ile
        595                 600                 605
```

```
Gln Ser Leu Gln Ser Glu Ser Glu Pro Leu Ser Leu Ile Ala Asn Val
    610                 615                 620

Val Ala Gly Ser Ser Cys Arg Gly Pro Pro Leu Pro Arg Asp Leu Gln
625                 630                 635                 640

Gly Ser Arg His Arg Ala Glu Val Ala Ser Ala Leu Arg Ser Phe Ser
                645                 650                 655

Pro Leu Gln Pro Gly Gln Ala Pro Thr Gly Arg Ala His Ser Thr Met
            660                 665                 670

Thr Gly Ser Gly Val Asp Ala Arg Thr Ala Ser Ser Gly Ser Ser Val
        675                 680                 685

Trp Glu Gly Gln Leu Gln Ser Leu Val Leu Ser Glu Tyr Ala Ser Thr
    690                 695                 700

Glu Met Ser Leu His Ala Leu Tyr Met His Gln Leu His Lys Gln Gln
705                 710                 715                 720

Ala Gln Ala Glu Pro Glu Arg His Val Trp His Arg Arg Glu Ser Asp
                725                 730                 735

Glu Ser Gly Glu Ser Ala Pro Asp Glu Gly Gly Glu Gly Ala Arg Ala
            740                 745                 750

Pro Gln Ser Ile Pro Arg Ser Ala Ser Tyr Pro Cys Ala Ala Pro Arg
        755                 760                 765

Pro Gly Ala Pro Glu Thr Thr Ala Leu His Gly Gly Phe Gln Arg Arg
    770                 775                 780

Tyr Gly Gly Ile Thr Asp Pro Gly Thr Val Pro Arg Val Pro Ser His
785                 790                 795                 800

Phe Ser Arg Leu Pro Leu Gly Gly Trp Ala Glu Asp Gly Gln Ser Ala
                805                 810                 815

Ser Arg His Pro Glu Pro Val Pro Glu Glu Gly Ser Glu Asp Glu Leu
            820                 825                 830
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Pro Pro Gln Val His Lys Val
835

<210> 8083
<211> 98
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1678; "

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<223> /note="Gene Symbol: ATG9A; "

<220>
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<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390704"

<400> 8083
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Thr Phe Ile Ile Cys Thr Arg Arg Met Ala Ser His Val Cys Ser
50 55 60

Ser Gly Arg Ser Leu Ser Ser Cys Ser Ser Ser Leu Trp Leu Pro Ser
65 70 75 80

Leu Pro Ser Trp Ser Ala Ala Trp Thr Met Thr Ser Tyr Leu Pro Thr
85 90 95

Arg Trp

<210> 8084
<211> 98

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393708"

<400> 8084
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Thr Phe Ile Ile Cys Thr Arg Arg Met Ala Ser His Val Cys Ser
50 55 60

Ser Gly Arg Ser Leu Ser Ser Cys Ser Ser Ser Leu Trp Leu Pro Ser
65 70 75 80

Leu Pro Ser Trp Ser Ala Ala Trp Thr Met Thr Ser Tyr Leu Pro Thr
85 90 95

Arg Trp

<210> 8085
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394345"

<400> 8085
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
50 55 60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65 70 75 80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe
85 90

<210> 8086
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396404"

<400> 8086
Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
1   5   10   15

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
            20   25   30

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
        35   40   45

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
    50   55   60

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser Ala Leu Pro
65   70   75   80

Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile Val Gln Thr Gln Lys
                85   90   95

Glu His Gln Ile Cys Ile His Lys Arg Glu Leu Thr Glu Leu Asp Ile
            100   105   110

Tyr His Arg Ile Leu Arg Phe Gln Asn Tyr Met Val Ala Leu Val Asn
        115   120   125

Lys Ser Leu Leu Pro
    130

<210> 8087
<211> 255
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1678; "

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000398528"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8087

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Xaa Arg Asp Gly Ala Ala Ala Ser Leu Ala Gln Gly Gly Leu Leu Pro
1               5                  10                  15

Glu Asn Ala Leu Phe Thr Ser Ile Gln Ser Leu Gln Ser Glu Ser Glu
            20                  25                  30

Pro Leu Ser Leu Ile Ala Asn Val Val Ala Gly Ser Ser Cys Arg Gly
        35                  40                  45

Pro Pro Leu Pro Arg Asp Leu Gln Gly Ser Arg His Arg Ala Glu Val
    50                  55                  60

Ala Ser Ala Leu Arg Ser Phe Ser Pro Leu Gln Pro Gly Gln Ala Pro
65                  70                  75                  80

Thr Gly Arg Ala His Ser Thr Met Thr Gly Ser Gly Val Asp Ala Arg
                85                  90                  95

Thr Ala Ser Ser Gly Ser Ser Val Trp Glu Gly Gln Leu Gln Ser Leu
            100                 105                 110

Val Leu Ser Glu Tyr Ala Ser Thr Glu Met Ser Leu His Ala Leu Tyr
        115                 120                 125

Met His Gln Leu His Lys Gln Gln Ala Gln Ala Glu Pro Glu Arg His
    130                 135                 140

Val Trp His Arg Arg Glu Ser Asp Glu Ser Gly Glu Ser Ala Pro Asp
145                 150                 155                 160

Glu Gly Gly Glu Gly Ala Arg Ala Pro Gln Ser Ile Pro Arg Ser Ala
                165                 170                 175
```

```
Ser Tyr Pro Cys Ala Ala Pro Arg Pro Gly Ala Pro Glu Thr Thr Ala
            180                 185                 190

Leu His Gly Gly Phe Gln Arg Arg Tyr Gly Gly Ile Thr Asp Pro Gly
        195                 200                 205

Thr Val Pro Arg Val Pro Ser His Phe Ser Arg Leu Pro Leu Gly Gly
    210                 215                 220

Trp Ala Glu Asp Gly Gln Ser Ala Ser Arg His Pro Glu Pro Val Pro
225                 230                 235                 240

Glu Glu Gly Ser Glu Asp Glu Leu Pro Pro Gln Val His Lys Val
                245                 250                 255


<210> 8088
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Gene Name:
      autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400234"

<400> 8088
Leu Ala His Ile His Tyr Met Pro Asp His Trp Gln Gly Asn Ala His
1               5                   10                  15

Arg Ser Gln Thr Arg Asp Glu Phe Ala Gln Leu Phe Gln Tyr Lys Ala
            20                  25                  30

Val Phe Ile Leu Glu Glu Leu Leu Ser Pro Ile Val Thr Pro Leu Ile
        35                  40                  45

Leu Ile Phe Cys Leu Arg Pro Arg Ala Leu Glu Ile Ile Asp Phe Phe
    50                  55                  60
```

Arg Asn Phe Thr Val Glu Val Val Gly Val Gly Asp Thr Cys Ser Phe
65 70 75 80

Ala Gln Met Asp Val Arg Gln His Gly His Pro Gln Trp Leu Ser Ala
85 90 95

Gly Gln Thr Glu Ala Ser Val Tyr Gln Gln Ala Glu Asp Gly Lys Thr
100 105 110

Glu Leu Ser Leu Met His Phe Ala Ile Thr Asn Pro Gly Trp Gln Pro
115 120 125

Pro Arg Glu Ser Thr Ala Phe Leu Gly Phe Leu Lys Glu Gln Val Gln
130 135 140

Arg Asp Gly Ala Ala Ala Ser Leu Ala Gln Gly Gly Leu Leu Pro Glu
145 150 155 160

Asn Ala Leu Phe Thr Ser Ile Gln Ser Leu Gln Ser Glu Ser Glu Pro
165 170 175

Leu Ser Leu Ile Ala Asn Val Val Ala Gly Ser Ser Cys Arg Gly Pro
180 185 190

Pro Leu Pro Arg Asp Leu Gln Gly Ser Arg His Arg Ala Glu Val Ala
195 200 205

Ser Ala Leu Arg Ser Phe Ser Pro Leu Gln Pro Gly Gln Ala Pro Thr
210 215 220

Gly Arg Ala His Ser Thr Met Thr Gly Ser Gly Ser Thr Ser Ser Arg
225 230 235 240

Pro Arg Leu Asn

<210> 8089
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1678; "

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<221> source
<223> /note="Gene Symbol: ATG9A; "

<220>
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<223> /note="Gene Name:
autophagy related 9A; "

<220>
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<223> /note="ENSP ID: ENSP00000401530"

<400> 8089

```
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1               5                  10                  15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
            20                  25                  30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
        35                  40                  45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
    50                  55                  60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65                  70                  75                  80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
            100                 105                 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
145                 150                 155                 160

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met Ser Ala Leu Pro
```

165 170 175

Tyr Cys Thr Trp Gln Glu Val Gln Ala Arg Ile
180 185

<210> 8090
<211> 172
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<400> 8090
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
50 55 60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65 70 75 80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
85 90 95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
100 105 110

```
Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
145                 150                 155                 160

His Ser Phe Tyr Leu His Ala Leu Arg Ile Pro Met
                165                 170
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<210> 8091
<211> 144
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<213> Homo sapiens

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<220>
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<220>
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<223> /note="Gene Name:
autophagy related 9A; "

<220>
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<223> /note="ENSP ID: ENSP00000406785"

<400> 8091

```
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1               5                   10                  15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
            20                  25                  30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
        35                  40                  45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
    50                  55                  60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
```

65 70 75 80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
85 90 95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
100 105 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
115 120 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
130 135 140

<210> 8092
<211> 169
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ATG9A; "

<220>
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<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409164"

<400> 8092
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
50 55 60

```
Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65                  70                  75                  80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
            100                 105                 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
        115                 120                 125

Asn Gly Ser Leu Ile Thr Ile Leu Val Ile Ala Gly Val Phe Trp Ile
    130                 135                 140

His Arg Leu Ile Lys Phe Ile Tyr Asn Ile Cys Cys Tyr Trp Glu Ile
145                 150                 155                 160

His Ser Phe Tyr Leu His Ala Leu Arg
                165
```

<210> 8093
<211> 131
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG9A; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 9A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413569"

<400> 8093

```
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1               5                   10                  15

Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
```

20 25 30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
35 40 45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
50 55 60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65 70 75 80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
85 90 95

Met Val Asn His Ser Leu His Pro Thr Glu Pro Val Lys Val Thr Leu
100 105 110

Pro Asp Ala Phe Leu Pro Ala Gln Val Cys Ser Ala Arg Ile Gln Glu
115 120 125

Asn Gly Ser
130

<210> 8094
<211> 97
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATG9A; "

<220>
<221> source
<223> /note="Gene Name:
autophagy related 9A; "

<220>
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<223> /note="ENSP ID: ENSP00000416435"

<400> 8094
Met Ala Gln Phe Asp Thr Glu Tyr Gln Arg Leu Glu Ala Ser Tyr Ser
1 5 10 15

```
Asp Ser Pro Pro Gly Glu Glu Asp Leu Leu Val His Val Ala Glu Gly
            20                  25                  30

Ser Lys Ser Pro Trp His His Ile Glu Asn Leu Asp Leu Phe Phe Ser
        35                  40                  45

Arg Val Tyr Asn Leu His Gln Lys Asn Gly Phe Thr Cys Met Leu Ile
    50                  55                  60

Gly Glu Ile Phe Glu Leu Met Gln Phe Leu Phe Val Val Ala Phe Thr
65                  70                  75                  80

Thr Phe Leu Val Ser Cys Val Asp Tyr Asp Ile Leu Phe Ala Asn Lys
                85                  90                  95

Met
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<210> 8095
<211> 924
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
autophagy related 9B; "

<220>
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<223> /note="Uniprot ID: Q674R7; "

<220>
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<223> /note="ENSP ID: ENSP00000475737"

<400> 8095

```
Met Val Ser Arg Met Gly Trp Gly Gly Arg Arg Arg Arg Leu Gly Arg
1               5                   10                  15

Trp Gly Asp Leu Gly Pro Gly Ser Val Pro Leu Leu Pro Met Pro Leu
```

```
            20                  25                  30

Pro Pro Pro Pro Pro Pro Ser Cys Arg Gly Pro Gly Gly Gly Arg Ile
        35                  40                  45

Ser Ile Phe Ser Leu Ser Pro Ala Pro His Thr Arg Ser Ser Pro Ser
    50                  55                  60

Ser Phe Ser Pro Pro Thr Ala Gly Pro Pro Cys Ser Val Leu Gln Gly
65                  70                  75                  80

Thr Gly Ala Ser Gln Ser Cys His Ser Ala Leu Pro Ile Pro Ala Thr
                85                  90                  95

Pro Pro Thr Gln Ala Gln Pro Ala Met Thr Pro Ala Ser Ala Ser Pro
            100                 105                 110

Ser Trp Gly Ser His Ser Thr Pro Pro Leu Ala Pro Ala Thr Pro Thr
        115                 120                 125

Pro Ser Gln Gln Cys Pro Gln Asp Ser Pro Gly Leu Arg Val Gly Pro
    130                 135                 140

Leu Ile Pro Glu Gln Asp Tyr Glu Arg Leu Glu Asp Cys Asp Pro Glu
145                 150                 155                 160

Gly Ser Gln Asp Ser Pro Ile His Gly Glu Glu Gln Gln Pro Leu Leu
                165                 170                 175

His Val Pro Glu Gly Leu Arg Gly Ser Trp His His Ile Gln Asn Leu
            180                 185                 190

Asp Ser Phe Phe Thr Lys Ile Tyr Ser Tyr His Gln Arg Asn Gly Phe
        195                 200                 205

Ala Cys Ile Leu Leu Glu Asp Val Phe Gln Leu Gly Gln Phe Ile Phe
    210                 215                 220

Ile Val Thr Phe Thr Thr Phe Leu Leu Arg Cys Val Asp Tyr Asn Val
225                 230                 235                 240

Leu Phe Ala Asn Gln Pro Ser Asn His Thr Arg Pro Gly Pro Phe His
                245                 250                 255
```

```
Ser Lys Val Thr Leu Ser Asp Ala Ile Leu Pro Ser Ala Gln Cys Ala
            260                 265                 270

Glu Arg Ile Arg Ser Ser Pro Leu Leu Val Leu Leu Leu Val Leu Ala
        275                 280                 285

Ala Gly Phe Trp Leu Val Gln Leu Leu Arg Ser Val Cys Asn Leu Phe
    290                 295                 300

Ser Tyr Trp Asp Ile Gln Val Phe Tyr Arg Glu Ala Leu His Ile Pro
305                 310                 315                 320

Pro Glu Glu Leu Ser Ser Val Pro Trp Ala Glu Val Gln Ser Arg Leu
                325                 330                 335

Leu Ala Leu Gln Arg Ser Gly Gly Leu Cys Val Gln Pro Arg Pro Leu
            340                 345                 350

Thr Glu Leu Asp Ile His His Arg Ile Leu Arg Tyr Thr Asn Tyr Gln
        355                 360                 365

Val Ala Leu Ala Asn Lys Gly Leu Leu Pro Ala Arg Cys Pro Leu Pro
    370                 375                 380

Trp Gly Gly Ser Ala Ala Phe Leu Ser Arg Gly Leu Ala Leu Asn Val
385                 390                 395                 400

Asp Leu Leu Leu Phe Arg Gly Pro Phe Ser Leu Phe Arg Gly Gly Trp
                405                 410                 415

Glu Leu Pro His Ala Tyr Lys Arg Ser Asp Gln Arg Gly Ala Leu Ala
            420                 425                 430

Ala Arg Trp Gly Arg Thr Val Leu Leu Leu Ala Ala Leu Asn Leu Ala
        435                 440                 445

Leu Ser Pro Leu Val Leu Ala Trp Gln Val Leu His Val Phe Tyr Ser
    450                 455                 460

His Val Glu Leu Leu Arg Arg Glu Pro Gly Ala Leu Gly Ala Arg Gly
465                 470                 475                 480
```

```
Trp Ser Arg Leu Ala Arg Leu Gln Leu Arg His Phe Asn Glu Leu Pro
                485                 490                 495

His Glu Leu Arg Ala Arg Leu Ala Arg Ala Tyr Arg Pro Ala Ala Ala
            500                 505                 510

Phe Leu Arg Thr Ala Ala Pro Pro Ala Pro Leu Arg Thr Leu Leu Ala
        515                 520                 525

Arg Gln Leu Val Phe Phe Ala Gly Ala Leu Phe Ala Ala Leu Leu Val
    530                 535                 540

Leu Thr Val Tyr Asp Glu Asp Val Leu Ala Val Glu His Val Leu Thr
545                 550                 555                 560

Ala Met Thr Ala Leu Gly Val Thr Ala Thr Val Ala Arg Ser Phe Ile
                565                 570                 575

Pro Glu Glu Gln Cys Gln Gly Arg Ala Pro Gln Leu Leu Leu Gln Thr
            580                 585                 590

Ala Leu Ala His Met His Tyr Leu Pro Glu Glu Pro Gly Pro Gly Gly
        595                 600                 605

Arg Asp Arg Ala Tyr Arg Gln Met Ala Gln Leu Leu Gln Tyr Arg Ala
    610                 615                 620

Val Ser Leu Leu Glu Glu Leu Leu Ser Pro Leu Leu Thr Pro Leu Phe
625                 630                 635                 640

Leu Leu Phe Trp Phe Arg Pro Arg Ala Leu Glu Ile Ile Asp Phe Phe
                645                 650                 655

His His Phe Thr Val Asp Val Ala Gly Val Gly Asp Ile Cys Ser Phe
            660                 665                 670

Ala Leu Met Asp Val Lys Arg His Gly His Pro Gln Trp Leu Ser Ala
        675                 680                 685

Gly Gln Thr Glu Ala Ser Leu Ser Gln Arg Ala Glu Asp Gly Lys Thr
    690                 695                 700
```

```
Glu Leu Ser Leu Met Arg Phe Ser Leu Ala His Pro Leu Trp Arg Pro
705                 710                 715                 720

Pro Gly His Ser Ser Lys Phe Leu Gly His Leu Trp Gly Arg Val Gln
                725                 730                 735

Gln Asp Ala Ala Ala Trp Gly Ala Thr Ser Ala Arg Gly Pro Ser Thr
            740                 745                 750

Pro Gly Val Leu Ser Asn Cys Thr Ser Pro Leu Pro Glu Ala Phe Leu
        755                 760                 765

Ala Asn Leu Phe Val His Pro Leu Leu Pro Pro Arg Asp Leu Ser Pro
    770                 775                 780

Thr Ala Pro Cys Pro Ala Ala Ala Thr Ala Ser Leu Leu Ala Ser Ile
785                 790                 795                 800

Ser Arg Ile Ala Gln Asp Pro Ser Ser Val Ser Pro Gly Gly Thr Gly
                805                 810                 815

Gly Gln Lys Leu Ala Gln Leu Pro Glu Leu Ala Ser Ala Glu Met Ser
            820                 825                 830

Leu His Val Ile Tyr Leu His Gln Leu His Gln Gln Gln Gln Gln Gln
        835                 840                 845

Glu Pro Trp Gly Glu Ala Ala Ala Ser Ile Leu Ser Arg Pro Cys Ser
    850                 855                 860

Ser Pro Ser Gln Pro Pro Ser Pro Asp Glu Glu Lys Pro Ser Trp Ser
865                 870                 875                 880

Ser Asp Gly Ser Ser Pro Ala Ser Ser Pro Arg Gln Gln Trp Gly Thr
                885                 890                 895

Gln Lys Ala Arg Asn Leu Phe Pro Gly Gly Phe Gln Val Thr Thr Asp
            900                 905                 910

Thr Gln Lys Glu Pro Asp Arg Ala Ser Cys Thr Asp
        915                 920
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<210> 8096

<211> 924
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1679; "

<220>
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<223> /note="Gene Symbol: ATG9B; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q674R7; "

<220>
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<223> /note="ENSP ID: ENSP00000479879"

<400> 8096

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Met Val Ser Arg Met Gly Trp Gly Gly Arg Arg Arg Arg Leu Gly Arg
1               5                  10                  15

Trp Gly Asp Leu Gly Pro Gly Ser Val Pro Leu Leu Pro Met Pro Leu
            20                  25                  30

Pro Pro Pro Pro Pro Pro Ser Cys Arg Gly Pro Gly Gly Gly Arg Ile
        35                  40                  45

Ser Ile Phe Ser Leu Ser Pro Ala Pro His Thr Arg Ser Ser Pro Ser
    50                  55                  60

Ser Phe Ser Pro Pro Thr Ala Gly Pro Pro Cys Ser Val Leu Gln Gly
65                  70                  75                  80

Thr Gly Ala Ser Gln Ser Cys His Ser Ala Leu Pro Ile Pro Ala Thr
                85                  90                  95

Pro Pro Thr Gln Ala Gln Pro Ala Met Thr Pro Ala Ser Ala Ser Pro
            100                 105                 110

Ser Trp Gly Ser His Ser Thr Pro Pro Leu Ala Pro Ala Thr Pro Thr
        115                 120                 125
```

```
Pro Ser Gln Gln Cys Pro Gln Asp Ser Pro Gly Leu Arg Val Gly Pro
    130                 135                 140

Leu Ile Pro Glu Gln Asp Tyr Glu Arg Leu Glu Asp Cys Asp Pro Glu
145                 150                 155                 160

Gly Ser Gln Asp Ser Pro Ile His Gly Glu Glu Gln Gln Pro Leu Leu
                165                 170                 175

His Val Pro Glu Gly Leu Arg Gly Ser Trp His His Ile Gln Asn Leu
            180                 185                 190

Asp Ser Phe Phe Thr Lys Ile Tyr Ser Tyr His Gln Arg Asn Gly Phe
        195                 200                 205

Ala Cys Ile Leu Leu Glu Asp Val Phe Gln Leu Gly Gln Phe Ile Phe
    210                 215                 220

Ile Val Thr Phe Thr Thr Phe Leu Leu Arg Cys Val Asp Tyr Asn Val
225                 230                 235                 240

Leu Phe Ala Asn Gln Pro Ser Asn His Thr Arg Pro Gly Pro Phe His
                245                 250                 255

Ser Lys Val Thr Leu Ser Asp Ala Ile Leu Pro Ser Ala Gln Cys Ala
            260                 265                 270

Glu Arg Ile Arg Ser Ser Pro Leu Leu Val Leu Leu Leu Val Leu Ala
        275                 280                 285

Ala Gly Phe Trp Leu Val Gln Leu Leu Arg Ser Val Cys Asn Leu Phe
    290                 295                 300

Ser Tyr Trp Asp Ile Gln Val Phe Tyr Arg Glu Ala Leu His Ile Pro
305                 310                 315                 320

Pro Glu Glu Leu Ser Ser Val Pro Trp Ala Glu Val Gln Ser Arg Leu
                325                 330                 335

Leu Ala Leu Gln Arg Ser Gly Gly Leu Cys Val Gln Pro Arg Pro Leu
            340                 345                 350
```

```
Thr Glu Leu Asp Ile His His Arg Ile Leu Arg Tyr Thr Asn Tyr Gln
        355                 360                 365

Val Ala Leu Ala Asn Lys Gly Leu Leu Pro Ala Arg Cys Pro Leu Pro
    370                 375                 380

Trp Gly Gly Ser Ala Ala Phe Leu Ser Arg Gly Leu Ala Leu Asn Val
385                 390                 395                 400

Asp Leu Leu Leu Phe Arg Gly Pro Phe Ser Leu Phe Arg Gly Gly Trp
                405                 410                 415

Glu Leu Pro His Ala Tyr Lys Arg Ser Asp Gln Arg Gly Ala Leu Ala
            420                 425                 430

Ala Arg Trp Gly Arg Thr Val Leu Leu Leu Ala Ala Leu Asn Leu Ala
        435                 440                 445

Leu Ser Pro Leu Val Leu Ala Trp Gln Val Leu His Val Phe Tyr Ser
    450                 455                 460

His Val Glu Leu Leu Arg Arg Glu Pro Gly Ala Leu Gly Ala Arg Gly
465                 470                 475                 480

Trp Ser Arg Leu Ala Arg Leu Gln Leu Arg His Phe Asn Glu Leu Pro
                485                 490                 495

His Glu Leu Arg Ala Arg Leu Ala Arg Ala Tyr Arg Pro Ala Ala Ala
            500                 505                 510

Phe Leu Arg Thr Ala Ala Pro Pro Ala Pro Leu Arg Thr Leu Leu Ala
        515                 520                 525

Arg Gln Leu Val Phe Phe Ala Gly Ala Leu Phe Ala Ala Leu Leu Val
    530                 535                 540

Leu Thr Val Tyr Asp Glu Asp Val Leu Ala Val Glu His Val Leu Thr
545                 550                 555                 560

Ala Met Thr Ala Leu Gly Val Thr Ala Thr Val Ala Arg Ser Phe Ile
                565                 570                 575

Pro Glu Glu Gln Cys Gln Gly Arg Ala Pro Gln Leu Leu Leu Gln Thr
```

```
            580                 585                 590

Ala Leu Ala His Met His Tyr Leu Pro Glu Glu Pro Gly Pro Gly Gly
        595                 600                 605

Arg Asp Arg Ala Tyr Arg Gln Met Ala Gln Leu Leu Gln Tyr Arg Ala
    610                 615                 620

Val Ser Leu Leu Glu Glu Leu Leu Ser Pro Leu Leu Thr Pro Leu Phe
625                 630                 635                 640

Leu Leu Phe Trp Phe Arg Pro Arg Ala Leu Glu Ile Ile Asp Phe Phe
                645                 650                 655

His His Phe Thr Val Asp Val Ala Gly Val Gly Asp Ile Cys Ser Phe
            660                 665                 670

Ala Leu Met Asp Val Lys Arg His Gly His Pro Gln Trp Leu Ser Ala
        675                 680                 685

Gly Gln Thr Glu Ala Ser Leu Ser Gln Arg Ala Glu Asp Gly Lys Thr
    690                 695                 700

Glu Leu Ser Leu Met Arg Phe Ser Leu Ala His Pro Leu Trp Arg Pro
705                 710                 715                 720

Pro Gly His Ser Ser Lys Phe Leu Gly His Leu Trp Gly Arg Val Gln
                725                 730                 735

Gln Asp Ala Ala Ala Trp Gly Ala Thr Ser Ala Arg Gly Pro Ser Thr
            740                 745                 750

Pro Gly Val Leu Ser Asn Cys Thr Ser Pro Leu Pro Glu Ala Phe Leu
        755                 760                 765

Ala Asn Leu Phe Val His Pro Leu Leu Pro Pro Arg Asp Leu Ser Pro
    770                 775                 780

Thr Ala Pro Cys Pro Ala Ala Ala Thr Ala Ser Leu Leu Ala Ser Ile
785                 790                 795                 800

Ser Arg Ile Ala Gln Asp Pro Ser Ser Val Ser Pro Gly Gly Thr Gly
                805                 810                 815
```

```
Gly Gln Lys Leu Ala Gln Leu Pro Glu Leu Ala Ser Ala Glu Met Ser
            820                 825                 830

Leu His Val Ile Tyr Leu His Gln Leu His Gln Gln Gln Gln Gln Gln
        835                 840                 845

Glu Pro Trp Gly Glu Ala Ala Ala Ser Ile Leu Ser Arg Pro Cys Ser
    850                 855                 860

Ser Pro Ser Gln Pro Pro Ser Pro Asp Glu Glu Lys Pro Ser Trp Ser
865                 870                 875                 880

Ser Asp Gly Ser Ser Pro Ala Ser Ser Pro Arg Gln Gln Trp Gly Thr
                885                 890                 895

Gln Lys Ala Arg Asn Leu Phe Pro Gly Gly Phe Gln Val Thr Thr Asp
            900                 905                 910

Thr Gln Lys Glu Pro Asp Arg Ala Ser Cys Thr Asp
        915                 920


<210> 8097
<211> 1208
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1680; "

<220>
<221> source
<223> /note="Gene Symbol: AMBRA1; "

<220>
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<223> /note="Gene Name:
      autophagy/beclin-1 regulator 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9C0C7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318313"

<400> 8097
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Met Lys Val Val Pro Glu Lys Asn Ala Val Arg Ile Leu Trp Gly Arg
1               5                  10                  15

Glu Arg Gly Ala Arg Ala Met Gly Ala Gln Arg Leu Leu Gln Glu Leu
            20                  25                  30

Val Glu Asp Lys Thr Arg Trp Met Lys Trp Glu Gly Lys Arg Val Glu
        35                  40                  45

Leu Pro Asp Ser Pro Arg Ser Thr Phe Leu Leu Ala Phe Ser Pro Asp
    50                  55                  60

Arg Thr Leu Leu Ala Ser Thr His Val Asn His Asn Ile Tyr Ile Thr
65                  70                  75                  80

Glu Val Lys Thr Gly Lys Cys Val His Ser Leu Ile Gly His Arg Arg
                85                  90                  95

Thr Pro Trp Cys Val Thr Phe His Pro Thr Ile Ser Gly Leu Ile Ala
            100                 105                 110

Ser Gly Cys Leu Asp Gly Glu Val Arg Ile Trp Asp Leu His Gly Gly
        115                 120                 125

Ser Glu Ser Trp Phe Thr Asp Ser Asn Asn Ala Ile Ala Ser Leu Ala
    130                 135                 140

Phe His Pro Thr Ala Gln Leu Leu Leu Ile Ala Thr Ala Asn Glu Ile
145                 150                 155                 160

His Phe Trp Asp Trp Ser Arg Arg Glu Pro Phe Ala Val Val Lys Thr
                165                 170                 175

Ala Ser Glu Met Glu Arg Val Arg Leu Val Arg Phe Asp Pro Leu Gly
            180                 185                 190

His Tyr Leu Leu Thr Ala Ile Val Asn Pro Ser Asn Gln Gln Gly Asp
        195                 200                 205

Asp Glu Pro Glu Ile Pro Ile Asp Gly Thr Glu Leu Ser His Tyr Arg
    210                 215                 220

Gln Arg Ala Leu Leu Gln Ser Gln Pro Val Arg Arg Thr Pro Leu Leu
```

225 230 235 240

His Asn Phe Leu His Met Leu Ser Ser Arg Ser Ser Gly Ile Gln Thr
245 250 255

Glu Pro Phe His Pro Pro Glu Gln Ala Ser Ser Thr Gln Gln Asp Gln
260 265 270

Gly Leu Leu Asn Arg Pro Ser Ala Phe Ser Thr Val Gln Ser Ser Thr
275 280 285

Ala Gly Asn Thr Leu Arg Asn Leu Ser Leu Gly Pro Thr Arg Arg Ser
290 295 300

Leu Gly Gly Pro Leu Ser Ser His Pro Ser Arg Tyr His Arg Glu Ile
305 310 315 320

Ala Pro Gly Leu Thr Gly Ser Glu Trp Thr Arg Thr Val Leu Ser Leu
325 330 335

Asn Ser Arg Ser Glu Ala Glu Ser Met Pro Pro Pro Arg Thr Ser Ala
340 345 350

Ser Ser Val Ser Leu Leu Ser Val Leu Arg Gln Gln Glu Gly Gly Ser
355 360 365

Gln Ala Ser Val Tyr Thr Ser Ala Thr Glu Gly Arg Gly Phe Pro Ala
370 375 380

Ser Gly Leu Ala Thr Glu Ser Asp Gly Gly Asn Gly Ser Ser Gln Asn
385 390 395 400

Asn Ser Gly Ser Ile Arg His Glu Leu Gln Cys Asp Leu Arg Arg Phe
405 410 415

Phe Leu Glu Tyr Asp Arg Leu Gln Glu Leu Asp Gln Ser Leu Ser Gly
420 425 430

Glu Ala Pro Gln Thr Gln Gln Ala Gln Glu Met Leu Asn Asn Asn Ile
435 440 445

Glu Ser Glu Arg Pro Gly Pro Ser His Gln Pro Thr Pro His Ser Ser
450 455 460

```
Glu Asn Asn Ser Asn Leu Ser Arg Gly His Leu Asn Arg Cys Arg Ala
465                 470                 475                 480

Cys His Asn Leu Leu Thr Phe Asn Asn Asp Thr Leu Arg Trp Glu Arg
                485                 490                 495

Thr Thr Pro Asn Tyr Ser Ser Gly Glu Ala Ser Ser Ser Trp Gln Val
            500                 505                 510

Pro Ser Ser Phe Glu Ser Val Pro Ser Ser Gly Ser Gln Leu Pro Pro
        515                 520                 525

Leu Glu Arg Thr Glu Gly Gln Thr Pro Ser Ser Ser Arg Leu Glu Leu
    530                 535                 540

Ser Ser Ser Ala Ser Pro Gln Glu Glu Arg Thr Val Gly Val Ala Phe
545                 550                 555                 560

Asn Gln Glu Thr Gly His Trp Glu Arg Ile Tyr Thr Gln Ser Ser Arg
                565                 570                 575

Ser Gly Thr Val Ser Gln Glu Ala Leu His Gln Asp Met Pro Glu Glu
            580                 585                 590

Ser Ser Glu Glu Asp Ser Leu Arg Arg Arg Leu Leu Glu Ser Ser Leu
        595                 600                 605

Ile Ser Leu Ser Arg Tyr Asp Gly Ala Gly Ser Arg Glu His Pro Ile
    610                 615                 620

Tyr Pro Asp Pro Ala Arg Leu Ser Pro Ala Ala Tyr Tyr Ala Gln Arg
625                 630                 635                 640

Met Ile Gln Tyr Leu Ser Arg Arg Asp Ser Ile Arg Gln Arg Ser Met
                645                 650                 655

Arg Tyr Gln Gln Asn Arg Leu Arg Ser Ser Thr Ser Ser Ser Ser Ser
            660                 665                 670

Asp Asn Gln Gly Pro Ser Val Glu Gly Thr Asp Leu Glu Phe Glu Asp
        675                 680                 685
```

```
Phe Glu Asp Asn Gly Asp Arg Ser Arg His Arg Ala Pro Arg Asn Ala
    690                 695                 700

Arg Met Ser Ala Pro Ser Leu Gly Arg Phe Val Pro Arg Arg Phe Leu
705                 710                 715                 720

Leu Pro Glu Tyr Leu Pro Tyr Ala Gly Ile Phe His Glu Arg Gly Gln
                725                 730                 735

Pro Gly Leu Ala Thr His Ser Ser Val Asn Arg Val Leu Ala Gly Ala
            740                 745                 750

Val Ile Gly Asp Gly Gln Ser Ala Val Ala Ser Asn Ile Ala Asn Thr
        755                 760                 765

Thr Tyr Arg Leu Gln Trp Trp Asp Phe Thr Lys Phe Asp Leu Pro Glu
    770                 775                 780

Ile Ser Asn Ala Ser Val Asn Val Leu Val Gln Asn Cys Lys Ile Tyr
785                 790                 795                 800

Asn Asp Ala Ser Cys Asp Ile Ser Ala Asp Gly Gln Leu Leu Ala Ala
                805                 810                 815

Phe Ile Pro Ser Ser Gln Arg Gly Phe Pro Asp Glu Gly Ile Leu Ala
            820                 825                 830

Val Tyr Ser Leu Ala Pro His Asn Leu Gly Glu Met Leu Tyr Thr Lys
        835                 840                 845

Arg Phe Gly Pro Asn Ala Ile Ser Val Ser Leu Ser Pro Met Gly Arg
    850                 855                 860

Tyr Val Met Val Gly Leu Ala Ser Arg Arg Ile Leu Leu His Pro Ser
865                 870                 875                 880

Thr Glu His Met Val Ala Gln Val Phe Arg Leu Gln Gln Ala His Gly
                885                 890                 895

Gly Glu Thr Ser Met Arg Arg Val Phe Asn Val Leu Tyr Pro Met Pro
            900                 905                 910
```

```
Ala Asp Gln Arg Arg His Val Ser Ile Asn Ser Ala Arg Trp Leu Pro
        915                 920                 925

Glu Pro Gly Leu Gly Leu Ala Tyr Gly Thr Asn Lys Gly Asp Leu Val
    930                 935                 940

Ile Cys Arg Pro Glu Ala Leu Asn Ser Gly Val Glu Tyr Tyr Trp Asp
945                 950                 955                 960

Gln Leu Asn Glu Thr Val Phe Thr Val His Ser Asn Ser Arg Ser Ser
                965                 970                 975

Glu Arg Pro Gly Thr Ser Arg Ala Thr Trp Arg Thr Asp Arg Asp Met
            980                 985                 990

Gly Leu Met Asn Ala Ile Gly Leu  Gln Pro Arg Asn Pro  Ala Thr
Ser
        995                 1000                1005

Val Thr  Ser Gln Gly Thr Gln  Thr Leu Ala Leu Gln  Leu Gln Asn
    1010                1015                1020

Ala Glu  Thr Gln Thr Glu Arg  Glu Val Pro Glu Pro  Gly Thr Ala
    1025                1030                1035

Ala Ser  Gly Pro Gly Glu Gly  Glu Gly Ser Glu Tyr  Gly Ala Ser
    1040                1045                1050

Gly Glu  Asp Ala Leu Ser Arg  Ile Gln Arg Leu Met  Ala Glu Gly
    1055                1060                1065

Gly Met  Thr Ala Val Val Gln  Arg Glu Gln Ser Thr  Thr Met Ala
    1070                1075                1080

Ser Met  Gly Gly Phe Gly Asn  Asn Ile Ile Val Ser  His Arg Ile
    1085                1090                1095

His Arg  Ser Ser Gln Thr Gly  Thr Glu Pro Gly Ala  Ala His Thr
    1100                1105                1110

Ser Ser  Pro Gln Pro Ser Thr  Ser Arg Gly Leu Leu  Pro Glu Ala
    1115                1120                1125
```

```
Gly Gln  Leu Ala Glu Arg Gly  Leu Ser Pro Arg Thr  Ala Ser Trp
    1130                1135                1140


Asp Gln  Pro Gly Thr Pro Gly  Arg Glu Pro Thr Gln  Pro Thr Leu
    1145                1150                1155


Pro Ser  Ser Ser Pro Val Pro  Ile Pro Val Ser Leu  Pro Ser Ala
    1160                1165                1170


Glu Gly  Pro Thr Leu His Cys  Glu Leu Thr Asn Asn  Asn His Leu
    1175                1180                1185


Leu Asp  Gly Gly Ser Ser Arg  Gly Asp Ala Ala Gly  Pro Arg Gly
    1190                1195                1200


Glu Pro  Arg Asn Arg
    1205


<210> 8098
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<213> Homo sapiens

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<220>
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Met Lys Val Val Pro Glu Lys Asn Ala Val Arg Ile Leu Trp Gly Arg
1               5                  10                  15


Glu Arg Gly Ala Arg Ala Met Gly Ala Gln Arg Leu Leu Gln Glu Leu
            20                  25                  30
```

```
Val Glu Asp Lys Thr Arg Trp Met Lys Trp Glu Gly Lys Arg Val Glu
        35                  40                  45

Leu Pro Asp Ser Pro Arg Ser Thr Phe Leu Leu Ala Phe Ser Pro Asp
    50                  55                  60

Arg Thr Leu Leu Ala Ser Thr His Val Asn His Asn Ile Tyr Ile Thr
65                  70                  75                  80

Glu Val Lys Thr Gly Lys Cys Val His Ser Leu Ile Gly His Arg Arg
                85                  90                  95

Thr Pro Trp Cys Val Thr Phe His Pro Thr Ile Ser Gly Leu Ile Ala
            100                 105                 110

Ser Gly Cys Leu Asp Gly Glu Val Arg Ile Trp Asp Leu His Gly Gly
        115                 120                 125

Ser Glu Ser Trp Phe Thr Asp Ser Asn Asn Ala Ile Ala Ser Leu Ala
    130                 135                 140

Phe His Pro Thr Ala Gln Leu Leu Leu Ile Ala Thr Ala Asn Glu Ile
145                 150                 155                 160

His Phe Trp Asp Trp Ser Arg Arg Glu Pro Phe Ala Val Val Lys Thr
                165                 170                 175

Ala Ser Glu Met Glu Arg Val Arg Leu Val Arg Phe Asp Pro Leu Gly
            180                 185                 190

His Tyr Leu Leu Thr Ala Ile Val Asn Pro Ser Asn Gln Gln Gly Asp
        195                 200                 205

Asp Glu Pro Glu Ile Pro Ile Asp Gly Thr Glu Leu Ser His Tyr Arg
    210                 215                 220

Gln Arg Ala Leu Leu Gln Ser Gln Pro Val Arg Arg Thr Pro Leu Leu
225                 230                 235                 240

His Asn Phe Leu His Met Leu Ser Ser Arg Ser Ser Gly Ile Gln Val
                245                 250                 255
```

```
Gly Glu Gln Ser Thr Val Gln Asp Ser Ala Thr Pro Ser Pro Pro Pro
            260                 265                 270

Pro Pro Pro Gln Pro Ser Thr Glu Arg Pro Arg Thr Ser Ala Tyr Ile
        275                 280                 285

Arg Leu Arg Gln Arg Val Ser Tyr Pro Thr Ala Glu Cys Cys Gln His
    290                 295                 300

Leu Gly Ile Leu Cys Leu Cys Ser Arg Cys Ser Gly Thr Arg Val Pro
305                 310                 315                 320

Ser Leu Leu Pro His Gln Asp Ser Val Pro Pro Ala Ser Ala Arg Ala
                325                 330                 335

Thr Thr Pro Ser Phe Ser Phe Val Gln Thr Glu Pro Phe His Pro Pro
            340                 345                 350

Glu Gln Ala Ser Ser Thr Gln Gln Asp Gln Gly Leu Leu Asn Arg Pro
        355                 360                 365

Ser Ala Phe Ser Thr Val Gln Ser Ser Thr Ala Gly Asn Thr Leu Arg
    370                 375                 380

Asn Leu Ser Leu Gly Pro Thr Arg Arg Ser Leu Gly Gly Pro Leu Ser
385                 390                 395                 400

Ser His Pro Ser Arg Tyr His Arg Glu Ile Ala Pro Gly Leu Thr Gly
                405                 410                 415

Ser Glu Trp Thr Arg Thr Val Leu Ser Leu Asn Ser Arg Ser Glu Ala
            420                 425                 430

Glu Ser Met Pro Pro Pro Arg Thr Ser Ala Ser Ser Val Ser Leu Leu
        435                 440                 445

Ser Val Leu Arg Gln Gln Glu Gly Gly Ser Gln Ala Ser Val Tyr Thr
    450                 455                 460

Ser Ala Thr Glu Gly Arg Gly Phe Pro Ala Ser Gly Leu Ala Thr Glu
465                 470                 475                 480
```

```
Ser Asp Gly Gly Asn Gly Ser Ser Gln Asn Asn Ser Gly Ser Ile Arg
                485                 490                 495

His Glu Leu Gln Cys Asp Leu Arg Arg Phe Phe Leu Glu Tyr Asp Arg
            500                 505                 510

Leu Gln Glu Leu Asp Gln Ser Leu Ser Gly Glu Ala Pro Gln Thr Gln
        515                 520                 525

Gln Ala Gln Glu Met Leu Asn Asn Asn Ile Glu Ser Glu Arg Pro Gly
    530                 535                 540

Pro Ser His Gln Pro Thr Pro His Ser Ser Glu Asn Asn Ser Asn Leu
545                 550                 555                 560

Ser Arg Gly His Leu Asn Arg Cys Arg Ala Cys His Asn Leu Leu Thr
                565                 570                 575

Phe Asn Asn Asp Thr Leu Arg Trp Glu Arg Thr Thr Pro Asn Tyr Ser
            580                 585                 590

Ser Gly Glu Ala Ser Ser Ser Trp Gln Val Pro Ser Ser Phe Glu Ser
        595                 600                 605

Val Pro Ser Ser Gly Ser Gln Leu Pro Pro Leu Glu Arg Thr Glu Gly
    610                 615                 620

Gln Thr Pro Ser Ser Ser Arg Leu Glu Leu Ser Ser Ser Ala Ser Pro
625                 630                 635                 640

Gln Glu Glu Arg Thr Val Gly Val Ala Phe Asn Gln Glu Thr Gly His
                645                 650                 655

Trp Glu Arg Ile Tyr Thr Gln Ser Ser Arg Ser Gly Thr Val Ser Gln
            660                 665                 670

Glu Ala Leu His Gln Asp Met Pro Glu Glu Ser Ser Glu Glu Asp Ser
        675                 680                 685

Leu Arg Arg Arg Leu Leu Glu Ser Ser Leu Ile Ser Leu Ser Arg Tyr
    690                 695                 700

Asp Gly Ala Gly Ser Arg Glu His Pro Ile Tyr Pro Asp Pro Ala Arg
```

705 710 715 720

Leu Ser Pro Ala Ala Tyr Tyr Ala Gln Arg Met Ile Gln Tyr Leu Ser
725 730 735

Arg Arg Asp Ser Ile Arg Gln Arg Ser Met Arg Tyr Gln Gln Asn Arg
740 745 750

Leu Arg Ser Ser Thr Ser Ser Ser Ser Ser Asp Asn Gln Gly Pro Ser
755 760 765

Val Glu Gly Thr Asp Leu Glu Phe Glu Asp Phe Glu Asp Asn Gly Asp
770 775 780

Arg Ser Arg His Arg Ala Pro Arg Asn Ala Arg Met Ser Ala Pro Ser
785 790 795 800

Leu Gly Arg Phe Val Pro Arg Arg Phe Leu Leu Pro Glu Tyr Leu Pro
805 810 815

Tyr Ala Gly Ile Phe His Glu Arg Gly Gln Pro Gly Leu Ala Thr His
820 825 830

Ser Ser Val Asn Arg Val Leu Ala Gly Ala Val Ile Gly Asp Gly Gln
835 840 845

Ser Ala Val Ala Ser Asn Ile Ala Asn Thr Thr Tyr Arg Leu Gln Trp
850 855 860

Trp Asp Phe Thr Lys Phe Asp Leu Pro Glu Ile Ser Asn Ala Ser Val
865 870 875 880

Asn Val Leu Val Gln Asn Cys Lys Ile Tyr Asn Asp Ala Ser Cys Asp
885 890 895

Ile Ser Ala Asp Gly Gln Leu Leu Ala Ala Phe Ile Pro Ser Ser Gln
900 905 910

Arg Gly Phe Pro Asp Glu Gly Ile Leu Ala Val Tyr Ser Leu Ala Pro
915 920 925

His Asn Leu Gly Glu Met Leu Tyr Thr Lys Arg Phe Gly Pro Asn Ala
930 935 940

```
Ile Ser Val Ser Leu Ser Pro Met Gly Arg Tyr Val Met Val Gly Leu
945                 950                 955                 960

Ala Ser Arg Arg Ile Leu Leu His Pro Ser Thr Glu His Met Val Ala
                965                 970                 975

Gln Val Phe Arg Leu Gln Gln Ala His Gly Gly Glu Thr Ser Met Arg
            980                 985                 990

Arg Val Phe Asn Val Leu Tyr Pro  Met Pro Ala Asp Gln  Arg Arg
His
        995                 1000                1005

Val Ser  Ile Asn Ser Ala Arg  Trp Leu Pro Glu Pro  Gly Leu Gly
    1010                1015                1020

Leu Ala  Tyr Gly Thr Asn Lys  Gly Asp Leu Val Ile  Cys Arg Pro
    1025                1030                1035

Glu Ala  Leu Asn Ser Gly Val  Glu Tyr Tyr Trp Asp  Gln Leu Asn
    1040                1045                1050

Glu Thr  Val Phe Thr Val His  Ser Asn Ser Arg Ser  Ser Glu Arg
    1055                1060                1065

Pro Gly  Thr Ser Arg Ala Thr  Trp Arg Thr Asp Arg  Asp Met Gly
    1070                1075                1080

Leu Met  Asn Ala Ile Gly Leu  Gln Pro Arg Asn Pro  Ala Thr Ser
    1085                1090                1095

Val Thr  Ser Gln Gly Thr Gln  Thr Leu Ala Leu Gln  Leu Gln Asn
    1100                1105                1110

Ala Glu  Thr Gln Thr Glu Arg  Glu Val Pro Glu Pro  Gly Thr Ala
    1115                1120                1125

Ala Ser  Gly Pro Gly Glu Gly  Glu Gly Ser Glu Tyr  Gly Ala Ser
    1130                1135                1140

Gly Glu  Asp Ala Leu Ser Arg  Ile Gln Arg Leu Met  Ala Glu Gly
    1145                1150                1155
```

```
Gly Met  Thr Ala Val Val Gln  Arg Glu Gln Ser Thr  Thr Met Ala
    1160                1165                1170

Ser Met  Gly Gly Phe Gly Asn  Asn Ile Ile Val Ser  His Arg Ile
    1175                1180                1185

His Arg  Ser Ser Gln Thr Gly  Thr Glu Pro Gly Ala  Ala His Thr
    1190                1195                1200

Ser Ser  Pro Gln Pro Ser Thr  Ser Arg Gly Leu Leu  Pro Glu Ala
    1205                1210                1215

Gly Gln  Leu Ala Glu Arg Gly  Leu Ser Pro Arg Thr  Ala Ser Trp
    1220                1225                1230

Asp Gln  Pro Gly Thr Pro Gly  Arg Glu Pro Thr Gln  Pro Thr Leu
    1235                1240                1245

Pro Ser  Ser Ser Pro Val Pro  Ile Pro Val Ser Leu  Pro Ser Ala
    1250                1255                1260

Glu Gly  Pro Thr Leu His Cys  Glu Leu Thr Asn Asn  Asn His Leu
    1265                1270                1275

Leu Asp  Gly Gly Ser Ser Arg  Gly Asp Ala Ala Gly  Pro Arg Gly
    1280                1285                1290

Glu Pro  Arg Asn Arg
    1295


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Met Lys Val Val Pro Glu Lys Asn Ala Val Arg Ile Leu Trp Gly Arg
1 5 10 15

Glu Arg Gly Ala Arg Ala Met Gly
20

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<223> /note="Uniprot ID: Q9C0C7; "

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Met Lys Val Val Pro Glu Lys Asn Ala Val Arg Ile Leu Trp Gly Arg
1 5 10 15

Glu Arg Gly Ala Arg Ala Met Gly Ala Gln Arg Leu Leu Gln Glu Leu
20 25 30

Val Glu Asp Lys Thr Arg Trp Met Lys Trp Glu Gly Lys Arg Val Glu
35 40 45

Leu Pro Asp Ser Pro Arg Ser Thr Phe Leu Leu Ala Phe Ser Pro Asp
50 55 60

```
Arg Thr Leu Leu Ala Ser Thr His Val Asn His Asn Ile Tyr Ile Thr
65                  70                  75                  80

Glu Val Lys Thr Gly Lys Cys Val His Ser Leu Ile Gly His Arg Arg
                85                  90                  95

Thr Pro Trp Cys Val Thr Phe His Pro Thr Ile Ser Gly Leu Ile Ala
            100                 105                 110

Ser Gly Cys Leu Asp Gly Glu Val Arg Ile Trp Asp Leu His Gly Gly
        115                 120                 125

Ser Glu Ser Trp Phe Thr Asp Ser Asn Asn Ala Ile Ala Ser Leu Ala
    130                 135                 140

Phe His Pro Thr Ala Gln Leu Leu Leu Ile Ala Thr Ala Asn Glu Ile
145                 150                 155                 160

His Phe Trp Asp Trp Ser Arg Arg Glu Pro Phe Ala Val Val Lys Thr
                165                 170                 175

Ala Ser Glu Met Glu Arg Val Arg Leu Val Arg Phe Asp Pro Leu Gly
            180                 185                 190

His Tyr Leu Leu Thr Ala Ile Val Asn Pro Ser Asn Gln Gln Gly Asp
        195                 200                 205

Asp Glu Pro Glu Ile Pro Ile Asp Gly Thr Glu Leu Ser His Tyr Arg
    210                 215                 220

Gln Arg Ala Leu Leu Gln Ser Gln Pro Val Arg Arg Thr Pro Leu Leu
225                 230                 235                 240

His Asn Phe Leu His Met Leu Ser Ser Arg Ser Ser Gly Ile Gln Val
                245                 250                 255

Gly Glu Gln Ser Thr Val Gln Asp Ser Ala Thr Pro Ser Pro Pro Pro
            260                 265                 270

Pro Pro Pro Gln Pro Ser Thr Glu Arg Pro Arg Thr Ser Ala Tyr Ile
        275                 280                 285
```

```
Arg Leu Arg Gln Arg Val Ser Tyr Pro Thr Ala Glu Cys Cys Gln His
    290                 295                 300

Leu Gly Ile Leu Cys Leu Cys Ser Arg Cys Ser Gly Thr Arg Val Pro
305                 310                 315                 320

Ser Leu Leu Pro His Gln Asp Ser Val Pro Pro Ala Ser Ala Arg Ala
                325                 330                 335

Thr Thr Pro Ser Phe Ser Phe Val Gln Thr Glu Pro Phe His Pro Pro
            340                 345                 350

Glu Gln Ala Ser Ser Thr Gln Gln Asp Gln Gly Leu Leu Asn Arg Pro
        355                 360                 365

Ser Ala Phe Ser Thr Val Gln Ser Ser Thr Ala Gly Asn Thr Leu Arg
    370                 375                 380

Asn Leu Ser Leu Gly Pro Thr Arg Arg Ser Leu Gly Gly Pro Leu Ser
385                 390                 395                 400

Ser His Pro Ser Arg Tyr His Arg Glu Ile Ala Pro Gly Leu Thr Gly
                405                 410                 415

Ser Glu Trp Thr Arg Thr Val Leu Ser Leu Asn Ser Arg Ser Glu Ala
            420                 425                 430

Glu Ser Met Pro Pro Pro Arg Thr Ser Ala Ser Ser Val Ser Leu Leu
        435                 440                 445

Ser Val Leu Arg Gln Gln Glu Gly Gly Ser Gln Ala Ser Val Tyr Thr
    450                 455                 460

Ser Ala Thr Glu Gly Arg Gly Phe Pro Ala Ser Gly Leu Ala Thr Glu
465                 470                 475                 480

Ser Asp Gly Gly Asn Gly Ser Ser Gln Asn Asn Ser Gly Ser Ile Arg
                485                 490                 495

His Glu Leu Gln Cys Asp Leu Arg Arg Phe Phe Leu Glu Tyr Asp Arg
            500                 505                 510
```

```
Leu Gln Glu Leu Asp Gln Ser Leu Ser Gly Glu Ala Pro Gln Thr Gln
        515                 520                 525

Gln Ala Gln Glu Met Leu Asn Asn Asn Ile Glu Ser Glu Arg Pro Gly
    530                 535                 540

Pro Ser His Gln Pro Thr Pro His Ser Ser Glu Asn Asn Ser Asn Leu
545                 550                 555                 560

Ser Arg Gly His Leu Asn Arg Cys Arg Ala Cys His Asn Leu Leu Thr
                565                 570                 575

Phe Asn Asn Asp Thr Leu Arg Trp Glu Arg Thr Thr Pro Asn Tyr Ser
            580                 585                 590

Ser Gly Glu Ala Ser Ser Ser Trp Gln Val Pro Ser Ser Phe Glu Ser
        595                 600                 605

Val Pro Ser Ser Gly Ser Gln Leu Pro Pro Leu Glu Arg Thr Glu Gly
    610                 615                 620

Gln Thr Pro Ser Ser Ser Arg Leu Glu Leu Ser Ser Ser Ala Ser Pro
625                 630                 635                 640

Gln Glu Glu Arg Thr Val Gly Val Ala Phe Asn Gln Glu Thr Gly His
                645                 650                 655

Trp Glu Arg Ile Tyr Thr Gln Ser Ser Arg Ser Gly Thr Val Ser Gln
            660                 665                 670

Glu Ala Leu His Gln Asp Met Pro Glu Glu Ser Ser Glu Glu Asp Ser
        675                 680                 685

Leu Arg Arg Arg Leu Leu Glu Ser Ser Leu Ile Ser Leu Ser Arg Tyr
    690                 695                 700

Asp Gly Ala Gly Ser Arg Glu His Pro Ile Tyr Pro Asp Pro Ala Arg
705                 710                 715                 720

Asp Asn Gly Asp Arg Ser Arg His Arg Ala Pro Arg Asn Ala Arg Met
                725                 730                 735

Ser Ala Pro Ser Leu Gly Arg Phe Val Pro Arg Arg Phe Leu Leu Pro
```

740 745 750

Glu Tyr Leu Pro Tyr Ala Gly Ile Phe His Glu Arg Gly Gln Pro Gly
755 760 765

Leu Ala Thr His Ser Ser Val Asn Arg Val Leu Ala Gly Ala Val Ile
770 775 780

Gly Asp Gly Gln Ser Ala Val Ala Ser Asn Ile Ala Asn Thr Thr Tyr
785 790 795 800

Arg Leu Gln Trp Trp Asp Phe Thr Lys Phe Asp Leu Pro Glu Ile Ser
805 810 815

Asn Ala Ser Val Asn Val Leu Val Gln Asn Cys Lys Ile Tyr Asn Asp
820 825 830

Ala Ser Cys Asp Ile Ser Ala Asp Gly Gln Leu Leu Ala Ala Phe Ile
835 840 845

Pro Ser Ser Gln Arg Gly Phe Pro Asp Glu Gly Ile Leu Ala Val Tyr
850 855 860

Ser Leu Ala Pro His Asn Leu Gly Glu Met Leu Tyr Thr Lys Arg Phe
865 870 875 880

Gly Pro Asn Ala Ile Ser Val Ser Leu Ser Pro Met Gly Arg Tyr Val
885 890 895

Met Val Gly Leu Ala Ser Arg Arg Ile Leu Leu His Pro Ser Thr Glu
900 905 910

His Met Val Ala Gln Val Phe Arg Leu Gln Gln Ala His Gly Gly Glu
915 920 925

Thr Ser Met Arg Arg Val Phe Asn Val Leu Tyr Pro Met Pro Ala Asp
930 935 940

Gln Arg Arg His Val Ser Ile Asn Ser Ala Arg Trp Leu Pro Glu Pro
945 950 955 960

Gly Leu Gly Leu Ala Tyr Gly Thr Asn Lys Gly Asp Leu Val Ile Cys
965 970 975

```
Arg Pro Glu Ala Leu Asn Ser Gly Val Glu Tyr Tyr Trp Asp Gln Leu
            980                 985                 990

Asn Glu Thr Val Phe Thr Val His  Ser Asn Ser Arg Ser  Ser Glu
Arg
        995                1000                1005

Pro Gly  Thr Ser Arg Ala Thr  Trp Arg Thr Asp Arg  Asp Met Gly
    1010                1015                1020

Leu Met  Asn Ala Ile Gly Leu  Gln Pro Arg Asn Pro  Ala Thr Ser
    1025                1030                1035

Val Thr  Ser Gln Gly Thr Gln  Thr Leu Ala Leu Gln  Leu Gln Asn
    1040                1045                1050

Ala Glu  Thr Gln Thr Glu Arg  Glu Val Pro Glu Pro  Gly Thr Ala
    1055                1060                1065

Ala Ser  Gly Pro Gly Glu Gly  Glu Gly Ser Glu Tyr  Gly Ala Ser
    1070                1075                1080

Gly Glu  Asp Ala Leu Ser Arg  Ile Gln Arg Leu Met  Ala Glu Gly
    1085                1090                1095

Gly Met  Thr Ala Val Val Gln  Arg Glu Gln Ser Thr  Thr Met Ala
    1100                1105                1110

Ser Met  Gly Gly Phe Gly Asn  Asn Ile Ile Val Ser  His Arg Ile
    1115                1120                1125

His Arg  Ser Ser Gln Thr Gly  Thr Glu Pro Gly Ala  Ala His Thr
    1130                1135                1140

Ser Ser  Pro Gln Pro Ser Thr  Ser Arg Gly Leu Leu  Pro Glu Ala
    1145                1150                1155

Gly Gln  Leu Ala Glu Arg Gly  Leu Ser Pro Arg Thr  Ala Ser Trp
    1160                1165                1170

Asp Gln  Pro Gly Thr Pro Gly  Arg Glu Pro Thr Gln  Pro Thr Leu
    1175                1180                1185
```

```
Pro Ser  Ser Ser Pro Val Pro  Ile Pro Val Ser Leu  Pro Ser Ala
    1190                 1195                 1200


Glu Gly  Pro Thr Leu His Cys  Glu Leu Thr Asn Asn  Asn His Leu
    1205                 1210                 1215


Leu Asp  Gly Gly Ser Ser Arg  Gly Asp Ala Ala Gly  Pro Arg Gly
    1220                 1225                 1230


Glu Pro  Arg Asn Arg
    1235


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<220>
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<400> 8101
Met Lys Val Val Pro Glu Lys Asn Ala Val Arg Ile Leu Trp Gly Arg
1               5                  10                  15


Glu Arg Gly Ala Arg Ala Met Gly Ala Gln Arg Leu Leu Gln Glu Leu
            20                  25                  30


Val Glu Asp Lys Thr Arg Trp Met Lys Trp Glu Gly Lys Arg Val Glu
        35                  40                  45


Leu Pro Asp Ser Pro Arg Ser Thr Phe Leu Leu Ala Phe Ser Pro Asp
    50                  55                  60
```

```
Arg Thr Leu Leu Ala Ser Thr His Val Asn His Asn Ile Tyr Ile Thr
65                  70                  75                  80

Glu Val Lys Thr Gly Lys Cys Val His Ser Leu Ile Gly His Arg Arg
                85                  90                  95

Thr Pro Trp Cys Val Thr Phe His Pro Thr Ile Ser Gly Leu Ile Ala
            100                 105                 110

Ser Gly Cys Leu Asp Gly Glu Val Arg Ile Trp Asp Leu His Gly Gly
        115                 120                 125

Ser Glu Ser Trp Phe Thr Asp Ser Asn Asn Ala Ile Ala Ser Leu Ala
    130                 135                 140

Phe His Pro Thr Ala Gln Leu Leu Leu Ile Ala Thr Ala Asn Glu Ile
145                 150                 155                 160

His Phe Trp Asp Trp Ser Arg Arg Glu Pro Phe Ala Val Val Lys Thr
                165                 170                 175

Ala Ser Glu Met Glu Arg Val Arg Leu Val Arg Phe Asp Pro Leu Gly
            180                 185                 190

His Tyr Leu Leu Thr Ala Ile Val Asn Pro Ser Asn Gln Gln Gly Asp
        195                 200                 205

Asp Glu Pro Glu Ile Pro Ile Asp Gly Thr Glu Leu Ser His Tyr Arg
    210                 215                 220

Gln Arg Ala Leu Leu Gln Ser Gln Pro Val Arg Arg Thr Pro Leu Leu
225                 230                 235                 240

His Asn Phe Leu His Met Leu Ser Ser Arg Ser Ser Gly Ile Gln Thr
                245                 250                 255

Glu Pro Phe His Pro Pro Glu Gln Ala Ser Ser Thr Gln Gln Asp Gln
            260                 265                 270

Gly Leu Leu Asn Arg Pro Ser Ala Phe Ser Thr Val Gln Ser Ser Thr
        275                 280                 285

Ala Gly Asn Thr Leu Arg Asn Leu Ser Leu Gly Pro Thr Arg Arg Ser
```

290 295 300

Leu Gly Gly Pro Leu Ser Ser His Pro Ser Arg Tyr His Arg Glu Ile
305 310 315 320

Ala Pro Gly Leu Thr Gly Ser Glu Trp Thr Arg Thr Val Leu Ser Leu
325 330 335

Asn Ser Arg Ser Glu Ala Glu Ser Met Pro Pro Pro Arg Thr Ser Ala
340 345 350

Ser Ser Val Ser Leu Leu Ser Val Leu Arg Gln Gln Glu Gly Gly Ser
355 360 365

Gln Ala Ser Val Tyr Thr Ser Ala Thr Glu Gly Arg Gly Phe Pro Ala
370 375 380

Ser Gly Leu Ala Thr Glu Ser Asp Gly Gly Asn Gly Ser Ser Gln Asn
385 390 395 400

Asn Ser Gly Ser Ile Arg His Glu Leu Gln Cys Asp Leu Arg Arg Phe
405 410 415

Phe Leu Glu Tyr Asp Arg Leu Gln Glu Leu Asp Gln Ser Leu Ser Gly
420 425 430

Glu Ala Pro Gln Thr Gln Gln Ala Gln Glu Met Leu Asn Asn Asn Ile
435 440 445

Glu Ser Glu Arg Pro Gly Pro Ser His Gln Pro Thr Pro His Ser Ser
450 455 460

Glu Asn Asn Ser Asn Leu Ser Arg Gly His Leu Asn Arg Cys Arg Ala
465 470 475 480

Cys His Asn Leu Leu Thr Phe Asn Asn Asp Thr Leu Arg Trp Glu Arg
485 490 495

Thr Thr Pro Asn Tyr Ser Ser Gly Glu Ala Ser Ser Ser Trp Gln Val
500 505 510

Pro Ser Ser Phe Glu Ser Val Pro Ser Ser Gly Ser Gln Leu Pro Pro
515 520 525

```
Leu Glu Arg Thr Glu Gly Gln Thr Pro Ser Ser Ser Arg Leu Glu Leu
    530                 535                 540

Ser Ser Ser Ala Ser Pro Gln Glu Glu Arg Thr Val Gly Val Ala Phe
545                 550                 555                 560

Asn Gln Glu Thr Gly His Trp Glu Arg Ile Tyr Thr Gln Ser Ser Arg
                565                 570                 575

Ser Gly Thr Val Ser Gln Glu Ala Leu His Gln Asp Met Pro Glu Glu
            580                 585                 590

Ser Ser Glu Glu Asp Ser Leu Arg Arg Leu Ser Pro Ala Ala Tyr Tyr
        595                 600                 605

Ala Gln Arg Met Ile Gln Tyr Leu Ser Arg Arg Asp Ser Ile Arg Gln
    610                 615                 620

Arg Ser Met Arg Tyr Gln Gln Asn Arg Leu Arg Ser Ser Thr Ser Ser
625                 630                 635                 640

Ser Ser Ser Asp Asn Gln Gly Pro Ser Val Glu Gly Thr Asp Leu Glu
                645                 650                 655

Phe Glu Asp Phe Glu Asp Asn Gly Asp Arg Ser Arg His Arg Ala Pro
            660                 665                 670

Arg Asn Ala Arg Met Ser Ala Pro Ser Leu Gly Arg Phe Val Pro Arg
        675                 680                 685

Arg Phe Leu Leu Pro Glu Tyr Leu Pro Tyr Ala Gly Ile Phe His Glu
    690                 695                 700

Arg Gly Gln Pro Gly Leu Ala Thr His Ser Ser Val Asn Arg Val Leu
705                 710                 715                 720

Ala Gly Ala Val Ile Gly Asp Gly Gln Ser Ala Val Ala Ser Asn Ile
                725                 730                 735

Ala Asn Thr Thr Tyr Arg Leu Gln Trp Trp Asp Phe Thr Lys Phe Asp
            740                 745                 750
```

```
Leu Pro Glu Ile Ser Asn Ala Ser Val Asn Val Leu Val Gln Asn Cys
        755                 760                 765

Lys Ile Tyr Asn Asp Ala Ser Cys Asp Ile Ser Ala Asp Gly Gln Leu
    770                 775                 780

Leu Ala Ala Phe Ile Pro Ser Ser Gln Arg Gly Phe Pro Asp Glu Gly
785                 790                 795                 800

Ile Leu Ala Val Tyr Ser Leu Ala Pro His Asn Leu Gly Glu Met Leu
                805                 810                 815

Tyr Thr Lys Arg Phe Gly Pro Asn Ala Ile Ser Val Ser Leu Ser Pro
            820                 825                 830

Met Gly Arg Tyr Val Met Val Gly Leu Ala Ser Arg Arg Ile Leu Leu
        835                 840                 845

His Pro Ser Thr Glu His Met Val Ala Gln Val Phe Arg Leu Gln Gln
    850                 855                 860

Ala His Gly Gly Glu Thr Ser Met Arg Arg Val Phe Asn Val Leu Tyr
865                 870                 875                 880

Pro Met Pro Ala Asp Gln Arg Arg His Val Ser Ile Asn Ser Ala Arg
                885                 890                 895

Trp Leu Pro Glu Pro Gly Leu Gly Leu Ala Tyr Gly Thr Asn Lys Gly
            900                 905                 910

Asp Leu Val Ile Cys Arg Pro Glu Ala Leu Asn Ser Gly Val Glu Tyr
        915                 920                 925

Tyr Trp Asp Gln Leu Asn Glu Thr Val Phe Thr Val His Ser Asn Ser
    930                 935                 940

Arg Ser Ser Glu Arg Pro Gly Thr Ser Arg Ala Thr Trp Arg Thr Asp
945                 950                 955                 960

Arg Asp Met Gly Leu Met Asn Ala Ile Gly Leu Gln Pro Arg Asn Pro
                965                 970                 975
```

```
Ala Thr Ser Val Thr Ser Gln Gly Thr Gln Thr Leu Ala Leu Gln Leu
            980                 985                 990

Gln Asn Ala Glu Thr Gln Thr Glu  Arg Glu Val Pro Glu  Pro Gly
Thr
        995                1000                1005

Ala Ala  Ser Gly Pro Gly Glu  Gly Glu Gly Ser Glu  Tyr Gly Ala
    1010                1015                1020

Ser Gly  Glu Asp Ala Leu Ser  Arg Ile Gln Arg Leu  Met Ala Glu
    1025                1030                1035

Gly Gly  Met Thr Ala Val Val  Gln Arg Glu Gln Ser  Thr Thr Met
    1040                1045                1050

Ala Ser  Met Gly Gly Phe Gly  Asn Asn Ile Ile Val  Ser His Arg
    1055                1060                1065

Ile His  Arg Ser Ser Gln Thr  Gly Thr Glu Pro Gly  Ala Ala His
    1070                1075                1080

Thr Ser  Ser Pro Gln Pro Ser  Thr Ser Arg Gly Leu  Leu Pro Glu
    1085                1090                1095

Ala Gly  Gln Leu Ala Glu Arg  Gly Leu Ser Pro Arg  Thr Ala Ser
    1100                1105                1110

Trp Asp  Gln Pro Gly Thr Pro  Gly Arg Glu Pro Thr  Gln Pro Thr
    1115                1120                1125

Leu Pro  Ser Ser Ser Pro Val  Pro Ile Pro Val Ser  Leu Pro Ser
    1130                1135                1140

Ala Glu  Gly Pro Thr Leu His  Cys Glu Leu Thr Asn  Asn Asn His
    1145                1150                1155

Leu Leu  Asp Gly Gly Ser Ser  Arg Gly Asp Ala Ala  Gly Pro Arg
    1160                1165                1170

Gly Glu  Pro Arg Asn Arg
    1175
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<210> 8102
<211> 1269
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AMBRA1; "

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<223> /note="Gene Name:
autophagy/beclin-1 regulator 1; "

<220>
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<223> /note="Uniprot ID: Q9C0C7; "

<220>
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<400> 8102
Met Lys Val Val Pro Glu Lys Asn Ala Val Arg Ile Leu Trp Gly Arg
1   5   10   15

Glu Arg Gly Ala Arg Ala Met Gly Ala Gln Arg Leu Leu Gln Glu Leu
            20   25   30

Val Glu Asp Lys Thr Arg Trp Met Lys Trp Glu Gly Lys Arg Val Glu
        35   40   45

Leu Pro Asp Ser Pro Arg Ser Thr Phe Leu Leu Ala Phe Ser Pro Asp
    50   55   60

Arg Thr Leu Leu Ala Ser Thr His Val Asn His Asn Ile Tyr Ile Thr
65   70   75   80

Glu Val Lys Thr Gly Lys Cys Val His Ser Leu Ile Gly His Arg Arg
                85   90   95

Thr Pro Trp Cys Val Thr Phe His Pro Thr Ile Ser Gly Leu Ile Ala
            100   105   110

Ser Gly Cys Leu Asp Gly Glu Val Arg Ile Trp Asp Leu His Gly Gly
        115   120   125

```
Ser Glu Ser Trp Phe Thr Asp Ser Asn Asn Ala Ile Ala Ser Leu Ala
    130                 135                 140

Phe His Pro Thr Ala Gln Leu Leu Leu Ile Ala Thr Ala Asn Glu Ile
145                 150                 155                 160

His Phe Trp Asp Trp Ser Arg Arg Glu Pro Phe Ala Val Val Lys Thr
                165                 170                 175

Ala Ser Glu Met Glu Arg Val Arg Leu Val Arg Phe Asp Pro Leu Gly
            180                 185                 190

His Tyr Leu Leu Thr Ala Ile Val Asn Pro Ser Asn Gln Gln Gly Asp
        195                 200                 205

Asp Glu Pro Glu Ile Pro Ile Asp Gly Thr Glu Leu Ser His Tyr Arg
    210                 215                 220

Gln Arg Ala Leu Leu Gln Ser Gln Pro Val Arg Arg Thr Pro Leu Leu
225                 230                 235                 240

His Asn Phe Leu His Met Leu Ser Ser Arg Ser Ser Gly Ile Gln Val
                245                 250                 255

Gly Glu Gln Ser Thr Val Gln Asp Ser Ala Thr Pro Ser Pro Pro Pro
            260                 265                 270

Pro Pro Pro Gln Pro Ser Thr Glu Arg Pro Arg Thr Ser Ala Tyr Ile
        275                 280                 285

Arg Leu Arg Gln Arg Val Ser Tyr Pro Thr Ala Glu Cys Cys Gln His
    290                 295                 300

Leu Gly Ile Leu Cys Leu Cys Ser Arg Cys Ser Gly Thr Arg Val Pro
305                 310                 315                 320

Ser Leu Leu Pro His Gln Asp Ser Val Pro Pro Ala Ser Ala Arg Ala
                325                 330                 335

Thr Thr Pro Ser Phe Ser Phe Val Gln Thr Glu Pro Phe His Pro Pro
            340                 345                 350
```

```
Glu Gln Ala Ser Ser Thr Gln Gln Asp Gln Gly Leu Leu Asn Arg Pro
        355                 360                 365

Ser Ala Phe Ser Thr Val Gln Ser Ser Thr Ala Gly Asn Thr Leu Arg
    370                 375                 380

Asn Leu Ser Leu Gly Pro Thr Arg Arg Ser Leu Gly Gly Pro Leu Ser
385                 390                 395                 400

Ser His Pro Ser Arg Tyr His Arg Glu Ile Ala Pro Gly Leu Thr Gly
                405                 410                 415

Ser Glu Trp Thr Arg Thr Val Leu Ser Leu Asn Ser Arg Ser Glu Ala
            420                 425                 430

Glu Ser Met Pro Pro Pro Arg Thr Ser Ala Ser Ser Val Ser Leu Leu
        435                 440                 445

Ser Val Leu Arg Gln Gln Glu Gly Gly Ser Gln Ala Ser Val Tyr Thr
    450                 455                 460

Ser Ala Thr Glu Gly Arg Gly Phe Pro Ala Ser Gly Leu Ala Thr Glu
465                 470                 475                 480

Ser Asp Gly Gly Asn Gly Ser Ser Gln Asn Asn Ser Gly Ser Ile Arg
                485                 490                 495

His Glu Leu Gln Cys Asp Leu Arg Arg Phe Phe Leu Glu Tyr Asp Arg
            500                 505                 510

Leu Gln Glu Leu Asp Gln Ser Leu Ser Gly Glu Ala Pro Gln Thr Gln
        515                 520                 525

Gln Ala Gln Glu Met Leu Asn Asn Asn Ile Glu Ser Glu Arg Pro Gly
    530                 535                 540

Pro Ser His Gln Pro Thr Pro His Ser Ser Glu Asn Asn Ser Asn Leu
545                 550                 555                 560

Ser Arg Gly His Leu Asn Arg Cys Arg Ala Cys His Asn Leu Leu Thr
                565                 570                 575
```

```
Phe Asn Asn Asp Thr Leu Arg Trp Glu Arg Thr Thr Pro Asn Tyr Ser
            580                 585                 590

Ser Gly Glu Ala Ser Ser Ser Trp Gln Val Pro Ser Ser Phe Glu Ser
        595                 600                 605

Val Pro Ser Ser Gly Ser Gln Leu Pro Pro Leu Glu Arg Thr Glu Gly
    610                 615                 620

Gln Thr Pro Ser Ser Ser Arg Leu Glu Leu Ser Ser Ser Ala Ser Pro
625                 630                 635                 640

Gln Glu Glu Arg Thr Val Gly Val Ala Phe Asn Gln Glu Thr Gly His
                645                 650                 655

Trp Glu Arg Ile Tyr Thr Gln Ser Ser Arg Ser Gly Thr Val Ser Gln
            660                 665                 670

Glu Ala Leu His Gln Asp Met Pro Glu Glu Ser Ser Glu Glu Asp Ser
        675                 680                 685

Leu Arg Arg Leu Ser Pro Ala Ala Tyr Tyr Ala Gln Arg Met Ile Gln
    690                 695                 700

Tyr Leu Ser Arg Arg Asp Ser Ile Arg Gln Arg Ser Met Arg Tyr Gln
705                 710                 715                 720

Gln Asn Arg Leu Arg Ser Ser Thr Ser Ser Ser Ser Ser Asp Asn Gln
                725                 730                 735

Gly Pro Ser Val Glu Gly Thr Asp Leu Glu Phe Glu Asp Phe Glu Asp
            740                 745                 750

Asn Gly Asp Arg Ser Arg His Arg Ala Pro Arg Asn Ala Arg Met Ser
        755                 760                 765

Ala Pro Ser Leu Gly Arg Phe Val Pro Arg Arg Phe Leu Leu Pro Glu
    770                 775                 780

Tyr Leu Pro Tyr Ala Gly Ile Phe His Glu Arg Gly Gln Pro Gly Leu
785                 790                 795                 800

Ala Thr His Ser Ser Val Asn Arg Val Leu Ala Gly Ala Val Ile Gly
```

```
                805                 810                 815

Asp Gly Gln Ser Ala Val Ala Ser Asn Ile Ala Asn Thr Thr Tyr Arg
            820                 825                 830

Leu Gln Trp Trp Asp Phe Thr Lys Phe Asp Leu Pro Glu Ile Ser Asn
        835                 840                 845

Ala Ser Val Asn Val Leu Val Gln Asn Cys Lys Ile Tyr Asn Asp Ala
    850                 855                 860

Ser Cys Asp Ile Ser Ala Asp Gly Gln Leu Leu Ala Ala Phe Ile Pro
865                 870                 875                 880

Ser Ser Gln Arg Gly Phe Pro Asp Glu Gly Ile Leu Ala Val Tyr Ser
                885                 890                 895

Leu Ala Pro His Asn Leu Gly Glu Met Leu Tyr Thr Lys Arg Phe Gly
            900                 905                 910

Pro Asn Ala Ile Ser Val Ser Leu Ser Pro Met Gly Arg Tyr Val Met
        915                 920                 925

Val Gly Leu Ala Ser Arg Arg Ile Leu Leu His Pro Ser Thr Glu His
    930                 935                 940

Met Val Ala Gln Val Phe Arg Leu Gln Gln Ala His Gly Gly Glu Thr
945                 950                 955                 960

Ser Met Arg Arg Val Phe Asn Val Leu Tyr Pro Met Pro Ala Asp Gln
                965                 970                 975

Arg Arg His Val Ser Ile Asn Ser Ala Arg Trp Leu Pro Glu Pro Gly
            980                 985                 990

Leu Gly Leu Ala Tyr Gly Thr Asn  Lys Gly Asp Leu Val  Ile Cys
Arg
        995                 1000                1005

Pro Glu  Ala Leu Asn Ser Gly  Val Glu Tyr Tyr Trp  Asp Gln Leu
    1010                1015                1020

Asn Glu  Thr Val Phe Thr Val  His Ser Asn Ser Arg  Ser Ser Glu
```

1025 1030 1035

Arg Pro Gly Thr Ser Arg Ala Thr Trp Arg Thr Asp Arg Asp Met
1040 1045 1050

Gly Leu Met Asn Ala Ile Gly Leu Gln Pro Arg Asn Pro Ala Thr
1055 1060 1065

Ser Val Thr Ser Gln Gly Thr Gln Thr Leu Ala Leu Gln Leu Gln
1070 1075 1080

Asn Ala Glu Thr Gln Thr Glu Arg Glu Val Pro Glu Pro Gly Thr
1085 1090 1095

Ala Ala Ser Gly Pro Gly Glu Gly Glu Gly Ser Glu Tyr Gly Ala
1100 1105 1110

Ser Gly Glu Asp Ala Leu Ser Arg Ile Gln Arg Leu Met Ala Glu
1115 1120 1125

Gly Gly Met Thr Ala Val Val Gln Arg Glu Gln Ser Thr Thr Met
1130 1135 1140

Ala Ser Met Gly Gly Phe Gly Asn Asn Ile Ile Val Ser His Arg
1145 1150 1155

Ile His Arg Ser Ser Gln Thr Gly Thr Glu Pro Gly Ala Ala His
1160 1165 1170

Thr Ser Ser Pro Gln Pro Ser Thr Ser Arg Gly Leu Leu Pro Glu
1175 1180 1185

Ala Gly Gln Leu Ala Glu Arg Gly Leu Ser Pro Arg Thr Ala Ser
1190 1195 1200

Trp Asp Gln Pro Gly Thr Pro Gly Arg Glu Pro Thr Gln Pro Thr
1205 1210 1215

Leu Pro Ser Ser Ser Pro Val Pro Ile Pro Val Ser Leu Pro Ser
1220 1225 1230

Ala Glu Gly Pro Thr Leu His Cys Glu Leu Thr Asn Asn Asn His
1235 1240 1245

Leu Leu Asp Gly Gly Ser Ser Arg Gly Asp Ala Ala Gly Pro Arg
1250 1255 1260

Gly Glu Pro Arg Asn Arg
1265

<210> 8103
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<220>
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<220>
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autophagy/beclin-1 regulator 1; "

<220>
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<400> 8103
Asn Ser Ala Arg Trp Leu Pro Glu Pro Gly Leu Gly Leu Ala Tyr Gly
1 5 10 15

Thr Asn Lys Gly Asp Leu Val Ile Cys Arg Pro Glu Thr Ser Arg Ala
20 25 30

Thr Trp Arg Thr Asp Arg Asp Met Gly Leu Met Asn Ala Ile Gly Leu
35 40 45

Gln Pro Arg Asn Pro Ala Thr Ser Val Thr Ser Gln Gly Thr Gln Thr
50 55 60

Leu Ala Leu Gln Leu Gln Asn Ala Glu Thr Gln Thr Glu Arg Glu Val
65 70 75 80

Pro Glu Pro Gly Thr Ala Ala Ser Gly Pro Gly Glu Gly Glu Gly Ser
85 90 95

```
Glu Tyr Gly Ala Ser Gly Glu Asp Ala Leu Ser Arg Ile Gln Arg Leu
            100                 105                 110

Met Ala Glu Gly Gly Met Thr Ala Val Val Gln Arg Glu Gln Ser Thr
        115                 120                 125

Thr Met Ala Ser Met Gly Gly Phe Gly Asn Asn Ile Ile Val Ser His
    130                 135                 140

Arg Ile His Arg Ser Ser Gln Thr Gly Thr Glu Pro Gly Ala Ala His
145                 150                 155                 160

Thr Ser Ser Pro Gln Pro Ser Thr Ser Arg Gly Leu Leu Pro Glu Ala
                165                 170                 175

Gly Gln Leu Ala Glu Arg Gly Leu Ser Pro Arg Thr Ala Ser Trp Asp
            180                 185                 190

Gln Pro Gly Thr Pro Gly Arg Glu Pro Thr Gln Pro Thr Leu Pro Ser
        195                 200                 205

Ser Ser Pro Val Pro Ile Pro Val Ser Leu Pro Ser Ala Glu Gly Pro
    210                 215                 220

Thr Leu His Cys Glu Leu Thr Asn Asn Asn His Leu Leu Asp Gly Gly
225                 230                 235                 240

Ser Ser Arg Gly Asp Ala Ala Gly Pro Arg Gly Glu Pro Arg Asn Arg
                245                 250                 255


<210> 8104
<211> 648
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1681; "

<220>
<221> source
<223> /note="Gene Symbol: AVL9; "

<220>
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<223> /note="Gene Name:
      AVL9 homolog (S. cerevisiase); "
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<220>
<221> source
<223> /note="Uniprot ID: Q8NBF6; "

<220>
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<223> /note="ENSP ID: ENSP00000315568"

<400> 8104
Met Glu Lys Ala Arg Arg Gly Gly Asp Gly Val Pro Arg Gly Pro Val
1   5   10   15

Leu His Ile Val Val Val Gly Phe His His Lys Lys Gly Cys Gln Val
            20   25   30

Glu Phe Ser Tyr Pro Pro Leu Ile Pro Gly Asp Gly His Asp Ser His
        35   40   45

Thr Leu Pro Glu Glu Trp Lys Tyr Leu Pro Phe Leu Ala Leu Pro Asp
    50   55   60

Gly Ala His Asn Tyr Gln Glu Asp Thr Val Phe Phe His Leu Pro Pro
65   70   75   80

Arg Asn Gly Asn Gly Ala Thr Val Phe Gly Ile Ser Cys Tyr Arg Gln
                85   90   95

Ile Glu Ala Lys Ala Leu Lys Val Arg Gln Ala Asp Ile Thr Arg Glu
            100   105   110

Thr Val Gln Lys Ser Val Cys Val Leu Ser Lys Leu Pro Leu Tyr Gly
        115   120   125

Leu Leu Gln Ala Lys Leu Gln Leu Ile Thr His Ala Tyr Phe Glu Glu
    130   135   140

Lys Asp Phe Ser Gln Ile Ser Ile Leu Lys Glu Leu Tyr Glu His Met
145   150   155   160

Asn Ser Ser Leu Gly Gly Ala Ser Leu Glu Gly Ser Gln Val Tyr Leu
                165   170   175

Gly Leu Ser Pro Arg Asp Leu Val Leu His Phe Arg His Lys Val Leu
            180   185   190

```
Ile Leu Phe Lys Leu Ile Leu Leu Glu Lys Lys Val Leu Phe Tyr Ile
        195                 200                 205

Ser Pro Val Asn Lys Leu Val Gly Ala Leu Met Thr Val Leu Ser Leu
    210                 215                 220

Phe Pro Gly Met Ile Glu His Gly Leu Ser Asp Cys Ser Gln Tyr Arg
225                 230                 235                 240

Pro Arg Lys Ser Met Ser Glu Asp Gly Gly Leu Gln Glu Ser Asn Pro
                245                 250                 255

Cys Ala Asp Asp Phe Val Ser Ala Ser Thr Ala Asp Val Ser His Thr
            260                 265                 270

Asn Leu Gly Thr Ile Arg Lys Val Met Ala Gly Asn His Gly Glu Asp
        275                 280                 285

Ala Ala Met Lys Thr Glu Glu Pro Leu Phe Gln Val Glu Asp Ser Ser
    290                 295                 300

Lys Gly Gln Glu Pro Asn Asp Thr Asn Gln Tyr Leu Lys Pro Pro Ser
305                 310                 315                 320

Arg Pro Ser Pro Asp Ser Ser Glu Ser Asp Trp Glu Thr Leu Asp Pro
                325                 330                 335

Ser Val Leu Glu Asp Pro Asn Leu Lys Glu Arg Glu Gln Leu Gly Ser
            340                 345                 350

Asp Gln Thr Asn Leu Phe Pro Lys Asp Ser Val Pro Ser Glu Ser Leu
        355                 360                 365

Pro Ile Thr Val Gln Pro Gln Ala Asn Thr Gly Gln Val Val Leu Ile
    370                 375                 380

Pro Gly Leu Ile Ser Gly Leu Glu Glu Asp Gln Tyr Gly Met Pro Leu
385                 390                 395                 400

Ala Ile Phe Thr Lys Gly Tyr Leu Cys Leu Pro Tyr Met Ala Leu Gln
                405                 410                 415
```

```
Gln His His Leu Leu Ser Asp Val Thr Val Arg Gly Phe Val Ala Gly
            420                 425                 430

Ala Thr Asn Ile Leu Phe Arg Gln Gln Lys His Leu Ser Asp Ala Ile
        435                 440                 445

Val Glu Val Glu Glu Ala Leu Ile Gln Ile His Asp Pro Glu Leu Arg
    450                 455                 460

Lys Leu Leu Asn Pro Thr Thr Ala Asp Leu Arg Phe Ala Asp Tyr Leu
465                 470                 475                 480

Val Arg His Val Thr Glu Asn Arg Asp Asp Val Phe Leu Asp Gly Thr
                485                 490                 495

Gly Trp Glu Gly Gly Asp Glu Trp Ile Arg Ala Gln Phe Ala Val Tyr
            500                 505                 510

Ile His Ala Leu Leu Ala Ala Thr Leu Gln Leu Asp Asn Glu Lys Ile
        515                 520                 525

Leu Ser Asp Tyr Gly Thr Thr Phe Val Thr Ala Trp Lys Asn Thr His
    530                 535                 540

Asn Tyr Arg Val Trp Asn Ser Asn Lys His Pro Ala Leu Ala Glu Ile
545                 550                 555                 560

Asn Pro Asn His Pro Phe Gln Gly Gln Tyr Ser Val Ser Asp Met Lys
                565                 570                 575

Leu Arg Phe Ser His Ser Val Gln Asn Ser Glu Arg Gly Lys Lys Ile
            580                 585                 590

Gly Asn Val Met Val Thr Thr Ser Arg Asn Val Val Gln Thr Gly Lys
        595                 600                 605

Ala Val Gly Gln Ser Val Gly Gly Ala Phe Ser Ser Ala Lys Thr Ala
    610                 615                 620

Met Ser Ser Trp Leu Ser Thr Phe Thr Thr Ser Thr Ser Gln Ser Leu
625                 630                 635                 640

Thr Glu Pro Pro Asp Glu Lys Pro
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645

<210> 8105
<211> 630
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: AVL9; "

<220>
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<223> /note="Gene Name:
AVL9 homolog (S. cerevisiase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387011"

<400> 8105
Met Glu Lys Ala Arg Arg Gly Gly Asp Gly Val Pro Arg Gly Pro Val
1 5 10 15

Leu His Ile Val Val Val Gly Phe His His Lys Lys Gly Cys Gln Val
20 25 30

Glu Phe Ser Tyr Pro Pro Leu Ile Pro Gly Asp Gly His Asp Ser His
35 40 45

Thr Leu Pro Glu Glu Trp Lys Tyr Leu Pro Phe Leu Ala Leu Pro Asp
50 55 60

Gly Ala His Asn Tyr Gln Glu Asp Thr Val Phe Phe His Leu Pro Pro
65 70 75 80

Arg Asn Gly Asn Gly Ala Thr Val Phe Gly Ile Ser Cys Tyr Arg Gln
85 90 95

Ile Glu Ala Lys Ala Leu Lys Val Arg Gln Ala Asp Ile Thr Arg Glu
100 105 110

Thr Val Gln Lys Ser Val Cys Val Leu Ser Lys Leu Pro Leu Tyr Gly
115 120 125

```
Leu Leu Gln Ala Lys Leu Gln Leu Ile Thr His Ala Tyr Phe Glu Glu
    130                 135                 140

Lys Asp Phe Ser Gln Ile Ser Ile Leu Lys Glu Leu Tyr Glu His Met
145                 150                 155                 160

Asn Ser Ser Leu Gly Gly Ala Ser Leu Glu Gly Ser Gln Val Tyr Leu
                165                 170                 175

Gly Leu Ser Pro Arg Asp Leu Val Leu His Phe Arg His Lys Val Leu
            180                 185                 190

Ile Leu Phe Lys Leu Ile Leu Leu Glu Lys Lys Val Leu Phe Tyr Ile
        195                 200                 205

Ser Pro Val Asn Lys Leu Val Gly Ala Leu Met Thr Val Leu Ser Leu
    210                 215                 220

Phe Pro Gly Met Ile Glu His Gly Leu Ser Asp Cys Ser Gln Tyr Arg
225                 230                 235                 240

Pro Arg Lys Ser Met Ser Glu Asp Gly Gly Leu Gln Glu Ser Asn Pro
                245                 250                 255

Cys Ala Asp Asp Phe Val Ser Ala Ser Thr Ala Asp Val Ser His Thr
            260                 265                 270

Asn Leu Gly Thr Ile Arg Lys Val Met Ala Gly Asn His Gly Glu Asp
        275                 280                 285

Ala Ala Met Lys Thr Glu Glu Pro Leu Phe Gln Val Glu Asp Ser Ser
    290                 295                 300

Lys Gly Gln Glu Pro Asn Asp Thr Asn Gln Tyr Leu Lys Pro Pro Ser
305                 310                 315                 320

Arg Pro Ser Pro Asp Ser Ser Glu Ser Asp Trp Glu Thr Leu Asp Pro
                325                 330                 335

Ser Val Leu Glu Asp Pro Asn Leu Lys Glu Arg Glu Gln Leu Gly Ser
            340                 345                 350
```

```
Asp Gln Thr Asn Leu Phe Pro Lys Asp Ser Val Pro Ser Glu Ser Leu
        355                 360                 365

Pro Ile Thr Val Gln Pro Gln Ala Asn Thr Gly Gln Val Val Leu Ile
    370                 375                 380

Pro Gly Leu Ile Ser Gly Leu Glu Glu Asp Gln Tyr Gly Met Pro Leu
385                 390                 395                 400

Ala Ile Phe Thr Lys Gly Tyr Leu Cys Leu Pro Tyr Met Ala Leu Gln
                405                 410                 415

Gln His His Leu Leu Ser Asp Val Thr Val Arg Gly Phe Val Ala Gly
            420                 425                 430

Ala Thr Asn Ile Leu Phe Arg Gln Gln Lys His Leu Ser Asp Ala Ile
        435                 440                 445

Val Glu Val Glu Glu Ala Leu Ile Gln Ile His Asp Pro Glu Leu Arg
    450                 455                 460

Lys Leu Leu Asn Pro Thr Thr Ala Asp Leu Arg Phe Ala Asp Tyr Leu
465                 470                 475                 480

Val Arg His Val Thr Glu Asn Arg Asp Asp Val Phe Leu Asp Gly Thr
                485                 490                 495

Gly Trp Glu Gly Gly Asp Glu Trp Ile Arg Ala Gln Phe Ala Val Tyr
            500                 505                 510

Ile His Ala Leu Leu Ala Ala Thr Leu Gln Leu Asp Asn Glu Lys Ile
        515                 520                 525

Leu Ser Asp Tyr Gly Thr Thr Phe Val Thr Ala Trp Lys Asn Thr His
    530                 535                 540

Asn Tyr Arg Val Trp Asn Ser Asn Lys His Pro Ala Leu Ala Glu Ile
545                 550                 555                 560

Asn Pro Asn Ser Val Gln Asn Ser Glu Arg Gly Lys Lys Ile Gly Asn
                565                 570                 575

Val Met Val Thr Thr Ser Arg Asn Val Val Gln Thr Gly Lys Ala Val
```

580 585 590

Gly Gln Ser Val Gly Gly Ala Phe Ser Ser Ala Lys Thr Ala Met Ser
595 600 605

Ser Trp Leu Ser Thr Phe Thr Thr Ser Thr Ser Gln Ser Leu Thr Glu
610 615 620

Pro Pro Asp Glu Lys Pro
625 630

<210> 8106
<211> 568
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
AVL9 homolog (S. cerevisiase); "

<220>
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<223> /note="ENSP ID: ENSP00000395134"

<400> 8106
Gln Glu Asp Thr Val Phe Phe His Leu Pro Pro Arg Asn Gly Asn Gly
1 5 10 15

Ala Thr Val Phe Gly Ile Ser Cys Tyr Arg Gln Ile Glu Ala Lys Ala
20 25 30

Leu Lys Val Arg Gln Ala Asp Ile Thr Arg Glu Thr Val Gln Lys Ser
35 40 45

Val Cys Val Leu Ser Lys Leu Pro Leu Tyr Gly Leu Leu Gln Ala Lys
50 55 60

Leu Gln Leu Ile Thr His Ala Tyr Phe Glu Glu Lys Asp Phe Ser Gln
65 70 75 80

```
Ile Ser Ile Leu Lys Glu Leu Tyr Glu His Met Asn Ser Ser Leu Gly
                85                  90                  95

Gly Ala Ser Leu Glu Gly Ser Gln Val Tyr Leu Gly Leu Ser Pro Arg
            100                 105                 110

Asp Leu Val Leu His Phe Arg His Lys Val Leu Ile Leu Phe Lys Leu
        115                 120                 125

Ile Leu Leu Glu Lys Lys Val Leu Phe Tyr Ile Ser Pro Val Asn Lys
    130                 135                 140

Leu Val Gly Ala Leu Met Thr Val Leu Ser Leu Phe Pro Gly Met Ile
145                 150                 155                 160

Glu His Gly Leu Ser Asp Cys Ser Gln Tyr Arg Pro Arg Lys Ser Met
                165                 170                 175

Ser Glu Asp Gly Gly Leu Gln Glu Ser Asn Pro Cys Ala Asp Asp Phe
            180                 185                 190

Val Ser Ala Ser Thr Ala Asp Val Ser His Thr Asn Leu Gly Thr Ile
        195                 200                 205

Arg Lys Val Met Ala Gly Asn His Gly Glu Asp Ala Ala Met Lys Thr
    210                 215                 220

Glu Glu Pro Leu Phe Gln Val Glu Asp Ser Ser Lys Gly Gln Glu Pro
225                 230                 235                 240

Asn Asp Thr Asn Gln Tyr Leu Lys Pro Pro Ser Arg Pro Ser Pro Asp
                245                 250                 255

Ser Ser Glu Ser Asp Trp Glu Thr Leu Asp Pro Ser Val Leu Glu Asp
            260                 265                 270

Pro Asn Leu Lys Glu Arg Glu Gln Leu Gly Ser Asp Gln Thr Asn Leu
        275                 280                 285

Phe Pro Lys Asp Ser Val Pro Ser Glu Ser Leu Pro Ile Thr Val Gln
    290                 295                 300
```

```
Pro Gln Ala Asn Thr Gly Gln Val Val Leu Ile Pro Gly Leu Ile Ser
305                 310                 315                 320

Gly Leu Glu Glu Asp Gln Tyr Gly Met Pro Leu Ala Ile Phe Thr Lys
                325                 330                 335

Gly Tyr Leu Cys Leu Pro Tyr Met Ala Leu Gln Gln His His Leu Leu
            340                 345                 350

Ser Asp Val Thr Val Arg Gly Phe Val Ala Gly Ala Thr Asn Ile Leu
        355                 360                 365

Phe Arg Gln Gln Lys His Leu Ser Asp Ala Ile Val Glu Val Glu Glu
    370                 375                 380

Ala Leu Ile Gln Ile His Asp Pro Glu Leu Arg Lys Leu Leu Asn Pro
385                 390                 395                 400

Thr Thr Ala Asp Leu Arg Phe Ala Asp Tyr Leu Val Arg His Val Thr
                405                 410                 415

Glu Asn Arg Asp Asp Val Phe Leu Asp Gly Thr Gly Trp Glu Gly Gly
            420                 425                 430

Asp Glu Trp Ile Arg Ala Gln Phe Ala Val Tyr Ile His Ala Leu Leu
        435                 440                 445

Ala Ala Thr Leu Gln Leu Val Leu Phe Arg Ile Val Asn Val Ala Lys
    450                 455                 460

Lys Leu Glu Thr Ser Trp Ser Gln Leu Ala Gly Met Leu Tyr Lys Gln
465                 470                 475                 480

Glu Lys Leu Leu Ala Ser Gln Leu Glu Glu Leu Phe Pro Val Gln Arg
                485                 490                 495

Gln Leu Cys Leu His Gly Phe Pro Leu Ser Pro Leu Pro Pro Pro Lys
            500                 505                 510

Val Ser Leu Ser His Gln Met Arg Ser Leu Glu Gln Gly Val Arg Gly
        515                 520                 525

Cys Tyr Cys Phe Leu Arg Phe Lys Cys Pro Leu Ser Val Cys Cys Ser
```

```
    530                 535                 540

Gln Ala Val Thr Ser His Arg Ser Thr Ala Gly Asp His Met Ser Asn
545                 550                 555                 560

Cys Leu His Gly Cys Cys Ser Lys
                565
```

<210> 8107
<211> 862
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1682; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN1; "

<220>
<221> source
<223> /note="Gene Name:
axin 1; "

<220>
<221> source
<223> /note="Uniprot ID: O15169; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262320"

<400> 8107

```
Met Asn Ile Gln Glu Gln Gly Phe Pro Leu Asp Leu Gly Ala Ser Phe
1               5                   10                  15

Thr Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu Leu
            20                  25                  30

Val Ser Thr Asp Pro Arg Pro Ala Ser Tyr Ser Phe Cys Ser Gly Lys
        35                  40                  45

Gly Val Gly Ile Lys Gly Glu Thr Ser Thr Ala Thr Pro Arg Arg Ser
    50                  55                  60

Asp Leu Asp Leu Gly Tyr Glu Pro Glu Gly Ser Ala Ser Pro Thr Pro
65                  70                  75                  80
```

```
Pro Tyr Leu Lys Trp Ala Glu Ser Leu His Ser Leu Leu Asp Asp Gln
                85                  90                  95

Asp Gly Ile Ser Leu Phe Arg Thr Phe Leu Lys Gln Glu Gly Cys Ala
            100                 105                 110

Asp Leu Leu Asp Phe Trp Phe Ala Cys Thr Gly Phe Arg Lys Leu Glu
        115                 120                 125

Pro Cys Asp Ser Asn Glu Glu Lys Arg Leu Lys Leu Ala Arg Ala Ile
    130                 135                 140

Tyr Arg Lys Tyr Ile Leu Asp Asn Asn Gly Ile Val Ser Arg Gln Thr
145                 150                 155                 160

Lys Pro Ala Thr Lys Ser Phe Ile Lys Gly Cys Ile Met Lys Gln Leu
                165                 170                 175

Ile Asp Pro Ala Met Phe Asp Gln Ala Gln Thr Glu Ile Gln Ala Thr
            180                 185                 190

Met Glu Glu Asn Thr Tyr Pro Ser Phe Leu Lys Ser Asp Ile Tyr Leu
        195                 200                 205

Glu Tyr Thr Arg Thr Gly Ser Glu Ser Pro Lys Val Cys Ser Asp Gln
    210                 215                 220

Ser Ser Gly Ser Gly Thr Gly Lys Gly Ile Ser Gly Tyr Leu Pro Thr
225                 230                 235                 240

Leu Asn Glu Asp Glu Glu Trp Lys Cys Asp Gln Asp Met Asp Glu Asp
                245                 250                 255

Asp Gly Arg Asp Ala Ala Pro Pro Gly Arg Leu Pro Gln Lys Leu Leu
            260                 265                 270

Leu Glu Thr Ala Ala Pro Arg Val Ser Ser Ser Arg Arg Tyr Ser Glu
        275                 280                 285

Gly Arg Glu Phe Arg Tyr Gly Ser Trp Arg Glu Pro Val Asn Pro Tyr
    290                 295                 300
```

```
Tyr Val Asn Ala Gly Tyr Ala Leu Ala Pro Ala Thr Ser Ala Asn Asp
305                 310                 315                 320

Ser Glu Gln Gln Ser Leu Ser Ser Asp Ala Asp Thr Leu Ser Leu Thr
                325                 330                 335

Asp Ser Ser Val Asp Gly Ile Pro Pro Tyr Arg Ile Arg Lys Gln His
            340                 345                 350

Arg Arg Glu Met Gln Glu Ser Val Gln Val Asn Gly Arg Val Pro Leu
        355                 360                 365

Pro His Ile Pro Arg Thr Tyr Arg Val Pro Lys Glu Val Arg Val Glu
    370                 375                 380

Pro Gln Lys Phe Ala Glu Glu Leu Ile His Arg Leu Glu Ala Val Gln
385                 390                 395                 400

Arg Thr Arg Glu Ala Glu Glu Lys Leu Glu Glu Arg Leu Lys Arg Val
                405                 410                 415

Arg Met Glu Glu Glu Gly Glu Asp Gly Asp Pro Ser Ser Gly Pro Pro
            420                 425                 430

Gly Pro Cys His Lys Leu Pro Pro Ala Pro Ala Trp His His Phe Pro
        435                 440                 445

Pro Arg Cys Val Asp Met Gly Cys Ala Gly Leu Arg Asp Ala His Glu
    450                 455                 460

Glu Asn Pro Glu Ser Ile Leu Asp Glu His Val Gln Arg Val Leu Arg
465                 470                 475                 480

Thr Pro Gly Arg Gln Ser Pro Gly Pro Gly His Arg Ser Pro Asp Ser
                485                 490                 495

Gly His Val Ala Lys Met Pro Val Ala Leu Gly Gly Ala Ala Ser Gly
            500                 505                 510

His Gly Lys His Val Pro Lys Ser Gly Ala Lys Leu Asp Ala Ala Gly
        515                 520                 525

Leu His His His Arg His Val His His His Val His His Ser Thr Ala
```

```
    530                 535                 540

Arg Pro Lys Glu Gln Val Glu Ala Glu Ala Thr Arg Arg Ala Gln Ser
545                 550                 555                 560

Ser Phe Ala Trp Gly Leu Glu Pro His Ser His Gly Ala Arg Ser Arg
                565                 570                 575

Gly Tyr Ser Glu Ser Val Gly Ala Ala Pro Asn Ala Ser Asp Gly Leu
            580                 585                 590

Ala His Ser Gly Lys Val Gly Val Ala Cys Lys Arg Asn Ala Lys Lys
        595                 600                 605

Ala Glu Ser Gly Lys Ser Ala Ser Thr Glu Val Pro Gly Ala Ser Glu
    610                 615                 620

Asp Ala Glu Lys Asn Gln Lys Ile Met Gln Trp Ile Ile Glu Gly Glu
625                 630                 635                 640

Lys Glu Ile Ser Arg His Arg Arg Thr Gly His Gly Ser Ser Gly Thr
                645                 650                 655

Arg Lys Pro Gln Pro His Glu Asn Ser Arg Pro Leu Ser Leu Glu His
            660                 665                 670

Pro Trp Ala Gly Pro Gln Leu Arg Thr Ser Val Gln Pro Ser His Leu
        675                 680                 685

Phe Ile Gln Asp Pro Thr Met Pro Pro His Pro Ala Pro Asn Pro Leu
    690                 695                 700

Thr Gln Leu Glu Glu Ala Arg Arg Arg Leu Glu Glu Glu Glu Lys Arg
705                 710                 715                 720

Ala Ser Arg Ala Pro Ser Lys Gln Arg Tyr Val Gln Glu Val Met Arg
                725                 730                 735

Arg Gly Arg Ala Cys Val Arg Pro Ala Cys Ala Pro Val Leu His Val
            740                 745                 750

Val Pro Ala Val Ser Asp Met Glu Leu Ser Glu Thr Glu Thr Arg Ser
        755                 760                 765
```

```
Gln Arg Lys Val Gly Gly Gly Ser Ala Gln Pro Cys Asp Ser Ile Val
    770                 775                 780

Val Ala Tyr Tyr Phe Cys Gly Glu Pro Ile Pro Tyr Arg Thr Leu Val
785                 790                 795                 800

Arg Gly Arg Ala Val Thr Leu Gly Gln Phe Lys Glu Leu Leu Thr Lys
                805                 810                 815

Lys Gly Ser Tyr Arg Tyr Tyr Phe Lys Lys Val Ser Asp Glu Phe Asp
            820                 825                 830

Cys Gly Val Val Phe Glu Glu Val Arg Glu Asp Glu Ala Val Leu Pro
        835                 840                 845

Val Phe Glu Glu Lys Ile Ile Gly Lys Val Glu Lys Val Asp
    850                 855                 860


<210> 8108
<211> 826
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1682; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN1; "

<220>
<221> source
<223> /note="Gene Name:
      axin 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O15169; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000346935"

<400> 8108
Met Asn Ile Gln Glu Gln Gly Phe Pro Leu Asp Leu Gly Ala Ser Phe
1               5                   10                  15
```

```
Thr Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu Leu
            20                  25                  30

Val Ser Thr Asp Pro Arg Pro Ala Ser Tyr Ser Phe Cys Ser Gly Lys
        35                  40                  45

Gly Val Gly Ile Lys Gly Glu Thr Ser Thr Ala Thr Pro Arg Arg Ser
    50                  55                  60

Asp Leu Asp Leu Gly Tyr Glu Pro Glu Gly Ser Ala Ser Pro Thr Pro
65                  70                  75                  80

Pro Tyr Leu Lys Trp Ala Glu Ser Leu His Ser Leu Leu Asp Asp Gln
                85                  90                  95

Asp Gly Ile Ser Leu Phe Arg Thr Phe Leu Lys Gln Glu Gly Cys Ala
            100                 105                 110

Asp Leu Leu Asp Phe Trp Phe Ala Cys Thr Gly Phe Arg Lys Leu Glu
        115                 120                 125

Pro Cys Asp Ser Asn Glu Glu Lys Arg Leu Lys Leu Ala Arg Ala Ile
    130                 135                 140

Tyr Arg Lys Tyr Ile Leu Asp Asn Asn Gly Ile Val Ser Arg Gln Thr
145                 150                 155                 160

Lys Pro Ala Thr Lys Ser Phe Ile Lys Gly Cys Ile Met Lys Gln Leu
                165                 170                 175

Ile Asp Pro Ala Met Phe Asp Gln Ala Gln Thr Glu Ile Gln Ala Thr
            180                 185                 190

Met Glu Glu Asn Thr Tyr Pro Ser Phe Leu Lys Ser Asp Ile Tyr Leu
        195                 200                 205

Glu Tyr Thr Arg Thr Gly Ser Glu Ser Pro Lys Val Cys Ser Asp Gln
    210                 215                 220

Ser Ser Gly Ser Gly Thr Gly Lys Gly Ile Ser Gly Tyr Leu Pro Thr
225                 230                 235                 240

Leu Asn Glu Asp Glu Glu Trp Lys Cys Asp Gln Asp Met Asp Glu Asp
```

```
                245                 250                 255

Asp Gly Arg Asp Ala Ala Pro Pro Gly Arg Leu Pro Gln Lys Leu Leu
            260                 265                 270

Leu Glu Thr Ala Ala Pro Arg Val Ser Ser Ser Arg Arg Tyr Ser Glu
        275                 280                 285

Gly Arg Glu Phe Arg Tyr Gly Ser Trp Arg Glu Pro Val Asn Pro Tyr
    290                 295                 300

Tyr Val Asn Ala Gly Tyr Ala Leu Ala Pro Ala Thr Ser Ala Asn Asp
305                 310                 315                 320

Ser Glu Gln Gln Ser Leu Ser Ser Asp Ala Asp Thr Leu Ser Leu Thr
                325                 330                 335

Asp Ser Ser Val Asp Gly Ile Pro Pro Tyr Arg Ile Arg Lys Gln His
            340                 345                 350

Arg Arg Glu Met Gln Glu Ser Val Gln Val Asn Gly Arg Val Pro Leu
        355                 360                 365

Pro His Ile Pro Arg Thr Tyr Arg Val Pro Lys Glu Val Arg Val Glu
    370                 375                 380

Pro Gln Lys Phe Ala Glu Glu Leu Ile His Arg Leu Glu Ala Val Gln
385                 390                 395                 400

Arg Thr Arg Glu Ala Glu Glu Lys Leu Glu Glu Arg Leu Lys Arg Val
                405                 410                 415

Arg Met Glu Glu Glu Gly Glu Asp Gly Asp Pro Ser Ser Gly Pro Pro
            420                 425                 430

Gly Pro Cys His Lys Leu Pro Pro Ala Pro Ala Trp His His Phe Pro
        435                 440                 445

Pro Arg Cys Val Asp Met Gly Cys Ala Gly Leu Arg Asp Ala His Glu
    450                 455                 460

Glu Asn Pro Glu Ser Ile Leu Asp Glu His Val Gln Arg Val Leu Arg
465                 470                 475                 480
```

```
Thr Pro Gly Arg Gln Ser Pro Gly Pro Gly His Arg Ser Pro Asp Ser
                485                 490                 495

Gly His Val Ala Lys Met Pro Val Ala Leu Gly Gly Ala Ala Ser Gly
            500                 505                 510

His Gly Lys His Val Pro Lys Ser Gly Ala Lys Leu Asp Ala Ala Gly
        515                 520                 525

Leu His His His Arg His Val His His His Val His His Ser Thr Ala
    530                 535                 540

Arg Pro Lys Glu Gln Val Glu Ala Glu Ala Thr Arg Arg Ala Gln Ser
545                 550                 555                 560

Ser Phe Ala Trp Gly Leu Glu Pro His Ser His Gly Ala Arg Ser Arg
                565                 570                 575

Gly Tyr Ser Glu Ser Val Gly Ala Ala Pro Asn Ala Ser Asp Gly Leu
            580                 585                 590

Ala His Ser Gly Lys Val Gly Val Ala Cys Lys Arg Asn Ala Lys Lys
        595                 600                 605

Ala Glu Ser Gly Lys Ser Ala Ser Thr Glu Val Pro Gly Ala Ser Glu
    610                 615                 620

Asp Ala Glu Lys Asn Gln Lys Ile Met Gln Trp Ile Ile Glu Gly Glu
625                 630                 635                 640

Lys Glu Ile Ser Arg His Arg Arg Thr Gly His Gly Ser Ser Gly Thr
                645                 650                 655

Arg Lys Pro Gln Pro His Glu Asn Ser Arg Pro Leu Ser Leu Glu His
            660                 665                 670

Pro Trp Ala Gly Pro Gln Leu Arg Thr Ser Val Gln Pro Ser His Leu
        675                 680                 685

Phe Ile Gln Asp Pro Thr Met Pro Pro His Pro Ala Pro Asn Pro Leu
    690                 695                 700
```

```
Thr Gln Leu Glu Glu Ala Arg Arg Arg Leu Glu Glu Glu Glu Lys Arg
705                 710                 715                 720

Ala Ser Arg Ala Pro Ser Lys Gln Arg Thr Arg Ser Gln Arg Lys Val
                725                 730                 735

Gly Gly Gly Ser Ala Gln Pro Cys Asp Ser Ile Val Val Ala Tyr Tyr
            740                 745                 750

Phe Cys Gly Glu Pro Ile Pro Tyr Arg Thr Leu Val Arg Gly Arg Ala
        755                 760                 765

Val Thr Leu Gly Gln Phe Lys Glu Leu Leu Thr Lys Lys Gly Ser Tyr
    770                 775                 780

Arg Tyr Tyr Phe Lys Lys Val Ser Asp Glu Phe Asp Cys Gly Val Val
785                 790                 795                 800

Phe Glu Glu Val Arg Glu Asp Glu Ala Val Leu Pro Val Phe Glu Glu
                805                 810                 815

Lys Ile Ile Gly Lys Val Glu Lys Val Asp
            820                 825


<210> 8109
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1682; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN1; "

<220>
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<223> /note="Gene Name:
      axin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416835"


<220>
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<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8109
Xaa Leu Glu Glu Glu Glu Lys Arg Ala Ser Arg Ala Pro Ser Lys Gln
1   5   10   15

Arg Thr Arg Ser Gln Arg Lys Val Gly Gly Gly Ser Ala Gln Pro Cys
            20   25   30

Asp Ser Ile Val Val Ala Tyr Tyr Phe Cys Gly Glu Pro Ile Pro Tyr
        35   40   45

Arg Thr Leu Val Arg Gly Arg Ala Val Thr Leu Gly Gln Phe Lys Glu
    50   55   60

Leu Leu Thr Lys Lys Gly Ser Tyr Arg Pro Pro Ser His Leu Arg Cys
65   70   75   80

Cys Leu Leu Thr Ala Leu Leu Thr Ser Val Leu Gln Ile Leu Leu Gln
                85   90   95

Glu Ser Glu Arg Arg Val
            100

<210> 8110
<211> 843
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "

<220>
<221> source
<223> /note="Gene Name:
      axin 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y2T1; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000302625"

<400> 8110

```
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1               5                  10                  15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
            20                  25                  30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
        35                  40                  45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
    50                  55                  60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65                  70                  75                  80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
                85                  90                  95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
            100                 105                 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
        115                 120                 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
    130                 135                 140

Val Ser Lys Gln Leu Lys Pro Ala Thr Lys Thr Tyr Ile Arg Asp Gly
145                 150                 155                 160

Ile Lys Lys Gln Gln Ile Asp Ser Ile Met Phe Asp Gln Ala Gln Thr
                165                 170                 175

Glu Ile Gln Ser Val Met Glu Glu Asn Ala Tyr Gln Met Phe Leu Thr
            180                 185                 190

Ser Asp Ile Tyr Leu Glu Tyr Val Arg Ser Gly Gly Glu Asn Thr Ala
        195                 200                 205

Tyr Met Ser Asn Gly Gly Leu Gly Ser Leu Lys Val Val Cys Gly Tyr
    210                 215                 220
```

```
Leu Pro Thr Leu Asn Glu Glu Glu Glu Trp Thr Cys Ala Asp Phe Lys
225                 230                 235                 240

Cys Lys Leu Ser Pro Thr Val Val Gly Leu Ser Ser Lys Thr Leu Arg
                245                 250                 255

Ala Thr Ala Ser Val Arg Ser Thr Glu Thr Val Asp Ser Gly Tyr Arg
            260                 265                 270

Ser Phe Lys Arg Ser Asp Pro Val Asn Pro Tyr His Ile Gly Ser Gly
        275                 280                 285

Tyr Val Phe Ala Pro Ala Thr Ser Ala Asn Asp Ser Glu Ile Ser Ser
    290                 295                 300

Asp Ala Leu Thr Asp Asp Ser Met Ser Met Thr Asp Ser Ser Val Asp
305                 310                 315                 320

Gly Ile Pro Pro Tyr Arg Val Gly Ser Lys Lys Gln Leu Gln Arg Glu
                325                 330                 335

Met His Arg Ser Val Lys Ala Asn Gly Gln Val Ser Leu Pro His Phe
            340                 345                 350

Pro Arg Thr His Arg Leu Pro Lys Glu Met Thr Pro Val Glu Pro Ala
        355                 360                 365

Thr Phe Ala Ala Glu Leu Ile Ser Arg Leu Glu Lys Leu Lys Leu Glu
    370                 375                 380

Leu Glu Ser Arg His Ser Leu Glu Glu Arg Leu Gln Gln Ile Arg Glu
385                 390                 395                 400

Asp Glu Glu Arg Glu Gly Ser Glu Leu Thr Leu Asn Ser Arg Glu Gly
                405                 410                 415

Ala Pro Thr Gln His Pro Leu Ser Leu Leu Pro Ser Gly Ser Tyr Glu
            420                 425                 430

Glu Asp Pro Gln Thr Ile Leu Asp Asp His Leu Ser Arg Val Leu Lys
        435                 440                 445
```

```
Thr Pro Gly Cys Gln Ser Pro Gly Val Gly Arg Tyr Ser Pro Arg Ser
    450                 455                 460

Arg Ser Pro Asp His His His His His His Ser Gln Tyr His Ser Leu
465                 470                 475                 480

Leu Pro Pro Gly Gly Lys Leu Pro Pro Ala Ala Ala Ser Pro Gly Ala
                485                 490                 495

Cys Pro Leu Leu Gly Gly Lys Gly Phe Val Thr Lys Gln Thr Thr Lys
            500                 505                 510

His Val His His His Tyr Ile His His His Ala Val Pro Lys Thr Lys
        515                 520                 525

Glu Glu Ile Glu Ala Glu Ala Thr Gln Arg Val His Cys Phe Cys Pro
    530                 535                 540

Gly Gly Ser Glu Tyr Tyr Cys Tyr Ser Lys Cys Lys Ser His Ser Lys
545                 550                 555                 560

Ala Pro Glu Thr Met Pro Ser Glu Gln Phe Gly Gly Ser Arg Gly Ser
                565                 570                 575

Thr Leu Pro Lys Arg Asn Gly Lys Gly Thr Glu Pro Gly Leu Ala Leu
            580                 585                 590

Pro Ala Arg Glu Gly Gly Ala Pro Gly Gly Ala Gly Ala Leu Gln Leu
        595                 600                 605

Pro Arg Glu Glu Gly Asp Arg Ser Gln Asp Val Trp Gln Trp Met Leu
    610                 615                 620

Glu Ser Glu Arg Gln Ser Lys Pro Lys Pro His Ser Ala Gln Ser Thr
625                 630                 635                 640

Lys Lys Ala Tyr Pro Leu Glu Ser Ala Arg Ser Ser Pro Gly Glu Arg
                645                 650                 655

Ala Ser Arg His His Leu Trp Gly Gly Asn Ser Gly His Pro Arg Thr
            660                 665                 670
```

```
Thr Pro Arg Ala His Leu Phe Thr Gln Asp Pro Ala Met Pro Pro Leu
        675                 680                 685

Thr Pro Pro Asn Thr Leu Ala Gln Leu Glu Glu Ala Cys Arg Arg Leu
    690                 695                 700

Ala Glu Val Ser Lys Pro Pro Lys Gln Arg Cys Cys Val Ala Ser Gln
705                 710                 715                 720

Gln Arg Asp Arg Asn His Ser Ala Thr Val Gln Thr Gly Ala Thr Pro
                725                 730                 735

Phe Ser Asn Pro Ser Leu Ala Pro Glu Asp His Lys Glu Pro Lys Lys
            740                 745                 750

Leu Ala Gly Val His Ala Leu Gln Ala Ser Glu Leu Val Val Thr Tyr
        755                 760                 765

Phe Phe Cys Gly Glu Glu Ile Pro Tyr Arg Arg Met Leu Lys Ala Gln
    770                 775                 780

Ser Leu Thr Leu Gly His Phe Lys Glu Gln Leu Ser Lys Lys Gly Asn
785                 790                 795                 800

Tyr Arg Tyr Tyr Phe Lys Lys Ala Ser Asp Glu Phe Ala Cys Gly Ala
                805                 810                 815

Val Phe Glu Glu Ile Trp Glu Asp Glu Thr Val Leu Pro Met Tyr Glu
            820                 825                 830

Gly Arg Ile Leu Gly Lys Val Glu Arg Ile Asp
        835                 840


<210> 8111
<211> 778
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "
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<220>
<221> source
<223> /note="Gene Name:
axin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364854"

<400> 8111
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1 5 10 15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
20 25 30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
35 40 45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
50 55 60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65 70 75 80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
85 90 95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
100 105 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
115 120 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
130 135 140

Val Ser Lys Gln Leu Lys Pro Ala Thr Lys Thr Tyr Ile Arg Asp Gly
145 150 155 160

Ile Lys Lys Gln Gln Ile Asp Ser Ile Met Phe Asp Gln Ala Gln Thr
165 170 175

Glu Ile Gln Ser Val Met Glu Glu Asn Ala Tyr Gln Met Phe Leu Thr
180 185 190

```
Ser Asp Ile Tyr Leu Glu Tyr Val Arg Ser Gly Gly Glu Asn Thr Ala
        195                 200                 205

Tyr Met Ser Asn Gly Gly Leu Gly Ser Leu Lys Val Val Cys Gly Tyr
    210                 215                 220

Leu Pro Thr Leu Asn Glu Glu Glu Glu Trp Thr Cys Ala Asp Phe Lys
225                 230                 235                 240

Cys Lys Leu Ser Pro Thr Val Val Gly Leu Ser Ser Lys Thr Leu Arg
                245                 250                 255

Ala Thr Ala Ser Val Arg Ser Thr Glu Thr Val Asp Ser Gly Tyr Arg
            260                 265                 270

Ser Phe Lys Arg Ser Asp Pro Val Asn Pro Tyr His Ile Gly Ser Gly
        275                 280                 285

Tyr Val Phe Ala Pro Ala Thr Ser Ala Asn Asp Ser Glu Ile Ser Ser
    290                 295                 300

Asp Ala Leu Thr Asp Asp Ser Met Ser Met Thr Asp Ser Ser Val Asp
305                 310                 315                 320

Gly Ile Pro Pro Tyr Arg Val Gly Ser Lys Lys Gln Leu Gln Arg Glu
                325                 330                 335

Met His Arg Ser Val Lys Ala Asn Gly Gln Val Ser Leu Pro His Phe
            340                 345                 350

Pro Arg Thr His Arg Leu Pro Lys Glu Met Thr Pro Val Glu Pro Ala
        355                 360                 365

Thr Phe Ala Ala Glu Leu Ile Ser Arg Leu Glu Lys Leu Lys Leu Glu
    370                 375                 380

Leu Glu Ser Arg His Ser Leu Glu Glu Arg Leu Gln Gln Ile Arg Glu
385                 390                 395                 400

Asp Glu Glu Arg Glu Gly Ser Glu Leu Thr Leu Asn Ser Arg Glu Gly
                405                 410                 415
```

```
Ala Pro Thr Gln His Pro Leu Ser Leu Leu Pro Ser Gly Ser Tyr Glu
            420                 425                 430

Glu Asp Pro Gln Thr Ile Leu Asp Asp His Leu Ser Arg Val Leu Lys
        435                 440                 445

Thr Pro Gly Cys Gln Ser Pro Gly Val Gly Arg Tyr Ser Pro Arg Ser
    450                 455                 460

Arg Ser Pro Asp His His His His His His Ser Gln Tyr His Ser Leu
465                 470                 475                 480

Leu Pro Pro Gly Gly Lys Leu Pro Pro Ala Ala Ala Ser Pro Gly Ala
                485                 490                 495

Cys Pro Leu Leu Gly Gly Lys Gly Phe Val Thr Lys Gln Thr Thr Lys
            500                 505                 510

His Val His His His Tyr Ile His His His Ala Val Pro Lys Thr Lys
        515                 520                 525

Glu Glu Ile Glu Ala Glu Ala Thr Gln Arg Val His Cys Phe Cys Pro
    530                 535                 540

Gly Gly Ser Glu Tyr Tyr Cys Tyr Ser Lys Cys Lys Ser His Ser Lys
545                 550                 555                 560

Ala Pro Glu Thr Met Pro Ser Glu Gln Phe Gly Ala Gln Ser Thr Lys
                565                 570                 575

Lys Ala Tyr Pro Leu Glu Ser Ala Arg Ser Ser Pro Gly Glu Arg Ala
            580                 585                 590

Ser Arg His His Leu Trp Gly Gly Asn Ser Gly His Pro Arg Thr Thr
        595                 600                 605

Pro Arg Ala His Leu Phe Thr Gln Asp Pro Ala Met Pro Pro Leu Thr
    610                 615                 620

Pro Pro Asn Thr Leu Ala Gln Leu Glu Glu Ala Cys Arg Arg Leu Ala
625                 630                 635                 640

Glu Val Ser Lys Pro Pro Lys Gln Arg Cys Cys Val Ala Ser Gln Gln
```

645 650 655

Arg Asp Arg Asn His Ser Ala Thr Val Gln Thr Gly Ala Thr Pro Phe
660 665 670

Ser Asn Pro Ser Leu Ala Pro Glu Asp His Lys Glu Pro Lys Lys Leu
675 680 685

Ala Gly Val His Ala Leu Gln Ala Ser Glu Leu Val Val Thr Tyr Phe
690 695 700

Phe Cys Gly Glu Glu Ile Pro Tyr Arg Arg Met Leu Lys Ala Gln Ser
705 710 715 720

Leu Thr Leu Gly His Phe Lys Glu Gln Leu Ser Lys Lys Gly Asn Tyr
725 730 735

Arg Tyr Tyr Phe Lys Lys Ala Ser Asp Glu Phe Ala Cys Gly Ala Val
740 745 750

Phe Glu Glu Ile Trp Glu Asp Glu Thr Val Leu Pro Met Tyr Glu Gly
755 760 765

Arg Ile Leu Gly Lys Val Glu Arg Ile Asp
770 775

<210> 8112
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "

<220>
<221> source
<223> /note="Gene Name:
axin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441151"

<400> 8112
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1 5 10 15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
20 25 30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
35 40 45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
50 55 60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65 70 75 80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
85 90 95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
100 105 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
115 120 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
130 135 140

Val Ser Lys Gln Leu Lys
145 150

<210> 8113
<211> 191
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "

<220>
<221> source
<223> /note="Gene Name:

axin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463192"

<400> 8113

```
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1               5                  10                  15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
            20                  25                  30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
        35                  40                  45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
    50                  55                  60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65                  70                  75                  80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
                85                  90                  95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
            100                 105                 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
        115                 120                 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
    130                 135                 140

Val Ser Lys Gln Leu Lys Pro Ala Thr Lys Thr Tyr Ile Arg Asp Gly
145                 150                 155                 160

Ile Lys Lys Gln Gln Ile Asp Ser Ile Met Phe Asp Gln Ala Gln Thr
                165                 170                 175

Glu Ile Gln Ser Val Met Glu Glu Asn Ala Tyr Gln Met Phe Leu
            180                 185                 190
```

<210> 8114
<211> 192

<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "

<220>
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<223> /note="Gene Name:
axin 2; "

<220>
<221> source
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<400> 8114

```
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1               5                  10                  15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
            20                  25                  30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
        35                  40                  45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
    50                  55                  60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65                  70                  75                  80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
                85                  90                  95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
            100                 105                 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
        115                 120                 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
    130                 135                 140
```

```
Val Ser Lys Gln Leu Lys Pro Ala Thr Lys Thr Tyr Ile Arg Asp Gly
145                 150                 155                 160

Ile Lys Lys Gln Gln Ile Asp Ser Ile Met Phe Asp Gln Ala Gln Thr
                165                 170                 175

Glu Ile Gln Ser Val Met Glu Glu Asn Ala Tyr Gln Met Phe Leu Thr
            180                 185                 190
```

<210> 8115
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "

<220>
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<223> /note="Gene Name:
axin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464264"

<400> 8115

```
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1               5                   10                  15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
            20                  25                  30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
        35                  40                  45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
    50                  55                  60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65                  70                  75                  80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
                85                  90                  95
```

```
Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
            100                 105                 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
        115                 120                 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
    130                 135                 140

Val Ser Lys Gln Leu Lys Pro Ala Thr Lys Thr Tyr Ile Arg Asp Gly
145                 150                 155                 160

Ile Lys Lys Gln Gln Ile Asp Ser Ile Met Phe Asp Gln Ala Gln Thr
                165                 170                 175

Glu Ile Gln Ser Val Met Glu Glu Asn Ala Tyr Gln Met Phe Leu Thr
            180                 185                 190

Ser Asp Ile Tyr Leu Glu Tyr Val Arg Ser Gly Gly Glu Asn Thr Ala
        195                 200                 205

Tyr Met Ser Asn Gly Gly Leu Gly Ser Leu Lys Val Val Cys Gly Tyr
    210                 215                 220

Leu Pro Thr Leu Asn Glu Glu Glu Glu Trp Thr Cys Ala Asp Phe Lys
225                 230                 235                 240

Cys Lys Leu Ser Pro Thr Val Val Gly Leu Ser Ser Lys Thr Leu Arg
                245                 250                 255

Ala Thr Ala Ser Val Arg Ser Thr Glu Thr Val Asp Ser Gly Tyr
            260                 265                 270


<210> 8116
<211> 778
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
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<223> /note="Gene Symbol: AXIN2; "

<220>
<221> source
<223> /note="Gene Name:
axin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478916"

<400> 8116

```
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1               5                  10                  15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
            20                  25                  30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
        35                  40                  45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
    50                  55                  60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65                  70                  75                  80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
                85                  90                  95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
            100                 105                 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
        115                 120                 125

Arg Val Ala Lys Ala Ile Tyr Lys Arg Tyr Ile Glu Asn Asn Ser Ile
    130                 135                 140

Val Ser Lys Gln Leu Lys Pro Ala Thr Lys Thr Tyr Ile Arg Asp Gly
145                 150                 155                 160

Ile Lys Lys Gln Gln Ile Asp Ser Ile Met Phe Asp Gln Ala Gln Thr
                165                 170                 175

Glu Ile Gln Ser Val Met Glu Glu Asn Ala Tyr Gln Met Phe Leu Thr
```

```
            180                 185                 190

Ser Asp Ile Tyr Leu Glu Tyr Val Arg Ser Gly Gly Glu Asn Thr Ala
        195                 200                 205

Tyr Met Ser Asn Gly Gly Leu Gly Ser Leu Lys Val Val Cys Gly Tyr
    210                 215                 220

Leu Pro Thr Leu Asn Glu Glu Glu Glu Trp Thr Cys Ala Asp Phe Lys
225                 230                 235                 240

Cys Lys Leu Ser Pro Thr Val Val Gly Leu Ser Ser Lys Thr Leu Arg
                245                 250                 255

Ala Thr Ala Ser Val Arg Ser Thr Glu Thr Val Asp Ser Gly Tyr Arg
            260                 265                 270

Ser Phe Lys Arg Ser Asp Pro Val Asn Pro Tyr His Ile Gly Ser Gly
        275                 280                 285

Tyr Val Phe Ala Pro Ala Thr Ser Ala Asn Asp Ser Glu Ile Ser Ser
    290                 295                 300

Asp Ala Leu Thr Asp Asp Ser Met Ser Met Thr Asp Ser Ser Val Asp
305                 310                 315                 320

Gly Ile Pro Pro Tyr Arg Val Gly Ser Lys Lys Gln Leu Gln Arg Glu
                325                 330                 335

Met His Arg Ser Val Lys Ala Asn Gly Gln Val Ser Leu Pro His Phe
            340                 345                 350

Pro Arg Thr His Arg Leu Pro Lys Glu Met Thr Pro Val Glu Pro Ala
        355                 360                 365

Thr Phe Ala Ala Glu Leu Ile Ser Arg Leu Glu Lys Leu Lys Leu Glu
    370                 375                 380

Leu Glu Ser Arg His Ser Leu Glu Glu Arg Leu Gln Gln Ile Arg Glu
385                 390                 395                 400

Asp Glu Glu Arg Glu Gly Ser Glu Leu Thr Leu Asn Ser Arg Glu Gly
                405                 410                 415
```

```
Ala Pro Thr Gln His Pro Leu Ser Leu Leu Pro Ser Gly Ser Tyr Glu
            420                 425                 430

Glu Asp Pro Gln Thr Ile Leu Asp Asp His Leu Ser Arg Val Leu Lys
        435                 440                 445

Thr Pro Gly Cys Gln Ser Pro Gly Val Gly Arg Tyr Ser Pro Arg Ser
    450                 455                 460

Arg Ser Pro Asp His His His His His His Ser Gln Tyr His Ser Leu
465                 470                 475                 480

Leu Pro Pro Gly Gly Lys Leu Pro Pro Ala Ala Ala Ser Pro Gly Ala
                485                 490                 495

Cys Pro Leu Leu Gly Gly Lys Gly Phe Val Thr Lys Gln Thr Thr Lys
            500                 505                 510

His Val His His His Tyr Ile His His His Ala Val Pro Lys Thr Lys
        515                 520                 525

Glu Glu Ile Glu Ala Glu Ala Thr Gln Arg Val His Cys Phe Cys Pro
    530                 535                 540

Gly Gly Ser Glu Tyr Tyr Cys Tyr Ser Lys Cys Lys Ser His Ser Lys
545                 550                 555                 560

Ala Pro Glu Thr Met Pro Ser Glu Gln Phe Gly Ala Gln Ser Thr Lys
                565                 570                 575

Lys Ala Tyr Pro Leu Glu Ser Ala Arg Ser Ser Pro Gly Glu Arg Ala
            580                 585                 590

Ser Arg His His Leu Trp Gly Gly Asn Ser Gly His Pro Arg Thr Thr
        595                 600                 605

Pro Arg Ala His Leu Phe Thr Gln Asp Pro Ala Met Pro Pro Leu Thr
    610                 615                 620

Pro Pro Asn Thr Leu Ala Gln Leu Glu Glu Ala Cys Arg Arg Leu Ala
625                 630                 635                 640
```

```
Glu Val Ser Lys Pro Pro Lys Gln Arg Cys Cys Val Ala Ser Gln Gln
                645                 650                 655

Arg Asp Arg Asn His Ser Ala Thr Val Gln Thr Gly Ala Thr Pro Phe
            660                 665                 670

Ser Asn Pro Ser Leu Ala Pro Glu Asp His Lys Glu Pro Lys Lys Leu
        675                 680                 685

Ala Gly Val His Ala Leu Gln Ala Ser Glu Leu Val Val Thr Tyr Phe
    690                 695                 700

Phe Cys Gly Glu Glu Ile Pro Tyr Arg Arg Met Leu Lys Ala Gln Ser
705                 710                 715                 720

Leu Thr Leu Gly His Phe Lys Glu Gln Leu Ser Lys Lys Gly Asn Tyr
                725                 730                 735

Arg Tyr Tyr Phe Lys Lys Ala Ser Asp Glu Phe Ala Cys Gly Ala Val
            740                 745                 750

Phe Glu Glu Ile Trp Glu Asp Glu Thr Val Leu Pro Met Tyr Glu Gly
        755                 760                 765

Arg Ile Leu Gly Lys Val Glu Arg Ile Asp
    770                 775


<210> 8117
<211> 160
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1683; "

<220>
<221> source
<223> /note="Gene Symbol: AXIN2; "

<220>
<221> source
<223> /note="Gene Name:
      axin 2; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000481191"

<400> 8117
Met Ser Ser Ala Met Leu Val Thr Cys Leu Pro Asp Pro Ser Ser Ser
1 5 10 15

Phe Arg Glu Asp Ala Pro Arg Pro Pro Val Pro Gly Glu Glu Gly Glu
20 25 30

Thr Pro Pro Cys Gln Pro Gly Val Gly Lys Gly Gln Val Thr Lys Pro
35 40 45

Met Pro Val Ser Ser Asn Thr Arg Arg Asn Glu Asp Gly Leu Gly Glu
50 55 60

Pro Glu Gly Arg Ala Ser Pro Asp Ser Pro Leu Thr Arg Trp Thr Lys
65 70 75 80

Ser Leu His Ser Leu Leu Gly Asp Gln Asp Gly Ala Tyr Leu Phe Arg
85 90 95

Thr Phe Leu Glu Arg Glu Lys Cys Val Asp Thr Leu Asp Phe Trp Phe
100 105 110

Ala Cys Asn Gly Phe Arg Gln Met Asn Leu Lys Asp Thr Lys Thr Leu
115 120 125

Arg Val Ala Lys Asp Phe Cys His Asp Ile Leu Phe Tyr Leu Tyr Cys
130 135 140

Lys Leu Cys Ile Ile Lys Ser Ser Phe Lys Glu Asn Tyr Leu Val Gln
145 150 155 160

<210> 8118
<211> 306
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1684; "

<220>
<221> source
<223> /note="Gene Symbol: AIDA; "

<220>

<221> source
<223> /note="Gene Name:
axin interactor, dorsalization associated; "

<220>
<221> source
<223> /note="Uniprot ID: Q96BJ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339161"

<400> 8118

```
Met Ser Glu Val Thr Arg Ser Leu Leu Gln Arg Trp Gly Ala Ser Phe
1               5                  10                  15

Arg Arg Gly Ala Asp Phe Asp Ser Trp Gly Gln Leu Val Glu Ala Ile
            20                  25                  30

Asp Glu Tyr Gln Ile Leu Ala Arg His Leu Gln Lys Glu Ala Gln Ala
        35                  40                  45

Gln His Asn Asn Ser Glu Phe Thr Glu Glu Gln Lys Lys Thr Ile Gly
    50                  55                  60

Lys Ile Ala Thr Cys Leu Glu Leu Arg Ser Ala Ala Leu Gln Ser Thr
65                  70                  75                  80

Gln Ser Gln Glu Glu Phe Lys Leu Glu Asp Leu Lys Lys Leu Glu Pro
                85                  90                  95

Ile Leu Lys Asn Ile Leu Thr Tyr Asn Lys Glu Phe Pro Phe Asp Val
            100                 105                 110

Gln Pro Val Pro Leu Arg Arg Ile Leu Ala Pro Gly Glu Glu Glu Asn
        115                 120                 125

Leu Glu Phe Glu Glu Asp Glu Glu Glu Gly Gly Ala Gly Ala Gly Ser
    130                 135                 140

Pro Asp Ser Phe Pro Ala Arg Val Pro Gly Thr Leu Leu Pro Arg Leu
145                 150                 155                 160

Pro Ser Glu Pro Gly Met Thr Leu Leu Thr Ile Arg Ile Glu Lys Ile
                165                 170                 175
```

```
Gly Leu Lys Asp Ala Gly Gln Cys Ile Asp Pro Tyr Ile Thr Val Ser
            180                 185                 190

Val Lys Asp Leu Asn Gly Ile Asp Leu Thr Pro Val Gln Asp Thr Pro
        195                 200                 205

Val Ala Ser Arg Lys Glu Asp Thr Tyr Val His Phe Asn Val Asp Ile
    210                 215                 220

Glu Leu Gln Lys His Val Glu Lys Leu Thr Lys Gly Ala Ala Ile Phe
225                 230                 235                 240

Phe Glu Phe Lys His Tyr Lys Pro Lys Lys Arg Phe Thr Ser Thr Lys
                245                 250                 255

Cys Phe Ala Phe Met Glu Met Asp Glu Ile Lys Pro Gly Pro Ile Val
            260                 265                 270

Ile Glu Leu Tyr Lys Lys Pro Thr Asp Phe Lys Arg Lys Lys Leu Gln
        275                 280                 285

Leu Leu Thr Lys Lys Pro Leu Tyr Leu His Leu His Gln Thr Leu His
    290                 295                 300

Lys Glu
305


<210> 8119
<211> 224
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1684; "

<220>
<221> source
<223> /note="Gene Symbol: AIDA; "

<220>
<221> source
<223> /note="Gene Name:
      axin interactor, dorsalization associated; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96BJ3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000347964"

<400> 8119
Met Ser Glu Val Thr Arg Ser Leu Leu Gln Arg Trp Gly Ala Ser Phe
1 5 10 15

Arg Arg Gly Ala Asp Phe Asp Ser Trp Gly Gln Leu Val Glu Ala Ile
20 25 30

Asp Glu Tyr Gln Ile Leu Ala Arg His Leu Gln Lys Glu Ala Gln Ala
35 40 45

Gln His Asn Asn Ser Glu Phe Thr Glu Glu Gln Lys Lys Thr Ile Gly
50 55 60

Lys Ile Ala Thr Cys Leu Glu Leu Arg Ser Ala Ala Leu Gln Ser Thr
65 70 75 80

Gln Ser Gln Glu Glu Phe Lys Leu Glu Asp Leu Lys Lys Leu Glu Pro
85 90 95

Ile Leu Lys Asn Ile Leu Thr Tyr Asn Lys Glu Phe Pro Phe Asp Val
100 105 110

Gln Pro Val Pro Leu Arg Arg Ile Leu Ala Pro Gly Glu Glu Glu Asn
115 120 125

Leu Glu Phe Glu Glu Asp Glu Glu Glu Gly Gly Ala Gly Ala Gly Ser
130 135 140

Pro Asp Ser Phe Pro Ala Arg Val Pro Gly Ala Ala Ile Phe Phe Glu
145 150 155 160

Phe Lys His Tyr Lys Pro Lys Lys Arg Phe Thr Ser Thr Lys Cys Phe
165 170 175

Ala Phe Met Glu Met Asp Glu Ile Lys Pro Gly Pro Ile Val Ile Glu
180 185 190

Leu Tyr Lys Lys Pro Thr Asp Phe Lys Arg Lys Lys Leu Gln Leu Leu
195 200 205

```
Thr Lys Lys Pro Leu Tyr Leu His Leu His Gln Thr Leu His Lys Glu
    210                 215                 220


<210> 8120
<211> 894
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1685; "

<220>
<221> source
<223> /note="Gene Symbol: AXL; "

<220>
<221> source
<223> /note="Gene Name:
      AXL receptor tyr kinase; "

<220>
<221> source
<223> /note="Uniprot ID:  P30530; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301178"

<400> 8120
Met Ala Trp Arg Cys Pro Arg Met Gly Arg Val Pro Leu Ala Trp Cys
1               5                   10                  15


Leu Ala Leu Cys Gly Trp Ala Cys Met Ala Pro Arg Gly Thr Gln Ala
            20                  25                  30


Glu Glu Ser Pro Phe Val Gly Asn Pro Gly Asn Ile Thr Gly Ala Arg
        35                  40                  45


Gly Leu Thr Gly Thr Leu Arg Cys Gln Leu Gln Val Gln Gly Glu Pro
    50                  55                  60


Pro Glu Val His Trp Leu Arg Asp Gly Gln Ile Leu Glu Leu Ala Asp
65                  70                  75                  80


Ser Thr Gln Thr Gln Val Pro Leu Gly Glu Asp Glu Gln Asp Asp Trp
                85                  90                  95


Ile Val Val Ser Gln Leu Arg Ile Thr Ser Leu Gln Leu Ser Asp Thr
```

```
            100                 105                 110

Gly Gln Tyr Gln Cys Leu Val Phe Leu Gly His Gln Thr Phe Val Ser
        115                 120                 125

Gln Pro Gly Tyr Val Gly Leu Glu Gly Leu Pro Tyr Phe Leu Glu Glu
    130                 135                 140

Pro Glu Asp Arg Thr Val Ala Ala Asn Thr Pro Phe Asn Leu Ser Cys
145                 150                 155                 160

Gln Ala Gln Gly Pro Pro Glu Pro Val Asp Leu Leu Trp Leu Gln Asp
                165                 170                 175

Ala Val Pro Leu Ala Thr Ala Pro Gly His Gly Pro Gln Arg Ser Leu
            180                 185                 190

His Val Pro Gly Leu Asn Lys Thr Ser Ser Phe Ser Cys Glu Ala His
        195                 200                 205

Asn Ala Lys Gly Val Thr Thr Ser Arg Thr Ala Thr Ile Thr Val Leu
    210                 215                 220

Pro Gln Gln Pro Arg Asn Leu His Leu Val Ser Arg Gln Pro Thr Glu
225                 230                 235                 240

Leu Glu Val Ala Trp Thr Pro Gly Leu Ser Gly Ile Tyr Pro Leu Thr
                245                 250                 255

His Cys Thr Leu Gln Ala Val Leu Ser Asp Asp Gly Met Gly Ile Gln
            260                 265                 270

Ala Gly Glu Pro Asp Pro Pro Glu Glu Pro Leu Thr Ser Gln Ala Ser
        275                 280                 285

Val Pro Pro His Gln Leu Arg Leu Gly Ser Leu His Pro His Thr Pro
    290                 295                 300

Tyr His Ile Arg Val Ala Cys Thr Ser Ser Gln Gly Pro Ser Ser Trp
305                 310                 315                 320

Thr His Trp Leu Pro Val Glu Thr Pro Glu Gly Val Pro Leu Gly Pro
                325                 330                 335
```

```
Pro Glu Asn Ile Ser Ala Thr Arg Asn Gly Ser Gln Ala Phe Val His
            340                 345                 350

Trp Gln Glu Pro Arg Ala Pro Leu Gln Gly Thr Leu Leu Gly Tyr Arg
        355                 360                 365

Leu Ala Tyr Gln Gly Gln Asp Thr Pro Glu Val Leu Met Asp Ile Gly
    370                 375                 380

Leu Arg Gln Glu Val Thr Leu Glu Leu Gln Gly Asp Gly Ser Val Ser
385                 390                 395                 400

Asn Leu Thr Val Cys Val Ala Ala Tyr Thr Ala Ala Gly Asp Gly Pro
                405                 410                 415

Trp Ser Leu Pro Val Pro Leu Glu Ala Trp Arg Pro Gly Gln Ala Gln
            420                 425                 430

Pro Val His Gln Leu Val Lys Glu Pro Ser Thr Pro Ala Phe Ser Trp
        435                 440                 445

Pro Trp Trp Tyr Val Leu Leu Gly Ala Val Val Ala Ala Ala Cys Val
    450                 455                 460

Leu Ile Leu Ala Leu Phe Leu Val His Arg Arg Lys Lys Glu Thr Arg
465                 470                 475                 480

Tyr Gly Glu Val Phe Glu Pro Thr Val Glu Arg Gly Glu Leu Val Val
                485                 490                 495

Arg Tyr Arg Val Arg Lys Ser Tyr Ser Arg Arg Thr Thr Glu Ala Thr
            500                 505                 510

Leu Asn Ser Leu Gly Ile Ser Glu Glu Leu Lys Glu Lys Leu Arg Asp
        515                 520                 525

Val Met Val Asp Arg His Lys Val Ala Leu Gly Lys Thr Leu Gly Glu
    530                 535                 540

Gly Glu Phe Gly Ala Val Met Glu Gly Gln Leu Asn Gln Asp Asp Ser
545                 550                 555                 560
```

```
Ile Leu Lys Val Ala Val Lys Thr Met Lys Ile Ala Ile Cys Thr Arg
                565                 570                 575

Ser Glu Leu Glu Asp Phe Leu Ser Glu Ala Val Cys Met Lys Glu Phe
            580                 585                 590

Asp His Pro Asn Val Met Arg Leu Ile Gly Val Cys Phe Gln Gly Ser
        595                 600                 605

Glu Arg Glu Ser Phe Pro Ala Pro Val Val Ile Leu Pro Phe Met Lys
    610                 615                 620

His Gly Asp Leu His Ser Phe Leu Leu Tyr Ser Arg Leu Gly Asp Gln
625                 630                 635                 640

Pro Val Tyr Leu Pro Thr Gln Met Leu Val Lys Phe Met Ala Asp Ile
                645                 650                 655

Ala Ser Gly Met Glu Tyr Leu Ser Thr Lys Arg Phe Ile His Arg Asp
            660                 665                 670

Leu Ala Ala Arg Asn Cys Met Leu Asn Glu Asn Met Ser Val Cys Val
        675                 680                 685

Ala Asp Phe Gly Leu Ser Lys Lys Ile Tyr Asn Gly Asp Tyr Tyr Arg
    690                 695                 700

Gln Gly Arg Ile Ala Lys Met Pro Val Lys Trp Ile Ala Ile Glu Ser
705                 710                 715                 720

Leu Ala Asp Arg Val Tyr Thr Ser Lys Ser Asp Val Trp Ser Phe Gly
                725                 730                 735

Val Thr Met Trp Glu Ile Ala Thr Arg Gly Gln Thr Pro Tyr Pro Gly
            740                 745                 750

Val Glu Asn Ser Glu Ile Tyr Asp Tyr Leu Arg Gln Gly Asn Arg Leu
        755                 760                 765

Lys Gln Pro Ala Asp Cys Leu Asp Gly Leu Tyr Ala Leu Met Ser Arg
    770                 775                 780
```

```
Cys Trp Glu Leu Asn Pro Gln Asp Arg Pro Ser Phe Thr Glu Leu Arg
785                 790                 795                 800

Glu Asp Leu Glu Asn Thr Leu Lys Ala Leu Pro Pro Ala Gln Glu Pro
                805                 810                 815

Asp Glu Ile Leu Tyr Val Asn Met Asp Glu Gly Gly Gly Tyr Pro Glu
            820                 825                 830

Pro Pro Gly Ala Ala Gly Gly Ala Asp Pro Pro Thr Gln Pro Asp Pro
        835                 840                 845

Lys Asp Ser Cys Ser Cys Leu Thr Ala Ala Glu Val His Pro Ala Gly
    850                 855                 860

Arg Tyr Val Leu Cys Pro Ser Thr Thr Pro Ser Pro Ala Gln Pro Ala
865                 870                 875                 880

Asp Arg Gly Ser Pro Ala Ala Pro Gly Gln Glu Asp Gly Ala
                885                 890


<210> 8121
<211> 885
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1685; "

<220>
<221> source
<223> /note="Gene Symbol: AXL; "

<220>
<221> source
<223> /note="Gene Name:
      AXL receptor tyr kinase; "

<220>
<221> source
<223> /note="Uniprot ID:  P30530; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351995"

<400> 8121
Met Ala Trp Arg Cys Pro Arg Met Gly Arg Val Pro Leu Ala Trp Cys
1               5                   10                  15
```

```
Leu Ala Leu Cys Gly Trp Ala Cys Met Ala Pro Arg Gly Thr Gln Ala
            20                  25                  30

Glu Glu Ser Pro Phe Val Gly Asn Pro Gly Asn Ile Thr Gly Ala Arg
        35                  40                  45

Gly Leu Thr Gly Thr Leu Arg Cys Gln Leu Gln Val Gln Gly Glu Pro
    50                  55                  60

Pro Glu Val His Trp Leu Arg Asp Gly Gln Ile Leu Glu Leu Ala Asp
65                  70                  75                  80

Ser Thr Gln Thr Gln Val Pro Leu Gly Glu Asp Glu Gln Asp Asp Trp
                85                  90                  95

Ile Val Val Ser Gln Leu Arg Ile Thr Ser Leu Gln Leu Ser Asp Thr
            100                 105                 110

Gly Gln Tyr Gln Cys Leu Val Phe Leu Gly His Gln Thr Phe Val Ser
        115                 120                 125

Gln Pro Gly Tyr Val Gly Leu Glu Gly Leu Pro Tyr Phe Leu Glu Glu
    130                 135                 140

Pro Glu Asp Arg Thr Val Ala Ala Asn Thr Pro Phe Asn Leu Ser Cys
145                 150                 155                 160

Gln Ala Gln Gly Pro Pro Glu Pro Val Asp Leu Leu Trp Leu Gln Asp
                165                 170                 175

Ala Val Pro Leu Ala Thr Ala Pro Gly His Gly Pro Gln Arg Ser Leu
            180                 185                 190

His Val Pro Gly Leu Asn Lys Thr Ser Ser Phe Ser Cys Glu Ala His
        195                 200                 205

Asn Ala Lys Gly Val Thr Thr Ser Arg Thr Ala Thr Ile Thr Val Leu
    210                 215                 220

Pro Gln Gln Pro Arg Asn Leu His Leu Val Ser Arg Gln Pro Thr Glu
225                 230                 235                 240
```

```
Leu Glu Val Ala Trp Thr Pro Gly Leu Ser Gly Ile Tyr Pro Leu Thr
                245                 250                 255

His Cys Thr Leu Gln Ala Val Leu Ser Asp Asp Gly Met Gly Ile Gln
            260                 265                 270

Ala Gly Glu Pro Asp Pro Pro Glu Glu Pro Leu Thr Ser Gln Ala Ser
        275                 280                 285

Val Pro Pro His Gln Leu Arg Leu Gly Ser Leu His Pro His Thr Pro
    290                 295                 300

Tyr His Ile Arg Val Ala Cys Thr Ser Ser Gln Gly Pro Ser Ser Trp
305                 310                 315                 320

Thr His Trp Leu Pro Val Glu Thr Pro Glu Gly Val Pro Leu Gly Pro
                325                 330                 335

Pro Glu Asn Ile Ser Ala Thr Arg Asn Gly Ser Gln Ala Phe Val His
            340                 345                 350

Trp Gln Glu Pro Arg Ala Pro Leu Gln Gly Thr Leu Leu Gly Tyr Arg
        355                 360                 365

Leu Ala Tyr Gln Gly Gln Asp Thr Pro Glu Val Leu Met Asp Ile Gly
    370                 375                 380

Leu Arg Gln Glu Val Thr Leu Glu Leu Gln Gly Asp Gly Ser Val Ser
385                 390                 395                 400

Asn Leu Thr Val Cys Val Ala Ala Tyr Thr Ala Ala Gly Asp Gly Pro
                405                 410                 415

Trp Ser Leu Pro Val Pro Leu Glu Ala Trp Arg Pro Val Lys Glu Pro
            420                 425                 430

Ser Thr Pro Ala Phe Ser Trp Pro Trp Trp Tyr Val Leu Leu Gly Ala
        435                 440                 445

Val Val Ala Ala Ala Cys Val Leu Ile Leu Ala Leu Phe Leu Val His
    450                 455                 460
```

```
Arg Arg Lys Lys Glu Thr Arg Tyr Gly Glu Val Phe Glu Pro Thr Val
465                 470                 475                 480

Glu Arg Gly Glu Leu Val Val Arg Tyr Arg Val Arg Lys Ser Tyr Ser
                485                 490                 495

Arg Arg Thr Thr Glu Ala Thr Leu Asn Ser Leu Gly Ile Ser Glu Glu
            500                 505                 510

Leu Lys Glu Lys Leu Arg Asp Val Met Val Asp Arg His Lys Val Ala
        515                 520                 525

Leu Gly Lys Thr Leu Gly Glu Gly Glu Phe Gly Ala Val Met Glu Gly
    530                 535                 540

Gln Leu Asn Gln Asp Asp Ser Ile Leu Lys Val Ala Val Lys Thr Met
545                 550                 555                 560

Lys Ile Ala Ile Cys Thr Arg Ser Glu Leu Glu Asp Phe Leu Ser Glu
                565                 570                 575

Ala Val Cys Met Lys Glu Phe Asp His Pro Asn Val Met Arg Leu Ile
            580                 585                 590

Gly Val Cys Phe Gln Gly Ser Glu Arg Glu Ser Phe Pro Ala Pro Val
        595                 600                 605

Val Ile Leu Pro Phe Met Lys His Gly Asp Leu His Ser Phe Leu Leu
    610                 615                 620

Tyr Ser Arg Leu Gly Asp Gln Pro Val Tyr Leu Pro Thr Gln Met Leu
625                 630                 635                 640

Val Lys Phe Met Ala Asp Ile Ala Ser Gly Met Glu Tyr Leu Ser Thr
                645                 650                 655

Lys Arg Phe Ile His Arg Asp Leu Ala Ala Arg Asn Cys Met Leu Asn
            660                 665                 670

Glu Asn Met Ser Val Cys Val Ala Asp Phe Gly Leu Ser Lys Lys Ile
        675                 680                 685

Tyr Asn Gly Asp Tyr Tyr Arg Gln Gly Arg Ile Ala Lys Met Pro Val
```

690 695 700

Lys Trp Ile Ala Ile Glu Ser Leu Ala Asp Arg Val Tyr Thr Ser Lys
705 710 715 720

Ser Asp Val Trp Ser Phe Gly Val Thr Met Trp Glu Ile Ala Thr Arg
725 730 735

Gly Gln Thr Pro Tyr Pro Gly Val Glu Asn Ser Glu Ile Tyr Asp Tyr
740 745 750

Leu Arg Gln Gly Asn Arg Leu Lys Gln Pro Ala Asp Cys Leu Asp Gly
755 760 765

Leu Tyr Ala Leu Met Ser Arg Cys Trp Glu Leu Asn Pro Gln Asp Arg
770 775 780

Pro Ser Phe Thr Glu Leu Arg Glu Asp Leu Glu Asn Thr Leu Lys Ala
785 790 795 800

Leu Pro Pro Ala Gln Glu Pro Asp Glu Ile Leu Tyr Val Asn Met Asp
805 810 815

Glu Gly Gly Gly Tyr Pro Glu Pro Pro Gly Ala Ala Gly Gly Ala Asp
820 825 830

Pro Pro Thr Gln Pro Asp Pro Lys Asp Ser Cys Ser Cys Leu Thr Ala
835 840 845

Ala Glu Val His Pro Ala Gly Arg Tyr Val Leu Cys Pro Ser Thr Thr
850 855 860

Pro Ser Pro Ala Gln Pro Ala Asp Arg Gly Ser Pro Ala Ala Pro Gly
865 870 875 880

Gln Glu Asp Gly Ala
885

<210> 8122
<211> 626
<212> PRT
<213> Homo sapiens

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<220>
<221> source
<223> /note="Gene Symbol: AXL; "

<220>
<221> source
<223> /note="Gene Name:
AXL receptor tyr kinase; "

<220>
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<223> /note="ENSP ID: ENSP00000471497"

<400> 8122

```
Met Gly Ile Gln Ala Gly Glu Pro Asp Pro Pro Glu Glu Pro Leu Thr
1               5                  10                  15

Ser Gln Ala Ser Val Pro Pro His Gln Leu Arg Leu Gly Ser Leu His
            20                  25                  30

Pro His Thr Pro Tyr His Ile Arg Val Ala Cys Thr Ser Ser Gln Gly
        35                  40                  45

Pro Ser Ser Trp Thr His Trp Leu Pro Val Glu Thr Pro Glu Gly Val
    50                  55                  60

Pro Leu Gly Pro Pro Glu Asn Ile Ser Ala Thr Arg Asn Gly Ser Gln
65                  70                  75                  80

Ala Phe Val His Trp Gln Glu Pro Arg Ala Pro Leu Gln Gly Thr Leu
                85                  90                  95

Leu Gly Tyr Arg Leu Ala Tyr Gln Gly Gln Asp Thr Pro Glu Val Leu
            100                 105                 110

Met Asp Ile Gly Leu Arg Gln Glu Val Thr Leu Glu Leu Gln Gly Asp
        115                 120                 125

Gly Ser Val Ser Asn Leu Thr Val Cys Val Ala Ala Tyr Thr Ala Ala
    130                 135                 140

Gly Asp Gly Pro Trp Ser Leu Pro Val Pro Leu Glu Ala Trp Arg Pro
145                 150                 155                 160
```

```
Gly Gln Ala Gln Pro Val His Gln Leu Val Lys Glu Pro Ser Thr Pro
                165                 170                 175

Ala Phe Ser Trp Pro Trp Trp Tyr Val Leu Leu Gly Ala Val Val Ala
            180                 185                 190

Ala Ala Cys Val Leu Ile Leu Ala Leu Phe Leu Val His Arg Arg Lys
        195                 200                 205

Lys Glu Thr Arg Tyr Gly Glu Val Phe Glu Pro Thr Val Glu Arg Gly
    210                 215                 220

Glu Leu Val Val Arg Tyr Arg Val Arg Lys Ser Tyr Ser Arg Arg Thr
225                 230                 235                 240

Thr Glu Ala Thr Leu Asn Ser Leu Gly Ile Ser Glu Glu Leu Lys Glu
                245                 250                 255

Lys Leu Arg Asp Val Met Val Asp Arg His Lys Val Ala Leu Gly Lys
            260                 265                 270

Thr Leu Gly Glu Gly Glu Phe Gly Ala Val Met Glu Gly Gln Leu Asn
        275                 280                 285

Gln Asp Asp Ser Ile Leu Lys Val Ala Val Lys Thr Met Lys Ile Ala
    290                 295                 300

Ile Cys Thr Arg Ser Glu Leu Glu Asp Phe Leu Ser Glu Ala Val Cys
305                 310                 315                 320

Met Lys Glu Phe Asp His Pro Asn Val Met Arg Leu Ile Gly Val Cys
                325                 330                 335

Phe Gln Gly Ser Glu Arg Glu Ser Phe Pro Ala Pro Val Val Ile Leu
            340                 345                 350

Pro Phe Met Lys His Gly Asp Leu His Ser Phe Leu Leu Tyr Ser Arg
        355                 360                 365

Leu Gly Asp Gln Pro Val Tyr Leu Pro Thr Gln Met Leu Val Lys Phe
    370                 375                 380

Met Ala Asp Ile Ala Ser Gly Met Glu Tyr Leu Ser Thr Lys Arg Phe
```

385 390 395 400

Ile His Arg Asp Leu Ala Ala Arg Asn Cys Met Leu Asn Glu Asn Met
405 410 415

Ser Val Cys Val Ala Asp Phe Gly Leu Ser Lys Lys Ile Tyr Asn Gly
420 425 430

Asp Tyr Tyr Arg Gln Gly Arg Ile Ala Lys Met Pro Val Lys Trp Ile
435 440 445

Ala Ile Glu Ser Leu Ala Asp Arg Val Tyr Thr Ser Lys Ser Asp Val
450 455 460

Trp Ser Phe Gly Val Thr Met Trp Glu Ile Ala Thr Arg Gly Gln Thr
465 470 475 480

Pro Tyr Pro Gly Val Glu Asn Ser Glu Ile Tyr Asp Tyr Leu Arg Gln
485 490 495

Gly Asn Arg Leu Lys Gln Pro Ala Asp Cys Leu Asp Gly Leu Tyr Ala
500 505 510

Leu Met Ser Arg Cys Trp Glu Leu Asn Pro Gln Asp Arg Pro Ser Phe
515 520 525

Thr Glu Leu Arg Glu Asp Leu Glu Asn Thr Leu Lys Ala Leu Pro Pro
530 535 540

Ala Gln Glu Pro Asp Glu Ile Leu Tyr Val Asn Met Asp Glu Gly Gly
545 550 555 560

Gly Tyr Pro Glu Pro Pro Gly Ala Ala Gly Gly Ala Asp Pro Pro Thr
565 570 575

Gln Pro Asp Pro Lys Asp Ser Cys Ser Cys Leu Thr Ala Ala Glu Val
580 585 590

His Pro Ala Gly Arg Tyr Val Leu Cys Pro Ser Thr Thr Pro Ser Pro
595 600 605

Ala Gln Pro Ala Asp Arg Gly Ser Pro Ala Ala Pro Gly Gln Glu Asp
610 615 620

Gly Ala
625

<210> 8123
<211> 1012
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
axonemal dynein light chain
domain containing 1; "

<220>
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<223> /note="Uniprot ID: Q5T1B0; "

<220>
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<223> /note="ENSP ID: ENSP00000356590"

<400> 8123
Met Ser Leu Pro Lys Thr Pro Ser Thr Pro Leu Asn Ser Thr Ser Thr
1 5 10 15

Ser Glu Ser Lys Lys Leu Lys Val Ser Val Ala Lys Glu Gly Thr Arg
20 25 30

Gly Leu Pro Glu Leu Lys Glu Lys Lys Asn Met Val Asp Arg Ser Lys
35 40 45

Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe Ile Pro Lys Glu Val Leu
50 55 60

Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly Pro Cys Pro Glu Asn Leu
65 70 75 80

Leu Pro Pro Lys Lys Ile Lys Thr Pro Lys Gly Thr Leu Pro Arg Leu
85 90 95

```
Val Asp His Val Trp His His Pro Val Arg Arg Asn Lys Phe Lys Tyr
            100                 105                 110

Leu Ile Asp His Pro Val Ser Leu Thr Gly Ala Gly Arg Asp Ile Ser
        115                 120                 125

Phe Leu Tyr Asp Val Thr Tyr Ala Lys Gly Gln Thr Arg Glu Lys Ala
    130                 135                 140

Val Cys Pro Pro His Leu Ala Arg Ser Leu Gln Ser His Asp Gly Val
145                 150                 155                 160

Ile Val Pro His Lys Pro Lys Thr Leu Thr Asp Thr Leu Ile Pro Glu
                165                 170                 175

Glu Phe His Ile Val Ser Ser Thr Gly Val Ser Gly Leu Glu Cys Tyr
            180                 185                 190

Asp Asp Lys Tyr Thr Thr Leu Leu Thr Asp Ser Glu Asn Arg Leu Leu
        195                 200                 205

Leu Phe Pro Ser Met Lys Pro Asn Lys Arg Val Glu Val Ala Gln Leu
    210                 215                 220

Asn Asp Val Met Asp Thr Met Leu Glu Arg Ala Gly Val Glu Asn Gln
225                 230                 235                 240

Glu Tyr Thr Gly Pro Thr Lys Met His Lys Leu Leu His Ile Leu Lys
                245                 250                 255

Lys Glu Gln Thr Ile Tyr Asn Met Ile Phe His Glu Leu Ile Arg Gln
            260                 265                 270

Val Ser Val Asp Cys Ala Asp Arg Gly Glu Leu Leu Ser Lys Val Arg
        275                 280                 285

Glu Arg Tyr Val Gln Met Leu Asp Gln Ile Ala Arg Gln Met Ile Asp
    290                 295                 300

Phe Tyr Lys Asp Leu Val Thr Gln Arg Val Met Asp Gln Arg Ile Leu
305                 310                 315                 320
```

```
Glu Glu Leu Tyr Asn Phe Lys His Val Ile Glu Glu Leu Thr Arg Glu
                325                 330                 335

Leu Cys Leu Val Arg Ala His Asp Val Lys Leu Thr Lys Glu Thr Glu
            340                 345                 350

Lys Ala His Lys Asp Leu Ala Gln Ala Leu Leu Asn Ala Glu Lys Asn
        355                 360                 365

Ala Lys Ile Val Glu Glu Tyr His Asp Leu Tyr Thr Leu Gln Arg Glu
    370                 375                 380

Arg Met Glu Asn Asp Met Lys Lys Leu Val Ala Glu Arg Asp Ile Trp
385                 390                 395                 400

Ser Ser Ala Thr Tyr Glu Leu Ala Leu Lys Val Ile Glu Arg Asn Arg
                405                 410                 415

Val Ile Leu Ala Arg Arg Leu Tyr Leu Asn Glu Lys Gly Trp Asn Lys
            420                 425                 430

Tyr Thr Lys His Phe Ile Ile Leu Leu Ser Asn Lys Asp Thr Glu Asp
        435                 440                 445

Leu Ala Leu Leu Gln Lys Leu Thr Gln Lys Trp Arg Asn Leu Val Asn
    450                 455                 460

Lys Leu Lys Gln Glu Val Glu Gln Met Glu Glu Ser Thr Ser Glu Thr
465                 470                 475                 480

Leu Lys Ile Val Lys Asp Gly Leu Ile Lys Trp Gln Glu Phe Phe Asn
                485                 490                 495

Glu Lys Asp Ile Leu Ser Pro Asn Lys Gly Asn Ile Phe Asn Ser Val
            500                 505                 510

Leu Leu Asp Phe Lys Gln Trp Gln Lys Ile Leu Asn Glu Lys Lys Glu
        515                 520                 525

Glu Phe Thr Gly Asp Val Leu Leu Ser Lys Tyr Asp Thr Leu Lys Ile
    530                 535                 540

Ile Lys His Leu Gln Glu Asn Trp Ala Asp Ile Gly Leu Gly Ile Phe
```

545 550 555 560

Asn Arg His Lys Ser Leu Glu Gly Glu Met Pro Ser Glu Arg Gln Tyr
565 570 575

Met Glu Glu Ile Ile Lys Asn Ile Gln Lys Leu Tyr Lys Glu Tyr Glu
580 585 590

Ile Arg Ile Asn Gly Asp Asn Gly Tyr Ser Lys Ile Leu Pro Ser Leu
595 600 605

Ile Ser Ser Leu Asp Phe Cys Ser Phe Lys Leu Glu Asn Leu Glu Phe
610 615 620

Pro Asp Thr Pro Leu Glu Glu Trp Gln Glu Ile Asp Glu Lys Ile Asn
625 630 635 640

Glu Met Lys Ser His Leu Asp Ile Leu Leu Asn Leu Thr Gly Ile Val
645 650 655

Pro Gln His Ile Asp Val Asp Ser Val Ser Val Leu Gln Ala Tyr Ile
660 665 670

Phe Asn Met Ile Gln Gln Trp Leu Leu Lys Ile Gly Asn Glu Ile Asn
675 680 685

Asn Gly Asn Ile Glu Leu Gln His His Met Asp Glu Leu His Ile Ser
690 695 700

Met Ile Gln Trp Met Val Asn Leu Leu Ile Leu Met Ile Pro Asn Phe
705 710 715 720

Thr Asp Gln Asp Cys Leu Leu Lys Leu Glu Glu Glu Ser Ala Glu Lys
725 730 735

His Asp Ile Gly Val Ala Arg Leu Glu Leu Asp Ala Ile Glu Leu Thr
740 745 750

Arg Lys Leu Tyr Gln Tyr Ser Ser Tyr Leu Ser Ser Cys Cys Lys Gly
755 760 765

Met Val Thr Ala Met Ala Leu Ser Lys Ser Thr Asn Ser His Lys Asn
770 775 780

```
Ala Thr Glu Asp Leu Tyr Glu Val Asp Lys Leu Lys Lys Glu Cys Tyr
785                 790                 795                 800

Glu Trp Ile Asn Thr Cys Ser Cys Leu Leu Ser Asn Ile Lys Gly Arg
                805                 810                 815

Lys Ile Thr Leu Leu Thr Tyr Glu Glu Ile Glu Arg Leu Leu Glu Glu
            820                 825                 830

Glu Ala Val Lys Glu Phe Ile Glu Pro Glu Ile Asp Glu Ser Phe Lys
        835                 840                 845

Glu Asp Glu Glu Glu Ser Lys Glu Asp Arg Lys Leu Gln Glu Glu Asn
    850                 855                 860

Lys Glu Arg Ala Glu Glu Gln Pro Ser Thr Ser Thr Glu Lys Glu Lys
865                 870                 875                 880

Leu Ile Arg Phe Ile Gly Glu Asp Glu Asn Val His Ser Lys Pro Leu
                885                 890                 895

Phe Glu Thr Asp Val Leu Ser Ser Trp Arg Glu Ser Ala Lys Gln Gly
            900                 905                 910

Thr Leu Ala Gln Lys Tyr Leu Glu Ala Met Ala Val Ile Glu His Met
        915                 920                 925

Gln Glu Lys Leu Leu Glu Val Glu Asn Arg Ala Arg Gln Ala Glu Glu
    930                 935                 940

Lys Phe Glu Asp Ala Tyr Glu Lys Leu His His Thr Leu Ile Lys Asn
945                 950                 955                 960

Lys Asp Leu Glu Glu Leu Val Met Thr Ser Arg Lys Glu Ser Lys Glu
                965                 970                 975

Glu Lys Glu Asn Gln Asp Glu Arg Glu Val Lys Glu Glu Glu Glu Gln
            980                 985                 990

Gln Glu Glu Glu Glu Val Arg Ser  Ala Glu Asn Ser Ser  Lys Ser
Pro
        995                 1000                1005
```

Lys Lys Gly His
1010

<210> 8124
<211> 872
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AXDND1; "

<220>
<221> source
<223> /note="Gene Name:
axonemal dynein light chain
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000391716"

<400> 8124
Leu Thr Tyr Ala Ala Asn Ala Gly Pro Cys Pro Glu Asn Leu Leu Pro
1 5 10 15

Pro Lys Lys Ile Lys Thr Pro Lys Gly Thr Leu Pro Arg Leu Val Asp
20 25 30

His Val Trp His His Pro Val Arg Arg Asn Lys Phe Lys Tyr Leu Ile
35 40 45

Asp His Pro Val Ser Leu Thr Gly Ala Gly Arg Asp Ile Ser Phe Leu
50 55 60

Tyr Asp Val Thr Tyr Ala Lys Gly Gln Thr Arg Glu Lys Ala Val Cys
65 70 75 80

Pro Pro His Leu Ala Arg Ser Leu Gln Ser His Asp Gly Val Ile Val
85 90 95

Pro His Lys Pro Lys Thr Leu Thr Asp Thr Leu Ile Pro Glu Glu Phe
100 105 110

```
His Ile Val Ser Ser Thr Gly Val Ser Gly Leu Glu Cys Tyr Asp Asp
        115                 120                 125

Lys Tyr Thr Thr Leu Leu Thr Asp Ser Glu Asn Arg Leu Leu Leu Phe
    130                 135                 140

Pro Ser Met Lys Pro Asn Lys Arg Val Glu Val Ala Gln Leu Asn Asp
145                 150                 155                 160

Val Met Asp Thr Met Leu Glu Arg Ala Gly Val Glu Asn Gln Glu Tyr
                165                 170                 175

Thr Gly Pro Thr Lys Met His Lys Leu Leu His Ile Leu Lys Lys Glu
            180                 185                 190

Gln Thr Ile Tyr Asn Met Ile Phe His Glu Leu Ile Arg Gln Val Ser
        195                 200                 205

Val Asp Cys Ala Asp Arg Gly Glu Leu Leu Ser Lys Val Arg Glu Arg
    210                 215                 220

Tyr Val Gln Met Leu Asp Gln Ile Ala Arg Gln Met Ile Asp Phe Tyr
225                 230                 235                 240

Lys Asp Leu Val Thr Gln Arg Val Met Asp Gln Arg Ile Leu Glu Glu
                245                 250                 255

Leu Tyr Asn Phe Lys His Val Ile Glu Glu Leu Thr Arg Glu Leu Cys
            260                 265                 270

Leu Val Arg Ala His Asp Val Lys Leu Thr Lys Glu Thr Glu Lys Ala
        275                 280                 285

His Lys Asp Leu Ala Gln Ala Leu Leu Asn Ala Glu Lys Asn Ala Lys
    290                 295                 300

Ile Val Glu Glu Tyr His Asp Leu Tyr Thr Leu Gln Arg Glu Arg Met
305                 310                 315                 320

Glu Asn Asp Met Lys Lys Leu Val Ala Glu Arg Asp Ile Trp Ser Ser
                325                 330                 335
```

```
Ala Thr Tyr Glu Leu Ala Leu Lys Val Ile Glu Arg Asn Arg Val Ile
            340                 345                 350

Leu Ala Arg Arg Leu Tyr Leu Asn Glu Lys Gly Trp Asn Lys Tyr Thr
        355                 360                 365

Lys His Phe Ile Ile Leu Leu Ser Asn Lys Asp Thr Glu Asp Leu Ala
    370                 375                 380

Leu Leu Gln Lys Leu Thr Gln Lys Trp Arg Asn Leu Val Asn Lys Leu
385                 390                 395                 400

Lys Gln Glu Val Glu Gln Met Glu Glu Ser Thr Ser Glu Thr Leu Lys
                405                 410                 415

Ile Val Lys Asp Gly Leu Ile Lys Trp Gln Glu Phe Phe Asn Glu Lys
            420                 425                 430

Asp Ile Leu Ser Pro Asn Lys Gly Asn Ile Phe Asn Ser Val Leu Leu
        435                 440                 445

Asp Phe Lys Gln Trp Gln Lys Ile Leu Asn Glu Lys Lys Glu Glu Phe
    450                 455                 460

Thr Gly Asp Val Leu Leu Ser Lys Tyr Asp Thr Leu Lys Ile Ile Lys
465                 470                 475                 480

His Leu Gln Glu Asn Trp Ala Asp Ile Gly Leu Gly Ile Phe Asn Arg
                485                 490                 495

His Lys Ser Leu Glu Gly Glu Met Pro Ser Glu Arg Gln Tyr Met Glu
            500                 505                 510

Glu Ile Ile Lys Asn Ile Gln Lys Leu Tyr Lys Glu Tyr Glu Ile Arg
        515                 520                 525

Ile Asn Gly Asp Asn Gly Tyr Ser Lys Ile Leu Pro Ser Leu Ile Ser
    530                 535                 540

Ser Leu Asp Phe Cys Ser Phe Lys Leu Glu Asn Leu Glu Phe Pro Asp
545                 550                 555                 560

Thr Pro Leu Glu Glu Trp Gln Glu Ile Asp Glu Lys Ile Asn Glu Met
```

565 570 575

Lys Ser His Leu Asp Ile Leu Leu Asn Leu Thr Gly Ile Val Pro Gln
580 585 590

His Ile Asp Val Asp Ser Val Ser Val Leu Gln Ala Tyr Ile Phe Asn
595 600 605

Met Ile Gln Gln Trp Leu Leu Lys Ile Gly Asn Glu Ile Asn Asn Gly
610 615 620

Asn Ile Glu Leu Gln His His Met Asp Glu Leu His Ile Ser Met Ile
625 630 635 640

Gln Trp Met Val Asn Leu Leu Ile Leu Met Ile Pro Asn Phe Thr Asp
645 650 655

Gln Asp Cys Leu Leu Lys Leu Glu Glu Glu Ser Ala Glu Lys His Asp
660 665 670

Ile Gly Val Ala Arg Leu Glu Leu Asp Ala Ile Glu Leu Thr Arg Lys
675 680 685

Leu Tyr Gln Tyr Ser Ser Tyr Leu Ser Ser Cys Cys Lys Gly Met Val
690 695 700

Thr Ala Met Ala Leu Ser Lys Ser Thr Asn Ser His Lys Asn Ala Thr
705 710 715 720

Glu Asp Leu Tyr Glu Val Asp Lys Leu Lys Gln Pro Ser Thr Ser Thr
725 730 735

Glu Lys Glu Lys Leu Ile Arg Phe Ile Gly Glu Asp Glu Asn Val His
740 745 750

Ser Lys Pro Leu Phe Glu Thr Asp Val Leu Ser Ser Trp Arg Glu Ser
755 760 765

Ala Lys Gln Gly Thr Leu Ala Gln Lys Tyr Leu Glu Ala Met Ala Val
770 775 780

Ile Glu His Met Gln Glu Lys Leu Leu Glu Val Glu Asn Arg Ala Arg
785 790 795 800

```
Gln Ala Glu Glu Lys Phe Glu Asp Ala Tyr Glu Lys Leu His His Thr
                805                 810                 815

Leu Ile Lys Asn Lys Asp Leu Glu Glu Leu Val Met Thr Ser Arg Lys
            820                 825                 830

Glu Ser Lys Glu Glu Lys Glu Asn Gln Asp Glu Arg Glu Val Lys Glu
        835                 840                 845

Glu Glu Glu Gln Gln Glu Glu Glu Glu Val Arg Ser Ala Glu Asn Ser
    850                 855                 860

Ser Lys Ser Pro Lys Lys Gly His
865                 870
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<210> 8125
<211> 672
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AXDND1; "

<220>
<221> source
<223> /note="Gene Name:
axonemal dynein light chain
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416712"

<400> 8125

```
Met Ser Leu Pro Lys Thr Pro Ser Thr Pro Leu Asn Ser Thr Ser Thr
1               5                  10                  15

Ser Glu Ser Lys Lys Leu Lys Val Ser Val Ala Lys Glu Gly Thr Arg
            20                  25                  30

Gly Leu Pro Glu Leu Lys Glu Lys Lys Asn Met Val Asp Arg Ser Lys
        35                  40                  45
```

```
Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe Ile Pro Lys Glu Val Leu
    50                  55                  60

Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly Pro Cys Pro Glu Asn Leu
65                  70                  75                  80

Leu Pro Pro Lys Lys Ile Lys Thr Pro Lys Gly Thr Leu Pro Arg Leu
                85                  90                  95

Val Asp His Val Trp His His Pro Val Arg Arg Asn Lys Phe Lys Tyr
            100                 105                 110

Leu Ile Asp His Pro Val Ser Leu Thr Gly Ala Gly Arg Asp Ile Ser
        115                 120                 125

Phe Leu Tyr Asp Val Thr Tyr Ala Lys Gly Gln Thr Arg Glu Lys Ala
    130                 135                 140

Val Cys Pro Pro His Leu Ala Arg Ser Leu Gln Ser His Asp Gly Val
145                 150                 155                 160

Ile Val Pro His Lys Pro Lys Thr Leu Thr Asp Thr Leu Ile Pro Glu
                165                 170                 175

Glu Phe His Ile Val Ser Ser Thr Gly Val Ser Gly Leu Glu Cys Tyr
            180                 185                 190

Asp Asp Lys Tyr Thr Thr Leu Leu Thr Asp Ser Glu Asn Arg Leu Leu
        195                 200                 205

Leu Phe Pro Ser Met Lys Pro Asn Lys Arg Val Glu Val Ala Gln Leu
    210                 215                 220

Asn Asp Val Met Asp Thr Met Leu Glu Arg Ala Gly Val Glu Asn Gln
225                 230                 235                 240

Glu Tyr Thr Gly Pro Thr Lys Met His Lys Leu Leu His Ile Leu Lys
                245                 250                 255

Lys Glu Gln Thr Ile Tyr Asn Met Ile Phe His Glu Leu Ile Arg Gln
            260                 265                 270
```

```
Val Ser Val Asp Cys Ala Asp Arg Gly Glu Leu Leu Ser Lys Val Arg
        275                 280                 285

Glu Arg Tyr Val Gln Met Leu Asp Gln Ile Ala Arg Gln Met Ile Asp
    290                 295                 300

Phe Tyr Lys Asp Leu Val Thr Gln Arg Val Met Asp Gln Arg Ile Leu
305                 310                 315                 320

Glu Glu Leu Tyr Asn Phe Lys His Val Ile Glu Glu Leu Thr Arg Glu
                325                 330                 335

Leu Cys Leu Val Arg Ala His Asp Val Lys Leu Thr Lys Glu Thr Glu
            340                 345                 350

Lys Ala His Lys Asp Leu Ala Gln Ala Leu Leu Asn Ala Glu Lys Asn
        355                 360                 365

Ala Lys Ile Val Glu Glu Tyr His Asp Leu Tyr Thr Leu Gln Arg Glu
    370                 375                 380

Arg Met Glu Asn Asp Met Lys Lys Leu Val Ala Glu Arg Asp Ile Trp
385                 390                 395                 400

Ser Ser Ala Thr Tyr Glu Leu Ala Leu Lys Val Ile Glu Arg Asn Arg
                405                 410                 415

Val Ile Leu Ala Arg Arg Leu Tyr Leu Asn Glu Lys Gly Trp Asn Lys
            420                 425                 430

Tyr Thr Lys His Phe Ile Ile Leu Leu Ser Asn Lys Asp Thr Glu Asp
        435                 440                 445

Leu Ala Leu Leu Gln Lys Leu Thr Gln Lys Trp Arg Asn Leu Val Asn
    450                 455                 460

Lys Leu Lys Gln Glu Val Glu Gln Met Glu Glu Ser Thr Ser Glu Thr
465                 470                 475                 480

Leu Lys Ile Val Lys Asp Gly Leu Ile Lys Trp Gln Glu Phe Phe Asn
                485                 490                 495

Glu Lys Asp Ile Leu Ser Pro Asn Lys Gly Asn Ile Phe Asn Ser Val
```

```
            500                 505                 510

Leu Leu Asp Phe Lys Gln Trp Gln Lys Ile Leu Asn Glu Lys Lys Glu
        515                 520                 525

Glu Phe Thr Gly Asp Val Leu Leu Ser Lys Tyr Asp Thr Leu Lys Ile
    530                 535                 540

Ile Lys His Leu Gln Glu Asn Trp Ala Asp Ile Gly Leu Gly Ile Phe
545                 550                 555                 560

Asn Arg His Lys Ser Leu Glu Gly Glu Met Pro Ser Glu Arg Gln Tyr
                565                 570                 575

Met Glu Glu Ile Ile Lys Asn Ile Gln Lys Leu Tyr Lys Glu Tyr Glu
            580                 585                 590

Ile Arg Ile Asn Gly Asp Asn Gly Tyr Ser Lys Ile Leu Pro Ser Leu
        595                 600                 605

Ile Ser Ser Leu Asp Phe Cys Ser Phe Lys Leu Glu Asn Leu Glu Phe
    610                 615                 620

Pro Asp Thr Pro Leu Glu Glu Trp Gln Glu Ile Asp Glu Lys Ile Asn
625                 630                 635                 640

Glu Met Lys Ser His Leu Asp Ile Leu Leu Asn Leu Thr Gly Cys Ser
                645                 650                 655

Thr Ala His Arg Cys Gly Phe Cys Phe Gly Thr Pro Ser Val Tyr Ile
            660                 665                 670


<210> 8126
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: AXDND1; "

<220>
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<221> source
<223> /note="Gene Name:
axonemal dynein light chain
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422992"

<400> 8126
Met Ser Leu Pro Lys Thr Pro Ser Thr Pro Leu Asn Ser Thr Ser Thr
1 5 10 15

Ser Glu Ser Lys Lys Leu Lys Val Ser Val Ala Lys Glu Gly Thr Arg
20 25 30

Gly Leu Pro Glu Leu Lys Glu Lys Lys Asn Met Val Asp Arg Ser Lys
35 40 45

Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe Ile Pro Lys Glu Val Leu
50 55 60

Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly Pro Cys Pro Glu
65 70 75

<210> 8127
<211> 529
<212> PRT
<213> Homo sapiens

<220>
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<220>
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axonemal dynein light chain
domain containing 1; "

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<223> /note="ENSP ID: ENSP00000424373"

<400> 8127
Met Ser Leu Pro Lys Thr Pro Ser Thr Pro Leu Asn Ser Thr Ser Thr
1 5 10 15

```
Ser Glu Ser Lys Lys Leu Lys Val Ser Val Ala Lys Glu Gly Thr Arg
            20                  25                  30

Gly Leu Pro Glu Leu Lys Glu Lys Lys Asn Met Val Asp Arg Ser Lys
        35                  40                  45

Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe Ile Pro Lys Glu Val Leu
    50                  55                  60

Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly Pro Cys Pro Glu Asn Leu
65                  70                  75                  80

Leu Pro Pro Lys Lys Ile Lys Thr Pro Lys Gly Thr Leu Pro Arg Leu
                85                  90                  95

Val Asp His Val Trp His His Pro Val Arg Arg Asn Lys Phe Lys Tyr
            100                 105                 110

Leu Ile Asp His Pro Val Ser Leu Thr Gly Ala Gly Arg Asp Ile Ser
        115                 120                 125

Phe Leu Tyr Asp Val Thr Tyr Ala Lys Gly Gln Thr Arg Glu Lys Ala
    130                 135                 140

Val Cys Pro Pro His Leu Ala Arg Ser Leu Gln Ser His Asp Gly Val
145                 150                 155                 160

Ile Val Pro His Lys Pro Lys Thr Leu Thr Asp Thr Leu Ile Pro Glu
                165                 170                 175

Glu Phe His Ile Val Ser Ser Thr Gly Val Ser Gly Leu Glu Cys Tyr
            180                 185                 190

Asp Asp Lys Tyr Thr Thr Leu Leu Thr Asp Ser Glu Asn Arg Leu Leu
        195                 200                 205

Leu Phe Pro Ser Met Lys Pro Asn Lys Arg Val Glu Val Ala Gln Leu
    210                 215                 220

Asn Asp Val Met Asp Thr Met Leu Glu Arg Ala Gly Val Glu Asn Gln
225                 230                 235                 240
```

```
Glu Tyr Thr Gly Pro Thr Lys Met His Lys Leu Leu His Ile Leu Lys
                245                 250                 255

Lys Glu Gln Thr Ile Tyr Asn Met Ile Phe His Glu Leu Ile Arg Gln
            260                 265                 270

Val Ser Val Asp Cys Ala Asp Arg Gly Glu Leu Leu Ser Lys Val Arg
        275                 280                 285

Glu Arg Tyr Val Gln Met Leu Asp Gln Ile Ala Arg Gln Met Ile Asp
    290                 295                 300

Phe Tyr Lys Asp Leu Val Thr Gln Arg Val Met Asp Gln Arg Ile Leu
305                 310                 315                 320

Glu Glu Leu Tyr Asn Phe Lys His Val Ile Glu Glu Leu Thr Arg Glu
                325                 330                 335

Leu Cys Leu Val Arg Ala His Asp Val Lys Leu Thr Lys Glu Thr Glu
            340                 345                 350

Lys Ala His Lys Asp Leu Ala Gln Ala Leu Leu Asn Ala Glu Lys Asn
        355                 360                 365

Ala Lys Ile Val Glu Glu Tyr His Asp Leu Tyr Thr Leu Gln Arg Glu
    370                 375                 380

Arg Met Glu Asn Asp Met Lys Lys Leu Val Ala Glu Arg Asp Ile Trp
385                 390                 395                 400

Ser Ser Ala Thr Tyr Glu Leu Ala Leu Lys Val Ile Glu Arg Asn Arg
                405                 410                 415

Val Ile Leu Ala Arg Arg Leu Tyr Leu Asn Glu Lys Gly Trp Asn Lys
            420                 425                 430

Tyr Thr Lys His Phe Ile Ile Leu Leu Ser Asn Lys Asp Thr Glu Asp
        435                 440                 445

Leu Ala Leu Leu Gln Lys Leu Thr Gln Lys Trp Arg Asn Leu Val Asn
    450                 455                 460

Lys Leu Lys Gln Glu Val Glu Gln Met Glu Glu Ser Thr Ser Glu Thr
```

```
465                 470                 475                 480

Leu Lys Ile Val Lys Asp Gly Leu Ile Lys Trp Gln Glu Phe Phe Asn
                485                 490                 495

Glu Lys Asp Ile Leu Ser Pro Asn Lys Gly Asn Ile Phe Asn Ser Val
            500                 505                 510

Leu Leu Asp Phe Lys Gln Trp Gln Lys Val Thr Pro Lys Phe Phe Gln
        515                 520                 525

Val
```

<210> 8128
<211> 151
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1686; "

<220>
<221> source
<223> /note="Gene Symbol: AXDND1; "

<220>
<221> source
<223> /note="Gene Name:
axonemal dynein light chain
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425019"

<400> 8128

```
Met Val Asp Arg Ser Lys Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe
1               5                   10                  15

Ile Pro Lys Glu Val Leu Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly
            20                  25                  30

Pro Cys Pro Glu Asn Leu Leu Pro Pro Lys Lys Ile Lys Thr Pro Lys
        35                  40                  45

Gly Thr Leu Pro Arg Leu Val Asp His Val Trp His His Pro Val Arg
    50                  55                  60
```

```
Arg Asn Lys Phe Lys Tyr Leu Ile Asp His Pro Val Ser Leu Thr Gly
65                  70                  75                  80

Ala Gly Arg Asp Ile Ser Phe Leu Tyr Asp Val Thr Tyr Ala Lys Gly
                85                  90                  95

Gln Thr Arg Glu Lys Ala Val Cys Pro Pro His Leu Ala Arg Ser Leu
            100                 105                 110

Gln Ser His Asp Gly Val Ile Val Pro His Lys Pro Lys Thr Leu Thr
        115                 120                 125

Asp Thr Leu Ile Pro Glu Glu Phe His Ile Val Ser Ser Thr Gly Val
    130                 135                 140

Ser Gly Leu Glu Cys Tyr Asp
145                 150


<210> 8129
<211> 123
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1686; "

<220>
<221> source
<223> /note="Gene Symbol: AXDND1; "

<220>
<221> source
<223> /note="Gene Name:
      axonemal dynein light chain
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425198"

<400> 8129
Met Val Asp Arg Ser Lys Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe
1               5                   10                  15

Ile Pro Lys Glu Val Leu Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly
            20                  25                  30
```

```
Pro Cys Pro Glu Asn Leu Leu Pro Pro Lys Lys Ile Lys Thr Pro Lys
        35                  40                  45

Gly Thr Leu Pro Arg Leu Val Asp His Val Trp His His Pro Val Arg
    50                  55                  60

Arg Asn Lys Phe Lys Tyr Leu Ile Asp His Pro Val Ser Leu Thr Gly
65                  70                  75                  80

Ala Gly Arg Asp Ile Ser Phe Leu Tyr Asp Val Thr Tyr Ala Lys Gly
                85                  90                  95

Gln Thr Arg Glu Lys Ala Val Cys Pro Pro His Leu Ala Arg Ser Leu
            100                 105                 110

Gln Ser His Asp Gly Val Ile Val Pro His Lys
        115                 120


<210> 8130
<211> 529
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1686; "

<220>
<221> source
<223> /note="Gene Symbol: AXDND1; "

<220>
<221> source
<223> /note="Gene Name:
      axonemal dynein light chain
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482167"

<400> 8130
Met Ser Leu Pro Lys Thr Pro Ser Thr Pro Leu Asn Ser Thr Ser Thr
1               5                   10                  15

Ser Glu Ser Lys Lys Leu Lys Val Ser Val Ala Lys Glu Gly Thr Arg
            20                  25                  30
```

```
Gly Leu Pro Glu Leu Lys Glu Lys Lys Asn Met Val Asp Arg Ser Lys
        35                  40                  45

Leu Leu Pro Thr Ser Leu Gln Asn Glu Phe Ile Pro Lys Glu Val Leu
    50                  55                  60

Leu Ser Leu Thr Tyr Ala Ala Asn Ala Gly Pro Cys Pro Glu Asn Leu
65                  70                  75                  80

Leu Pro Pro Lys Lys Ile Lys Thr Pro Lys Gly Thr Leu Pro Arg Leu
                85                  90                  95

Val Asp His Val Trp His His Pro Val Arg Arg Asn Lys Phe Lys Tyr
            100                 105                 110

Leu Ile Asp His Pro Val Ser Leu Thr Gly Ala Gly Arg Asp Ile Ser
        115                 120                 125

Phe Leu Tyr Asp Val Thr Tyr Ala Lys Gly Gln Thr Arg Glu Lys Ala
    130                 135                 140

Val Cys Pro Pro His Leu Ala Arg Ser Leu Gln Ser His Asp Gly Val
145                 150                 155                 160

Ile Val Pro His Lys Pro Lys Thr Leu Thr Asp Thr Leu Ile Pro Glu
                165                 170                 175

Glu Phe His Ile Val Ser Ser Thr Gly Val Ser Gly Leu Glu Cys Tyr
            180                 185                 190

Asp Asp Lys Tyr Thr Thr Leu Leu Thr Asp Ser Glu Asn Arg Leu Leu
        195                 200                 205

Leu Phe Pro Ser Met Lys Pro Asn Lys Arg Val Glu Val Ala Gln Leu
    210                 215                 220

Asn Asp Val Met Asp Thr Met Leu Glu Arg Ala Gly Val Glu Asn Gln
225                 230                 235                 240

Glu Tyr Thr Gly Pro Thr Lys Met His Lys Leu Leu His Ile Leu Lys
                245                 250                 255

Lys Glu Gln Thr Ile Tyr Asn Met Ile Phe His Glu Leu Ile Arg Gln
```

260 265 270

Val Ser Val Asp Cys Ala Asp Arg Gly Glu Leu Leu Ser Lys Val Arg
275 280 285

Glu Arg Tyr Val Gln Met Leu Asp Gln Ile Ala Arg Gln Met Ile Asp
290 295 300

Phe Tyr Lys Asp Leu Val Thr Gln Arg Val Met Asp Gln Arg Ile Leu
305 310 315 320

Glu Glu Leu Tyr Asn Phe Lys His Val Ile Glu Glu Leu Thr Arg Glu
325 330 335

Leu Cys Leu Val Arg Ala His Asp Val Lys Leu Thr Lys Glu Thr Glu
340 345 350

Lys Ala His Lys Asp Leu Ala Gln Ala Leu Leu Asn Ala Glu Lys Asn
355 360 365

Ala Lys Ile Val Glu Glu Tyr His Asp Leu Tyr Thr Leu Gln Arg Glu
370 375 380

Arg Met Glu Asn Asp Met Lys Lys Leu Val Ala Glu Arg Asp Ile Trp
385 390 395 400

Ser Ser Ala Thr Tyr Glu Leu Ala Leu Lys Val Ile Glu Arg Asn Arg
405 410 415

Val Ile Leu Ala Arg Arg Leu Tyr Leu Asn Glu Lys Gly Trp Asn Lys
420 425 430

Tyr Thr Lys His Phe Ile Ile Leu Leu Ser Asn Lys Asp Thr Glu Asp
435 440 445

Leu Ala Leu Leu Gln Lys Leu Thr Gln Lys Trp Arg Asn Leu Val Asn
450 455 460

Lys Leu Lys Gln Glu Val Glu Gln Met Glu Glu Ser Thr Ser Glu Thr
465 470 475 480

Leu Lys Ile Val Lys Asp Gly Leu Ile Lys Trp Gln Glu Phe Phe Asn
485 490 495

Glu Lys Asp Ile Leu Ser Pro Asn Lys Gly Asn Ile Phe Asn Ser Val
500 505 510

Leu Leu Asp Phe Lys Gln Trp Gln Lys Val Thr Pro Lys Phe Phe Gln
515 520 525

Val

<210> 8131
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1687; "

<220>
<221> source
<223> /note="Gene Symbol: AZU1; "

<220>
<221> source
<223> /note="Gene Name:
azurocidin 1; "

<220>
<221> source
<223> /note="Uniprot ID: P20160; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000233997"

<400> 8131
Met Thr Arg Leu Thr Val Leu Ala Leu Leu Ala Gly Leu Leu Ala Ser
1 5 10 15

Ser Arg Ala Gly Ser Ser Pro Leu Leu Asp Ile Val Gly Gly Arg Lys
20 25 30

Ala Arg Pro Arg Gln Phe Pro Phe Leu Ala Ser Ile Gln Asn Gln Gly
35 40 45

Arg His Phe Cys Gly Gly Ala Leu Ile His Ala Arg Phe Val Met Thr
50 55 60

```
Ala Ala Ser Cys Phe Gln Ser Gln Asn Pro Gly Val Ser Thr Val Val
65                  70                  75                  80

Leu Gly Ala Tyr Asp Leu Arg Arg Arg Glu Arg Gln Ser Arg Gln Thr
                85                  90                  95

Phe Ser Ile Ser Ser Met Ser Glu Asn Gly Tyr Asp Pro Gln Gln Asn
            100                 105                 110

Leu Asn Asp Leu Met Leu Leu Gln Leu Asp Arg Glu Ala Asn Leu Thr
        115                 120                 125

Ser Ser Val Thr Ile Leu Pro Leu Pro Leu Gln Asn Ala Thr Val Glu
    130                 135                 140

Ala Gly Thr Arg Cys Gln Val Ala Gly Trp Gly Ser Gln Arg Ser Gly
145                 150                 155                 160

Gly Arg Leu Ser Arg Phe Pro Arg Phe Val Asn Val Thr Val Thr Pro
                165                 170                 175

Glu Asp Gln Cys Arg Pro Asn Asn Val Cys Thr Gly Val Leu Thr Arg
            180                 185                 190

Arg Gly Gly Ile Cys Asn Gly Asp Gly Gly Thr Pro Leu Val Cys Glu
        195                 200                 205

Gly Leu Ala His Gly Val Ala Ser Phe Ser Leu Gly Pro Cys Gly Arg
    210                 215                 220

Gly Pro Asp Phe Phe Thr Arg Val Ala Leu Phe Arg Asp Trp Ile Asp
225                 230                 235                 240

Gly Val Leu Asn Asn Pro Gly Pro Gly Pro Ala
                245                 250


<210> 8132
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1687; "
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<220>
<221> source
<223> /note="Gene Symbol: AZU1; "

<220>
<221> source
<223> /note="Gene Name:
azurocidin 1; "

<220>
<221> source
<223> /note="Uniprot ID: P20160; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479183"

<400> 8132

```
Met Thr Arg Leu Thr Val Leu Ala Leu Leu Ala Gly Leu Leu Ala Ser
1               5                  10                  15

Ser Arg Ala Gly Ser Ser Pro Leu Leu Asp Ile Val Gly Gly Arg Lys
            20                  25                  30

Ala Arg Pro Arg Gln Phe Pro Phe Leu Ala Ser Ile Gln Asn Gln Gly
        35                  40                  45

Arg His Phe Cys Gly Gly Ala Leu Ile His Ala Arg Phe Val Met Thr
    50                  55                  60

Ala Ala Ser Cys Phe Gln Ser Gln Asn Pro Gly Val Ser Thr Val Val
65                  70                  75                  80

Leu Gly Ala Tyr Asp Leu Arg Arg Arg Glu Arg Gln Ser Arg Gln Thr
                85                  90                  95

Phe Ser Ile Ser Ser Met Ser Glu Asn Gly Tyr Asp Pro Gln Gln Asn
            100                 105                 110

Leu Asn Asp Leu Met Leu Leu Gln Leu Asp Arg Glu Ala Asn Leu Thr
        115                 120                 125

Ser Ser Val Thr Ile Leu Pro Leu Pro Leu Gln Asn Ala Thr Val Glu
    130                 135                 140

Ala Gly Thr Arg Cys Gln Val Ala Gly Trp Gly Ser Gln Arg Ser Gly
145                 150                 155                 160
```

```
Gly Arg Leu Ser Arg Phe Pro Arg Phe Val Asn Val Thr Val Thr Pro
                165                 170                 175

Glu Asp Gln Cys Arg Pro Asn Asn Val Cys Thr Gly Val Leu Thr Arg
            180                 185                 190

Arg Gly Gly Ile Cys Asn Gly Asp Gly Gly Thr Pro Leu Val Cys Glu
        195                 200                 205

Gly Leu Ala His Gly Val Ala Ser Phe Ser Leu Gly Pro Cys Gly Arg
    210                 215                 220

Gly Pro Asp Phe Phe Thr Arg Val Ala Leu Phe Arg Asp Trp Ile Asp
225                 230                 235                 240

Gly Val Leu Asn Asn Pro Gly Pro Gly Pro Ala
                245                 250


<210> 8133
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1687; "

<220>
<221> source
<223> /note="Gene Symbol: AZU1; "

<220>
<221> source
<223> /note="Gene Name:
      azurocidin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481172"

<400> 8133
Met Thr Ala Ala Ser Cys Phe Gln Ser Gln Asn Pro Gly Val Ser Thr
1               5                   10                  15

Val Val Leu Gly Ala Tyr Asp Leu Arg Arg Arg Glu Arg Gln Ser Arg
            20                  25                  30

Gln Thr Phe Ser Ile Ser Ser Met Ser Glu Asn Gly Tyr Asp Pro Gln
```

```
        35                  40                  45

Gln Asn Leu Asn Asp Leu Met Leu Leu Gln Leu Asp Arg Glu Ala Asn
    50                  55                  60

Leu Thr Ser Ser Val Thr Ile Leu Pro Leu Pro Leu Gln Asn Ala Thr
65                  70                  75                  80

Val Glu Ala Gly Thr Arg Cys Gln Val Ala Gly Trp Gly Ser Gln Arg
                85                  90                  95

Ser Gly Gly Arg Leu Ser Arg Phe Pro Arg Phe Val Asn Val Thr Val
            100                 105                 110

Thr Pro Glu Asp Gln Cys Arg Pro Asn Asn Val Cys Thr Gly Val Leu
        115                 120                 125

Thr Arg Arg Gly Gly Ile Cys Asn Val Ser Ala Pro Cys Gly Gly Arg
    130                 135                 140

Arg Gly Pro Glu Arg Tyr
145                 150


<210> 8134
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1687; "

<220>
<221> source
<223> /note="Gene Symbol: AZU1; "

<220>
<221> source
<223> /note="Gene Name:
      azurocidin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488091"

<400> 8134
Met Thr Ala Ala Ser Cys Phe Gln Ser Gln Asn Pro Gly Val Ser Thr
1               5                   10                  15
```

```
Val Val Leu Gly Ala Tyr Asp Leu Arg Arg Arg Glu Arg Gln Ser Arg
            20                  25                  30

Gln Thr Phe Ser Ile Ser Ser Met Ser Glu Asn Gly Tyr Asp Pro Gln
        35                  40                  45

Gln Asn Leu Asn Asp Leu Met Leu Leu Gln Leu Asp Arg Glu Ala Asn
    50                  55                  60

Leu Thr Ser Ser Val Thr Ile Leu Pro Leu Pro Leu Gln Asn Ala Thr
65                  70                  75                  80

Val Glu Ala Gly Thr Arg Cys Gln Val Ala Gly Trp Gly Ser Gln Arg
                85                  90                  95

Ser Gly Gly Arg Leu Ser Arg Phe Pro Arg Phe Val Asn Val Thr Val
            100                 105                 110

Thr Pro Glu Asp Gln Cys Arg Pro Asn Asn Val Cys Thr Gly Val Leu
        115                 120                 125

Thr Arg Arg Gly Gly Ile Cys Asn Val Ser Ala Pro Cys Gly Gly Arg
    130                 135                 140

Arg Gly Pro Glu Arg Tyr
145                 150


<210> 8135
<211> 289
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1688; "

<220>
<221> source
<223> /note="Gene Symbol: BTLA; "

<220>
<221> source
<223> /note="Gene Name:
      B and T lymphocyte associated; "

<220>
<221> source
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<223> /note="Uniprot ID: Q7Z6A9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000333919"

<400> 8135

```
Met Lys Thr Leu Pro Ala Met Leu Gly Thr Gly Lys Leu Phe Trp Val
1               5                  10                  15

Phe Phe Leu Ile Pro Tyr Leu Asp Ile Trp Asn Ile His Gly Lys Glu
            20                  25                  30

Ser Cys Asp Val Gln Leu Tyr Ile Lys Arg Gln Ser Glu His Ser Ile
        35                  40                  45

Leu Ala Gly Asp Pro Phe Glu Leu Glu Cys Pro Val Lys Tyr Cys Ala
    50                  55                  60

Asn Arg Pro His Val Thr Trp Cys Lys Leu Asn Gly Thr Thr Cys Val
65                  70                  75                  80

Lys Leu Glu Asp Arg Gln Thr Ser Trp Lys Glu Glu Lys Asn Ile Ser
                85                  90                  95

Phe Phe Ile Leu His Phe Glu Pro Val Leu Pro Asn Asp Asn Gly Ser
            100                 105                 110

Tyr Arg Cys Ser Ala Asn Phe Gln Ser Asn Leu Ile Glu Ser His Ser
        115                 120                 125

Thr Thr Leu Tyr Val Thr Asp Val Lys Ser Ala Ser Glu Arg Pro Ser
    130                 135                 140

Lys Asp Glu Met Ala Ser Arg Pro Trp Leu Leu Tyr Arg Leu Leu Pro
145                 150                 155                 160

Leu Gly Gly Leu Pro Leu Leu Ile Thr Thr Cys Phe Cys Leu Phe Cys
                165                 170                 175

Cys Leu Arg Arg His Gln Gly Lys Gln Asn Glu Leu Ser Asp Thr Ala
            180                 185                 190

Gly Arg Glu Ile Asn Leu Val Asp Ala His Leu Lys Ser Glu Gln Thr
        195                 200                 205
```

```
Glu Ala Ser Thr Arg Gln Asn Ser Gln Val Leu Leu Ser Glu Thr Gly
    210                 215                 220

Ile Tyr Asp Asn Asp Pro Asp Leu Cys Phe Arg Met Gln Glu Gly Ser
225                 230                 235                 240

Glu Val Tyr Ser Asn Pro Cys Leu Glu Glu Asn Lys Pro Gly Ile Val
                245                 250                 255

Tyr Ala Ser Leu Asn His Ser Val Ile Gly Pro Asn Ser Arg Leu Ala
            260                 265                 270

Arg Asn Val Lys Glu Ala Pro Thr Glu Tyr Ala Ser Ile Cys Val Arg
        275                 280                 285

Ser
```

<210> 8136
<211> 241
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1688; "

<220>
<221> source
<223> /note="Gene Symbol: BTLA; "

<220>
<221> source
<223> /note="Gene Name:
B and T lymphocyte associated; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z6A9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373178"

<400> 8136

```
Met Lys Thr Leu Pro Ala Met Leu Gly Thr Gly Lys Leu Phe Trp Val
1               5                   10                  15
```

Phe Phe Leu Ile Pro Tyr Leu Asp Ile Trp Asn Ile His Gly Lys Glu
20 25 30

Ser Cys Asp Val Gln Leu Tyr Ile Lys Arg Gln Ser Glu His Ser Ile
35 40 45

Leu Ala Gly Asp Pro Phe Glu Leu Glu Cys Pro Val Lys Tyr Cys Ala
50 55 60

Asn Arg Pro His Val Thr Trp Cys Lys Leu Asn Gly Thr Thr Cys Val
65 70 75 80

Lys Leu Glu Asp Arg Gln Thr Ser Trp Lys Glu Glu Lys Asn Ile Ser
85 90 95

Phe Phe Ile Leu His Phe Glu Pro Val Leu Pro Asn Asp Asn Gly Ser
100 105 110

Tyr Arg Cys Ser Ala Asn Phe Gln Ser Asn Leu Ile Glu Ser His Ser
115 120 125

Thr Thr Leu Tyr Val Thr Gly Lys Gln Asn Glu Leu Ser Asp Thr Ala
130 135 140

Gly Arg Glu Ile Asn Leu Val Asp Ala His Leu Lys Ser Glu Gln Thr
145 150 155 160

Glu Ala Ser Thr Arg Gln Asn Ser Gln Val Leu Leu Ser Glu Thr Gly
165 170 175

Ile Tyr Asp Asn Asp Pro Asp Leu Cys Phe Arg Met Gln Glu Gly Ser
180 185 190

Glu Val Tyr Ser Asn Pro Cys Leu Glu Glu Asn Lys Pro Gly Ile Val
195 200 205

Tyr Ala Ser Leu Asn His Ser Val Ile Gly Pro Asn Ser Arg Leu Ala
210 215 220

Arg Asn Val Lys Glu Ala Pro Thr Glu Tyr Ala Ser Ile Cys Val Arg
225 230 235 240

Ser

<210> 8137
<211> 2624
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
<221> source
<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="Uniprot ID: A6H8Y1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351575"

<400> 8137
Met Phe Arg Arg Ala Arg Leu Ser Val Lys Pro Asn Val Arg Pro Gly
1   5   10   15

Val Gly Ala Arg Gly Ser Thr Ala Ser Asn Pro Gln Arg Gly Arg Glu
            20   25   30

Ser Pro Arg Pro Pro Asp Pro Ala Thr Asp Ser Ala Ser Lys Pro Ala
        35   40   45

Glu Pro Thr Asp Val Pro Thr Val Asp Phe Gly Gly Ala Glu Pro Gln
    50   55   60

Glu Lys Ala Pro Arg Ser Ser Thr Glu Lys Thr Gly Gly Asp Asn Asp
65   70   75   80

Val Glu Glu Ser Ser Arg Ser Ser Ser Thr Val Ser Gln Arg Arg Lys
                85   90   95

Arg Ile Ser Ser Thr Ser Ser Leu Val Lys Ser Ser Val Ser Val Pro

```
            100                 105                 110

Ser Glu Ser His Pro Leu Ser Thr Ile Asn Gln Glu Ala Pro Gln Pro
        115                 120                 125

Thr Ala Thr Ser Thr Lys Glu Lys Gln Pro Cys Ser Asp Arg Tyr Arg
    130                 135                 140

Ile Tyr Lys Ala Gln Lys Leu Arg Glu Met Leu Lys Glu Glu Leu Arg
145                 150                 155                 160

Lys Glu Lys Lys Gln Trp Lys Asn Lys Tyr Ala Ile Asn Glu Ser Gln
                165                 170                 175

Arg Pro Pro Asp Arg Ser Lys Met Thr Met Arg Asp Phe Ile Tyr Tyr
            180                 185                 190

Leu Pro Asp Asn Asn Pro Met Thr Ser Ser Leu Glu Gln Glu Lys Lys
        195                 200                 205

Thr Glu Lys Pro Ser Thr Pro Val Gln Thr Arg Glu Gln Glu Gly Lys
    210                 215                 220

Ser Thr Pro Asn Ala Glu Asp Asn Glu Met Glu Glu Glu Thr Asp Asp
225                 230                 235                 240

Gly Pro Leu Leu Val Pro Arg Val Lys Val Ala Glu Asp Gly Ser Ile
                245                 250                 255

Ile Leu Asp Glu Glu Ser Leu Thr Val Glu Val Leu Arg Thr Lys Gly
            260                 265                 270

Pro Cys Val Val Glu Glu Asn Asp Pro Ile Phe Glu Arg Gly Ser Thr
        275                 280                 285

Thr Thr Tyr Ser Ser Phe Arg Lys Asn Tyr Tyr Ser Lys Pro Trp Ser
    290                 295                 300

Asn Lys Glu Thr Asp Met Phe Phe Leu Ala Ile Ser Met Val Gly Thr
305                 310                 315                 320

Asp Phe Ser Met Ile Gly Gln Leu Phe Pro His Arg Ala Arg Ile Glu
                325                 330                 335
```

```
Ile Lys Asn Lys Phe Lys Arg Glu Glu Lys Thr Asn Gly Trp Arg Ile
            340                 345                 350

Asp Lys Ala Phe Gln Glu Lys Arg Pro Phe Asp Phe Asp Phe Phe Ala
        355                 360                 365

His Leu Leu Gln Lys Val Leu Ala Glu Glu Glu Lys Arg Lys Gln Lys
    370                 375                 380

Ser Val Lys Asn His Ser Leu Lys Glu Lys Lys Ser Thr Lys Pro Arg
385                 390                 395                 400

Lys Asn Val Lys Val Lys Lys Val Ala Cys Glu Gly Val Asn Asn Asp
                405                 410                 415

Pro Asp Glu Ser Met Ser Ser Arg Ile Ser Asp Thr Glu Arg Ser Gln
            420                 425                 430

Lys Asp Ala Gln Thr Val Glu Glu Glu Ser Leu Thr Leu Ser Arg Glu
        435                 440                 445

Asp Ala Glu Gln Val Ala Leu Glu Val Asp Leu Asn Gln Lys Lys Arg
    450                 455                 460

Arg Arg Lys Lys Gln Asp Gly Ala Asn Glu Leu Gly Val Asn Asn Leu
465                 470                 475                 480

Leu Glu Asn Ala Thr Val Gln Ala Gly Pro Ser Lys Gly Glu Lys His
                485                 490                 495

Lys Asn Lys Cys Gln Ala Ile Arg Pro Glu Leu Lys Glu Gly Glu Cys
            500                 505                 510

Ser Lys Glu Gln Met Leu Ser Cys Thr Gln Asn Ile Asp Gly Ile Val
        515                 520                 525

Gly Phe Ala Ser Thr Glu Lys Val Glu Lys Arg Thr Asp Pro Ile Leu
    530                 535                 540

Ser Leu Ser Asn Gln Gln Asp Ala Thr Ser Val Ala Thr Glu Ser Ser
545                 550                 555                 560
```

Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala
565 570 575

Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn
580 585 590

Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val
595 600 605

Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser
610 615 620

Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu
625 630 635 640

Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu
645 650 655

Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu
660 665 670

Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn
675 680 685

Cys Leu Gln Glu Gly Ser Gln Leu Lys Ala Leu Arg Pro Val Gln Val
690 695 700

Arg Gly Arg Leu Gln Lys Pro Lys Pro Asn Ala Gly Lys Ala Ala Glu
705 710 715 720

Arg Lys Glu Ile Leu Ile Ser Gln Glu Glu Ile Gly Ala Asn Val Glu
725 730 735

Lys Asn Glu Asn Glu Ser Cys Ala Asp Arg Asp Thr Pro Gln His Met
740 745 750

Glu Asp Gln Ser Arg Lys Asp Phe Glu Glu Glu Asp Val Ile Leu Gln
755 760 765

Pro Glu Lys Asn Asp Ser Phe Gln Asn Val Gln Pro Asp Glu Pro Lys
770 775 780

```
Val Leu Asn Glu Cys Leu Ser Val Gln Glu Asn Asn Lys Ala Asn Lys
785                 790                 795                 800

Leu Asn Gln Val Pro Ile Leu Arg Thr Arg Phe Gln Lys Pro Lys Pro
                805                 810                 815

Asn Ile Gly Arg Gly Thr Gly Arg Arg Glu Ile Ser Ser Lys Glu Glu
            820                 825                 830

Val Leu Glu Lys Ile Leu Val Ser Gly Glu Met Ala Ala Ala Leu Arg
        835                 840                 845

Glu Thr Val Arg Leu Asp Thr Ser Pro Lys Glu Met Val Pro Ala Glu
    850                 855                 860

Ile Asn Thr Lys Glu Met Gln Ser Asp Leu Lys Glu Thr Gly Arg Arg
865                 870                 875                 880

Ala Ile Ser Pro Arg Glu Lys Ile Leu Asp Val Ile Asp Asp Thr Ile
                885                 890                 895

Glu Met Glu Thr Gly Leu Lys Ala Met Gly Arg Glu Ile Cys Leu Arg
            900                 905                 910

Glu Lys Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Lys Asp
        915                 920                 925

Leu Glu Glu Ala Gly Arg Arg Glu Ile Ser Pro Gln Lys Asn Gly Pro
    930                 935                 940

Glu Glu Val Lys Pro Leu Gly Glu Val Glu Thr Asp Leu Lys Ala Thr
945                 950                 955                 960

Gly Asn Glu Ser Ser Pro Arg Glu Lys Thr Pro Glu Val Thr Asp Ala
                965                 970                 975

Thr Glu Glu Ile Asp Lys Asn Leu Glu Glu Thr Gly Arg Arg Lys Ile
            980                 985                 990

Ser Pro Arg Glu Asn Gly Pro Glu  Glu Val Lys Pro Val  Asp Glu
Met
        995                 1000                1005
```

```
Glu Thr  Asp Leu Asn Ala Thr  Gly Arg Glu Ser Ser  Pro Arg Glu
    1010                1015                1020

Lys Thr  Pro Glu Val Ile Asp  Ala Thr Glu Glu Ile  Asp Leu Glu
    1025                1030                1035

Glu Thr  Glu Arg Glu Val Ser  Pro Gln Glu Asn Gly  Leu Glu Glu
    1040                1045                1050

Val Lys  Pro Leu Gly Glu Met  Glu Thr Asp Leu Lys  Ala Thr Gly
    1055                1060                1065

Arg Asp  Ser Phe Pro Arg Gly  Lys Thr Pro Glu Val  Ile Asp Ala
    1070                1075                1080

Ile Glu  Glu Ile Glu Ile Asp  Leu Glu Glu Thr Glu  Arg Glu Ile
    1085                1090                1095

Ser Pro  Gln Glu Asn Gly Leu  Glu Glu Val Lys Pro  Leu Gly Glu
    1100                1105                1110

Met Gln  Thr Asp Leu Lys Ala  Thr Gly Arg Glu Ile  Ser Pro Arg
    1115                1120                1125

Glu Lys  Thr Pro Glu Val Ile  Asp Ala Thr Glu Glu  Ile Asp Lys
    1130                1135                1140

Asp Leu  Glu Glu Thr Gly Arg  Arg Glu Ile Ser Pro  Glu Glu Asn
    1145                1150                1155

Gly Pro  Glu Glu Val Lys Pro  Val Asp Glu Met Glu  Thr Asp Leu
    1160                1165                1170

Lys Thr  Thr Gly Arg Glu Gly  Ser Ser Arg Glu Lys  Thr Arg Glu
    1175                1180                1185

Val Ile  Asp Ala Ala Glu Val  Ile Glu Thr Asp Leu  Glu Glu Thr
    1190                1195                1200

Glu Arg  Glu Ile Ser Pro Gln  Glu Asn Gly Pro Glu  Glu Val Lys
    1205                1210                1215

Pro Val  Gly Lys Met Glu Thr  Asp Leu Lys Glu Ile  Arg Glu Glu
```

1220 1225 1230

Ile Ser Gln Arg Glu Lys Val Leu Ala Glu Phe Ser Ala Ile Arg
1235 1240 1245

Glu Lys Glu Ile Asp Leu Lys Glu Thr Gly Lys Arg Asp Ile Pro
1250 1255 1260

Ile Met Glu Lys Val Ser Gly Lys Met Ala Val Val Glu Glu Met
1265 1270 1275

Glu Ala Asp Leu Lys Glu Thr Gly Lys Glu Asn Phe Arg Glu Arg
1280 1285 1290

Gly Ser Glu Glu Ile Cys Val Thr Glu Glu Lys Val Ala Glu Leu
1295 1300 1305

Lys Gln Thr Gly Lys Thr Asp Ile Ser Pro Arg Glu Asn Glu Leu
1310 1315 1320

Glu Glu Thr Ser Thr Ser Arg Gln Thr Asp Thr His Leu Met Gln
1325 1330 1335

Ser Gly Ser Asn Asp Phe Ser Ala Val Pro Ser Leu Asp Ile Gln
1340 1345 1350

Asn Ile Ser Ser Glu Val Leu Ser Met Met His Thr Pro Val Glu
1355 1360 1365

Glu Lys Arg Asn Ser Glu Lys Glu Val Ser Ser His Phe Ser His
1370 1375 1380

Phe Lys Ile Ser Ser Gln Thr His Glu Ser Asp Lys Thr Glu Val
1385 1390 1395

Gln Gly Ile Gln Ser Pro Asp Val Pro Glu Gln Phe Ser Asp Ile
1400 1405 1410

Asn Leu Ser Lys Ser Leu Pro Gln Glu Gln Lys Pro Leu Glu Ile
1415 1420 1425

Lys Pro Ala Pro Phe Val Arg Ser Arg Phe Lys Arg Pro Lys Pro
1430 1435 1440

```
Asn Leu  Ala Arg Ala Ala Leu  Lys Arg Glu Thr Thr  Glu Ser Glu
    1445                1450                1455

Lys Tyr  Ile Tyr Glu Lys Lys  Ser Glu Thr Lys Lys  Met Glu Thr
    1460                1465                1470

Ile Val  Met Gln Glu Asn Asn  Glu Gln Thr Asp Thr  Leu Pro Ser
    1475                1480                1485

Gln His  Asp Glu Ala Ser Leu  Met Ile Ser Arg Glu  Lys Asp Thr
    1490                1495                1500

Leu Gly  His Arg Asn Glu Glu  Ala Val Ile Leu Pro  Cys Thr Gln
    1505                1510                1515

Thr Glu  Arg Asn Leu Ser Pro  Ser Asn Ser Cys Glu  Pro Lys Glu
    1520                1525                1530

Glu Ser  Gln Ser Ala Pro Val  Gln Lys Asn Asp Ser  Val Val Ser
    1535                1540                1545

Val Gly  Thr Asn Asn Val Asn  Thr Phe Gln Gln Glu  Met Lys Glu
    1550                1555                1560

Ser Val  Ile Gln Thr Ala Arg  Gln Val Arg Gly Arg  Leu Gln Arg
    1565                1570                1575

Pro Arg  Pro Asn Ile Arg Lys  Thr Gly Gln Arg Gln  Ile Val Asp
    1580                1585                1590

Lys Gly  Glu Ala Lys Gly Ile  Ile Lys Glu Gly Arg  Thr Ile Leu
    1595                1600                1605

Pro Lys  Asp Glu Thr Glu Lys  Lys Val Leu Thr Val  Ser Asn Ser
    1610                1615                1620

Gln Ile  Glu Thr Glu Ile Glu  Val Pro Ser Ser Ala  Val Pro Glu
    1625                1630                1635

His Arg  Met Tyr Glu Asn Gln  Ser Gln Val Val Leu  Val Glu Asn
    1640                1645                1650
```

```
Leu His  Val Asn Lys Thr Asn  Glu Thr Ile Arg His  Glu Asn Lys
    1655                1660                1665

Pro Tyr  Val Pro Ser Ser Ala  Gln Met Thr Arg Arg  Lys Phe Gln
    1670                1675                1680

Lys Ala  Lys Pro Asn Leu Gly  Arg Ala His Ser Lys  Lys Glu Glu
    1685                1690                1695

Pro Val  Leu Glu Lys Val Thr  Thr Asp Gln Ser Lys  Glu Gly Lys
    1700                1705                1710

Pro Glu  Asp His Leu Leu Gln  Lys Gly Ala Ser Asn  Thr Gln Leu
    1715                1720                1725

Leu Leu  Lys Glu Lys Ala Glu  Leu Leu Thr Ser Leu  Glu Val Ser
    1730                1735                1740

Ala Arg  Lys Asp Cys Val Gly  Ser Lys Glu Ser Ala  Leu Ala Lys
    1745                1750                1755

Ile Asp  Ala Glu Leu Glu Glu  Val Gly Pro Ser Arg  Arg Val Gly
    1760                1765                1770

Glu Glu  Thr Val Gly Asp Asn  Ser Pro Ser Ser Val  Val Glu Glu
    1775                1780                1785

Gln Tyr  Leu Asn Lys Leu Thr  Ser Cys Pro Gln Pro  Leu Asn Glu
    1790                1795                1800

Thr Ser  Tyr Ser Lys Ile Ala  Leu Asp Gly Lys Thr  Thr Ile Ser
    1805                1810                1815

Ser Thr  Ser Glu Tyr Glu Arg  Asn Arg Gly Glu Arg  Arg Ser His
    1820                1825                1830

Lys Lys  Phe Lys Pro Asn Val  Thr Arg Gly Arg Gly  Ser Lys Arg
    1835                1840                1845

Val Arg  Gly Lys Thr Ser Lys  Lys Glu Pro Arg Ala  Ser Lys Ala
    1850                1855                1860
```

Met Leu Val Thr Leu Arg Ala Ser Gln Glu Glu Asp Asp Asp Ala
1865 1870 1875

Asp Asp Phe Glu Ser Asp Tyr Glu Glu Glu Ser Tyr His Leu Ala
1880 1885 1890

Pro Glu Glu Val Asn Lys Ala Pro Val Phe Val Pro Val Gly Leu
1895 1900 1905

Arg Ser Pro Glu Pro Val Ser Ala Gln Ile Glu Glu Thr Met Glu
1910 1915 1920

Glu Leu Glu Ile Thr Val Asn Val Pro Asp Val Gly Cys Ile Ala
1925 1930 1935

Val Val Glu His Glu Leu Pro Asn Thr Asp Val Thr Thr Glu Glu
1940 1945 1950

Met Lys Gln Glu Glu Asn Leu Ser Val Pro Phe Glu Met Thr Thr
1955 1960 1965

Ser Glu His Ile Gln Asp Glu Pro Gly Thr Asn Asp Gly Ser Thr
1970 1975 1980

Glu Ala Ala Ile Thr Leu Leu Thr Met Gly Asp Leu Val Leu Gln
1985 1990 1995

Ser Glu Ile Ser Ser Glu Gln Gly Asp Val Gly Val Cys Ile Ile
2000 2005 2010

Pro His Val His Ser Lys Asp Lys Ser His Ile Pro Ser Ser Leu
2015 2020 2025

Asp Asn Val Asn His Lys Ile Val His Glu Cys Gln Glu Leu Ser
2030 2035 2040

Ser Pro Val Ile Thr Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys
2045 2050 2055

Ile Val Leu Glu Glu Gln Ser Ser Arg Glu Glu Ile Ser Leu Met
2060 2065 2070

Glu Lys Val Lys Glu Asn Ala Thr Pro Thr Arg Asn Thr Ile Ser

2075 2080 2085

Lys Val Thr Ser Asn Leu Arg Ile Arg Ser Arg Leu Ala Lys Pro
2090 2095 2100

Lys Pro Asn Leu Glu Lys Thr Leu Gly Thr Asn Arg Leu Asp Asp
2105 2110 2115

Tyr Gln Glu Val Ser Ser Leu Cys Val Thr Lys Gly Ala Glu Met
2120 2125 2130

Glu Thr Gln Arg Glu Thr Glu Lys Asn Ala Ser Lys Ala Thr Glu
2135 2140 2145

Leu Glu Asn Lys Asn Leu Gly Pro Val Thr Thr Ala Glu Asn Lys
2150 2155 2160

Asp Gln Ser Lys Leu Ala Cys Val His Gly Ile Lys Gly Thr Ser
2165 2170 2175

Ile Ser Ser Glu Val Asn Leu Thr Glu Arg Asn Glu Asn Gln Glu
2180 2185 2190

Glu Ser Ser Gln Glu Val His Met Leu Ser Val Ala Pro Val Ala
2195 2200 2205

Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly Leu Asp Arg Gly Leu
2210 2215 2220

Gly Glu Asn Ser Val Glu Glu Pro Gln Ile Lys Asp Ser Lys Gly
2225 2230 2235

Asp Ser Val Leu Thr Leu Pro Val Pro Glu Tyr Thr Pro Thr Ser
2240 2245 2250

Ile Pro Glu Val Gln Gln Glu Asn Ile Ile Asn Pro Gln Asp Leu
2255 2260 2265

Thr Val Asn Leu Val Ala Asn Val Pro Gln Asp Gly Glu Asp Glu
2270 2275 2280

Gln Ala Phe Ile Leu Thr Leu Val Glu Ile Pro Ala Asn Ala Val
2285 2290 2295

```
Glu Glu  Phe Thr Asp Ala Thr  Ala Gln Phe Met Pro  Asn Pro Leu
    2300                2305                2310

Leu Pro  Ala Pro Ile Leu Val  Lys Ser Val Asn Thr  Glu Glu Arg
    2315                2320                2325

Gly Asp  Met Ser Ile Cys Leu  Pro Ala Thr Ser Val  Gly Gln Asp
    2330                2335                2340

Ala Met  Gly Leu Ser Ile Ser  Gly Arg Asp Asn Ser  Lys Lys Pro
    2345                2350                2355

Pro Asp  Asn Leu Asp Leu Val  Ser Arg Lys Arg Phe  Gln Cys Arg
    2360                2365                2370

Leu Asp  Lys Asn Asp His Ile  Pro Pro Ala Lys Lys  Arg Ser Leu
    2375                2380                2385

Thr Leu  Arg Asp Asp Cys Gln  Glu Tyr Thr Thr Glu  Val His Ser
    2390                2395                2400

Lys Glu  Leu Thr Asn Val Phe  Glu Glu Thr Gly Glu  Ser His Lys
    2405                2410                2415

Gly Gln  Asp Ile Phe Leu Thr  Ser Gly Ser Thr Leu  Thr Thr Pro
    2420                2425                2430

Glu Pro  Gln Arg Gln Gln Val  Glu Ala Ala Phe Gln  Ser Arg Gly
    2435                2440                2445

Ser Arg  Ser Pro Asp Ala Cys  Met Asp Lys Asn Val  Pro Gln Leu
    2450                2455                2460

Pro Gln  Asp Glu Met Ile Val  Ser Asp Lys Glu Glu  Arg Thr Asp
    2465                2470                2475

Ala Ala  Pro Lys Ser Gln Gln  Met Asp Ser Arg Thr  Ser Ser Ser
    2480                2485                2490

Lys Ala  Ser Leu Ser Arg Pro  Gly Arg Arg Pro Leu  Gly Phe Leu
    2495                2500                2505
```

```
Ser Leu  Ile Cys Ser Lys Asn  Ser Leu Glu Ser Asp  Glu Pro Met
    2510                2515                2520

Gln Val  His Ser Lys Lys Arg  Leu Lys Pro Leu Ile  Pro Gly Leu
    2525                2530                2535

Arg Lys  Lys Leu Lys Arg Ser  Asn Pro Phe Asn Glu  Ser Gln Glu
    2540                2545                2550

Lys Asn  Arg Glu Ser Ser Asp  Leu Leu Pro Ser Pro  Ser Val Ile
    2555                2560                2565

Thr Thr  Gln Ser Glu Asn Ile  Ser Ser Ser Ala Thr  Gln Val Ser
    2570                2575                2580

Cys Asp  Gln Pro Leu Leu Lys  Glu Gly Tyr Lys Ser  Ala Gln Lys
    2585                2590                2595

Arg Ala  Pro Gln Gly Glu Ala  Thr Thr Val Ser Glu  Tyr Phe Phe
    2600                2605                2610

Asn Asp  Ile Phe Ile Glu Val  Asp Glu Thr Glu
    2615                2620


<210> 8138
<211> 846
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
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<223> /note="Gene Name:
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      subunit of RNA polymerase III
      transcription initiation factor IIIB; "

<220>
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<223> /note="ENSP ID: ENSP00000370050"
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<400> 8138
Met Phe Arg Arg Ala Arg Leu Ser Val Lys Pro Asn Val Arg Pro Gly
1 5 10 15

Val Gly Ala Arg Gly Ser Thr Ala Ser Asn Pro Gln Arg Gly Arg Glu
20 25 30

Ser Pro Arg Pro Pro Asp Pro Ala Thr Asp Ser Ala Ser Lys Pro Ala
35 40 45

Glu Pro Thr Asp Val Pro Thr Val Asp Phe Gly Gly Ala Glu Pro Gln
50 55 60

Glu Lys Ala Pro Arg Ser Ser Thr Glu Lys Thr Gly Gly Asp Asn Asp
65 70 75 80

Val Glu Glu Ser Ser Arg Ser Ser Ser Thr Val Ser Gln Arg Arg Lys
85 90 95

Arg Ile Ser Ser Thr Ser Ser Leu Val Lys Ser Ser Val Ser Val Pro
100 105 110

Ser Glu Ser His Pro Leu Ser Thr Ile Asn Gln Glu Ala Pro Gln Pro
115 120 125

Thr Ala Thr Ser Thr Lys Glu Lys Gln Pro Cys Ser Asp Arg Tyr Arg
130 135 140

Ile Tyr Lys Ala Gln Lys Leu Arg Glu Met Leu Lys Glu Glu Leu Arg
145 150 155 160

Lys Glu Lys Lys Gln Trp Lys Asn Lys Tyr Ala Ile Asn Glu Ser Gln
165 170 175

Arg Pro Pro Asp Arg Ser Lys Met Thr Met Arg Asp Phe Ile Tyr Tyr
180 185 190

Leu Pro Asp Asn Asn Pro Met Thr Ser Ser Leu Glu Gln Glu Lys Lys
195 200 205

Thr Glu Lys Pro Ser Thr Pro Val Gln Thr Arg Glu Gln Glu Gly Lys
210 215 220

```
Ser Thr Pro Asn Ala Glu Asp Asn Glu Met Glu Glu Glu Thr Asp Asp
225                 230                 235                 240

Gly Pro Leu Leu Val Pro Arg Val Lys Val Ala Glu Asp Gly Ser Ile
                245                 250                 255

Ile Leu Asp Glu Glu Ser Leu Thr Val Glu Val Leu Arg Thr Lys Gly
            260                 265                 270

Pro Cys Val Val Glu Glu Asn Asp Pro Ile Phe Glu Arg Gly Ser Thr
        275                 280                 285

Thr Thr Tyr Ser Ser Phe Arg Lys Asn Tyr Tyr Ser Lys Pro Trp Ser
    290                 295                 300

Asn Lys Glu Thr Asp Met Phe Phe Leu Ala Ile Ser Met Val Gly Thr
305                 310                 315                 320

Asp Phe Ser Met Ile Gly Gln Leu Phe Pro His Arg Ala Arg Ile Glu
                325                 330                 335

Ile Lys Asn Lys Phe Lys Arg Glu Glu Lys Thr Asn Gly Trp Arg Ile
            340                 345                 350

Asp Lys Ala Phe Gln Glu Lys Arg Pro Phe Asp Phe Asp Phe Phe Ala
        355                 360                 365

His Leu Leu Gln Lys Val Leu Ala Glu Glu Glu Lys Arg Lys Gln Lys
    370                 375                 380

Ser Val Lys Asn His Ser Leu Lys Glu Lys Lys Ser Thr Lys Pro Arg
385                 390                 395                 400

Lys Asn Val Lys Val Lys Lys Val Ala Cys Glu Gly Val Asn Asn Asp
                405                 410                 415

Pro Asp Glu Ser Met Ser Ser Arg Ile Ser Asp Thr Glu Arg Ser Gln
            420                 425                 430

Lys Asp Ala Gln Thr Val Glu Glu Glu Ser Leu Thr Leu Ser Arg Glu
        435                 440                 445

Asp Ala Glu Gln Val Ala Leu Glu Val Asp Leu Asn Gln Lys Lys Arg
```

```
    450                 455                 460

Arg Arg Lys Lys Gln Asp Gly Ala Asn Glu Leu Gly Val Asn Asn Leu
465                 470                 475                 480

Leu Glu Asn Ala Thr Val Gln Ala Gly Pro Ser Lys Gly Glu Lys His
                485                 490                 495

Lys Asn Lys Cys Gln Ala Ile Arg Pro Glu Leu Lys Glu Gly Glu Cys
            500                 505                 510

Ser Lys Glu Gln Met Leu Ser Cys Thr Gln Asn Ile Asp Gly Ile Val
        515                 520                 525

Gly Phe Ala Ser Thr Glu Lys Val Glu Lys Arg Thr Asp Pro Ile Leu
    530                 535                 540

Ser Leu Ser Asn Gln Gln Asp Ala Thr Ser Val Ala Thr Glu Ser Ser
545                 550                 555                 560

Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala
                565                 570                 575

Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn
            580                 585                 590

Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val
        595                 600                 605

Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser
    610                 615                 620

Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu
625                 630                 635                 640

Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu
                645                 650                 655

Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu
            660                 665                 670

Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn
        675                 680                 685
```

```
Cys Leu Gln Glu Gly Ser Gln Leu Lys Ala Leu Arg Pro Val Gln Val
    690                 695                 700

Arg Gly Arg Leu Gln Lys Pro Lys Pro Asn Ala Gly Lys Ala Ala Glu
705                 710                 715                 720

Arg Lys Glu Ile Leu Ile Ser Gln Glu Glu Ile Gly Ala Asn Val Glu
                725                 730                 735

Lys Asn Glu Asn Glu Ser Cys Ala Asp Arg Asp Thr Pro Gln His Met
            740                 745                 750

Glu Asp Gln Ser Arg Lys Asp Phe Glu Glu Glu Asp Val Ile Leu Gln
        755                 760                 765

Pro Glu Lys Asn Asp Ser Phe Gln Asn Val Gln Pro Asp Glu Pro Lys
    770                 775                 780

Val Leu Asn Glu Cys Leu Ser Val Gln Glu Asn Asn Lys Ala Asn Lys
785                 790                 795                 800

Leu Asn Gln Val Pro Ile Leu Arg Thr Arg Phe Gln Lys Pro Lys Pro
                805                 810                 815

Asn Ile Gly Arg Gly Thr Gly Arg Arg Glu Ile Ser Ser Lys Glu Glu
            820                 825                 830

Val Leu Glu Lys Ile Leu Ser Leu Gly Lys Trp Arg Gln His
        835                 840                 845


<210> 8139
<211> 583
<212> PRT
<213> Homo sapiens

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B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
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<223> /note="ENSP ID: ENSP00000421910"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8139

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Xaa Arg Lys Asp Cys Val Gly Ser Lys Glu Ser Ala Leu Ala Lys Ile
1               5                   10                  15

Asp Ala Glu Leu Glu Glu Val Gly Pro Ser Arg Arg Val Gly Glu Glu
            20                  25                  30

Thr Val Gly Asp Asn Ser Pro Ser Ser Val Val Glu Glu Gln Tyr Leu
        35                  40                  45

Asn Lys Leu Thr Ser Cys Pro Gln Pro Leu Asn Glu Thr Ser Tyr Ser
    50                  55                  60

Lys Ile Ala Leu Asp Gly Lys Thr Thr Ile Ser Ser Thr Ser Glu Tyr
65                  70                  75                  80

Glu Arg Asn Arg Gly Glu Arg Arg Ser His Lys Lys Phe Lys Pro Asn
                85                  90                  95

Val Thr Arg Gly Arg Gly Ser Lys Arg Val Arg Gly Lys Thr Ser Lys
            100                 105                 110

Lys Glu Pro Arg Ala Ser Lys Ala Met Leu Val Thr Leu Arg Ala Ser
        115                 120                 125

Gln Glu Glu Asp Asp Asp Ala Asp Asp Phe Glu Ser Asp Tyr Glu Glu
    130                 135                 140

Glu Ser Tyr His Leu Ala Pro Glu Glu Val Asn Lys Ala Pro Val Phe
145                 150                 155                 160

Val Pro Val Gly Leu Arg Ser Pro Glu Pro Val Ser Ala Gln Ile Glu
```

```
                165                 170                 175

Glu Thr Met Glu Glu Leu Glu Ile Thr Val Asn Val Pro Asp Val Gly
            180                 185                 190

Cys Ile Ala Val Val Glu His Glu Leu Pro Asn Thr Asp Val Thr Thr
        195                 200                 205

Glu Glu Met Lys Gln Glu Glu Asn Leu Ser Val Pro Phe Glu Met Thr
    210                 215                 220

Thr Ser Glu His Ile Gln Asp Glu Pro Gly Thr Asn Asp Gly Ser Thr
225                 230                 235                 240

Glu Ala Ala Ile Thr Leu Leu Thr Met Gly Asp Leu Val Leu Gln Ser
                245                 250                 255

Glu Ile Ser Ser Glu Gln Gly Asp Gly Val Cys Ile Ile Pro His Val
            260                 265                 270

His Ser Lys Asp Lys Ser His Ile Pro Ser Ser Leu Asp Asn Val Asn
        275                 280                 285

His Lys Ile Val His Glu Cys Gln Glu Leu Ser Ser Pro Val Ile Thr
    290                 295                 300

Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys Ile Val Leu Glu Glu Gln
305                 310                 315                 320

Ser Ser Arg Glu Glu Ile Ser Leu Met Glu Lys Val Lys Glu Asn Ala
                325                 330                 335

Thr Pro Thr Arg Asn Thr Ile Ser Lys Val Thr Ser Asn Leu Arg Ile
            340                 345                 350

Arg Ser Arg Leu Ala Lys Pro Lys Pro Asn Leu Glu Lys Thr Leu Gly
        355                 360                 365

Thr Asn Arg Leu Asp Asp Tyr Gln Glu Val Ser Ser Leu Cys Val Thr
    370                 375                 380

Lys Gly Ala Glu Met Glu Thr Gln Arg Glu Thr Glu Lys Asn Ala Ser
385                 390                 395                 400
```

Lys Ala Thr Glu Leu Glu Asn Lys Asn Leu Gly Pro Val Thr Thr Ala
405 410 415

Glu Asn Lys Asp Gln Ser Lys Leu Ala Cys Val His Gly Ile Lys Gly
420 425 430

Thr Ser Ile Ser Ser Glu Val Asn Leu Thr Glu Arg Asn Glu Asn Gln
435 440 445

Glu Glu Ser Ser Gln Glu Val His Met Leu Ser Val Ala Pro Val Ala
450 455 460

Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly Leu Asp Arg Gly Leu Gly
465 470 475 480

Glu Asn Ser Val Glu Glu Pro Gln Ile Lys Asp Ser Lys Gly Asp Ser
485 490 495

Val Leu Thr Leu Pro Val Pro Glu Tyr Thr Pro Thr Ser Ile Pro Glu
500 505 510

Val Gln Gln Glu Asn Ile Ile Asn Pro Gln Asp Leu Thr Val Phe Val
515 520 525

Tyr Gln Gln Leu Gln Leu Val Lys Met Pro Trp Val Tyr Leu Phe Leu
530 535 540

Glu Glu Ile Ile Leu Lys Ser Arg Leu Ile Ile Trp Ile Leu Tyr Leu
545 550 555 560

Gly Arg Asp Phe Asn Ala Gly Leu Ile Lys Met Thr Thr Phe Leu Leu
565 570 575

Pro Lys Asn Val His Ser Leu
580

<210> 8140
<211> 606
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1689; "

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<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
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<223> /note="ENSP ID: ENSP00000432404"

<400> 8140

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Thr Asp Val Thr Thr Glu Glu Met Lys Gln Glu Glu Asn Leu Ser Val
1               5                  10                  15

Pro Phe Glu Met Thr Thr Ser Glu His Ile Gln Asp Glu Pro Gly Val
            20                  25                  30

Cys Ile Ile Pro His Val His Ser Lys Asp Lys Ser His Ile Pro Ser
        35                  40                  45

Ser Leu Asp Asn Val Asn His Lys Ile Val His Glu Cys Gln Glu Leu
    50                  55                  60

Ser Ser Pro Val Ile Thr Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys
65                  70                  75                  80

Ile Val Leu Glu Glu Gln Ser Ser Arg Glu Glu Ile Ser Leu Met Glu
                85                  90                  95

Lys Val Lys Glu Asn Ala Thr Pro Thr Arg Asn Thr Ile Ser Lys Val
            100                 105                 110

Thr Ser Asn Leu Arg Ile Arg Ser Arg Leu Ala Lys Pro Lys Pro Asn
        115                 120                 125

Leu Glu Lys Thr Leu Gly Thr Asn Arg Leu Asp Asp Tyr Gln Glu Val
    130                 135                 140

Ser Ser Leu Cys Val Thr Lys Gly Ala Glu Met Glu Thr Gln Arg Glu
145                 150                 155                 160
```

```
Thr Glu Lys Asn Ala Ser Lys Ala Thr Glu Leu Glu Asn Lys Asn Leu
                165                 170                 175

Gly Pro Val Thr Thr Ala Glu Asn Lys Asp Gln Ser Lys Leu Ala Cys
            180                 185                 190

Val His Gly Ile Lys Gly Thr Ser Ile Ser Ser Glu Val Asn Leu Thr
        195                 200                 205

Glu Arg Asn Glu Asn Gln Glu Glu Ser Ser Gln Glu Val His Met Leu
    210                 215                 220

Ser Val Ala Pro Val Ala Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly
225                 230                 235                 240

Leu Asp Arg Gly Leu Gly Glu Asn Ser Val Glu Glu Pro Gln Ile Lys
                245                 250                 255

Asp Ser Lys Gly Asp Ser Val Leu Thr Leu Pro Val Pro Glu Tyr Thr
            260                 265                 270

Pro Thr Ser Ile Pro Glu Val Gln Gln Glu Asn Ile Ile Asn Pro Gln
        275                 280                 285

Asp Leu Thr Val Asn Leu Val Ala Asn Val Pro Gln Asp Gly Glu Asp
    290                 295                 300

Glu Gln Ala Phe Ile Leu Thr Leu Val Glu Ile Pro Ala Asn Ala Val
305                 310                 315                 320

Glu Glu Phe Thr Asp Ala Thr Ala Gln Phe Met Pro Asn Pro Leu Leu
                325                 330                 335

Pro Ala Pro Ile Leu Val Lys Ser Val Asn Thr Glu Glu Arg Gly Asp
            340                 345                 350

Met Ser Ile Cys Leu Pro Ala Thr Ser Val Gly Gln Asp Ala Met Gly
        355                 360                 365

Leu Ser Ile Ser Gly Arg Asp Asn Ser Lys Lys Pro Pro Asp Asn Leu
    370                 375                 380
```

Asp Leu Val Ser Arg Lys Arg Phe Gln Cys Arg Leu Asp Lys Asn Asp
385 390 395 400

His Ile Pro Pro Ala Lys Lys Arg Ser Leu Thr Leu Arg Asp Asp Cys
405 410 415

Gln Glu Tyr Thr Thr Glu Val His Ser Lys Glu Leu Thr Asn Val Phe
420 425 430

Glu Glu Thr Gly Glu Ser His Lys Gly Gln Asp Ile Phe Leu Thr Ser
435 440 445

Gly Ser Thr Leu Thr Thr Pro Glu Pro Gln Arg Gln Gln Val Glu Ala
450 455 460

Ala Phe Gln Ser Arg Gly Ser Arg Ser Pro Asp Ala Cys Met Asp Lys
465 470 475 480

Asn Val Pro Gln Leu Pro Gln Asp Glu Met Ile Val Ser Asp Lys Glu
485 490 495

Glu Arg Thr Asp Ala Ala Pro Lys Ser Gln Gln Met Asp Ser Arg Thr
500 505 510

Ser Ser Ser Lys Ala Ser Leu Ser Arg Pro Gly Arg Arg Pro Leu Gly
515 520 525

Phe Leu Ser Leu Ile Cys Ser Lys Asn Ser Leu Glu Ser Asp Glu Pro
530 535 540

Met Gln Val His Ser Lys Lys Arg Leu Lys Pro Leu Ile Pro Gly Leu
545 550 555 560

Arg Lys Lys Leu Lys Arg Ser Asn Pro Phe Asn Glu Ser Gln Glu Lys
565 570 575

Asn Arg Glu Ser Ser Asp Leu Leu Pro Ser Pro Ser Val Ile Thr Thr
580 585 590

Gln Ser Glu Asn Ile Ser Ser Ser Ala Thr Gln Arg Pro Phe
595 600 605

<210> 8141

<211> 583
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

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<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
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<223> /note="ENSP ID: ENSP00000479056"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8141
Xaa Arg Lys Asp Cys Val Gly Ser Lys Glu Ser Ala Leu Ala Lys Ile
1 5 10 15

Asp Ala Glu Leu Glu Glu Val Gly Pro Ser Arg Arg Val Gly Glu Glu
20 25 30

Thr Val Gly Asp Asn Ser Pro Ser Ser Val Val Glu Glu Gln Tyr Leu
35 40 45

Asn Lys Leu Thr Ser Cys Pro Gln Pro Leu Asn Glu Thr Ser Tyr Ser
50 55 60

Lys Ile Ala Leu Asp Gly Lys Thr Thr Ile Ser Ser Thr Ser Glu Tyr
65 70 75 80

Glu Arg Asn Arg Gly Glu Arg Arg Ser His Lys Lys Phe Lys Pro Asn
85 90 95

Val Thr Arg Gly Arg Gly Ser Lys Arg Val Arg Gly Lys Thr Ser Lys
100 105 110

```
Lys Glu Pro Arg Ala Ser Lys Ala Met Leu Val Thr Leu Arg Ala Ser
        115                 120                 125

Gln Glu Glu Asp Asp Asp Ala Asp Asp Phe Glu Ser Asp Tyr Glu Glu
    130                 135                 140

Glu Ser Tyr His Leu Ala Pro Glu Glu Val Asn Lys Ala Pro Val Phe
145                 150                 155                 160

Val Pro Val Gly Leu Arg Ser Pro Glu Pro Val Ser Ala Gln Ile Glu
                165                 170                 175

Glu Thr Met Glu Glu Leu Glu Ile Thr Val Asn Val Pro Asp Val Gly
            180                 185                 190

Cys Ile Ala Val Val Glu His Glu Leu Pro Asn Thr Asp Val Thr Thr
        195                 200                 205

Glu Glu Met Lys Gln Glu Glu Asn Leu Ser Val Pro Phe Glu Met Thr
    210                 215                 220

Thr Ser Glu His Ile Gln Asp Glu Pro Gly Thr Asn Asp Gly Ser Thr
225                 230                 235                 240

Glu Ala Ala Ile Thr Leu Leu Thr Met Gly Asp Leu Val Leu Gln Ser
                245                 250                 255

Glu Ile Ser Ser Glu Gln Gly Asp Gly Val Cys Ile Ile Pro His Val
            260                 265                 270

His Ser Lys Asp Lys Ser His Ile Pro Ser Ser Leu Asp Asn Val Asn
        275                 280                 285

His Lys Ile Val His Glu Cys Gln Glu Leu Ser Ser Pro Val Ile Thr
    290                 295                 300

Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys Ile Val Leu Glu Glu Gln
305                 310                 315                 320

Ser Ser Arg Glu Glu Ile Ser Leu Met Glu Lys Val Lys Glu Asn Ala
                325                 330                 335
```

```
Thr Pro Thr Arg Asn Thr Ile Ser Lys Val Thr Ser Asn Leu Arg Ile
            340                 345                 350

Arg Ser Arg Leu Ala Lys Pro Lys Pro Asn Leu Glu Lys Thr Leu Gly
        355                 360                 365

Thr Asn Arg Leu Asp Asp Tyr Gln Glu Val Ser Ser Leu Cys Val Thr
    370                 375                 380

Lys Gly Ala Glu Met Glu Thr Gln Arg Glu Thr Glu Lys Asn Ala Ser
385                 390                 395                 400

Lys Ala Thr Glu Leu Glu Asn Lys Asn Leu Gly Pro Val Thr Thr Ala
                405                 410                 415

Glu Asn Lys Asp Gln Ser Lys Leu Ala Cys Val His Gly Ile Lys Gly
            420                 425                 430

Thr Ser Ile Ser Ser Glu Val Asn Leu Thr Glu Arg Asn Glu Asn Gln
        435                 440                 445

Glu Glu Ser Ser Gln Glu Val His Met Leu Ser Val Ala Pro Val Ala
    450                 455                 460

Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly Leu Asp Arg Gly Leu Gly
465                 470                 475                 480

Glu Asn Ser Val Glu Glu Pro Gln Ile Lys Asp Ser Lys Gly Asp Ser
                485                 490                 495

Val Leu Thr Leu Pro Val Pro Glu Tyr Thr Pro Thr Ser Ile Pro Glu
            500                 505                 510

Val Gln Gln Glu Asn Ile Ile Asn Pro Gln Asp Leu Thr Val Phe Val
        515                 520                 525

Tyr Gln Gln Leu Gln Leu Val Lys Met Pro Trp Val Tyr Leu Phe Leu
    530                 535                 540

Glu Glu Ile Ile Leu Lys Ser Arg Leu Ile Ile Trp Ile Leu Tyr Leu
545                 550                 555                 560

Gly Arg Asp Phe Asn Ala Gly Leu Ile Lys Met Thr Thr Phe Leu Leu
```

565 570 575

Pro Lys Asn Val His Ser Leu
580

<210> 8142
<211> 606
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
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<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479247"

<400> 8142
Thr Asp Val Thr Thr Glu Glu Met Lys Gln Glu Glu Asn Leu Ser Val
1 5 10 15

Pro Phe Glu Met Thr Thr Ser Glu His Ile Gln Asp Glu Pro Gly Val
20 25 30

Cys Ile Ile Pro His Val His Ser Lys Asp Lys Ser His Ile Pro Ser
35 40 45

Ser Leu Asp Asn Val Asn His Lys Ile Val His Glu Cys Gln Glu Leu
50 55 60

Ser Ser Pro Val Ile Thr Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys
65 70 75 80

Ile Val Leu Glu Glu Gln Ser Ser Arg Glu Glu Ile Ser Leu Met Glu
85 90 95

Lys Val Lys Glu Asn Ala Thr Pro Thr Arg Asn Thr Ile Ser Lys Val

```
            100                 105                 110

Thr Ser Asn Leu Arg Ile Arg Ser Arg Leu Ala Lys Pro Lys Pro Asn
        115                 120                 125

Leu Glu Lys Thr Leu Gly Thr Asn Arg Leu Asp Asp Tyr Gln Glu Val
    130                 135                 140

Ser Ser Leu Cys Val Thr Lys Gly Ala Glu Met Glu Thr Gln Arg Glu
145                 150                 155                 160

Thr Glu Lys Asn Ala Ser Lys Ala Thr Glu Leu Glu Asn Lys Asn Leu
                165                 170                 175

Gly Pro Val Thr Thr Ala Glu Asn Lys Asp Gln Ser Lys Leu Ala Cys
            180                 185                 190

Val His Gly Ile Lys Gly Thr Ser Ile Ser Ser Glu Val Asn Leu Thr
        195                 200                 205

Glu Arg Asn Glu Asn Gln Glu Glu Ser Ser Gln Glu Val His Met Leu
    210                 215                 220

Ser Val Ala Pro Val Ala Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly
225                 230                 235                 240

Leu Asp Arg Gly Leu Gly Glu Asn Ser Val Glu Glu Pro Gln Ile Lys
                245                 250                 255

Asp Ser Lys Gly Asp Ser Val Leu Thr Leu Pro Val Pro Glu Tyr Thr
            260                 265                 270

Pro Thr Ser Ile Pro Glu Val Gln Gln Glu Asn Ile Ile Asn Pro Gln
        275                 280                 285

Asp Leu Thr Val Asn Leu Val Ala Asn Val Pro Gln Asp Gly Glu Asp
    290                 295                 300

Glu Gln Ala Phe Ile Leu Thr Leu Val Glu Ile Pro Ala Asn Ala Val
305                 310                 315                 320

Glu Glu Phe Thr Asp Ala Thr Ala Gln Phe Met Pro Asn Pro Leu Leu
                325                 330                 335
```

```
Pro Ala Pro Ile Leu Val Lys Ser Val Asn Thr Glu Glu Arg Gly Asp
            340                 345                 350

Met Ser Ile Cys Leu Pro Ala Thr Ser Val Gly Gln Asp Ala Met Gly
        355                 360                 365

Leu Ser Ile Ser Gly Arg Asp Asn Ser Lys Lys Pro Pro Asp Asn Leu
    370                 375                 380

Asp Leu Val Ser Arg Lys Arg Phe Gln Cys Arg Leu Asp Lys Asn Asp
385                 390                 395                 400

His Ile Pro Pro Ala Lys Lys Arg Ser Leu Thr Leu Arg Asp Asp Cys
                405                 410                 415

Gln Glu Tyr Thr Thr Glu Val His Ser Lys Glu Leu Thr Asn Val Phe
            420                 425                 430

Glu Glu Thr Gly Glu Ser His Lys Gly Gln Asp Ile Phe Leu Thr Ser
        435                 440                 445

Gly Ser Thr Leu Thr Thr Pro Glu Pro Gln Arg Gln Gln Val Glu Ala
    450                 455                 460

Ala Phe Gln Ser Arg Gly Ser Arg Ser Pro Asp Ala Cys Met Asp Lys
465                 470                 475                 480

Asn Val Pro Gln Leu Pro Gln Asp Glu Met Ile Val Ser Asp Lys Glu
                485                 490                 495

Glu Arg Thr Asp Ala Ala Pro Lys Ser Gln Gln Met Asp Ser Arg Thr
            500                 505                 510

Ser Ser Ser Lys Ala Ser Leu Ser Arg Pro Gly Arg Arg Pro Leu Gly
        515                 520                 525

Phe Leu Ser Leu Ile Cys Ser Lys Asn Ser Leu Glu Ser Asp Glu Pro
    530                 535                 540

Met Gln Val His Ser Lys Lys Arg Leu Lys Pro Leu Ile Pro Gly Leu
545                 550                 555                 560
```

```
Arg Lys Lys Leu Lys Arg Ser Asn Pro Phe Asn Glu Ser Gln Glu Lys
                565                 570                 575

Asn Arg Glu Ser Ser Asp Leu Leu Pro Ser Pro Ser Val Ile Thr Thr
            580                 585                 590

Gln Ser Glu Asn Ile Ser Ser Ser Ala Thr Gln Arg Pro Phe
        595                 600                 605


<210> 8143
<211> 846
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
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<223> /note="Gene Name:
      B double prime 1,
      subunit of RNA polymerase III
      transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479517"

<400> 8143
Met Phe Arg Arg Ala Arg Leu Ser Val Lys Pro Asn Val Arg Pro Gly
1               5                   10                  15

Val Gly Ala Arg Gly Ser Thr Ala Ser Asn Pro Gln Arg Gly Arg Glu
            20                  25                  30

Ser Pro Arg Pro Pro Asp Pro Ala Thr Asp Ser Ala Ser Lys Pro Ala
        35                  40                  45

Glu Pro Thr Asp Val Pro Thr Val Asp Phe Gly Gly Ala Glu Pro Gln
    50                  55                  60

Glu Lys Ala Pro Arg Ser Ser Thr Glu Lys Thr Gly Gly Asp Asn Asp
65                  70                  75                  80
```

```
Val Glu Glu Ser Ser Arg Ser Ser Ser Thr Val Ser Gln Arg Arg Lys
                85                  90                  95

Arg Ile Ser Ser Thr Ser Ser Leu Val Lys Ser Ser Val Ser Val Pro
            100                 105                 110

Ser Glu Ser His Pro Leu Ser Thr Ile Asn Gln Glu Ala Pro Gln Pro
        115                 120                 125

Thr Ala Thr Ser Thr Lys Glu Lys Gln Pro Cys Ser Asp Arg Tyr Arg
    130                 135                 140

Ile Tyr Lys Ala Gln Lys Leu Arg Glu Met Leu Lys Glu Glu Leu Arg
145                 150                 155                 160

Lys Glu Lys Lys Gln Trp Lys Asn Lys Tyr Ala Ile Asn Glu Ser Gln
                165                 170                 175

Arg Pro Pro Asp Arg Ser Lys Met Thr Met Arg Asp Phe Ile Tyr Tyr
            180                 185                 190

Leu Pro Asp Asn Asn Pro Met Thr Ser Ser Leu Glu Gln Glu Lys Lys
        195                 200                 205

Thr Glu Lys Pro Ser Thr Pro Val Gln Thr Arg Glu Gln Glu Gly Lys
    210                 215                 220

Ser Thr Pro Asn Ala Glu Asp Asn Glu Met Glu Glu Glu Thr Asp Asp
225                 230                 235                 240

Gly Pro Leu Leu Val Pro Arg Val Lys Val Ala Glu Asp Gly Ser Ile
                245                 250                 255

Ile Leu Asp Glu Glu Ser Leu Thr Val Glu Val Leu Arg Thr Lys Gly
            260                 265                 270

Pro Cys Val Val Glu Glu Asn Asp Pro Ile Phe Glu Arg Gly Ser Thr
        275                 280                 285

Thr Thr Tyr Ser Ser Phe Arg Lys Asn Tyr Tyr Ser Lys Pro Trp Ser
    290                 295                 300
```

```
Asn Lys Glu Thr Asp Met Phe Phe Leu Ala Ile Ser Met Val Gly Thr
305                 310                 315                 320

Asp Phe Ser Met Ile Gly Gln Leu Phe Pro His Arg Ala Arg Ile Glu
                325                 330                 335

Ile Lys Asn Lys Phe Lys Arg Glu Glu Lys Thr Asn Gly Trp Arg Ile
            340                 345                 350

Asp Lys Ala Phe Gln Glu Lys Arg Pro Phe Asp Phe Asp Phe Phe Ala
        355                 360                 365

His Leu Leu Gln Lys Val Leu Ala Glu Glu Glu Lys Arg Lys Gln Lys
    370                 375                 380

Ser Val Lys Asn His Ser Leu Lys Glu Lys Lys Ser Thr Lys Pro Arg
385                 390                 395                 400

Lys Asn Val Lys Val Lys Lys Val Ala Cys Glu Gly Val Asn Asn Asp
                405                 410                 415

Pro Asp Glu Ser Met Ser Ser Arg Ile Ser Asp Thr Glu Arg Ser Gln
            420                 425                 430

Lys Asp Ala Gln Thr Val Glu Glu Glu Ser Leu Thr Leu Ser Arg Glu
        435                 440                 445

Asp Ala Glu Gln Val Ala Leu Glu Val Asp Leu Asn Gln Lys Lys Arg
    450                 455                 460

Arg Arg Lys Lys Gln Asp Gly Ala Asn Glu Leu Gly Val Asn Asn Leu
465                 470                 475                 480

Leu Glu Asn Ala Thr Val Gln Ala Gly Pro Ser Lys Gly Glu Lys His
                485                 490                 495

Lys Asn Lys Cys Gln Ala Ile Arg Pro Glu Leu Lys Glu Gly Glu Cys
            500                 505                 510

Ser Lys Glu Gln Met Leu Ser Cys Thr Gln Asn Ile Asp Gly Ile Val
        515                 520                 525

Gly Phe Ala Ser Thr Glu Lys Val Glu Lys Arg Thr Asp Pro Ile Leu
```

```
    530                 535                 540

Ser Leu Ser Asn Gln Gln Asp Ala Thr Ser Val Ala Thr Glu Ser Ser
545                 550                 555                 560

Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala
                565                 570                 575

Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn
            580                 585                 590

Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val
        595                 600                 605

Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser
    610                 615                 620

Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu
625                 630                 635                 640

Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu
                645                 650                 655

Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu
            660                 665                 670

Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn
        675                 680                 685

Cys Leu Gln Glu Gly Ser Gln Leu Lys Ala Leu Arg Pro Val Gln Val
    690                 695                 700

Arg Gly Arg Leu Gln Lys Pro Lys Pro Asn Ala Gly Lys Ala Ala Glu
705                 710                 715                 720

Arg Lys Glu Ile Leu Ile Ser Gln Glu Glu Ile Gly Ala Asn Val Glu
                725                 730                 735

Lys Asn Glu Asn Glu Ser Cys Ala Asp Arg Asp Thr Pro Gln His Met
            740                 745                 750

Glu Asp Gln Ser Arg Lys Asp Phe Glu Glu Glu Asp Val Ile Leu Gln
        755                 760                 765
```

```
Pro Glu Lys Asn Asp Ser Phe Gln Asn Val Gln Pro Asp Glu Pro Lys
    770                 775                 780

Val Leu Asn Glu Cys Leu Ser Val Gln Glu Asn Asn Lys Ala Asn Lys
785                 790                 795                 800

Leu Asn Gln Val Pro Ile Leu Arg Thr Arg Phe Gln Lys Pro Lys Pro
                805                 810                 815

Asn Ile Gly Arg Gly Thr Gly Arg Arg Glu Ile Ser Ser Lys Glu Glu
            820                 825                 830

Val Leu Glu Lys Ile Leu Ser Leu Gly Lys Trp Arg Gln His
        835                 840                 845
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<210> 8144
<211> 846
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
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<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480411"

<400> 8144

```
Met Phe Arg Arg Ala Arg Leu Ser Val Lys Pro Asn Val Arg Pro Gly
1               5                   10                  15

Val Gly Ala Arg Gly Ser Thr Ala Ser Asn Pro Gln Arg Gly Arg Glu
            20                  25                  30

Ser Pro Arg Pro Pro Glu Pro Ala Thr Asp Ser Ala Ser Lys Pro Ala
        35                  40                  45
```

```
Glu Pro Thr Asp Val Pro Thr Val Asp Phe Gly Gly Ala Glu Pro Gln
    50                  55                  60

Glu Lys Ala Pro Arg Ser Ser Thr Glu Lys Thr Gly Gly Asp Asn Asp
65                  70                  75                  80

Val Glu Glu Ser Ser Arg Ser Ser Ser Thr Val Ser Gln Arg Arg Lys
                85                  90                  95

Arg Ile Ser Ser Thr Ser Ser Leu Val Lys Ser Ser Val Ser Val Pro
            100                 105                 110

Ser Glu Ser His Pro Leu Ser Thr Ile Asn Gln Glu Ala Pro Gln Pro
        115                 120                 125

Thr Ala Thr Ser Thr Lys Glu Lys Gln Pro Cys Ser Asp Arg Tyr Arg
    130                 135                 140

Ile Tyr Lys Ala Gln Lys Leu Arg Glu Met Leu Lys Glu Glu Leu Arg
145                 150                 155                 160

Lys Glu Lys Lys Gln Trp Lys Asn Lys Tyr Ala Ile Asn Glu Ser Gln
                165                 170                 175

Arg Pro Pro Asp Arg Ser Lys Met Thr Met Arg Asp Phe Ile Tyr Tyr
            180                 185                 190

Leu Pro Asp Asn Asn Pro Met Thr Ser Ser Leu Glu Gln Glu Lys Lys
        195                 200                 205

Thr Glu Lys Pro Ser Thr Pro Val Gln Thr Arg Glu Gln Glu Gly Lys
    210                 215                 220

Ser Thr Pro Asn Ala Glu Asp Asn Glu Met Glu Glu Glu Thr Asp Asp
225                 230                 235                 240

Gly Pro Leu Leu Val Pro Arg Val Lys Val Ala Glu Asp Gly Ser Ile
                245                 250                 255

Ile Leu Asp Glu Glu Ser Leu Thr Val Glu Val Leu Arg Thr Lys Gly
            260                 265                 270
```

```
Pro Cys Val Val Glu Glu Asn Asp Pro Ile Phe Glu Arg Gly Ser Thr
        275                 280                 285

Thr Thr Tyr Ser Ser Phe Arg Lys Asn Tyr Tyr Ser Lys Pro Trp Ser
    290                 295                 300

Asn Lys Glu Thr Asp Met Phe Phe Leu Ala Ile Ser Met Val Gly Thr
305                 310                 315                 320

Asp Phe Ser Met Ile Gly Gln Leu Phe Pro His Arg Ala Arg Ile Glu
                325                 330                 335

Ile Lys Asn Lys Phe Lys Arg Glu Glu Lys Thr Asn Gly Trp Arg Ile
            340                 345                 350

Asp Lys Ala Phe Gln Glu Lys Arg Pro Phe Asp Phe Asp Phe Phe Ala
        355                 360                 365

His Leu Leu Gln Lys Val Leu Ala Glu Glu Glu Lys Arg Lys Gln Lys
    370                 375                 380

Ser Val Lys Asn His Ser Leu Lys Glu Lys Lys Ser Thr Lys Pro Arg
385                 390                 395                 400

Lys Asn Val Lys Val Lys Lys Val Ala Cys Glu Gly Val Asn Asn Asp
                405                 410                 415

Pro Asp Glu Ser Met Ser Ser Arg Ile Ser Asp Thr Glu Arg Ser Gln
            420                 425                 430

Lys Asp Ala Gln Thr Val Glu Glu Glu Ser Leu Thr Leu Ser Arg Glu
        435                 440                 445

Asp Ala Glu Gln Val Ala Leu Glu Val Asp Leu Asn Gln Lys Lys Arg
    450                 455                 460

Arg Arg Lys Lys Gln Asp Gly Ala Asn Glu Leu Gly Val Asn Asn Leu
465                 470                 475                 480

Leu Glu Asn Ala Thr Val Gln Ala Gly Pro Ser Lys Gly Glu Lys His
                485                 490                 495
```

```
Lys Asn Lys Cys Gln Ala Ile Arg Pro Glu Leu Lys Glu Gly Glu Cys
            500                 505                 510

Ser Lys Glu Gln Met Leu Ser Cys Thr Gln Asn Ile Asp Gly Ile Val
        515                 520                 525

Gly Phe Ala Ser Thr Glu Lys Val Glu Lys Arg Thr Asp Pro Ile Leu
    530                 535                 540

Ser Leu Ser Asn Gln Gln Asp Ala Thr Ser Val Ala Thr Glu Ser Ser
545                 550                 555                 560

Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala
                565                 570                 575

Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn
            580                 585                 590

Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val
        595                 600                 605

Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser
    610                 615                 620

Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu
625                 630                 635                 640

Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu
                645                 650                 655

Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu
            660                 665                 670

Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn
        675                 680                 685

Cys Leu Gln Glu Gly Ser Gln Leu Lys Ala Leu Arg Pro Val Gln Val
    690                 695                 700

Arg Gly Arg Leu Gln Lys Pro Lys Pro Asn Ala Gly Lys Ala Ala Glu
705                 710                 715                 720

Arg Lys Glu Ile Leu Ile Ser Gln Glu Glu Ile Gly Ala Asn Val Glu
```

```
                725                 730                 735

Lys Asn Glu Asn Glu Ser Cys Ala Asp Arg Asp Thr Pro Gln His Met
            740                 745                 750

Glu Asp Gln Ser Arg Lys Asp Phe Glu Glu Glu Asp Val Ile Leu Gln
        755                 760                 765

Pro Glu Lys Asn Asp Ser Phe Gln Asn Val Gln Pro Asp Glu Pro Lys
    770                 775                 780

Val Leu Asn Glu Cys Leu Ser Val Gln Glu Asn Asn Lys Ala Asn Lys
785                 790                 795                 800

Leu Asn Gln Val Pro Ile Leu Arg Thr Arg Phe Gln Lys Pro Lys Pro
                805                 810                 815

Asn Ile Gly Arg Gly Thr Gly Arg Arg Glu Ile Ser Ser Lys Glu Glu
            820                 825                 830

Val Leu Glu Lys Ile Leu Ser Leu Gly Lys Trp Arg Gln His
        835                 840                 845


<210> 8145
<211> 2624
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
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<223> /note="Gene Name:
      B double prime 1,
      subunit of RNA polymerase III
      transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482112"

<400> 8145
Met Phe Arg Arg Ala Arg Leu Ser Val Lys Pro Asn Val Arg Pro Gly
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```
1               5                   10                  15

Val Gly Ala Arg Gly Ser Thr Ala Ser Asn Pro Gln Arg Gly Arg Glu
            20                  25                  30

Ser Pro Arg Pro Pro Glu Pro Ala Thr Asp Ser Ala Ser Lys Pro Ala
        35                  40                  45

Glu Pro Thr Asp Val Pro Thr Val Asp Phe Gly Gly Ala Glu Pro Gln
    50                  55                  60

Glu Lys Ala Pro Arg Ser Ser Thr Glu Lys Thr Gly Gly Asp Asn Asp
65                  70                  75                  80

Val Glu Glu Ser Ser Arg Ser Ser Ser Thr Val Ser Gln Arg Arg Lys
                85                  90                  95

Arg Ile Ser Ser Thr Ser Ser Leu Val Lys Ser Ser Val Ser Val Pro
            100                 105                 110

Ser Glu Ser His Pro Leu Ser Thr Ile Asn Gln Glu Ala Pro Gln Pro
        115                 120                 125

Thr Ala Thr Ser Thr Lys Glu Lys Gln Pro Cys Ser Asp Arg Tyr Arg
    130                 135                 140

Ile Tyr Lys Ala Gln Lys Leu Arg Glu Met Leu Lys Glu Glu Leu Arg
145                 150                 155                 160

Lys Glu Lys Lys Gln Trp Lys Asn Lys Tyr Ala Ile Asn Glu Ser Gln
                165                 170                 175

Arg Pro Pro Asp Arg Ser Lys Met Thr Met Arg Asp Phe Ile Tyr Tyr
            180                 185                 190

Leu Pro Asp Asn Asn Pro Met Thr Ser Ser Leu Glu Gln Glu Lys Lys
        195                 200                 205

Thr Glu Lys Pro Ser Thr Pro Val Gln Thr Arg Glu Gln Glu Gly Lys
    210                 215                 220

Ser Thr Pro Asn Ala Glu Asp Asn Glu Met Glu Glu Glu Thr Asp Asp
225                 230                 235                 240
```

```
Gly Pro Leu Leu Val Pro Arg Val Lys Val Ala Glu Asp Gly Ser Ile
                245                 250                 255

Ile Leu Asp Glu Glu Ser Leu Thr Val Glu Val Leu Arg Thr Lys Gly
            260                 265                 270

Pro Cys Val Val Glu Glu Asn Asp Pro Ile Phe Glu Arg Gly Ser Thr
        275                 280                 285

Thr Thr Tyr Ser Ser Phe Arg Lys Asn Tyr Tyr Ser Lys Pro Trp Ser
    290                 295                 300

Asn Lys Glu Thr Asp Met Phe Phe Leu Ala Ile Ser Met Val Gly Thr
305                 310                 315                 320

Asp Phe Ser Met Ile Gly Gln Leu Phe Pro His Arg Ala Arg Ile Glu
                325                 330                 335

Ile Lys Asn Lys Phe Lys Arg Glu Glu Lys Thr Asn Gly Trp Arg Ile
            340                 345                 350

Asp Lys Ala Phe Gln Glu Lys Arg Pro Phe Asp Phe Asp Phe Phe Ala
        355                 360                 365

His Leu Leu Gln Lys Val Leu Ala Glu Glu Glu Lys Arg Lys Gln Lys
    370                 375                 380

Ser Val Lys Asn His Ser Leu Lys Glu Lys Lys Ser Thr Lys Pro Arg
385                 390                 395                 400

Lys Asn Val Lys Val Lys Lys Val Ala Cys Glu Gly Val Asn Asn Asp
                405                 410                 415

Pro Asp Glu Ser Met Ser Ser Arg Ile Ser Asp Thr Glu Arg Ser Gln
            420                 425                 430

Lys Asp Ala Gln Thr Val Glu Glu Glu Ser Leu Thr Leu Ser Arg Glu
        435                 440                 445

Asp Ala Glu Gln Val Ala Leu Glu Val Asp Leu Asn Gln Lys Lys Arg
    450                 455                 460
```

```
Arg Arg Lys Lys Gln Asp Gly Ala Asn Glu Leu Gly Val Asn Asn Leu
465                 470                 475                 480

Leu Glu Asn Ala Thr Val Gln Ala Gly Pro Ser Lys Gly Glu Lys His
                485                 490                 495

Lys Asn Lys Cys Gln Ala Ile Arg Pro Glu Leu Lys Glu Gly Glu Cys
            500                 505                 510

Ser Lys Glu Gln Met Leu Ser Cys Thr Gln Asn Ile Asp Gly Ile Val
        515                 520                 525

Gly Phe Ala Ser Thr Glu Lys Val Glu Lys Arg Thr Asp Pro Ile Leu
    530                 535                 540

Ser Leu Ser Asn Gln Gln Asp Ala Thr Ser Val Ala Thr Glu Ser Ser
545                 550                 555                 560

Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala
                565                 570                 575

Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn
            580                 585                 590

Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val
        595                 600                 605

Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser
    610                 615                 620

Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu
625                 630                 635                 640

Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu
                645                 650                 655

Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu
            660                 665                 670

Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn
        675                 680                 685
```

```
Cys Leu Gln Glu Gly Ser Gln Leu Lys Ala Leu Arg Pro Val Gln Val
    690                 695                 700

Arg Gly Arg Leu Gln Lys Pro Lys Pro Asn Ala Gly Lys Ala Ala Glu
705                 710                 715                 720

Arg Lys Glu Ile Leu Ile Ser Gln Glu Glu Ile Gly Ala Asn Val Glu
                725                 730                 735

Lys Asn Glu Asn Glu Ser Cys Ala Asp Arg Asp Thr Pro Gln His Met
            740                 745                 750

Glu Asp Gln Ser Arg Lys Asp Phe Glu Glu Glu Asp Val Ile Leu Gln
        755                 760                 765

Pro Glu Lys Asn Asp Ser Phe Gln Asn Val Gln Pro Asp Glu Pro Lys
    770                 775                 780

Val Leu Asn Glu Cys Leu Ser Val Gln Glu Asn Asn Lys Ala Asn Lys
785                 790                 795                 800

Leu Asn Gln Val Pro Ile Leu Arg Thr Arg Phe Gln Lys Pro Lys Pro
                805                 810                 815

Asn Ile Gly Arg Gly Thr Gly Arg Arg Glu Ile Ser Ser Lys Glu Glu
            820                 825                 830

Val Leu Glu Lys Ile Leu Val Ser Gly Glu Met Ala Ala Ala Leu Arg
        835                 840                 845

Glu Thr Val Arg Leu Asp Thr Ser Pro Lys Glu Met Val Pro Ala Glu
    850                 855                 860

Ile Asn Thr Lys Glu Met Gln Ser Asp Leu Lys Glu Thr Gly Arg Arg
865                 870                 875                 880

Ala Ile Ser Pro Arg Glu Lys Ile Leu Asp Val Ile Asp Asp Thr Ile
                885                 890                 895

Glu Met Glu Thr Gly Leu Lys Ala Met Gly Arg Glu Ile Cys Leu Arg
            900                 905                 910

Glu Lys Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Lys Asp
```

915 920 925

Leu Glu Glu Ala Gly Arg Arg Glu Ile Ser Pro Gln Lys Asn Gly Pro
930 935 940

Glu Glu Val Lys Pro Leu Gly Glu Val Glu Thr Asp Leu Lys Ala Thr
945 950 955 960

Gly Asn Glu Ser Ser Pro Arg Glu Lys Thr Pro Glu Val Thr Asp Ala
965 970 975

Thr Glu Glu Ile Asp Lys Asn Leu Glu Glu Thr Gly Arg Arg Lys Ile
980 985 990

Ser Pro Arg Glu Asn Gly Pro Glu Glu Val Lys Pro Val Asp Glu
Met
995 1000 1005

Glu Thr Asp Leu Asn Ala Thr Gly Arg Glu Ser Ser Pro Arg Glu
1010 1015 1020

Lys Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Leu Glu
1025 1030 1035

Glu Thr Glu Arg Glu Val Ser Pro Gln Glu Asn Gly Leu Glu Glu
1040 1045 1050

Val Lys Pro Leu Gly Glu Met Glu Thr Asp Leu Lys Ala Thr Gly
1055 1060 1065

Arg Asp Ser Phe Pro Arg Gly Lys Thr Pro Glu Val Ile Asp Ala
1070 1075 1080

Ile Glu Glu Ile Glu Ile Asp Leu Glu Glu Thr Glu Arg Glu Ile
1085 1090 1095

Ser Pro Gln Glu Asn Gly Leu Glu Glu Val Lys Pro Leu Gly Glu
1100 1105 1110

Met Gln Thr Asp Leu Lys Ala Thr Gly Arg Glu Ile Ser Pro Arg
1115 1120 1125

Glu Lys Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Lys

1130 1135 1140

Asp Leu Glu Glu Thr Gly Arg Arg Glu Ile Ser Pro Glu Glu Asn
1145 1150 1155

Gly Pro Glu Glu Val Lys Pro Val Asp Glu Met Glu Thr Asp Leu
1160 1165 1170

Lys Thr Thr Gly Arg Glu Gly Ser Ser Arg Glu Lys Thr Arg Glu
1175 1180 1185

Val Ile Asp Ala Ala Glu Val Ile Glu Thr Asp Leu Glu Glu Thr
1190 1195 1200

Glu Arg Glu Ile Ser Pro Gln Glu Asn Gly Pro Glu Glu Val Lys
1205 1210 1215

Pro Val Gly Lys Met Glu Thr Asp Leu Lys Glu Ile Arg Glu Glu
1220 1225 1230

Ile Ser Gln Arg Glu Lys Val Leu Ala Glu Phe Ser Ala Ile Arg
1235 1240 1245

Glu Lys Glu Ile Asp Leu Lys Glu Thr Gly Lys Arg Asp Ile Pro
1250 1255 1260

Ile Met Glu Lys Val Ser Gly Lys Met Ala Val Val Glu Glu Met
1265 1270 1275

Glu Ala Asp Leu Lys Glu Thr Gly Lys Glu Asn Phe Arg Glu Arg
1280 1285 1290

Gly Ser Glu Glu Ile Cys Val Thr Glu Glu Lys Val Ala Glu Leu
1295 1300 1305

Lys Gln Thr Gly Lys Thr Asp Ile Ser Pro Arg Glu Asn Glu Leu
1310 1315 1320

Glu Glu Thr Ser Thr Ser Arg Gln Thr Asp Thr His Leu Met Gln
1325 1330 1335

Ser Gly Ser Asn Asp Phe Ser Ala Val Pro Ser Leu Asp Ile Gln
1340 1345 1350

```
Asn Ile  Ser Ser Glu Val Leu  Ser Met Met His Thr  Pro Val Glu
    1355                1360                1365

Glu Lys  Arg Asn Ser Glu Lys  Glu Val Ser Ser His  Phe Ser His
    1370                1375                1380

Phe Lys  Ile Ser Ser Gln Thr  His Glu Ser Asp Lys  Thr Glu Val
    1385                1390                1395

Gln Gly  Ile Gln Ser Pro Asp  Val Pro Glu Gln Phe  Ser Asp Ile
    1400                1405                1410

Asn Leu  Ser Lys Ser Leu Pro  Gln Glu Gln Lys Pro  Leu Glu Ile
    1415                1420                1425

Lys Pro  Ala Pro Phe Val Arg  Ser Arg Phe Lys Arg  Pro Lys Pro
    1430                1435                1440

Asn Leu  Ala Arg Ala Ala Leu  Lys Arg Glu Thr Thr  Glu Ser Glu
    1445                1450                1455

Lys Tyr  Ile Tyr Glu Lys Lys  Ser Glu Thr Lys Lys  Met Glu Thr
    1460                1465                1470

Ile Val  Met Gln Glu Asn Asn  Glu Gln Thr Asp Thr  Leu Pro Ser
    1475                1480                1485

Gln His  Asp Glu Ala Ser Leu  Met Ile Ser Arg Glu  Lys Asp Thr
    1490                1495                1500

Leu Gly  His Arg Asn Glu Glu  Ala Val Ile Leu Pro  Cys Thr Gln
    1505                1510                1515

Thr Glu  Arg Asn Leu Ser Pro  Ser Asn Ser Cys Glu  Pro Lys Glu
    1520                1525                1530

Glu Ser  Gln Ser Ala Pro Val  Gln Lys Asn Asp Ser  Val Val Ser
    1535                1540                1545

Val Gly  Thr Asn Asn Val Asn  Thr Phe Gln Gln Glu  Met Lys Glu
    1550                1555                1560
```

```
Ser Val  Ile Gln Thr Ala Arg  Gln Val Arg Gly Arg  Leu Gln Arg
    1565                1570                1575

Pro Arg  Pro Asn Ile Arg Lys  Thr Gly Gln Arg Gln  Ile Val Asp
    1580                1585                1590

Lys Gly  Glu Ala Lys Gly Ile  Ile Lys Glu Gly Arg  Thr Ile Leu
    1595                1600                1605

Pro Lys  Asp Glu Thr Glu Lys  Lys Val Leu Thr Val  Ser Asn Ser
    1610                1615                1620

Gln Ile  Glu Thr Glu Ile Glu  Val Pro Ser Ser Ala  Val Pro Glu
    1625                1630                1635

His Arg  Met Tyr Glu Asn Gln  Ser Gln Val Val Leu  Val Glu Asn
    1640                1645                1650

Leu His  Val Asn Lys Thr Asn  Glu Thr Ile Arg His  Glu Asn Lys
    1655                1660                1665

Pro Tyr  Val Pro Ser Ser Ala  Gln Met Thr Arg Arg  Lys Phe Gln
    1670                1675                1680

Lys Ala  Lys Pro Asn Leu Gly  Arg Ala His Ser Lys  Lys Glu Glu
    1685                1690                1695

Pro Val  Leu Glu Lys Val Thr  Thr Asp Gln Ser Lys  Glu Gly Lys
    1700                1705                1710

Pro Glu  Asp His Leu Leu Gln  Lys Gly Ala Ser Asn  Thr Gln Leu
    1715                1720                1725

Leu Leu  Lys Glu Lys Ala Glu  Leu Leu Thr Ser Leu  Glu Val Ser
    1730                1735                1740

Ala Arg  Lys Asp Cys Val Gly  Ser Lys Glu Ser Ala  Leu Ala Lys
    1745                1750                1755

Ile Asp  Ala Glu Leu Glu Glu  Val Gly Pro Ser Arg  Arg Val Gly
    1760                1765                1770
```

```
Glu Glu  Thr Val Gly Asp Asn  Ser Pro Ser Ser Val  Val Glu Glu
    1775                1780                1785

Gln Tyr  Leu Asn Lys Leu Thr  Ser Cys Pro Gln Pro  Leu Asn Glu
    1790                1795                1800

Thr Ser  Tyr Ser Lys Ile Ala  Leu Asp Gly Lys Thr  Thr Ile Ser
    1805                1810                1815

Ser Thr  Ser Glu Tyr Glu Arg  Asn Arg Gly Glu Arg  Arg Ser His
    1820                1825                1830

Lys Lys  Phe Lys Pro Asn Val  Thr Arg Gly Arg Gly  Ser Lys Arg
    1835                1840                1845

Val Arg  Gly Lys Thr Ser Lys  Lys Glu Pro Arg Ala  Ser Lys Ala
    1850                1855                1860

Met Leu  Val Thr Leu Arg Ala  Ser Gln Glu Glu Asp  Asp Asp Ala
    1865                1870                1875

Asp Asp  Phe Glu Ser Asp Tyr  Glu Glu Glu Ser Tyr  His Leu Ala
    1880                1885                1890

Pro Glu  Glu Val Asn Lys Ala  Pro Val Phe Val Pro  Val Gly Leu
    1895                1900                1905

Arg Ser  Pro Glu Pro Val Ser  Ala Gln Ile Glu Glu  Thr Met Glu
    1910                1915                1920

Glu Leu  Glu Ile Thr Val Asn  Val Pro Asp Val Gly  Cys Ile Ala
    1925                1930                1935

Val Val  Glu His Glu Leu Pro  Asn Thr Asp Val Thr  Thr Glu Glu
    1940                1945                1950

Met Lys  Gln Glu Glu Asn Leu  Ser Val Pro Phe Glu  Met Thr Thr
    1955                1960                1965

Ser Glu  His Ile Gln Asp Glu  Pro Gly Thr Asn Asp  Gly Ser Thr
    1970                1975                1980

Glu Ala  Ala Ile Thr Leu Leu  Thr Met Gly Asp Leu  Val Leu Gln
```

1985 1990 1995

Ser Glu Ile Ser Ser Glu Gln Gly Asp Val Gly Val Cys Ile Ile
2000 2005 2010

Pro His Val His Ser Lys Asp Lys Ser His Ile Pro Ser Ser Leu
2015 2020 2025

Asp Asn Val Asn His Lys Ile Val His Glu Cys Gln Glu Leu Ser
2030 2035 2040

Ser Pro Val Ile Thr Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys
2045 2050 2055

Ile Val Leu Glu Glu Gln Ser Ser Arg Glu Glu Ile Ser Leu Met
2060 2065 2070

Glu Lys Val Lys Glu Asn Ala Thr Pro Thr Arg Asn Thr Ile Ser
2075 2080 2085

Lys Val Thr Ser Asn Leu Arg Ile Arg Ser Arg Leu Ala Lys Pro
2090 2095 2100

Lys Pro Asn Leu Glu Lys Thr Leu Gly Thr Asn Arg Leu Asp Asp
2105 2110 2115

Tyr Gln Glu Val Ser Ser Leu Cys Val Thr Lys Gly Ala Glu Met
2120 2125 2130

Glu Thr Gln Arg Glu Thr Glu Lys Asn Ala Ser Lys Ala Thr Glu
2135 2140 2145

Leu Glu Asn Lys Asn Leu Gly Pro Val Thr Thr Ala Glu Asn Lys
2150 2155 2160

Asp Gln Ser Lys Leu Ala Cys Val His Gly Ile Lys Gly Thr Ser
2165 2170 2175

Ile Ser Ser Glu Val Asn Leu Thr Glu Arg Asn Glu Asn Gln Glu
2180 2185 2190

Glu Ser Ser Gln Glu Val His Met Leu Ser Val Ala Pro Val Ala
2195 2200 2205

Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly Leu Asp Arg Gly Leu
2210 2215 2220

Gly Glu Asn Ser Val Glu Glu Pro Gln Ile Lys Asp Ser Lys Gly
2225 2230 2235

Asp Ser Val Leu Thr Leu Pro Val Pro Glu Tyr Thr Pro Thr Ser
2240 2245 2250

Ile Pro Glu Val Gln Gln Glu Asn Ile Ile Asn Pro Gln Asp Leu
2255 2260 2265

Thr Val Asn Leu Val Ala Asn Val Pro Gln Asp Gly Glu Asp Glu
2270 2275 2280

Gln Ala Phe Ile Leu Thr Leu Val Glu Ile Pro Ala Asn Ala Val
2285 2290 2295

Glu Glu Phe Thr Asp Ala Thr Ala Gln Phe Met Pro Asn Pro Leu
2300 2305 2310

Leu Pro Ala Pro Ile Leu Val Lys Ser Val Asn Thr Glu Glu Arg
2315 2320 2325

Gly Asp Met Ser Ile Cys Leu Pro Ala Thr Ser Val Gly Gln Asp
2330 2335 2340

Ala Met Gly Leu Ser Ile Ser Gly Arg Asp Asn Ser Lys Lys Pro
2345 2350 2355

Pro Asp Asn Leu Asp Leu Val Ser Arg Lys Arg Phe Gln Cys Arg
2360 2365 2370

Leu Asp Lys Asn Asp His Ile Pro Pro Ala Lys Lys Arg Ser Leu
2375 2380 2385

Thr Leu Arg Asp Asp Cys Gln Glu Tyr Thr Thr Glu Val His Ser
2390 2395 2400

Lys Glu Leu Thr Asn Val Phe Glu Glu Thr Gly Glu Ser His Lys
2405 2410 2415

```
Gly Gln  Asp Ile Phe Leu Thr  Ser Gly Ser Thr Leu  Thr Thr Pro
    2420                2425                2430

Glu Pro  Gln Arg Gln Gln Val  Glu Ala Ala Phe Gln  Ser Arg Gly
    2435                2440                2445

Ser Arg  Ser Pro Asp Ala Cys  Met Asp Lys Asn Val  Pro Gln Leu
    2450                2455                2460

Pro Gln  Asp Glu Met Ile Val  Ser Asp Lys Glu Glu  Arg Thr Asp
    2465                2470                2475

Ala Ala  Pro Lys Ser Gln Gln  Met Asp Ser Arg Thr  Ser Ser Ser
    2480                2485                2490

Lys Ala  Ser Leu Ser Arg Pro  Gly Arg Arg Pro Leu  Gly Phe Leu
    2495                2500                2505

Ser Leu  Ile Cys Ser Lys Asn  Ser Leu Glu Ser Asp  Glu Pro Met
    2510                2515                2520

Gln Val  His Ser Lys Lys Arg  Leu Lys Pro Leu Ile  Pro Gly Leu
    2525                2530                2535

Arg Lys  Lys Leu Lys Arg Ser  Asn Pro Phe Asn Glu  Ser Gln Glu
    2540                2545                2550

Lys Asn  Arg Glu Ser Ser Asp  Leu Leu Pro Ser Pro  Ser Val Ile
    2555                2560                2565

Thr Thr  Gln Ser Glu Asn Ile  Ser Ser Ser Ala Thr  Gln Val Ser
    2570                2575                2580

Cys Asp  Gln Pro Leu Leu Lys  Glu Gly Tyr Lys Ser  Ala Gln Lys
    2585                2590                2595

Arg Ala  Pro Gln Gly Glu Ala  Thr Thr Val Ser Glu  Tyr Phe Phe
    2600                2605                2610

Asn Asp  Ile Phe Ile Glu Val  Asp Glu Thr Glu
    2615                2620
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Val Gly Ala Arg Gly Ser Thr Ala Ser Asn Pro Gln Arg Gly Arg Glu
            20   25   30

Ser Pro Arg Pro Pro Asp Pro Ala Thr Asp Ser Ala Ser Lys Pro Ala
        35   40   45

Glu Pro Thr Asp Val Pro Thr Val Asp Phe Gly Gly Ala Glu Pro Gln
    50   55   60

Glu Lys Ala Pro Arg Ser Ser Thr Glu Lys Thr Gly Gly Asp Asn Asp
65   70   75   80

Val Glu Glu Ser Ser Arg Ser Ser Ser Thr Val Ser Gln Arg Arg Lys
                85   90   95

Arg Ile Ser Ser Thr Ser Ser Leu Val Lys Ser Ser Val Ser Val Pro
            100   105   110

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Ser Glu Ser His Pro Leu Ser Thr Ile Asn Gln Glu Ala Pro Gln Pro
        115                 120                 125

Thr Ala Thr Ser Thr Lys Glu Lys Gln Pro Cys Ser Asp Arg Tyr Arg
    130                 135                 140

Ile Tyr Lys Ala Gln Lys Leu Arg Glu Met Leu Lys Glu Glu Leu Arg
145                 150                 155                 160

Lys Glu Lys Lys Gln Trp Lys Asn Lys Tyr Ala Ile Asn Glu Ser Gln
                165                 170                 175

Arg Pro Pro Asp Arg Ser Lys Met Thr Met Arg Asp Phe Ile Tyr Tyr
            180                 185                 190

Leu Pro Asp Asn Asn Pro Met Thr Ser Ser Leu Glu Gln Glu Lys Lys
        195                 200                 205

Thr Glu Lys Pro Ser Thr Pro Val Gln Thr Arg Glu Gln Glu Gly Lys
    210                 215                 220

Ser Thr Pro Asn Ala Glu Asp Asn Glu Met Glu Glu Glu Thr Asp Asp
225                 230                 235                 240

Gly Pro Leu Leu Val Pro Arg Val Lys Val Ala Glu Asp Gly Ser Ile
                245                 250                 255

Ile Leu Asp Glu Glu Ser Leu Thr Val Glu Val Leu Arg Thr Lys Gly
            260                 265                 270

Pro Cys Val Val Glu Glu Asn Asp Pro Ile Phe Glu Arg Gly Ser Thr
        275                 280                 285

Thr Thr Tyr Ser Ser Phe Arg Lys Asn Tyr Tyr Ser Lys Pro Trp Ser
    290                 295                 300

Asn Lys Glu Thr Asp Met Phe Phe Leu Ala Ile Ser Met Val Gly Thr
305                 310                 315                 320

Asp Phe Ser Met Ile Gly Gln Leu Phe Pro His Arg Ala Arg Ile Glu
                325                 330                 335

Ile Lys Asn Lys Phe Lys Arg Glu Glu Lys Thr Asn Gly Trp Arg Ile
```

```
            340                 345                 350

Asp Lys Ala Phe Gln Glu Lys Arg Pro Phe Asp Phe Asp Phe Phe Ala
        355                 360                 365

His Leu Leu Gln Lys Val Leu Ala Glu Glu Glu Lys Arg Lys Gln Lys
    370                 375                 380

Ser Val Lys Asn His Ser Leu Lys Glu Lys Lys Ser Thr Lys Pro Arg
385                 390                 395                 400

Lys Asn Val Lys Val Lys Lys Val Ala Cys Glu Gly Val Asn Asn Asp
                405                 410                 415

Pro Asp Glu Ser Met Ser Ser Arg Ile Ser Asp Thr Glu Arg Ser Gln
            420                 425                 430

Lys Asp Ala Gln Thr Val Glu Glu Glu Ser Leu Thr Leu Ser Arg Glu
        435                 440                 445

Asp Ala Glu Gln Val Ala Leu Glu Val Asp Leu Asn Gln Lys Lys Arg
    450                 455                 460

Arg Arg Lys Lys Gln Asp Gly Ala Asn Glu Leu Gly Val Asn Asn Leu
465                 470                 475                 480

Leu Glu Asn Ala Thr Val Gln Ala Gly Pro Ser Lys Gly Glu Lys His
                485                 490                 495

Lys Asn Lys Cys Gln Ala Ile Arg Pro Glu Leu Lys Glu Gly Glu Cys
            500                 505                 510

Ser Lys Glu Gln Met Leu Ser Cys Thr Gln Asn Ile Asp Gly Ile Val
        515                 520                 525

Gly Phe Ala Ser Thr Glu Lys Val Glu Lys Arg Thr Asp Pro Ile Leu
    530                 535                 540

Ser Leu Ser Asn Gln Gln Asp Ala Thr Ser Val Ala Thr Glu Ser Ser
545                 550                 555                 560

Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala
                565                 570                 575
```

```
Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn
            580                 585                 590

Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val
        595                 600                 605

Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser
    610                 615                 620

Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu
625                 630                 635                 640

Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu
                645                 650                 655

Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu
            660                 665                 670

Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn
        675                 680                 685

Cys Leu Gln Glu Gly Ser Gln Leu Lys Ala Leu Arg Pro Val Gln Val
    690                 695                 700

Arg Gly Arg Leu Gln Lys Pro Lys Pro Asn Ala Gly Lys Ala Ala Glu
705                 710                 715                 720

Arg Lys Glu Ile Leu Ile Ser Gln Glu Glu Ile Gly Ala Asn Val Glu
                725                 730                 735

Lys Asn Glu Asn Glu Ser Cys Ala Asp Arg Asp Thr Pro Gln His Met
            740                 745                 750

Glu Asp Gln Ser Arg Lys Asp Phe Glu Glu Glu Asp Val Ile Leu Gln
        755                 760                 765

Pro Glu Lys Asn Asp Ser Phe Gln Asn Val Gln Pro Asp Glu Pro Lys
    770                 775                 780

Val Leu Asn Glu Cys Leu Ser Val Gln Glu Asn Asn Lys Ala Asn Lys
785                 790                 795                 800
```

```
Leu Asn Gln Val Pro Ile Leu Arg Thr Arg Phe Gln Lys Pro Lys Pro
                805                 810                 815

Asn Ile Gly Arg Gly Thr Gly Arg Arg Glu Ile Ser Ser Lys Glu Glu
            820                 825                 830

Val Leu Glu Lys Ile Leu Val Ser Gly Glu Met Ala Ala Ala Leu Arg
        835                 840                 845

Glu Thr Val Arg Leu Asp Thr Ser Pro Lys Glu Met Val Pro Ala Glu
    850                 855                 860

Ile Asn Thr Lys Glu Met Gln Ser Asp Leu Lys Glu Thr Gly Arg Arg
865                 870                 875                 880

Ala Ile Ser Pro Arg Glu Lys Ile Leu Asp Val Ile Asp Asp Thr Ile
                885                 890                 895

Glu Met Glu Thr Gly Leu Lys Ala Met Gly Arg Glu Ile Cys Leu Arg
            900                 905                 910

Glu Lys Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Lys Asp
        915                 920                 925

Leu Glu Glu Ala Gly Arg Arg Glu Ile Ser Pro Gln Lys Asn Gly Pro
    930                 935                 940

Glu Glu Val Lys Pro Leu Gly Glu Val Glu Thr Asp Leu Lys Ala Thr
945                 950                 955                 960

Gly Asn Glu Ser Ser Pro Arg Glu Lys Thr Pro Glu Val Thr Asp Ala
                965                 970                 975

Thr Glu Glu Ile Asp Lys Asn Leu Glu Glu Thr Gly Arg Arg Lys Ile
            980                 985                 990

Ser Pro Arg Glu Asn Gly Pro Glu  Glu Val Lys Pro Val  Asp Glu
Met
        995                 1000                1005

Glu Thr  Asp Leu Asn Ala Thr  Gly Arg Glu Ser Ser  Pro Arg Glu
    1010                1015                1020
```

```
Lys Thr  Pro Glu Val Ile Asp  Ala Thr Glu Glu Ile  Asp Leu Glu
    1025                1030                1035

Glu Thr  Glu Arg Glu Val Ser  Pro Gln Glu Asn Gly  Leu Glu Glu
    1040                1045                1050

Val Lys  Pro Leu Gly Glu Met  Glu Thr Asp Leu Lys  Ala Thr Gly
    1055                1060                1065

Arg Asp  Ser Phe Pro Arg Gly  Lys Thr Pro Glu Val  Ile Asp Ala
    1070                1075                1080

Ile Glu  Glu Ile Glu Ile Asp  Leu Glu Glu Thr Glu  Arg Glu Ile
    1085                1090                1095

Ser Pro  Gln Glu Asn Gly Leu  Glu Glu Val Lys Pro  Leu Gly Glu
    1100                1105                1110

Met Gln  Thr Asp Leu Lys Ala  Thr Gly Arg Glu Ile  Ser Pro Arg
    1115                1120                1125

Glu Lys  Thr Pro Glu Val Ile  Asp Ala Thr Glu Glu  Ile Asp Lys
    1130                1135                1140

Asp Leu  Glu Glu Thr Gly Arg  Arg Glu Ile Ser Pro  Glu Glu Asn
    1145                1150                1155

Gly Pro  Glu Glu Val Lys Pro  Val Asp Glu Met Glu  Thr Asp Leu
    1160                1165                1170

Lys Thr  Thr Gly Arg Glu Gly  Ser Ser Arg Glu Lys  Thr Arg Glu
    1175                1180                1185

Val Ile  Asp Ala Ala Glu Val  Ile Glu Thr Asp Leu  Glu Glu Thr
    1190                1195                1200

Glu Arg  Glu Ile Ser Pro Gln  Glu Asn Gly Pro Glu  Glu Val Lys
    1205                1210                1215

Pro Val  Gly Lys Met Glu Thr  Asp Leu Lys Glu Ile  Arg Glu Glu
    1220                1225                1230
```

```
Ile Ser  Gln Arg Glu Lys Val  Leu Ala Glu Phe Ser  Ala Ile Arg
    1235                1240                1245

Glu Lys  Glu Ile Asp Leu Lys  Glu Thr Gly Lys Arg  Asp Ile Pro
    1250                1255                1260

Ile Met  Glu Lys Val Ser Gly  Lys Met Ala Val Val  Glu Glu Met
    1265                1270                1275

Glu Ala  Asp Leu Lys Glu Thr  Gly Lys Glu Asn Phe  Arg Glu Arg
    1280                1285                1290

Gly Ser  Glu Glu Ile Cys Val  Thr Glu Glu Lys Val  Ala Glu Leu
    1295                1300                1305

Lys Gln  Thr Gly Lys Thr Asp  Ile Ser Pro Arg Glu  Asn Glu Leu
    1310                1315                1320

Glu Glu  Thr Ser Thr Ser Arg  Gln Thr Asp Thr His  Leu Met Gln
    1325                1330                1335

Ser Gly  Ser Asn Asp Phe Ser  Ala Val Pro Ser Leu  Asp Ile Gln
    1340                1345                1350

Asn Ile  Ser Ser Glu Val Leu  Ser Met Met His Thr  Pro Val Glu
    1355                1360                1365

Glu Lys  Arg Asn Ser Glu Lys  Glu Val Ser Ser His  Phe Ser His
    1370                1375                1380

Phe Lys  Ile Ser Ser Gln Thr  His Glu Ser Asp Lys  Thr Glu Val
    1385                1390                1395

Gln Gly  Ile Gln Ser Pro Asp  Val Pro Glu Gln Phe  Ser Asp Ile
    1400                1405                1410

Asn Leu  Ser Lys Ser Leu Pro  Gln Glu Gln Lys Pro  Leu Glu Ile
    1415                1420                1425

Lys Pro  Ala Pro Phe Val Arg  Ser Arg Phe Lys Arg  Pro Lys Pro
    1430                1435                1440

Asn Leu  Ala Arg Ala Ala Leu  Lys Arg Glu Thr Thr  Glu Ser Glu
```

1445 1450 1455

Lys Tyr Ile Tyr Glu Lys Lys Ser Glu Thr Lys Lys Met Glu Thr
1460 1465 1470

Ile Val Met Gln Glu Asn Asn Glu Gln Thr Asp Thr Leu Pro Ser
1475 1480 1485

Gln His Asp Glu Ala Ser Leu Met Ile Ser Arg Glu Lys Asp Thr
1490 1495 1500

Leu Gly His Arg Asn Glu Glu Ala Val Ile Leu Pro Cys Thr Gln
1505 1510 1515

Thr Glu Arg Asn Leu Ser Pro Ser Asn Ser Cys Glu Pro Lys Glu
1520 1525 1530

Glu Ser Gln Ser Ala Pro Val Gln Lys Asn Asp Ser Val Val Ser
1535 1540 1545

Val Gly Thr Asn Asn Val Asn Thr Phe Gln Gln Glu Met Lys Glu
1550 1555 1560

Ser Val Ile Gln Thr Ala Arg Gln Val Arg Gly Arg Leu Gln Arg
1565 1570 1575

Pro Arg Pro Asn Ile Arg Lys Thr Gly Gln Arg Gln Ile Val Asp
1580 1585 1590

Lys Gly Glu Ala Lys Gly Ile Ile Lys Glu Gly Arg Thr Ile Leu
1595 1600 1605

Pro Lys Asp Glu Thr Glu Lys Lys Val Leu Thr Val Ser Asn Ser
1610 1615 1620

Gln Ile Glu Thr Glu Ile Glu Val Pro Ser Ser Ala Val Pro Glu
1625 1630 1635

His Arg Met Tyr Glu Asn Gln Ser Gln Val Val Leu Val Glu Asn
1640 1645 1650

Leu His Val Asn Lys Thr Asn Glu Thr Ile Arg His Glu Asn Lys
1655 1660 1665

```
Pro Tyr  Val Pro Ser Ser Ala  Gln Met Thr Arg Arg  Lys Phe Gln
    1670                1675                1680

Lys Ala  Lys Pro Asn Leu Gly  Arg Ala His Ser Lys  Lys Glu Glu
    1685                1690                1695

Pro Val  Leu Glu Lys Val Thr  Thr Asp Gln Ser Lys  Glu Gly Lys
    1700                1705                1710

Pro Glu  Asp His Leu Leu Gln  Lys Gly Ala Ser Asn  Thr Gln Leu
    1715                1720                1725

Leu Leu  Lys Glu Lys Ala Glu  Leu Leu Thr Ser Leu  Glu Val Ser
    1730                1735                1740

Ala Arg  Lys Asp Cys Val Gly  Ser Lys Glu Ser Ala  Leu Ala Lys
    1745                1750                1755

Ile Asp  Ala Glu Leu Glu Glu  Val Gly Pro Ser Arg  Arg Val Gly
    1760                1765                1770

Glu Glu  Thr Val Gly Asp Asn  Ser Pro Ser Ser Val  Val Glu Glu
    1775                1780                1785

Gln Tyr  Leu Asn Lys Leu Thr  Ser Cys Pro Gln Pro  Leu Asn Glu
    1790                1795                1800

Thr Ser  Tyr Ser Lys Ile Ala  Leu Asp Gly Lys Thr  Thr Ile Ser
    1805                1810                1815

Ser Thr  Ser Glu Tyr Glu Arg  Asn Arg Gly Glu Arg  Arg Ser His
    1820                1825                1830

Lys Lys  Phe Lys Pro Asn Val  Thr Arg Gly Arg Gly  Ser Lys Arg
    1835                1840                1845

Val Arg  Gly Lys Thr Ser Lys  Lys Glu Pro Arg Ala  Ser Lys Ala
    1850                1855                1860

Met Leu  Val Thr Leu Arg Ala  Ser Gln Glu Glu Asp  Asp Asp Ala
    1865                1870                1875
```

```
Asp Asp  Phe Glu Ser Asp Tyr  Glu Glu Glu Ser Tyr  His Leu Ala
    1880                 1885                 1890

Pro Glu  Glu Val Asn Lys Ala  Pro Val Phe Val Pro  Val Gly Leu
    1895                 1900                 1905

Arg Ser  Pro Glu Pro Val Ser  Ala Gln Ile Glu Glu  Thr Met Glu
    1910                 1915                 1920

Glu Leu  Glu Ile Thr Val Asn  Val Pro Asp Val Gly  Cys Ile Ala
    1925                 1930                 1935

Val Val  Glu His Glu Leu Pro  Asn Thr Asp Val Thr  Thr Glu Glu
    1940                 1945                 1950

Met Lys  Gln Glu Glu Asn Leu  Ser Val Pro Phe Glu  Met Thr Thr
    1955                 1960                 1965

Ser Glu  His Ile Gln Asp Glu  Pro Gly Thr Asn Asp  Gly Ser Thr
    1970                 1975                 1980

Glu Ala  Ala Ile Thr Leu Leu  Thr Met Gly Asp Leu  Val Leu Gln
    1985                 1990                 1995

Ser Glu  Ile Ser Ser Glu Gln  Gly Asp Val Gly Val  Cys Ile Ile
    2000                 2005                 2010

Pro His  Val His Ser Lys Asp  Lys Ser His Ile Pro  Ser Ser Leu
    2015                 2020                 2025

Asp Asn  Val Asn His Lys Ile  Val His Glu Cys Gln  Glu Leu Ser
    2030                 2035                 2040

Ser Pro  Val Ile Thr Thr Ser  Pro Ala Ser Phe Glu  Glu Asn Lys
    2045                 2050                 2055

Ile Val  Leu Glu Glu Gln Ser  Ser Arg Glu Glu Ile  Ser Leu Met
    2060                 2065                 2070

Glu Lys  Val Lys Glu Asn Ala  Thr Pro Thr Arg Asn  Thr Ile Ser
    2075                 2080                 2085
```

Lys Val Thr Ser Asn Leu Arg Ile Arg Ser Arg Leu Ala Lys Pro
2090 2095 2100

Lys Pro Asn Leu Glu Lys Thr Leu Gly Thr Asn Arg Leu Asp Asp
2105 2110 2115

Tyr Gln Glu Val Ser Ser Leu Cys Val Thr Lys Gly Ala Glu Met
2120 2125 2130

Glu Thr Gln Arg Glu Thr Glu Lys Asn Ala Ser Lys Ala Thr Glu
2135 2140 2145

Leu Glu Asn Lys Asn Leu Gly Pro Val Thr Thr Ala Glu Asn Lys
2150 2155 2160

Asp Gln Ser Lys Leu Ala Cys Val His Gly Ile Lys Gly Thr Ser
2165 2170 2175

Ile Ser Ser Glu Val Asn Leu Thr Glu Arg Asn Glu Asn Gln Glu
2180 2185 2190

Glu Ser Ser Gln Glu Val His Met Leu Ser Val Ala Pro Val Ala
2195 2200 2205

Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly Leu Asp Arg Gly Leu
2210 2215 2220

Gly Glu Asn Ser Val Glu Glu Pro Gln Ile Lys Asp Ser Lys Gly
2225 2230 2235

Asp Ser Val Leu Thr Leu Pro Val Pro Glu Tyr Thr Pro Thr Ser
2240 2245 2250

Ile Pro Glu Val Gln Gln Glu Asn Ile Ile Asn Pro Gln Asp Leu
2255 2260 2265

Thr Val Asn Leu Val Ala Asn Val Pro Gln Asp Gly Glu Asp Glu
2270 2275 2280

Gln Ala Phe Ile Leu Thr Leu Val Glu Ile Pro Ala Asn Ala Val
2285 2290 2295

Glu Glu Phe Thr Asp Ala Thr Ala Gln Phe Met Pro Asn Pro Leu

2300 2305 2310

Leu Pro Ala Pro Ile Leu Val Lys Ser Val Asn Thr Glu Glu Arg
2315 2320 2325

Gly Asp Met Ser Ile Cys Leu Pro Ala Thr Ser Val Gly Gln Asp
2330 2335 2340

Ala Met Gly Leu Ser Ile Ser Gly Arg Asp Asn Ser Lys Lys Pro
2345 2350 2355

Pro Asp Asn Leu Asp Leu Val Ser Arg Lys Arg Phe Gln Cys Arg
2360 2365 2370

Leu Asp Lys Asn Asp His Ile Pro Pro Ala Lys Lys Arg Ser Leu
2375 2380 2385

Thr Leu Arg Asp Asp Cys Gln Glu Tyr Thr Thr Glu Val His Ser
2390 2395 2400

Lys Glu Leu Thr Asn Val Phe Glu Glu Thr Gly Glu Ser His Lys
2405 2410 2415

Gly Gln Asp Ile Phe Leu Thr Ser Gly Ser Thr Leu Thr Thr Pro
2420 2425 2430

Glu Pro Gln Arg Gln Gln Val Glu Ala Ala Phe Gln Ser Arg Gly
2435 2440 2445

Ser Arg Ser Pro Asp Ala Cys Met Asp Lys Asn Val Pro Gln Leu
2450 2455 2460

Pro Gln Asp Glu Met Ile Val Ser Asp Lys Glu Glu Arg Thr Asp
2465 2470 2475

Ala Ala Pro Lys Ser Gln Gln Met Asp Ser Arg Thr Ser Ser Ser
2480 2485 2490

Lys Ala Ser Leu Ser Arg Pro Gly Arg Arg Pro Leu Gly Phe Leu
2495 2500 2505

Ser Leu Ile Cys Ser Lys Asn Ser Leu Glu Ser Asp Glu Pro Met
2510 2515 2520

```
Gln Val  His Ser Lys Lys Arg  Leu Lys Pro Leu Ile  Pro Gly Leu
    2525                2530                2535

Arg Lys  Lys Leu Lys Arg Ser  Asn Pro Phe Asn Glu  Ser Gln Glu
    2540                2545                2550

Lys Asn  Arg Glu Ser Ser Asp  Leu Leu Pro Ser Pro  Ser Val Ile
    2555                2560                2565

Thr Thr  Gln Ser Glu Asn Ile  Ser Ser Ser Ala Thr  Gln Val Ser
    2570                2575                2580

Cys Asp  Gln Pro Leu Leu Lys  Glu Gly Tyr Lys Ser  Ala Gln Lys
    2585                2590                2595

Arg Ala  Pro Gln Gly Glu Ala  Thr Thr Val Ser Glu  Tyr Phe Phe
    2600                2605                2610

Asn Asp  Ile Phe Ile Glu Val  Asp Glu Thr Glu
    2615                2620
```

<210> 8147
<211> 583
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
<221> source
<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485731"

<220>
<221> MOD_RES

<222> (1)..(1)
<223> Any amino acid

<400> 8147
Xaa Arg Lys Asp Cys Val Gly Ser Lys Glu Ser Ala Leu Ala Lys Ile
1 5 10 15

Asp Ala Glu Leu Glu Glu Val Gly Pro Ser Arg Arg Val Gly Glu Glu
20 25 30

Thr Val Gly Asp Asn Ser Pro Ser Ser Val Val Glu Glu Gln Tyr Leu
35 40 45

Asn Lys Leu Thr Ser Cys Pro Gln Pro Leu Asn Glu Thr Ser Tyr Ser
50 55 60

Lys Ile Ala Leu Asp Gly Lys Thr Thr Ile Ser Ser Thr Ser Glu Tyr
65 70 75 80

Glu Arg Asn Arg Gly Glu Arg Arg Ser His Lys Lys Phe Lys Pro Asn
85 90 95

Val Thr Arg Gly Arg Gly Ser Lys Arg Val Arg Gly Lys Thr Ser Lys
100 105 110

Lys Glu Pro Arg Ala Ser Lys Ala Met Leu Val Thr Leu Arg Ala Ser
115 120 125

Gln Glu Glu Asp Asp Asp Ala Asp Asp Phe Glu Ser Asp Tyr Glu Glu
130 135 140

Glu Ser Tyr His Leu Ala Pro Glu Glu Val Asn Lys Ala Pro Val Phe
145 150 155 160

Val Pro Val Gly Leu Arg Ser Pro Glu Pro Val Ser Ala Gln Ile Glu
165 170 175

Glu Thr Met Glu Glu Leu Glu Ile Thr Val Asn Val Pro Asp Val Gly
180 185 190

Cys Ile Ala Val Val Glu His Glu Leu Pro Asn Thr Asp Val Thr Thr
195 200 205

Glu Glu Met Lys Gln Glu Glu Asn Leu Ser Val Pro Phe Glu Met Thr

```
    210                 215                 220

Thr Ser Glu His Ile Gln Asp Glu Pro Gly Thr Asn Asp Gly Ser Thr
225                 230                 235                 240

Glu Ala Ala Ile Thr Leu Leu Thr Met Gly Asp Leu Val Leu Gln Ser
                245                 250                 255

Glu Ile Ser Ser Glu Gln Gly Asp Gly Val Cys Ile Ile Pro His Val
            260                 265                 270

His Ser Lys Asp Lys Ser His Ile Pro Ser Ser Leu Asp Asn Val Asn
        275                 280                 285

His Lys Ile Val His Glu Cys Gln Glu Leu Ser Ser Pro Val Ile Thr
    290                 295                 300

Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys Ile Val Leu Glu Glu Gln
305                 310                 315                 320

Ser Ser Arg Glu Glu Ile Ser Leu Met Glu Lys Val Lys Glu Asn Ala
                325                 330                 335

Thr Pro Thr Arg Asn Thr Ile Ser Lys Val Thr Ser Asn Leu Arg Ile
            340                 345                 350

Arg Ser Arg Leu Ala Lys Pro Lys Pro Asn Leu Glu Lys Thr Leu Gly
        355                 360                 365

Thr Asn Arg Leu Asp Asp Tyr Gln Glu Val Ser Ser Leu Cys Val Thr
    370                 375                 380

Lys Gly Ala Glu Met Glu Thr Gln Arg Glu Thr Glu Lys Asn Ala Ser
385                 390                 395                 400

Lys Ala Thr Glu Leu Glu Asn Lys Asn Leu Gly Pro Val Thr Thr Ala
                405                 410                 415

Glu Asn Lys Asp Gln Ser Lys Leu Ala Cys Val His Gly Ile Lys Gly
            420                 425                 430

Thr Ser Ile Ser Ser Glu Val Asn Leu Thr Glu Arg Asn Glu Asn Gln
        435                 440                 445
```

```
Glu Glu Ser Ser Gln Glu Val His Met Leu Ser Val Ala Pro Val Ala
    450                 455                 460

Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly Leu Asp Arg Gly Leu Gly
465                 470                 475                 480

Glu Asn Ser Val Glu Glu Pro Gln Ile Lys Asp Ser Lys Gly Asp Ser
                485                 490                 495

Val Leu Thr Leu Pro Val Pro Glu Tyr Thr Pro Thr Ser Ile Pro Glu
            500                 505                 510

Val Gln Gln Glu Asn Ile Ile Asn Pro Gln Asp Leu Thr Val Phe Val
        515                 520                 525

Tyr Gln Gln Leu Gln Leu Val Lys Met Pro Trp Val Tyr Leu Phe Leu
    530                 535                 540

Glu Glu Ile Ile Leu Lys Ser Arg Leu Ile Ile Trp Ile Leu Tyr Leu
545                 550                 555                 560

Gly Arg Asp Phe Asn Ala Gly Leu Ile Lys Met Thr Thr Phe Leu Leu
                565                 570                 575

Pro Lys Asn Val His Ser Leu
            580
```

<210> 8148
<211> 606
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1689; "

<220>
<221> source
<223> /note="Gene Symbol: BDP1; "

<220>
<221> source
<223> /note="Gene Name:
B double prime 1,
subunit of RNA polymerase III
transcription initiation factor IIIB; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487333"

<400> 8148
Thr Asp Val Thr Thr Glu Glu Met Lys Gln Glu Glu Asn Leu Ser Val
1 5 10 15

Pro Phe Glu Met Thr Thr Ser Glu His Ile Gln Asp Glu Pro Gly Val
20 25 30

Cys Ile Ile Pro His Val His Ser Lys Asp Lys Ser His Ile Pro Ser
35 40 45

Ser Leu Asp Asn Val Asn His Lys Ile Val His Glu Cys Gln Glu Leu
50 55 60

Ser Ser Pro Val Ile Thr Thr Ser Pro Ala Ser Phe Glu Glu Asn Lys
65 70 75 80

Ile Val Leu Glu Glu Gln Ser Ser Arg Glu Glu Ile Ser Leu Met Glu
85 90 95

Lys Val Lys Glu Asn Ala Thr Pro Thr Arg Asn Thr Ile Ser Lys Val
100 105 110

Thr Ser Asn Leu Arg Ile Arg Ser Arg Leu Ala Lys Pro Lys Pro Asn
115 120 125

Leu Glu Lys Thr Leu Gly Thr Asn Arg Leu Asp Asp Tyr Gln Glu Val
130 135 140

Ser Ser Leu Cys Val Thr Lys Gly Ala Glu Met Glu Thr Gln Arg Glu
145 150 155 160

Thr Glu Lys Asn Ala Ser Lys Ala Thr Glu Leu Glu Asn Lys Asn Leu
165 170 175

Gly Pro Val Thr Thr Ala Glu Asn Lys Asp Gln Ser Lys Leu Ala Cys
180 185 190

Val His Gly Ile Lys Gly Thr Ser Ile Ser Ser Glu Val Asn Leu Thr
195 200 205

```
Glu Arg Asn Glu Asn Gln Glu Glu Ser Ser Gln Glu Val His Met Leu
    210                 215                 220

Ser Val Ala Pro Val Ala Ser Ser Glu Thr Gly Pro Cys Thr Leu Gly
225                 230                 235                 240

Leu Asp Arg Gly Leu Gly Glu Asn Ser Val Glu Glu Pro Gln Ile Lys
                245                 250                 255

Asp Ser Lys Gly Asp Ser Val Leu Thr Leu Pro Val Pro Glu Tyr Thr
            260                 265                 270

Pro Thr Ser Ile Pro Glu Val Gln Gln Glu Asn Ile Ile Asn Pro Gln
        275                 280                 285

Asp Leu Thr Val Asn Leu Val Ala Asn Val Pro Gln Asp Gly Glu Asp
    290                 295                 300

Glu Gln Ala Phe Ile Leu Thr Leu Val Glu Ile Pro Ala Asn Ala Val
305                 310                 315                 320

Glu Glu Phe Thr Asp Ala Thr Ala Gln Phe Met Pro Asn Pro Leu Leu
                325                 330                 335

Pro Ala Pro Ile Leu Val Lys Ser Val Asn Thr Glu Glu Arg Gly Asp
            340                 345                 350

Met Ser Ile Cys Leu Pro Ala Thr Ser Val Gly Gln Asp Ala Met Gly
        355                 360                 365

Leu Ser Ile Ser Gly Arg Asp Asn Ser Lys Lys Pro Pro Asp Asn Leu
    370                 375                 380

Asp Leu Val Ser Arg Lys Arg Phe Gln Cys Arg Leu Asp Lys Asn Asp
385                 390                 395                 400

His Ile Pro Pro Ala Lys Lys Arg Ser Leu Thr Leu Arg Asp Asp Cys
                405                 410                 415

Gln Glu Tyr Thr Thr Glu Val His Ser Lys Glu Leu Thr Asn Val Phe
            420                 425                 430
```

```
Glu Glu Thr Gly Glu Ser His Lys Gly Gln Asp Ile Phe Leu Thr Ser
        435                 440                 445

Gly Ser Thr Leu Thr Thr Pro Glu Pro Gln Arg Gln Gln Val Glu Ala
    450                 455                 460

Ala Phe Gln Ser Arg Gly Ser Arg Ser Pro Asp Ala Cys Met Asp Lys
465                 470                 475                 480

Asn Val Pro Gln Leu Pro Gln Asp Glu Met Ile Val Ser Asp Lys Glu
                485                 490                 495

Glu Arg Thr Asp Ala Ala Pro Lys Ser Gln Gln Met Asp Ser Arg Thr
            500                 505                 510

Ser Ser Ser Lys Ala Ser Leu Ser Arg Pro Gly Arg Arg Pro Leu Gly
        515                 520                 525

Phe Leu Ser Leu Ile Cys Ser Lys Asn Ser Leu Glu Ser Asp Glu Pro
    530                 535                 540

Met Gln Val His Ser Lys Lys Arg Leu Lys Pro Leu Ile Pro Gly Leu
545                 550                 555                 560

Arg Lys Lys Leu Lys Arg Ser Asn Pro Phe Asn Glu Ser Gln Glu Lys
                565                 570                 575

Asn Arg Glu Ser Ser Asp Leu Leu Pro Ser Pro Ser Val Ile Thr Thr
            580                 585                 590

Gln Ser Glu Asn Ile Ser Ser Ser Ala Thr Gln Arg Pro Phe
        595                 600                 605


<210> 8149
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1690; "

<220>
<221> source
<223> /note="Gene Symbol:; "
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<220>
<221> source
<223> /note="Gene Name:
B melanoma antigen
family, member 5
[Source:EntrezGene;Acc:85316]; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485185"

<400> 8149
Met Ala Ala Gly Ala Val Phe Leu Ala Leu Ser Ala Gln Leu Leu Gln
1 5 10 15

Ala Arg Leu Met Lys Glu Glu Ser Pro Val Val Ser Trp Arg Leu Glu
20 25 30

Pro Glu Asp Gly Thr Ala Leu
35

<210> 8150
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
B9 prt domain 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPM9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261499"

<400> 8150
Met Ala Thr Ala Ser Pro Ser Val Phe Leu Leu Met Val Asn Gly Gln
1 5 10 15

Val Glu Ser Ala Gln Phe Pro Glu Tyr Asp Asp Leu Tyr Cys Lys Tyr
20 25 30

```
Cys Phe Val Tyr Gly Gln Asp Trp Ala Pro Thr Ala Gly Leu Glu Glu
        35                  40                  45

Gly Ile Ser Gln Ile Thr Ser Lys Ser Gln Asp Val Arg Gln Ala Leu
    50                  55                  60

Val Trp Asn Phe Pro Ile Asp Val Thr Phe Lys Ser Thr Asn Pro Tyr
65                  70                  75                  80

Gly Trp Pro Gln Ile Val Leu Ser Val Tyr Gly Pro Asp Val Phe Gly
                85                  90                  95

Asn Asp Val Val Arg Gly Tyr Gly Ala Val His Val Pro Phe Ser Pro
            100                 105                 110

Gly Arg His Lys Arg Thr Ile Pro Met Phe Val Pro Glu Ser Thr Ser
        115                 120                 125

Lys Leu Gln Lys Phe Thr Ser Trp Phe Met Gly Arg Arg Pro Glu Tyr
    130                 135                 140

Thr Asp Pro Lys Val Val Ala Gln Gly Glu Gly Arg Glu Val Thr Arg
145                 150                 155                 160

Val Arg Ser Gln Gly Phe Val Thr Leu Leu Phe Asn Val Val Thr Lys
                165                 170                 175

Asp Met Arg Lys Leu Gly Tyr Asp Thr Gly Pro Ser Asp Thr Gln Gly
            180                 185                 190

Val Leu Gly Pro Ser Pro Pro Gln Ser Phe Pro Gln
        195                 200
```

<210> 8151
<211> 153
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source

<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
B9 prt domain 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPM9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000268841"

<400> 8151

```
Met Ala Thr Ala Ser Pro Ser Val Phe Leu Leu Met Val Asn Gly Gln
1               5                   10                  15


Val Glu Ser Ala Gln Phe Pro Glu Tyr Asp Asp Leu Tyr Cys Lys Tyr
            20                  25                  30


Cys Phe Val Tyr Gly Gln Asp Trp Ala Pro Thr Ala Gly Leu Glu Glu
        35                  40                  45


Gly Ile Ser Gln Ile Thr Ser Lys Ser Gln Asp Val Arg Gln Ala Leu
    50                  55                  60


Val Trp Asn Phe Pro Ile Asp Val Thr Phe Lys Ser Thr Asn Pro Tyr
65                  70                  75                  80


Gly Trp Pro Gln Ile Val Leu Ser Val Tyr Gly Pro Asp Val Phe Gly
                85                  90                  95


Asn Asp Val Val Arg Gly Tyr Gly Ala Val His Val Pro Phe Ser Pro
            100                 105                 110


Gly Arg His Lys Arg Thr Ile Pro Met Phe Val Pro Glu Ser Thr Ser
        115                 120                 125


Lys Leu Gln Lys Phe Thr Ser Leu Cys Leu Val Ala Ser Ser Asp Leu
    130                 135                 140


Gln Ala Ala Pro Pro Thr Glu Asp Lys
145                 150
```

<210> 8152

<211> 161
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
B9 prt domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378977"

<400> 8152

Met	Ala	Thr	Ala	Ser	Pro	Ser	Val	Phe	Leu	Leu	Met	Val	Asn	Gly	Gln
1				5				10						15	

Val	Glu	Ser	Ala	Gln	Phe	Pro	Glu	Tyr	Asp	Asp	Leu	Tyr	Cys	Lys	Tyr
			20					25					30		

Cys	Phe	Val	Tyr	Gly	Gln	Asp	Trp	Ala	Pro	Thr	Ala	Gly	Leu	Glu	Glu
		35					40					45			

Gly	Ile	Ser	Gln	Ile	Thr	Ser	Lys	Ser	Gln	Asp	Val	Arg	Gln	Ala	Leu
	50					55					60				

Val	Trp	Asn	Phe	Pro	Ile	Asp	Val	Thr	Phe	Lys	Ser	Thr	Asn	Pro	Tyr
65					70					75					80

Gly	Trp	Pro	Gln	Ile	Val	Leu	Ser	Val	Tyr	Gly	Pro	Asp	Val	Phe	Gly
				85					90					95	

Asn	Asp	Val	Val	Arg	Gly	Tyr	Gly	Ala	Val	His	Val	Pro	Phe	Ser	Pro
			100					105					110		

Gly	Arg	His	Lys	Arg	Thr	Ile	Pro	Met	Phe	Val	Pro	Glu	Ser	Thr	Ser
		115					120					125			

Lys	Leu	Gln	Lys	Phe	Thr	Ser	Trp	Phe	Met	Gly	Arg	Arg	Pro	Glu	Tyr
	130					135					140				

```
Thr Asp Pro Lys Val Val Ala Gln Gly Glu Gly Arg Glu Ala Gln Pro
145                 150                 155                 160


Gly



<210> 8153
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
      B9 prt domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378978"

<400> 8153
Met Ala Thr Ala Ser Pro Ser Val Phe Leu Leu Met Val Asn Gly Gln
1               5                   10                  15


Val Glu Ser Ala Gln Phe Pro Glu Tyr Asp Asp Leu Tyr Cys Lys Tyr
            20                  25                  30


Cys Phe Val Tyr Gly Gln Asp Trp Ala Pro Thr Ala Gly Leu Glu Glu
        35                  40                  45


Gly Ile Ser Gln Ile Thr Ser Lys Ser Gln Asp Val Arg Gln Ala Leu
    50                  55                  60


Val Trp Asn Phe Pro Ile Asp Val Thr Phe Lys Ser Thr Asn Pro Tyr
65                  70                  75                  80


Gly Trp Pro Gln Ile Val Leu Ser Val Tyr Gly Pro Asp Val Phe Gly
                85                  90                  95


Asn Asp Val Val Arg Gly Tyr Gly Ala Val His Val Pro Phe Ser Pro
```

```
            100                 105                 110

Gly Arg His Lys Arg Thr Ile Pro Met Phe Val Pro Glu Ser Thr Ser
        115                 120                 125

Lys Leu Gln Lys Phe Thr Ser Trp Phe Met Gly Arg Arg Pro Glu Tyr
    130                 135                 140

Thr Asp Pro Lys Val Val Ala Gln Gly Glu Gly Arg Glu Asp Glu Asn
145                 150                 155                 160

Ala Glu Ala Glu Ile Pro Arg Ser Thr Trp Val Ser Leu Cys Pro Ser
                165                 170                 175

Pro Ala Trp Leu Met Leu Pro Phe Cys Pro Gln
            180                 185


<210> 8154
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
      B9 prt domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410835"

<400> 8154
Leu Leu Met Val Asn Gly Gln Val Glu Ser Ala Gln Phe Pro Glu Tyr
1               5                   10                  15

Asp Asp Leu Tyr Cys Lys Tyr Cys Phe Val Tyr Gly Gln Asp Trp Ala
            20                  25                  30

Pro Thr Ala Gly Leu Glu Glu Gly Ile Ser Gln Ile Thr Ser Lys Ser
        35                  40                  45
```

```
Gln Asp Val Arg Gln Ala Leu Val Trp Asn Phe Pro Ile Asp Val Thr
    50                  55                  60

Phe Lys Ser Thr Asn Pro Tyr Gly Trp Pro Gln Ile Val Leu Ser Val
65                  70                  75                  80

Tyr Gly Pro Asp Val Phe Gly Asn Asp Val Val Arg Gly Tyr Gly Ala
                85                  90                  95

Val His Val Pro Phe Ser Pro Gly Arg His Lys Arg Thr Ile Pro Met
            100                 105                 110

Phe Val Pro Glu Ser Thr Ser Lys Leu Gln Lys Phe Thr Arg Ser Ala
        115                 120                 125

Ser Cys Ser Thr His
    130
```

<210> 8155
<211> 186
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
B9 prt domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433359"

<400> 8155

```
Met Ala Thr Ala Ser Pro Ser Val Phe Leu Leu Met Val Asn Gly Gln
1               5                   10                  15

Val Glu Ser Ala Gln Phe Pro Glu Tyr Asp Asp Leu Tyr Cys Lys Tyr
            20                  25                  30

Cys Phe Val Tyr Gly Gln Asp Trp Ala Pro Thr Ala Gly Leu Glu Glu
```

```
        35                  40                  45

Gly Ile Ser Gln Ile Thr Ser Lys Ser Gln Asp Val Arg Gln Ala Leu
    50                  55                  60

Val Trp Asn Phe Pro Ile Asp Val Thr Phe Lys Ser Thr Asn Pro Tyr
65                  70                  75                  80

Gly Trp Pro Gln Ile Val Leu Ser Val Tyr Gly Pro Asp Val Phe Gly
                85                  90                  95

Asn Asp Val Val Arg Gly Tyr Gly Ala Val His Val Pro Phe Ser Pro
            100                 105                 110

Gly Arg His Lys Arg Thr Ile Pro Met Phe Val Pro Glu Ser Thr Ser
        115                 120                 125

Lys Leu Gln Lys Phe Thr Ser Trp Phe Met Gly Arg Arg Pro Glu Tyr
    130                 135                 140

Thr Asp Pro Lys Val Val Ala Gln Gly Glu Gly Arg Glu Ala Ile Thr
145                 150                 155                 160

Ala Pro Arg Lys Ala Val Phe Ser Val His Gly Leu Thr Ser Pro Arg
                165                 170                 175

Ala Leu Ala Leu Val His Ile Lys Gly Thr
            180                 185


<210> 8156
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:
      B9 prt domain 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000458525"

<400> 8156
Met Met Thr Ser Thr Ala Ser Thr Ala Leu Cys Thr Ala Arg Thr Gly
1   5   10   15

Pro Pro Gln Arg Val Trp Arg Arg Gly Ser His Arg Ser His Pro Arg
            20   25   30

Ala Lys Met Cys Gly Lys His Trp Cys Gly Thr Ser Pro Leu Met Ser
        35   40   45

Pro Leu Lys Ala Pro Thr Pro Thr Ala Gly His Arg Ser Cys Ser Ala
    50   55   60

Cys Met Asp Gln Met Cys Ser Gly Thr Met Trp Phe Glu Ala Met Gly
65   70   75   80

Pro Cys Thr Cys Pro Ser His Leu Ala Gly Thr Lys Gly Pro Ser Pro
                85   90   95

Cys Leu Ser Gln Asn Leu Arg Leu Asn Cys Arg Ser Leu Gln Ala Gly
            100   105   110

Ser Trp Gly Gly Gly Pro Ser Thr Gln Thr Pro Arg Trp Trp Leu Arg
        115   120   125

Val Lys Ala Gly Lys Val Lys Leu Pro Pro Leu Ser
    130   135   140

<210> 8157
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1691; "

<220>
<221> source
<223> /note="Gene Symbol: B9D1; "

<220>
<221> source
<223> /note="Gene Name:

B9 prt domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459857"

<400> 8157
Met Met Thr Ser Thr Ala Ser Thr Ala Leu Cys Thr Ala Arg Thr Gly
1 5 10 15

Pro Pro Gln Arg Val Trp Arg Arg Gly Ser His Arg Ser His Pro Arg
20 25 30

Ala Lys Met Cys Gly Lys His Trp Cys Gly Thr Ser Pro Leu Met Ser
35 40 45

Pro Leu Lys Ala Pro Thr Pro Thr Ala Gly His Arg Ser Cys Ser Ala
50 55 60

Cys Met Asp Gln Met Cys Ser Gly Thr Met Trp Phe Glu Ala Met Gly
65 70 75 80

Pro Cys Thr Cys Pro Ser His Leu Ala Gly Thr Lys Gly Pro Ser Pro
85 90 95

Cys Leu Ser Gln Asn Leu Arg Leu Asn Cys Arg Ser Leu Gln Ala Gly
100 105 110

Ser Trp Gly Gly Gly Pro Ser Thr Gln Thr Pro Arg Trp Trp Leu Arg
115 120 125

Val Lys Ala Gly Lys Pro Pro Ser Gly Leu Ser Val Lys Asp Ser Ser
130 135 140

Val Ser Arg
145

<210> 8158
<211> 213
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<220>
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B9 prt domain 1; "

<220>
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<223> /note="ENSP ID: ENSP00000460939"

<400> 8158

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Met Met Thr Ser Thr Ala Ser Thr Ala Leu Cys Thr Ala Arg Thr Gly
1               5                  10                  15

Pro Pro Gln Arg Val Trp Arg Arg Gly Ser His Arg Ser His Pro Arg
            20                  25                  30

Ala Lys Met Cys Gly Lys His Trp Cys Gly Thr Ser Pro Leu Met Ser
        35                  40                  45

Pro Leu Lys Ala Pro Thr Pro Thr Ala Gly His Arg Ser Cys Ser Ala
    50                  55                  60

Cys Met Asp Gln Met Cys Ser Gly Thr Met Trp Phe Glu Ala Met Gly
65                  70                  75                  80

Pro Cys Thr Cys Pro Ser His Leu Ala Gly Thr Lys Gly Pro Ser Pro
                85                  90                  95

Cys Leu Ser Gln Asn Leu Arg Leu Asn Cys Arg Ser Leu Gln Ala Gly
            100                 105                 110

Ser Trp Gly Gly Gly Pro Ser Thr Gln Thr Pro Arg Trp Trp Leu Arg
        115                 120                 125

Val Lys Ala Gly Lys Val Lys Leu Pro Pro Leu Ser Tyr Pro His Pro
    130                 135                 140

Pro Tyr Arg Leu Gln Pro Gly Ser Gly Trp Ala Gln Gly Trp Gly Glu
145                 150                 155                 160

Cys Arg Gly Pro Ala Arg His Ile Gly Ala Ser Pro Gln Met Phe Pro
                165                 170                 175
```

```
Asp Glu Gly Leu Val Gly Ala Gln Arg Val Cys His Val Cys Leu Ser
            180                 185                 190

Arg Gln Pro Leu Tyr Leu Pro Val Arg Gly Leu Gly Gln Ala Leu Leu
        195                 200                 205

Ser Pro Phe Tyr Arg
    210


<210> 8159
<211> 106
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<220>
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<400> 8159
Met Met Thr Ser Thr Ala Ser Thr Ala Leu Cys Thr Ala Arg Thr Gly
1               5                   10                  15

Pro Pro Gln Arg Val Trp Arg Arg Gly Ser His Arg Ser His Pro Arg
            20                  25                  30

Ala Lys Met Cys Gly Lys His Trp Cys Gly Thr Ser Pro Leu Met Ser
        35                  40                  45

Pro Leu Lys Ala Pro Thr Pro Thr Ala Gly His Arg Ser Cys Ser Ala
    50                  55                  60

Cys Met Asp Gln Met Cys Ser Gly Thr Met Trp Phe Glu Ala Met Gly
65                  70                  75                  80

Pro Cys Thr Cys Pro Ser His Leu Ala Gly Thr Lys Gly Pro Ser Pro
                85                  90                  95
```

Cys Leu Ser Gln Asn Leu Arg Leu Asn Cys
100 105

<210> 8160
<211> 112
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
B9 prt domain 1; "

<220>
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<400> 8160
Ser Asn Arg Ala Arg Pro Arg Trp Val Pro Pro Ala Pro Pro Asp Leu
1 5 10 15

Pro Trp Arg Pro Arg Val Leu Ala Ser Phe Tyr Ser Trp Ser Thr Gly
20 25 30

Arg Trp Arg Ala Pro Ser Phe Gln Ser Met Met Thr Ser Thr Ala Ser
35 40 45

Thr Ala Leu Cys Thr Ala Arg Thr Gly Pro Pro Gln Arg Val Trp Arg
50 55 60

Arg Gly Ser His Arg Ser His Pro Arg Ala Lys Met Cys Gly Lys His
65 70 75 80

Trp Cys Gly Thr Ser Pro Leu Met Ser Pro Leu Lys Ala Pro Thr Pro
85 90 95

Thr Ala Ala Val Gln Leu Ala Phe Trp Lys Phe Arg Val His Gln Gly
100 105 110

<210> 8161
<211> 19
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: B9D1; "

<220>
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<223> /note="Gene Name:
B9 prt domain 1; "

<220>
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<223> /note="ENSP ID: ENSP00000463255"

<400> 8161
Met Met Thr Ser Thr Ala Ser Thr Ala Leu Cys Thr Ala Arg Thr Gly
1 5 10 15

Pro Pro Gln

<210> 8162
<211> 175
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: B9D2; "

<220>
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<223> /note="Gene Name:
B9 prt domain 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BPU9; "

<220>
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<223> /note="ENSP ID: ENSP00000243578"

<400> 8162
Met Ala Glu Val His Val Ile Gly Gln Ile Ile Gly Ala Ser Gly Phe
1 5 10 15

Ser Glu Ser Ser Leu Phe Cys Lys Trp Gly Ile His Thr Gly Ala Ala
20 25 30

Trp Lys Leu Leu Ser Gly Val Arg Glu Gly Gln Thr Gln Val Asp Thr
35 40 45

Pro Gln Ile Gly Asp Met Ala Tyr Trp Ser His Pro Ile Asp Leu His
50 55 60

Phe Ala Thr Lys Gly Leu Gln Gly Trp Pro Arg Leu His Phe Gln Val
65 70 75 80

Trp Ser Gln Asp Ser Phe Gly Arg Cys Gln Leu Ala Gly Tyr Gly Phe
85 90 95

Cys His Val Pro Ser Ser Pro Gly Thr His Gln Leu Ala Cys Pro Thr
100 105 110

Trp Arg Pro Leu Gly Ser Trp Arg Glu Gln Leu Ala Arg Ala Phe Val
115 120 125

Gly Gly Gly Pro Gln Leu Leu His Gly Asp Thr Ile Tyr Ser Gly Ala
130 135 140

Asp Arg Tyr Arg Leu His Thr Ala Ala Gly Gly Thr Val His Leu Glu
145 150 155 160

Ile Gly Leu Leu Leu Arg Asn Phe Asp Arg Tyr Gly Val Glu Cys
165 170 175

<210> 8163
<211> 82
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: B9D2; "

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<223> /note="Gene Name:
B9 prt domain 2; "

<220>
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<223> /note="ENSP ID: ENSP00000469666"

<400> 8163
Met Ala Glu Val His Val Ile Gly Gln Ile Ile Gly Ala Ser Gly Phe
1 5 10 15

Ser Glu Ser Ser Leu Phe Cys Lys Trp Gly Ile His Thr Glu Thr Gly
20 25 30

Ser Arg Tyr Val Ala Gln Ala Gly Leu Glu Leu Leu Arg Ser Asn Arg
35 40 45

Pro Pro Thr Ser Ala Ser Gln Ser Ala Arg Ile Lys Asn Gly Arg His
50 55 60

Gly Ser Ser Cys Gln Ala Cys Gly Arg Ala Lys Arg Lys Trp Thr Pro
65 70 75 80

Arg Arg

<210> 8164
<211> 487
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1693; "

<220>
<221> source
<223> /note="Gene Symbol: BPI; "

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<221> source
<223> /note="Gene Name:
bactericidal/permeability-increasing prt; "

<220>
<221> source
<223> /note="Uniprot ID: P17213; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262865"

<400> 8164
Met Arg Glu Asn Met Ala Arg Gly Pro Cys Asn Ala Pro Arg Trp Ala
1 5 10 15

Ser Leu Met Val Leu Val Ala Ile Gly Thr Ala Val Thr Ala Ala Val
20 25 30

Asn Pro Gly Val Val Val Arg Ile Ser Gln Lys Gly Leu Asp Tyr Ala
35 40 45

Ser Gln Gln Gly Thr Ala Ala Leu Gln Lys Glu Leu Lys Arg Ile Lys
50 55 60

Ile Pro Asp Tyr Ser Asp Ser Phe Lys Ile Lys His Leu Gly Lys Gly
65 70 75 80

His Tyr Ser Phe Tyr Ser Met Asp Ile Arg Glu Phe Gln Leu Pro Ser
85 90 95

Ser Gln Ile Ser Met Val Pro Asn Val Gly Leu Lys Phe Ser Ile Ser
100 105 110

Asn Ala Asn Ile Lys Ile Ser Gly Lys Trp Lys Ala Gln Lys Arg Phe
115 120 125

Leu Lys Met Ser Gly Asn Phe Asp Leu Ser Ile Glu Gly Met Ser Ile
130 135 140

Ser Ala Asp Leu Lys Leu Gly Ser Asn Pro Thr Ser Gly Lys Pro Thr
145 150 155 160

Ile Thr Cys Ser Ser Cys Ser Ser His Ile Asn Ser Val His Val His
165 170 175

Ile Ser Lys Ser Lys Val Gly Trp Leu Ile Gln Leu Phe His Lys Lys
180 185 190

Ile Glu Ser Ala Leu Arg Asn Lys Met Asn Ser Gln Val Cys Glu Lys
195 200 205

```
Val Thr Asn Ser Val Ser Ser Glu Leu Gln Pro Tyr Phe Gln Thr Leu
    210                 215                 220

Pro Val Met Thr Lys Ile Asp Ser Val Ala Gly Ile Asn Tyr Gly Leu
225                 230                 235                 240

Val Ala Pro Pro Ala Thr Thr Ala Glu Thr Leu Asp Val Gln Met Lys
                245                 250                 255

Gly Glu Phe Tyr Ser Glu Asn His His Asn Pro Pro Pro Phe Ala Pro
            260                 265                 270

Pro Val Met Glu Phe Pro Ala Ala His Asp Arg Met Val Tyr Leu Gly
        275                 280                 285

Leu Ser Asp Tyr Phe Phe Asn Thr Ala Gly Leu Val Tyr Gln Glu Ala
    290                 295                 300

Gly Val Leu Lys Met Thr Leu Arg Asp Asp Met Ile Pro Lys Glu Ser
305                 310                 315                 320

Lys Phe Arg Leu Thr Thr Lys Phe Phe Gly Thr Phe Leu Pro Glu Val
                325                 330                 335

Ala Lys Lys Phe Pro Asn Met Lys Ile Gln Ile His Val Ser Ala Ser
            340                 345                 350

Thr Pro Pro His Leu Ser Val Gln Pro Thr Gly Leu Thr Phe Tyr Pro
        355                 360                 365

Ala Val Asp Val Gln Ala Phe Ala Val Leu Pro Asn Ser Ser Leu Ala
    370                 375                 380

Ser Leu Phe Leu Ile Gly Met His Thr Thr Gly Ser Met Glu Val Ser
385                 390                 395                 400

Ala Glu Ser Asn Arg Leu Val Gly Glu Leu Lys Leu Asp Arg Leu Leu
                405                 410                 415

Leu Glu Leu Lys His Ser Asn Ile Gly Pro Phe Pro Val Glu Leu Leu
            420                 425                 430

Gln Asp Ile Met Asn Tyr Ile Val Pro Ile Leu Val Leu Pro Arg Val
```

435 440 445

Asn Glu Lys Leu Gln Lys Gly Phe Pro Leu Pro Thr Pro Ala Arg Val
450 455 460

Gln Leu Tyr Asn Val Val Leu Gln Pro His Gln Asn Phe Leu Leu Phe
465 470 475 480

Gly Ala Asp Val Val Tyr Lys
485

<210> 8165
<211> 95
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1693; "

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<223> /note="Gene Symbol: BPI; "

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<223> /note="Gene Name:
bactericidal/permeability-increasing prt; "

<220>
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<223> /note="ENSP ID: ENSP00000391511"

<400> 8165
Met Glu Lys Pro Gly Glu Asp Ala Ala Arg Asp Gly Leu Leu Pro Leu
1 5 10 15

Asn Pro Cys Trp Gly Gly Ser Arg Asp Gly Gly Ser Leu Cys Cys Pro
20 25 30

Gly Trp Ser Gln Thr Pro Gly Pro Lys Pro Ser Ser Gln Ser Ala Gly
35 40 45

Ile Thr Ser Val Ser His His Ala Lys Pro Asp Phe Lys Ile Phe Ala
50 55 60

Asn Pro Val Asp Lys Thr Gly Asp Trp Lys Lys Gly Pro Glu Ile Gln
65 70 75 80

```
Thr Gln Lys Pro Pro Pro Glu Ala Thr Arg Gln Pro Gly Pro Leu
                85                  90                  95


<210> 8166
<211> 123
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1693; "

<220>
<221> source
<223> /note="Gene Symbol: BPI; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000393126"

<400> 8166
Met Glu Lys Pro Gly Glu Asp Ala Ala Arg Asp Gly Leu Leu Pro Leu
1               5                  10                  15


Asn Pro Cys Trp Gly Gly Ser Arg Asp Gly Gly Ser Leu Cys Cys Pro
            20                  25                  30


Gly Trp Ser Gln Thr Pro Gly Pro Lys Pro Ser Ser Gln Ser Ala Gly
        35                  40                  45


Ile Thr Ser Val Ser His His Ala Lys Pro Asp Phe Lys Ile Phe Ala
    50                  55                  60


Asn Pro Val Ala Pro Trp Phe Asn Leu Lys Ala Leu Arg Phe Trp Gln
65                  70                  75                  80


Leu Trp Arg Met Arg Glu Asn Met Ala Arg Gly Pro Cys Asn Ala Pro
                85                  90                  95


Arg Trp Ala Ser Leu Met Val Leu Val Ala Ile Gly Thr Ala Val Thr
            100                 105                 110


Ala Ala Val Asn Pro Gly Val Val Val Arg Ile
```

115 120

<210> 8167
<211> 286
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1693; "

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<223> /note="Gene Name:
bactericidal/permeability-increasing prt; "

<220>
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<223> /note="ENSP ID: ENSP00000409833"

<400> 8167
Met Glu Asn Val Cys Glu Lys Val Thr Asn Ser Val Ser Ser Glu Leu
1 5 10 15

Gln Pro Tyr Phe Gln Thr Leu Pro Val Met Thr Lys Ile Asp Ser Val
20 25 30

Ala Gly Ile Asn Tyr Gly Leu Val Ala Pro Pro Ala Thr Thr Ala Glu
35 40 45

Thr Leu Asp Val Gln Met Lys Gly Glu Phe Tyr Ser Glu Asn His His
50 55 60

Asn Pro Pro Pro Phe Ala Pro Pro Val Met Glu Phe Pro Ala Ala His
65 70 75 80

Asp Arg Met Val Tyr Leu Gly Leu Ser Asp Tyr Phe Phe Asn Thr Ala
85 90 95

Gly Leu Val Tyr Gln Glu Ala Gly Val Leu Lys Met Thr Leu Arg Asp
100 105 110

Asp Met Ile Pro Lys Glu Ser Lys Phe Arg Leu Thr Thr Lys Phe Phe
115 120 125

```
Gly Thr Phe Leu Pro Glu Val Ala Lys Lys Phe Pro Asn Met Lys Ile
    130                 135                 140

Gln Ile His Val Ser Ala Ser Thr Pro Pro His Leu Ser Val Gln Pro
145                 150                 155                 160

Thr Gly Leu Thr Phe Tyr Pro Ala Val Asp Val Gln Ala Phe Ala Val
                165                 170                 175

Leu Pro Asn Ser Ser Leu Ala Ser Leu Phe Leu Ile Gly Met His Thr
            180                 185                 190

Thr Gly Ser Met Glu Val Ser Ala Glu Ser Asn Arg Leu Val Gly Glu
        195                 200                 205

Leu Lys Leu Asp Arg Leu Leu Leu Glu Leu Lys His Ser Asn Ile Gly
    210                 215                 220

Pro Phe Pro Val Glu Leu Leu Gln Asp Ile Met Asn Tyr Ile Val Pro
225                 230                 235                 240

Ile Leu Val Leu Pro Arg Val Asn Glu Lys Leu Gln Lys Gly Phe Pro
                245                 250                 255

Leu Pro Thr Pro Ala Arg Val Gln Leu Tyr Asn Val Val Leu Gln Pro
            260                 265                 270

His Gln Asn Phe Leu Leu Phe Gly Ala Asp Val Val Tyr Lys
        275                 280                 285


<210> 8168
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BPI; "

<220>
<221> source
<223> /note="Gene Name:
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bactericidal/permeability-increasing prt; "

<220>
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<223> /note="ENSP ID: ENSP00000486976"

<400> 8168
Met Glu Asn Val Cys Glu Lys Val Thr Asn Ser Val Ser Ser Glu Leu
1   5   10   15

Gln Pro Tyr Phe Gln Thr Leu Pro Val Met Thr Lys Ile Asp Ser Val
            20   25   30

Ala Gly Ile Asn Tyr Gly Leu Val Ala Pro Pro Ala Thr Thr Ala Glu
        35   40   45

Thr Leu Asp Val Gln Met Lys
    50   55

<210> 8169
<211> 29
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1693; "

<220>
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<223> /note="Gene Symbol: BPI; "

<220>
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<223> /note="Gene Name:
bactericidal/permeability-increasing prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487406"

<400> 8169
Met Glu Lys Pro Gly Glu Asp Ala Ala Arg Asp Gly Leu Leu Pro Leu
1   5   10   15

Asn Pro Cys Trp Gly Gly Ser Arg Cys Thr Met Leu Leu
            20   25

<210> 8170
<211> 618
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BIRC2; "

<220>
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<223> /note="Gene Name:
baculoviral IAP repeat containing 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q13490; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000227758"

<400> 8170

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Met His Lys Thr Ala Ser Gln Arg Leu Phe Pro Gly Pro Ser Tyr Gln
1               5                   10                  15


Asn Ile Lys Ser Ile Met Glu Asp Ser Thr Ile Leu Ser Asp Trp Thr
            20                  25                  30


Asn Ser Asn Lys Gln Lys Met Lys Tyr Asp Phe Ser Cys Glu Leu Tyr
        35                  40                  45


Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu
    50                  55                  60


Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys
65                  70                  75                  80


Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly
                85                  90                  95


Asp Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe
            100                 105                 110


Ile Gln Asn Leu Val Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr
        115                 120                 125


Ser Pro Met Arg Asn Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu
```

```
    130                 135                 140

His Ser Ser Leu Phe Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro
145                 150                 155                 160

Leu Asn Ser Arg Ala Val Glu Asp Ile Ser Ser Ser Arg Thr Asn Pro
                165                 170                 175

Tyr Ser Tyr Ala Met Ser Thr Glu Glu Ala Arg Phe Leu Thr Tyr His
            180                 185                 190

Met Trp Pro Leu Thr Phe Leu Ser Pro Ser Glu Leu Ala Arg Ala Gly
        195                 200                 205

Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys Gly
    210                 215                 220

Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asp Ala Met Ser Glu His
225                 230                 235                 240

Arg Arg His Phe Pro Asn Cys Pro Phe Leu Glu Asn Ser Leu Glu Thr
                245                 250                 255

Leu Arg Phe Ser Ile Ser Asn Leu Ser Met Gln Thr His Ala Ala Arg
            260                 265                 270

Met Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro Val Gln Pro Glu
        275                 280                 285

Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg Asn Asp Asp Val
    290                 295                 300

Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser Gly Asp
305                 310                 315                 320

Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg Cys Glu Phe Leu
                325                 330                 335

Ile Arg Met Lys Gly Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr
            340                 345                 350

Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu
        355                 360                 365
```

```
Glu Asn Ala Asp Pro Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser
    370                 375                 380

Ser Glu Asp Ala Val Met Met Asn Thr Pro Val Val Lys Ser Ala Leu
385                 390                 395                 400

Glu Met Gly Phe Asn Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys
                405                 410                 415

Ile Leu Thr Thr Gly Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser
            420                 425                 430

Ala Leu Leu Asn Ala Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys
        435                 440                 445

Gln Ala Glu Glu Met Ala Ser Asp Asp Leu Ser Leu Ile Arg Lys Asn
    450                 455                 460

Arg Met Ala Leu Phe Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp
465                 470                 475                 480

Asn Leu Leu Lys Ala Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile
                485                 490                 495

Lys Gln Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr
            500                 505                 510

Ile Leu Val Lys Gly Asn Ala Ala Ala Asn Ile Phe Lys Asn Cys Leu
        515                 520                 525

Lys Glu Ile Asp Ser Thr Leu Tyr Lys Asn Leu Phe Val Asp Lys Asn
    530                 535                 540

Met Lys Tyr Ile Pro Thr Glu Asp Val Ser Gly Leu Ser Leu Glu Glu
545                 550                 555                 560

Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Met Asp
                565                 570                 575

Lys Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val Cys
            580                 585                 590
```

Gln Glu Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys Arg Gly Ile
595 600 605

Ile Lys Gly Thr Val Arg Thr Phe Leu Ser
610 615

<210> 8171
<211> 569
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BIRC2; "

<220>
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<223> /note="Gene Name:
baculoviral IAP repeat containing 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q13490; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431723"

<400> 8171
Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg
1 5 10 15

Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val
20 25 30

Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly Asp
35 40 45

Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe Ile
50 55 60

Gln Asn Leu Val Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr Ser
65 70 75 80

Pro Met Arg Asn Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu His

```
                85                  90                  95

Ser Ser Leu Phe Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro Leu
            100                 105                 110

Asn Ser Arg Ala Val Glu Asp Ile Ser Ser Ser Arg Thr Asn Pro Tyr
        115                 120                 125

Ser Tyr Ala Met Ser Thr Glu Glu Ala Arg Phe Leu Thr Tyr His Met
    130                 135                 140

Trp Pro Leu Thr Phe Leu Ser Pro Ser Glu Leu Ala Arg Ala Gly Phe
145                 150                 155                 160

Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys Gly Gly
                165                 170                 175

Lys Leu Ser Asn Trp Glu Pro Lys Asp Asp Ala Met Ser Glu His Arg
            180                 185                 190

Arg His Phe Pro Asn Cys Pro Phe Leu Glu Asn Ser Leu Glu Thr Leu
        195                 200                 205

Arg Phe Ser Ile Ser Asn Leu Ser Met Gln Thr His Ala Ala Arg Met
    210                 215                 220

Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro Val Gln Pro Glu Gln
225                 230                 235                 240

Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg Asn Asp Asp Val Lys
                245                 250                 255

Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser Gly Asp Asp
            260                 265                 270

Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg Cys Glu Phe Leu Ile
        275                 280                 285

Arg Met Lys Gly Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr Pro
    290                 295                 300

His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu Glu
305                 310                 315                 320
```

```
Asn Ala Asp Pro Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser Ser
                325                 330                 335

Glu Asp Ala Val Met Met Asn Thr Pro Val Val Lys Ser Ala Leu Glu
            340                 345                 350

Met Gly Phe Asn Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys Ile
        355                 360                 365

Leu Thr Thr Gly Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser Ala
    370                 375                 380

Leu Leu Asn Ala Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys Gln
385                 390                 395                 400

Ala Glu Glu Met Ala Ser Asp Asp Leu Ser Leu Ile Arg Lys Asn Arg
                405                 410                 415

Met Ala Leu Phe Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp Asn
            420                 425                 430

Leu Leu Lys Ala Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile Lys
        435                 440                 445

Gln Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr Ile
    450                 455                 460

Leu Val Lys Gly Asn Ala Ala Ala Asn Ile Phe Lys Asn Cys Leu Lys
465                 470                 475                 480

Glu Ile Asp Ser Thr Leu Tyr Lys Asn Leu Phe Val Asp Lys Asn Met
                485                 490                 495

Lys Tyr Ile Pro Thr Glu Asp Val Ser Gly Leu Ser Leu Glu Glu Gln
            500                 505                 510

Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Met Asp Lys
        515                 520                 525

Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val Cys Gln
    530                 535                 540
```

Glu Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys Arg Gly Ile Ile
545 550 555 560

Lys Gly Thr Val Arg Thr Phe Leu Ser
565

<210> 8172
<211> 79
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BIRC2; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432410"

<400> 8172
Met Glu Cys Asn Phe Val Ala Val Glu Asp Ile Ser Ser Ser Arg Thr
1 5 10 15

Asn Pro Tyr Ser Tyr Ala Met Ser Thr Glu Glu Ala Arg Phe Leu Thr
20 25 30

Tyr His Met Trp Pro Leu Thr Phe Leu Ser Pro Ser Glu Leu Ala Arg
35 40 45

Ala Gly Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala
50 55 60

Cys Gly Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asp Ala Met
65 70 75

<210> 8173
<211> 182
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<213> Homo sapiens

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<220>
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<400> 8173

```
Met Lys Gly Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr Pro His
1               5                  10                  15

Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu Glu Asn
            20                  25                  30

Ala Asp Pro Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser Ser Glu
        35                  40                  45

Asp Ala Val Met Met Asn Thr Pro Val Val Lys Ser Ala Leu Glu Met
    50                  55                  60

Gly Phe Asn Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys Ile Leu
65                  70                  75                  80

Thr Thr Gly Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser Ala Leu
                85                  90                  95

Leu Asn Ala Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys Gln Ala
            100                 105                 110

Glu Glu Met Ala Ser Asp Asp Leu Ser Leu Ile Arg Lys Asn Arg Met
        115                 120                 125

Ala Leu Phe Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp Asn Leu
    130                 135                 140

Leu Lys Ala Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile Lys Gln
145                 150                 155                 160
```

```
Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr Ile Leu
                165                 170                 175


Val Lys Gly Asn Ala Ala
            180


<210> 8174
<211> 262
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<220>
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Tyr Asp Phe Ser Cys Glu Leu Tyr Arg Met Ser Thr Tyr Ser Thr Phe
1               5                   10                  15


Pro Ala Gly Val Pro Val Ser Glu Arg Ser Leu Ala Arg Ala Gly Phe
            20                  25                  30


Tyr Tyr Thr Gly Val Asn Asp Lys Val Lys Cys Phe Cys Cys Gly Leu
        35                  40                  45


Met Leu Asp Asn Trp Lys Leu Gly Asp Ser Pro Ile Gln Lys His Lys
    50                  55                  60


Gln Leu Tyr Pro Ser Cys Ser Phe Ile Gln Asn Leu Val Ser Ala Ser
65                  70                  75                  80


Leu Gly Ser Thr Ser Lys Asn Thr Ser Pro Met Arg Asn Ser Phe Ala
                85                  90                  95


His Ser Leu Ser Pro Thr Leu Glu His Ser Ser Leu Phe Ser Gly Ser
```

```
            100                 105                 110

Tyr Ser Ser Leu Ser Pro Asn Pro Leu Asn Ser Arg Ala Val Glu Asp
        115                 120                 125

Ile Ser Ser Ser Arg Thr Asn Pro Tyr Ser Tyr Ala Met Ser Thr Glu
    130                 135                 140

Glu Ala Arg Phe Leu Thr Tyr His Met Trp Pro Leu Thr Phe Leu Ser
145                 150                 155                 160

Pro Ser Glu Leu Ala Arg Ala Gly Phe Tyr Tyr Ile Gly Pro Gly Asp
                165                 170                 175

Arg Val Ala Cys Phe Ala Cys Gly Gly Lys Leu Ser Asn Trp Glu Pro
            180                 185                 190

Lys Asp Asp Ala Met Ser Glu His Arg Arg His Phe Pro Asn Cys Pro
        195                 200                 205

Phe Leu Glu Asn Ser Leu Glu Thr Leu Arg Phe Ser Ile Ser Asn Leu
    210                 215                 220

Ser Met Gln Thr His Ala Ala Arg Met Arg Thr Phe Met Tyr Trp Pro
225                 230                 235                 240

Ser Ser Val Pro Val Gln Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr
                245                 250                 255

Tyr Val Gly Val Ser Ser
            260


<210> 8175
<211> 149
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8175
Met Glu Asp Ser Thr Ile Leu Ser Asp Trp Thr Asn Ser Asn Lys Gln
1 5 10 15

Lys Met Lys Tyr Asp Phe Ser Cys Glu Leu Tyr Arg Met Ser Thr Tyr
20 25 30

Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg Ser Leu Ala Arg
35 40 45

Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val Lys Cys Phe Cys
50 55 60

Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly Asp Ser Pro Ile Gln
65 70 75 80

Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe Ile Gln Asn Leu Val
85 90 95

Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr Ser Pro Met Arg Asn
100 105 110

Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu His Ser Ser Leu Phe
115 120 125

Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro Leu Asn Ser Arg Ala
130 135 140

Val Glu Asp Ile Ser
145

<210> 8176
<211> 597
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<400> 8176

```
Met Glu Asp Ser Thr Ile Leu Ser Asp Trp Thr Asn Ser Asn Lys Gln
1               5                  10                  15

Lys Met Lys Tyr Asp Phe Ser Cys Glu Leu Tyr Arg Met Ser Thr Tyr
            20                  25                  30

Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg Ser Leu Ala Arg
        35                  40                  45

Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val Lys Cys Phe Cys
    50                  55                  60

Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly Asp Ser Pro Ile Gln
65                  70                  75                  80

Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe Ile Gln Asn Leu Val
                85                  90                  95

Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr Ser Pro Met Arg Asn
            100                 105                 110

Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu His Ser Ser Leu Phe
        115                 120                 125

Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro Leu Asn Ser Arg Ala
    130                 135                 140

Val Glu Asp Ile Ser Ser Ser Arg Thr Asn Pro Tyr Ser Tyr Ala Met
145                 150                 155                 160

Ser Thr Glu Glu Ala Arg Phe Leu Thr Tyr His Met Trp Pro Leu Thr
                165                 170                 175
```

```
Phe Leu Ser Pro Ser Glu Leu Ala Arg Ala Gly Phe Tyr Tyr Ile Gly
            180                 185                 190

Pro Gly Asp Arg Val Ala Cys Phe Ala Cys Gly Gly Lys Leu Ser Asn
        195                 200                 205

Trp Glu Pro Lys Asp Asp Ala Met Ser Glu His Arg Arg His Phe Pro
    210                 215                 220

Asn Cys Pro Phe Leu Glu Asn Ser Leu Glu Thr Leu Arg Phe Ser Ile
225                 230                 235                 240

Ser Asn Leu Ser Met Gln Thr His Ala Ala Arg Met Arg Thr Phe Met
                245                 250                 255

Tyr Trp Pro Ser Ser Val Pro Val Gln Pro Glu Gln Leu Ala Ser Ala
            260                 265                 270

Gly Phe Tyr Tyr Val Gly Arg Asn Asp Asp Val Lys Cys Phe Cys Cys
        275                 280                 285

Asp Gly Gly Leu Arg Cys Trp Glu Ser Gly Asp Asp Pro Trp Val Glu
    290                 295                 300

His Ala Lys Trp Phe Pro Arg Cys Glu Phe Leu Ile Arg Met Lys Gly
305                 310                 315                 320

Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr Pro His Leu Leu Glu
                325                 330                 335

Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu Glu Asn Ala Asp Pro
            340                 345                 350

Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser Ser Glu Asp Ala Val
        355                 360                 365

Met Met Asn Thr Pro Val Val Lys Ser Ala Leu Glu Met Gly Phe Asn
    370                 375                 380

Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys Ile Leu Thr Thr Gly
385                 390                 395                 400
```

```
Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser Ala Leu Leu Asn Ala
                405                 410                 415

Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys Gln Ala Glu Glu Met
            420                 425                 430

Ala Ser Asp Asp Leu Ser Leu Ile Arg Lys Asn Arg Met Ala Leu Phe
        435                 440                 445

Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp Asn Leu Leu Lys Ala
    450                 455                 460

Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile Lys Gln Lys Thr Gln
465                 470                 475                 480

Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr Ile Leu Val Lys Gly
                485                 490                 495

Asn Ala Ala Ala Asn Ile Phe Lys Asn Cys Leu Lys Glu Ile Asp Ser
            500                 505                 510

Thr Leu Tyr Lys Asn Leu Phe Val Asp Lys Asn Met Lys Tyr Ile Pro
        515                 520                 525

Thr Glu Asp Val Ser Gly Leu Ser Leu Glu Glu Gln Leu Arg Arg Leu
    530                 535                 540

Gln Glu Glu Arg Thr Cys Lys Val Cys Met Asp Lys Glu Val Ser Val
545                 550                 555                 560

Val Phe Ile Pro Cys Gly His Leu Val Val Cys Gln Glu Cys Ala Pro
                565                 570                 575

Ser Leu Arg Lys Cys Pro Ile Cys Arg Gly Ile Ile Lys Gly Thr Val
            580                 585                 590

Arg Thr Phe Leu Ser
        595
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<210> 8177
<211> 139
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000436741"

<400> 8177
Met Ala Leu Phe Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp Asn
1 5 10 15

Leu Leu Lys Ala Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile Lys
20 25 30

Gln Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr Ile
35 40 45

Leu Val Lys Gly Asn Ala Ala Ala Asn Ile Phe Lys Asn Cys Leu Lys
50 55 60

Glu Ile Asp Ser Thr Leu Tyr Lys Asn Leu Phe Val Asp Lys Asn Met
65 70 75 80

Lys Tyr Ile Pro Thr Glu Asp Val Ser Gly Leu Ser Leu Glu Glu Gln
85 90 95

Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Met Asp Lys
100 105 110

Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val Cys Gln
115 120 125

Glu Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile
130 135

<210> 8178
<211> 618

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000477613"

<400> 8178

```
Met His Lys Thr Ala Ser Gln Arg Leu Phe Pro Gly Pro Ser Tyr Gln
1               5                   10                  15


Asn Ile Lys Ser Ile Met Glu Asp Ser Thr Ile Leu Ser Asp Trp Thr
            20                  25                  30


Asn Ser Asn Lys Gln Lys Met Lys Tyr Asp Phe Ser Cys Glu Leu Tyr
        35                  40                  45


Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu
    50                  55                  60


Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys
65                  70                  75                  80


Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly
                85                  90                  95


Asp Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe
            100                 105                 110


Ile Gln Asn Leu Val Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr
        115                 120                 125
```

```
Ser Pro Met Arg Asn Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu
    130                 135                 140

His Ser Ser Leu Phe Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro
145                 150                 155                 160

Leu Asn Ser Arg Ala Val Glu Asp Ile Ser Ser Ser Arg Thr Asn Pro
                165                 170                 175

Tyr Ser Tyr Ala Met Ser Thr Glu Glu Ala Arg Phe Leu Thr Tyr His
            180                 185                 190

Met Trp Pro Leu Thr Phe Leu Ser Pro Ser Glu Leu Ala Arg Ala Gly
        195                 200                 205

Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys Gly
    210                 215                 220

Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asp Ala Met Ser Glu His
225                 230                 235                 240

Arg Arg His Phe Pro Asn Cys Pro Phe Leu Glu Asn Ser Leu Glu Thr
                245                 250                 255

Leu Arg Phe Ser Ile Ser Asn Leu Ser Met Gln Thr His Ala Ala Arg
            260                 265                 270

Met Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro Val Gln Pro Glu
        275                 280                 285

Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg Asn Asp Asp Val
    290                 295                 300

Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser Gly Asp
305                 310                 315                 320

Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg Cys Glu Phe Leu
                325                 330                 335

Ile Arg Met Lys Gly Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr
            340                 345                 350

Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu
```

```
        355                 360                 365

Glu Asn Ala Asp Pro Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser
    370                 375                 380

Ser Glu Asp Ala Val Met Met Asn Thr Pro Val Val Lys Ser Ala Leu
385                 390                 395                 400

Glu Met Gly Phe Asn Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys
                405                 410                 415

Ile Leu Thr Thr Gly Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser
            420                 425                 430

Ala Leu Leu Asn Ala Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys
        435                 440                 445

Gln Ala Glu Glu Met Ala Ser Asp Asp Leu Ser Leu Ile Arg Lys Asn
    450                 455                 460

Arg Met Ala Leu Phe Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp
465                 470                 475                 480

Asn Leu Leu Lys Ala Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile
                485                 490                 495

Lys Gln Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr
            500                 505                 510

Ile Leu Val Lys Gly Asn Ala Ala Ala Asn Ile Phe Lys Asn Cys Leu
        515                 520                 525

Lys Glu Ile Asp Ser Thr Leu Tyr Lys Asn Leu Phe Val Asp Lys Asn
    530                 535                 540

Met Lys Tyr Ile Pro Thr Glu Asp Val Ser Gly Leu Ser Leu Glu Glu
545                 550                 555                 560

Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Met Asp
                565                 570                 575

Lys Glu Val Ser Val Val Phe Ile Pro Cys Gly His Leu Val Val Cys
            580                 585                 590
```

```
Gln Glu Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys Arg Gly Ile
        595                 600                 605


Ile Lys Gly Thr Val Arg Thr Phe Leu Ser
    610                 615


<210> 8179
<211> 534
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BIRC2; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000484838"

<400> 8179
Met His Lys Thr Ala Ser Gln Arg Leu Phe Pro Gly Pro Ser Tyr Gln
1               5                   10                  15


Asn Ile Lys Ser Ile Met Glu Asp Ser Thr Ile Leu Ser Asp Trp Thr
            20                  25                  30


Asn Ser Asn Lys Gln Lys Met Lys Tyr Asp Phe Ser Cys Glu Leu Tyr
        35                  40                  45


Arg Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu
    50                  55                  60


Arg Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys
65                  70                  75                  80


Val Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Leu Gly
                85                  90                  95
```

```
Asp Ser Pro Ile Gln Lys His Lys Gln Leu Tyr Pro Ser Cys Ser Phe
            100                 105                 110

Ile Gln Asn Leu Val Ser Ala Ser Leu Gly Ser Thr Ser Lys Asn Thr
        115                 120                 125

Ser Pro Met Arg Asn Ser Phe Ala His Ser Leu Ser Pro Thr Leu Glu
    130                 135                 140

His Ser Ser Leu Phe Ser Gly Ser Tyr Ser Ser Leu Ser Pro Asn Pro
145                 150                 155                 160

Leu Asn Ser Arg Ala Val Glu Asp Ile Ser Ser Ser Arg Thr Asn Pro
                165                 170                 175

Tyr Ser Tyr Ala Met Ser Thr Glu Glu Ala Arg Phe Leu Thr Tyr His
            180                 185                 190

Met Trp Pro Leu Thr Phe Leu Ser Pro Ser Glu Leu Ala Arg Ala Gly
        195                 200                 205

Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys Gly
    210                 215                 220

Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asp Ala Met Ser Glu His
225                 230                 235                 240

Arg Arg His Phe Pro Asn Cys Pro Phe Leu Glu Asn Ser Leu Glu Thr
                245                 250                 255

Leu Arg Phe Ser Ile Ser Asn Leu Ser Met Gln Thr His Ala Ala Arg
            260                 265                 270

Met Arg Thr Phe Met Tyr Trp Pro Ser Ser Val Pro Val Gln Pro Glu
        275                 280                 285

Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Arg Asn Asp Asp Val
    290                 295                 300

Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser Gly Asp
305                 310                 315                 320

Asp Pro Trp Val Glu His Ala Lys Trp Phe Pro Arg Cys Glu Phe Leu
```

325 330 335

Ile Arg Met Lys Gly Gln Glu Phe Val Asp Glu Ile Gln Gly Arg Tyr
340 345 350

Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Thr Thr Gly Glu
355 360 365

Glu Asn Ala Asp Pro Pro Ile Ile His Phe Gly Pro Gly Glu Ser Ser
370 375 380

Ser Glu Asp Ala Val Met Met Asn Thr Pro Val Val Lys Ser Ala Leu
385 390 395 400

Glu Met Gly Phe Asn Arg Asp Leu Val Lys Gln Thr Val Gln Ser Lys
405 410 415

Ile Leu Thr Thr Gly Glu Asn Tyr Lys Thr Val Asn Asp Ile Val Ser
420 425 430

Ala Leu Leu Asn Ala Glu Asp Glu Lys Arg Glu Glu Glu Lys Glu Lys
435 440 445

Gln Ala Glu Glu Met Ala Ser Asp Asp Leu Ser Leu Ile Arg Lys Asn
450 455 460

Arg Met Ala Leu Phe Gln Gln Leu Thr Cys Val Leu Pro Ile Leu Asp
465 470 475 480

Asn Leu Leu Lys Ala Asn Val Ile Asn Lys Gln Glu His Asp Ile Ile
485 490 495

Lys Gln Lys Thr Gln Ile Pro Leu Gln Ala Arg Glu Leu Ile Asp Thr
500 505 510

Ile Leu Val Lys Gly Asn Ala Ala Ala Asn Ile Phe Lys Asn Cys Leu
515 520 525

Lys Val Lys Gln Arg Phe
530

<210> 8180
<211> 604

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BIRC3; "

<220>
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<220>
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<223> /note="Uniprot ID: Q13489; "

<220>
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<223> /note="ENSP ID: ENSP00000263464"

<400> 8180
Met Asn Ile Val Glu Asn Ser Ile Phe Leu Ser Asn Leu Met Lys Ser
1   5   10   15

Ala Asn Thr Phe Glu Leu Lys Tyr Asp Leu Ser Cys Glu Leu Tyr Arg
            20   25   30

Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg
        35   40   45

Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val
    50   55   60

Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Arg Gly Asp
65   70   75   80

Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser Cys Arg Phe Val
                85   90   95

Gln Ser Leu Asn Ser Val Asn Asn Leu Glu Ala Thr Ser Gln Pro Thr
            100   105   110

Phe Pro Ser Ser Val Thr Asn Ser Thr His Ser Leu Leu Pro Gly Thr
        115   120   125

```
Glu Asn Ser Gly Tyr Phe Arg Gly Ser Tyr Ser Asn Ser Pro Ser Asn
    130                 135                 140

Pro Val Asn Ser Arg Ala Asn Gln Asp Phe Ser Ala Leu Met Arg Ser
145                 150                 155                 160

Ser Tyr His Cys Ala Met Asn Asn Glu Asn Ala Arg Leu Leu Thr Phe
                165                 170                 175

Gln Thr Trp Pro Leu Thr Phe Leu Ser Pro Thr Asp Leu Ala Lys Ala
            180                 185                 190

Gly Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys
        195                 200                 205

Gly Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asn Ala Met Ser Glu
    210                 215                 220

His Leu Arg His Phe Pro Lys Cys Pro Phe Ile Glu Asn Gln Leu Gln
225                 230                 235                 240

Asp Thr Ser Arg Tyr Thr Val Ser Asn Leu Ser Met Gln Thr His Ala
                245                 250                 255

Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val Leu Val Asn
            260                 265                 270

Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Asn Ser Asp
        275                 280                 285

Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser
    290                 295                 300

Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro Arg Cys Glu
305                 310                 315                 320

Tyr Leu Ile Arg Ile Lys Gly Gln Glu Phe Ile Arg Gln Val Gln Ala
                325                 330                 335

Ser Tyr Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Ser Pro
            340                 345                 350

Gly Asp Glu Asn Ala Glu Ser Ser Ile Ile His Phe Glu Pro Gly Glu
```

```
        355                 360                 365

Asp His Ser Glu Asp Ala Ile Met Met Asn Thr Pro Val Ile Asn Ala
    370                 375                 380

Ala Val Glu Met Gly Phe Ser Arg Ser Leu Val Lys Gln Thr Val Gln
385                 390                 395                 400

Arg Lys Ile Leu Ala Thr Gly Glu Asn Tyr Arg Leu Val Asn Asp Leu
                405                 410                 415

Val Leu Asp Leu Leu Asn Ala Glu Asp Glu Ile Arg Glu Glu Glu Arg
            420                 425                 430

Glu Arg Ala Thr Glu Glu Lys Glu Ser Asn Asp Leu Leu Leu Ile Arg
        435                 440                 445

Lys Asn Arg Met Ala Leu Phe Gln His Leu Thr Cys Val Ile Pro Ile
    450                 455                 460

Leu Asp Ser Leu Leu Thr Ala Gly Ile Ile Asn Glu Gln Glu His Asp
465                 470                 475                 480

Val Ile Lys Gln Lys Thr Gln Thr Ser Leu Gln Ala Arg Glu Leu Ile
                485                 490                 495

Asp Thr Ile Leu Val Lys Gly Asn Ile Ala Ala Thr Val Phe Arg Asn
            500                 505                 510

Ser Leu Gln Glu Ala Glu Ala Val Leu Tyr Glu His Leu Phe Val Gln
        515                 520                 525

Gln Asp Ile Lys Tyr Ile Pro Thr Glu Asp Val Ser Asp Leu Pro Val
    530                 535                 540

Glu Glu Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys
545                 550                 555                 560

Met Asp Lys Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val
                565                 570                 575

Val Cys Lys Asp Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys Arg
            580                 585                 590
```

Ser Thr Ile Lys Gly Thr Val Arg Thr Phe Leu Ser
595 600

<210> 8181
<211> 183
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000431718"

<400> 8181
Gln Leu Gln Asp Thr Ser Arg Tyr Thr Val Ser Asn Leu Ser Met Gln
1 5 10 15

Thr His Ala Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val
20 25 30

Leu Val Asn Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly
35 40 45

Asn Ser Asp Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys
50 55 60

Trp Glu Ser Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro
65 70 75 80

Arg Trp Ser Leu Ala Leu Leu Pro Arg Leu Glu Cys Asp Gly Val Met
85 90 95

Ser Ala His Cys Asn Leu Arg Leu Leu Gly Ser Gly Asn Ser His Ala
100 105 110

```
Ser Ser Leu Ala Ser Ser Trp Asp Tyr Arg Cys Glu Tyr Leu Ile Arg
        115                 120                 125


Ile Lys Gly Gln Glu Phe Ile Arg Gln Val Gln Ala Ser Tyr Pro His
    130                 135                 140


Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Ser Pro Gly Asp Glu Asn
145                 150                 155                 160


Ala Glu Ser Ser Ile Ile His Phe Glu Pro Gly Glu Asp His Ser Glu
                165                 170                 175


Asp Ala Ile Met Met Asn Thr
            180


<210> 8182
<211> 604
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1695; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q13489; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432907"

<400> 8182
Met Asn Ile Val Glu Asn Ser Ile Phe Leu Ser Asn Leu Met Lys Ser
1               5                   10                  15


Ala Asn Thr Phe Glu Leu Lys Tyr Asp Leu Ser Cys Glu Leu Tyr Arg
            20                  25                  30


Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg
        35                  40                  45
```

```
Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val
    50                  55                  60

Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Arg Gly Asp
65                  70                  75                  80

Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser Cys Arg Phe Val
                85                  90                  95

Gln Ser Leu Asn Ser Val Asn Asn Leu Glu Ala Thr Ser Gln Pro Thr
            100                 105                 110

Phe Pro Ser Ser Val Thr Asn Ser Thr His Ser Leu Leu Pro Gly Thr
        115                 120                 125

Glu Asn Ser Gly Tyr Phe Arg Gly Ser Tyr Ser Asn Ser Pro Ser Asn
    130                 135                 140

Pro Val Asn Ser Arg Ala Asn Gln Asp Phe Ser Ala Leu Met Arg Ser
145                 150                 155                 160

Ser Tyr His Cys Ala Met Asn Asn Glu Asn Ala Arg Leu Leu Thr Phe
                165                 170                 175

Gln Thr Trp Pro Leu Thr Phe Leu Ser Pro Thr Asp Leu Ala Lys Ala
            180                 185                 190

Gly Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys
        195                 200                 205

Gly Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asn Ala Met Ser Glu
    210                 215                 220

His Leu Arg His Phe Pro Lys Cys Pro Phe Ile Glu Asn Gln Leu Gln
225                 230                 235                 240

Asp Thr Ser Arg Tyr Thr Val Ser Asn Leu Ser Met Gln Thr His Ala
                245                 250                 255

Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val Leu Val Asn
            260                 265                 270
```

```
Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Asn Ser Asp
        275                 280                 285

Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser
    290                 295                 300

Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro Arg Cys Glu
305                 310                 315                 320

Tyr Leu Ile Arg Ile Lys Gly Gln Glu Phe Ile Arg Gln Val Gln Ala
                325                 330                 335

Ser Tyr Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Ser Pro
            340                 345                 350

Gly Asp Glu Asn Ala Glu Ser Ser Ile Ile His Phe Glu Pro Gly Glu
        355                 360                 365

Asp His Ser Glu Asp Ala Ile Met Met Asn Thr Pro Val Ile Asn Ala
    370                 375                 380

Ala Val Glu Met Gly Phe Ser Arg Ser Leu Val Lys Gln Thr Val Gln
385                 390                 395                 400

Arg Lys Ile Leu Ala Thr Gly Glu Asn Tyr Arg Leu Val Asn Asp Leu
                405                 410                 415

Val Leu Asp Leu Leu Asn Ala Glu Asp Glu Ile Arg Glu Glu Glu Arg
            420                 425                 430

Glu Arg Ala Thr Glu Glu Lys Glu Ser Asn Asp Leu Leu Leu Ile Arg
        435                 440                 445

Lys Asn Arg Met Ala Leu Phe Gln His Leu Thr Cys Val Ile Pro Ile
    450                 455                 460

Leu Asp Ser Leu Leu Thr Ala Gly Ile Ile Asn Glu Gln Glu His Asp
465                 470                 475                 480

Val Ile Lys Gln Lys Thr Gln Thr Ser Leu Gln Ala Arg Glu Leu Ile
                485                 490                 495
```

```
Asp Thr Ile Leu Val Lys Gly Asn Ile Ala Ala Thr Val Phe Arg Asn
            500                 505                 510

Ser Leu Gln Glu Ala Glu Ala Val Leu Tyr Glu His Leu Phe Val Gln
        515                 520                 525

Gln Asp Ile Lys Tyr Ile Pro Thr Glu Asp Val Ser Asp Leu Pro Val
    530                 535                 540

Glu Glu Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys
545                 550                 555                 560

Met Asp Lys Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val
                565                 570                 575

Val Cys Lys Asp Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys Arg
            580                 585                 590

Ser Thr Ile Lys Gly Thr Val Arg Thr Phe Leu Ser
        595                 600
```

<210> 8183
<211> 604
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1695; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC3; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q13489; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481903"

<400> 8183

```
Met Asn Ile Val Glu Asn Ser Ile Phe Leu Ser Asn Leu Met Lys Ser
1               5                   10                  15
```

```
Ala Asn Thr Phe Glu Leu Lys Tyr Asp Leu Ser Cys Glu Leu Tyr Arg
            20                  25                  30

Met Ser Thr Tyr Ser Thr Phe Pro Ala Gly Val Pro Val Ser Glu Arg
        35                  40                  45

Ser Leu Ala Arg Ala Gly Phe Tyr Tyr Thr Gly Val Asn Asp Lys Val
    50                  55                  60

Lys Cys Phe Cys Cys Gly Leu Met Leu Asp Asn Trp Lys Arg Gly Asp
65                  70                  75                  80

Ser Pro Thr Glu Lys His Lys Lys Leu Tyr Pro Ser Cys Arg Phe Val
                85                  90                  95

Gln Ser Leu Asn Ser Val Asn Asn Leu Glu Ala Thr Ser Gln Pro Thr
            100                 105                 110

Phe Pro Ser Ser Val Thr Asn Ser Thr His Ser Leu Leu Pro Gly Thr
        115                 120                 125

Glu Asn Ser Gly Tyr Phe Arg Gly Ser Tyr Ser Asn Ser Pro Ser Asn
    130                 135                 140

Pro Val Asn Ser Arg Ala Asn Gln Asp Phe Ser Ala Leu Met Arg Ser
145                 150                 155                 160

Ser Tyr His Cys Ala Met Asn Asn Glu Asn Ala Arg Leu Leu Thr Phe
                165                 170                 175

Gln Thr Trp Pro Leu Thr Phe Leu Ser Pro Thr Asp Leu Ala Lys Ala
            180                 185                 190

Gly Phe Tyr Tyr Ile Gly Pro Gly Asp Arg Val Ala Cys Phe Ala Cys
        195                 200                 205

Gly Gly Lys Leu Ser Asn Trp Glu Pro Lys Asp Asn Ala Met Ser Glu
    210                 215                 220

His Leu Arg His Phe Pro Lys Cys Pro Phe Ile Glu Asn Gln Leu Gln
225                 230                 235                 240
```

```
Asp Thr Ser Arg Tyr Thr Val Ser Asn Leu Ser Met Gln Thr His Ala
                245                 250                 255

Ala Arg Phe Lys Thr Phe Phe Asn Trp Pro Ser Ser Val Leu Val Asn
            260                 265                 270

Pro Glu Gln Leu Ala Ser Ala Gly Phe Tyr Tyr Val Gly Asn Ser Asp
        275                 280                 285

Asp Val Lys Cys Phe Cys Cys Asp Gly Gly Leu Arg Cys Trp Glu Ser
    290                 295                 300

Gly Asp Asp Pro Trp Val Gln His Ala Lys Trp Phe Pro Arg Cys Glu
305                 310                 315                 320

Tyr Leu Ile Arg Ile Lys Gly Gln Glu Phe Ile Arg Gln Val Gln Ala
                325                 330                 335

Ser Tyr Pro His Leu Leu Glu Gln Leu Leu Ser Thr Ser Asp Ser Pro
            340                 345                 350

Gly Asp Glu Asn Ala Glu Ser Ser Ile Ile His Phe Glu Pro Gly Glu
        355                 360                 365

Asp His Ser Glu Asp Ala Ile Met Met Asn Thr Pro Val Ile Asn Ala
    370                 375                 380

Ala Val Glu Met Gly Phe Ser Arg Ser Leu Val Lys Gln Thr Val Gln
385                 390                 395                 400

Arg Lys Ile Leu Ala Thr Gly Glu Asn Tyr Arg Leu Val Asn Asp Leu
                405                 410                 415

Val Leu Asp Leu Leu Asn Ala Glu Asp Glu Ile Arg Glu Glu Glu Arg
            420                 425                 430

Glu Arg Ala Thr Glu Glu Lys Glu Ser Asn Asp Leu Leu Leu Ile Arg
        435                 440                 445

Lys Asn Arg Met Ala Leu Phe Gln His Leu Thr Cys Val Ile Pro Ile
    450                 455                 460
```

```
Leu Asp Ser Leu Leu Thr Ala Gly Ile Ile Asn Glu Gln Glu His Asp
465                 470                 475                 480

Val Ile Lys Gln Lys Thr Gln Thr Ser Leu Gln Ala Arg Glu Leu Ile
                485                 490                 495

Asp Thr Ile Leu Val Lys Gly Asn Ile Ala Ala Thr Val Phe Arg Asn
            500                 505                 510

Ser Leu Gln Glu Ala Glu Ala Val Leu Tyr Glu His Leu Phe Val Gln
        515                 520                 525

Gln Asp Ile Lys Tyr Ile Pro Thr Glu Asp Val Ser Asp Leu Pro Val
    530                 535                 540

Glu Glu Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys
545                 550                 555                 560

Met Asp Lys Glu Val Ser Ile Val Phe Ile Pro Cys Gly His Leu Val
                565                 570                 575

Val Cys Lys Asp Cys Ala Pro Ser Leu Arg Lys Cys Pro Ile Cys Arg
            580                 585                 590

Ser Thr Ile Lys Gly Thr Val Arg Thr Phe Leu Ser
        595                 600


<210> 8184
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301633"
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<400> 8184
Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1 5 10 15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
20 25 30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
35 40 45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
50 55 60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Ile Gly Pro Gly Thr Val Ala
65 70 75 80

Tyr Ala Cys Asn Thr Ser Thr Leu Gly Gly Arg Gly Gly Arg Ile Thr
85 90 95

Arg Glu Glu His Lys Lys His Ser Ser Gly Cys Ala Phe Leu Ser Val
100 105 110

Lys Lys Gln Phe Glu Glu Leu Thr Leu Gly Glu Phe Leu Lys Leu Asp
115 120 125

Arg Glu Arg Ala Lys Asn Lys Ile Ala Lys Glu Thr Asn Asn Lys Lys
130 135 140

Lys Glu Phe Glu Glu Thr Ala Glu Lys Val Arg Arg Ala Ile Glu Gln
145 150 155 160

Leu Ala Ala Met Asp
165

<210> 8185
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source

<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000324180"

<400> 8185
Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1 5 10 15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
20 25 30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
35 40 45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
50 55 60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Ile Glu Glu His Lys Lys His
65 70 75 80

Ser Ser Gly Cys Ala Phe Leu Ser Val Lys Lys Gln Phe Glu Glu Leu
85 90 95

Thr Leu Gly Glu Phe Leu Lys Leu Asp Arg Glu Arg Ala Lys Asn Lys
100 105 110

Ile Ala Lys Glu Thr Asn Asn Lys Lys Lys Glu Phe Glu Glu Thr Ala
115 120 125

Glu Lys Val Arg Arg Ala Ile Glu Gln Leu Ala Ala Met Asp
130 135 140

<210> 8186
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15392; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364086"

<400> 8186
Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1 5 10 15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
20 25 30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
35 40 45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
50 55 60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Met Gln Arg Lys Pro Thr Ile
65 70 75 80

Arg Arg Lys Asn Leu Arg Lys Leu Arg Arg Lys Cys Ala Val Pro Ser
85 90 95

Ser Ser Trp Leu Pro Trp Ile Glu Ala Ser Gly Arg Ser Cys Leu Val
100 105 110

Pro Glu Trp Leu His His Phe Gln Gly Leu Phe Pro Gly Ala Thr Ser
115 120 125

Leu Pro Val Gly Pro Leu Ala Met Ser
130 135

<210> 8187
<211> 74
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15392; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465868"

<400> 8187
Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1   5   10   15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
            20   25   30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
        35   40   45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
    50   55   60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Met
65   70

<210> 8188
<211> 83
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466063"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8188
Xaa Asn Trp Pro Phe Leu Glu Gly Cys Ala Cys Thr Pro Glu Arg Met
1 5 10 15

Ala Glu Ala Gly Phe Ile His Cys Pro Thr Glu Asn Glu Pro Asp Leu
20 25 30

Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu Glu Gly Trp Glu Pro Asp
35 40 45

Asp Asp Pro Ile Gly Pro Gly Thr Val Ala Tyr Ala Cys Asn Thr Ser
50 55 60

Thr Leu Gly Gly Arg Gly Gly Arg Ile Thr Arg Ser Gly Asp Arg Asp
65 70 75 80

His Leu Gly

<210> 8189
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15392; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466617"

<400> 8189
Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1   5   10   15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
            20   25   30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
        35   40   45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
    50   55   60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Met Arg Glu Leu Cys
65   70   75

<210> 8190
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466675"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8190
Xaa Asn Trp Pro Phe Leu Glu Gly Cys Ala Cys Thr Pro Glu Arg Met
1   5   10   15

Ala Glu Ala Gly Phe Ile His Cys Pro Thr Glu Asn Glu Pro Asp Leu
            20   25   30

Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu Glu Gly Trp Glu Pro Asp
        35   40   45

Asp Asp Pro Ile Gly Pro Gly Thr Val Ala Tyr Ala Cys Asn Thr Ser
    50   55   60

Thr Leu Gly Gly Arg Gly Gly Arg Ile Thr Arg Glu Glu His Lys Lys
65   70   75   80

His Ser Ser Gly Cys Ala Phe Leu Ser Val Lys Lys Gln Phe Glu Glu
                85   90   95

Leu Thr Leu Gly Glu Phe Leu Lys Leu Asp Arg Glu Arg Ala Lys Asn
            100   105   110

Lys Ile Glu Arg Ala Leu Leu Ala Glu
        115   120

<210> 8191
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467259"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8191
Xaa Asn Trp Pro Phe Leu Glu Gly Cys Ala Cys Thr Pro Glu Arg Met
1   5   10   15

Ala Glu Ala Gly Phe Ile His Cys Pro Thr Glu Asn Glu Pro Asp Leu
            20   25   30

Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu Glu Gly Trp Glu Pro Asp
        35   40   45

Asp Asp Pro Met
    50

<210> 8192
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1696; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC5; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: O15392; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467336"

<400> 8192
Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1   5   10   15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
            20   25   30

```
Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
        35                  40                  45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
    50                  55                  60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Ile Glu Glu His Lys Lys His
65                  70                  75                  80

Ser Ser Gly Cys Ala Phe Leu Ser Val Lys Lys Gln Phe Glu Glu Leu
                85                  90                  95

Thr Leu Gly Glu Phe Leu Lys Leu Asp Arg Glu Arg Ala Lys Asn Lys
            100                 105                 110

Ile Glu Arg Ala Leu Leu Ala Glu
        115                 120


<210> 8193
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1697; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC6; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393590"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8193
Xaa Glu Asp His Lys Glu Asp Ile Leu Cys Gly Pro Val Trp Leu Ala
1               5                   10                  15
```

```
Ser Gly Leu Asp Leu Ser Gly His Ala Gly Met Leu Thr Leu Thr Ser
            20                  25                  30

Pro Lys Leu Val Lys Gly Met Ala Gly Gly Lys Tyr Arg Ser Phe Leu
        35                  40                  45

Ile His Val Lys Ala Val Asn Glu Arg Gly Thr Glu Glu Ile Cys Asn
    50                  55                  60

Gly Gly Met Arg Pro Val Val Arg Leu Pro Ser Leu Lys His Gln Ser
65                  70                  75                  80

Asn Lys Gly Tyr Ser Leu Ala Ser Leu Leu Ala Lys Val Ala Ala Gly
                85                  90                  95

Lys Ser Ala Thr Met Cys His Val Thr Val Phe Arg Ile Ser
            100                 105                 110


<210> 8194
<211> 4857
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1697; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC6; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 6; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NR09; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393596"

<400> 8194
Met Val Thr Gly Gly Gly Ala Ala Pro Pro Gly Thr Val Thr Glu Pro
1               5                   10                  15

Leu Pro Ser Val Ile Val Leu Ser Ala Gly Arg Lys Met Ala Ala Ala
            20                  25                  30
```

```
Ala Ala Ala Ala Ser Gly Pro Gly Cys Ser Ser Ala Ala Gly Ala Gly
        35                  40                  45

Ala Ala Gly Val Ser Glu Trp Leu Val Leu Arg Asp Gly Cys Met His
    50                  55                  60

Cys Asp Ala Asp Gly Leu His Ser Leu Ser Tyr His Pro Ala Leu Asn
65                  70                  75                  80

Ala Ile Leu Ala Val Thr Ser Arg Gly Thr Ile Lys Val Ile Asp Gly
                85                  90                  95

Thr Ser Gly Ala Thr Leu Gln Ala Ser Ala Leu Ser Ala Lys Pro Gly
            100                 105                 110

Gly Gln Val Lys Cys Gln Tyr Ile Ser Ala Val Asp Lys Val Ile Phe
        115                 120                 125

Val Asp Asp Tyr Ala Val Gly Cys Arg Lys Asp Leu Asn Gly Ile Leu
    130                 135                 140

Leu Leu Asp Thr Ala Leu Gln Thr Pro Val Ser Lys Gln Asp Asp Val
145                 150                 155                 160

Val Gln Leu Glu Leu Pro Val Thr Glu Ala Gln Gln Leu Leu Ser Ala
                165                 170                 175

Cys Leu Glu Lys Val Asp Ile Ser Ser Thr Glu Gly Tyr Asp Leu Phe
            180                 185                 190

Ile Thr Gln Leu Lys Asp Gly Leu Lys Asn Thr Ser His Glu Thr Ala
        195                 200                 205

Ala Asn His Lys Val Ala Lys Trp Ala Thr Val Thr Phe His Leu Pro
    210                 215                 220

His His Val Leu Lys Ser Ile Ala Ser Ala Ile Val Asn Glu Leu Lys
225                 230                 235                 240

Lys Ile Asn Gln Asn Val Ala Ala Leu Pro Val Ala Ser Ser Val Met
                245                 250                 255
```

```
Asp Arg Leu Ser Tyr Leu Leu Pro Ser Ala Arg Pro Glu Leu Gly Val
            260                 265                 270

Gly Pro Gly Arg Ser Val Asp Arg Ser Leu Met Tyr Ser Glu Ala Asn
        275                 280                 285

Arg Arg Glu Thr Phe Thr Ser Trp Pro His Val Gly Tyr Arg Trp Ala
    290                 295                 300

Gln Pro Asp Pro Met Ala Gln Ala Gly Phe Tyr His Gln Pro Ala Ser
305                 310                 315                 320

Ser Gly Asp Asp Arg Ala Met Cys Phe Thr Cys Ser Val Cys Leu Val
                325                 330                 335

Cys Trp Glu Pro Thr Asp Glu Pro Trp Ser Glu His Glu Arg His Ser
            340                 345                 350

Pro Asn Cys Pro Phe Val Lys Gly Glu His Thr Gln Asn Val Pro Leu
        355                 360                 365

Ser Val Thr Leu Ala Thr Ser Pro Ala Gln Phe Pro Cys Thr Asp Gly
    370                 375                 380

Thr Asp Arg Ile Ser Cys Phe Gly Ser Gly Ser Cys Pro His Phe Leu
385                 390                 395                 400

Ala Ala Ala Thr Lys Arg Gly Lys Ile Cys Ile Trp Asp Val Ser Lys
                405                 410                 415

Leu Met Lys Val His Leu Lys Phe Glu Ile Asn Ala Tyr Asp Pro Ala
            420                 425                 430

Ile Val Gln Gln Leu Ile Leu Ser Gly Asp Pro Ser Ser Gly Val Asp
        435                 440                 445

Ser Arg Arg Pro Thr Leu Ala Trp Leu Glu Asp Ser Ser Ser Cys Ser
    450                 455                 460

Asp Ile Pro Lys Leu Glu Gly Asp Ser Asp Asp Leu Leu Glu Asp Ser
465                 470                 475                 480
```

```
Asp Ser Glu Glu His Ser Arg Ser Asp Ser Val Thr Gly His Thr Ser
                485                 490                 495

Gln Lys Glu Ala Met Glu Val Ser Leu Asp Ile Thr Ala Leu Ser Ile
            500                 505                 510

Leu Gln Gln Pro Glu Lys Leu Gln Trp Glu Ile Val Ala Asn Val Leu
        515                 520                 525

Glu Asp Thr Val Lys Asp Leu Glu Glu Leu Gly Ala Asn Pro Cys Leu
    530                 535                 540

Thr Asn Ser Lys Ser Glu Lys Thr Lys Glu Lys His Gln Glu Gln His
545                 550                 555                 560

Asn Ile Pro Phe Pro Cys Leu Leu Ala Gly Gly Leu Leu Thr Tyr Lys
                565                 570                 575

Ser Pro Ala Thr Ser Pro Ile Ser Ser Asn Ser His Arg Ser Leu Asp
            580                 585                 590

Gly Leu Ser Arg Thr Gln Gly Glu Ser Ile Ser Glu Gln Gly Ser Thr
        595                 600                 605

Asp Asn Glu Ser Cys Thr Asn Ser Glu Leu Asn Ser Pro Leu Val Arg
    610                 615                 620

Arg Thr Leu Pro Val Leu Leu Leu Tyr Ser Ile Lys Glu Ser Asp Glu
625                 630                 635                 640

Lys Ala Gly Lys Ile Phe Ser Gln Met Asn Asn Ile Met Ser Lys Ser
                645                 650                 655

Leu His Asp Asp Gly Phe Thr Val Pro Gln Ile Ile Glu Met Glu Leu
            660                 665                 670

Asp Ser Gln Glu Gln Leu Leu Leu Gln Asp Pro Pro Val Thr Tyr Ile
        675                 680                 685

Gln Gln Phe Ala Asp Ala Ala Ala Asn Leu Thr Ser Pro Asp Ser Glu
    690                 695                 700

Lys Trp Asn Ser Val Phe Pro Lys Pro Gly Thr Leu Val Gln Cys Leu
```

705 710 715 720

Arg Leu Pro Lys Phe Ala Glu Glu Glu Asn Leu Cys Ile Asp Ser Ile
725 730 735

Thr Pro Cys Ala Asp Gly Ile His Leu Leu Val Gly Leu Arg Thr Cys
740 745 750

Pro Val Glu Ser Leu Ser Ala Ile Asn Gln Val Glu Ala Leu Asn Asn
755 760 765

Leu Asn Lys Leu Asn Ser Ala Leu Cys Asn Arg Arg Lys Gly Glu Leu
770 775 780

Glu Ser Asn Leu Ala Val Val Asn Gly Ala Asn Ile Ser Val Ile Gln
785 790 795 800

His Glu Ser Pro Ala Asp Val Gln Thr Pro Leu Ile Ile Gln Pro Glu
805 810 815

Gln Arg Asn Val Ser Gly Gly Tyr Leu Val Leu Tyr Lys Met Asn Tyr
820 825 830

Ala Thr Arg Ile Val Thr Leu Glu Glu Glu Pro Ile Lys Ile Gln His
835 840 845

Ile Lys Asp Pro Gln Asp Thr Ile Thr Ser Leu Ile Leu Leu Pro Pro
850 855 860

Asp Ile Leu Asp Asn Arg Glu Asp Asp Cys Glu Glu Pro Ile Glu Asp
865 870 875 880

Met Gln Leu Thr Ser Lys Asn Gly Phe Glu Arg Glu Lys Thr Ser Asp
885 890 895

Ile Ser Thr Leu Gly His Leu Val Ile Thr Thr Gln Gly Gly Tyr Val
900 905 910

Lys Ile Leu Asp Leu Ser Asn Phe Glu Ile Leu Ala Lys Val Glu Pro
915 920 925

Pro Lys Lys Glu Gly Thr Glu Glu Gln Asp Thr Phe Val Ser Val Ile
930 935 940

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Tyr Cys Ser Gly Thr Asp Arg Leu Cys Ala Cys Thr Lys Gly Gly Glu
945                 950                 955                 960

Leu His Phe Leu Gln Ile Gly Gly Thr Cys Asp Asp Ile Asp Glu Ala
                965                 970                 975

Asp Ile Leu Val Asp Gly Ser Leu Ser Lys Gly Ile Glu Pro Ser Ser
            980                 985                 990

Glu Gly Ser Lys Pro Leu Ser Asn  Pro Ser Ser Pro Gly  Ile Ser
Gly
        995                 1000                1005

Val Asp  Leu Leu Val Asp Gln  Pro Phe Thr Leu Glu  Ile Leu Thr
    1010                1015                1020

Ser Leu  Val Glu Leu Thr Arg  Phe Glu Thr Leu Thr  Pro Arg Phe
    1025                1030                1035

Ser Ala  Thr Val Pro Pro Cys  Trp Val Glu Val Gln  Gln Glu Gln
    1040                1045                1050

Gln Gln  Arg Arg His Pro Gln  His Leu His Gln Gln  His His Gly
    1055                1060                1065

Asp Ala  Ala Gln His Thr Arg  Thr Trp Lys Leu Gln  Thr Asp Ser
    1070                1075                1080

Asn Ser  Trp Asp Glu His Val  Phe Glu Leu Val Leu  Pro Lys Ala
    1085                1090                1095

Cys Met  Val Gly His Val Asp  Phe Lys Phe Val Leu  Asn Ser Asn
    1100                1105                1110

Ile Thr  Asn Ile Pro Gln Ile  Gln Val Thr Leu Leu  Lys Asn Lys
    1115                1120                1125

Ala Pro  Gly Leu Gly Lys Val  Asn Ala Leu Asn Ile  Glu Val Glu
    1130                1135                1140

Gln Asn  Gly Lys Pro Ser Leu  Val Asp Leu Asn Glu  Glu Met Gln
    1145                1150                1155
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His Met  Asp Val Glu Glu Ser  Gln Cys Leu Arg Leu  Cys Pro Phe
    1160                1165                1170

Leu Glu  Asp His Lys Glu Asp  Ile Leu Cys Gly Pro  Val Trp Leu
    1175                1180                1185

Ala Ser  Gly Leu Asp Leu Ser  Gly His Ala Gly Met  Leu Thr Leu
    1190                1195                1200

Thr Ser  Pro Lys Leu Val Lys  Gly Met Ala Gly Gly  Lys Tyr Arg
    1205                1210                1215

Ser Phe  Leu Ile His Val Lys  Ala Val Asn Glu Arg  Gly Thr Glu
    1220                1225                1230

Glu Ile  Cys Asn Gly Gly Met  Arg Pro Val Val Arg  Leu Pro Ser
    1235                1240                1245

Leu Lys  His Gln Ser Asn Lys  Gly Tyr Ser Leu Ala  Ser Leu Leu
    1250                1255                1260

Ala Lys  Val Ala Ala Gly Lys  Glu Lys Ser Ser Asn  Val Lys Asn
    1265                1270                1275

Glu Asn  Thr Ser Gly Thr Arg  Lys Ser Glu Asn Leu  Arg Gly Cys
    1280                1285                1290

Asp Leu  Leu Gln Glu Val Ser  Val Thr Ile Arg Arg  Phe Lys Lys
    1295                1300                1305

Thr Ser  Ile Ser Lys Glu Arg  Val Gln Arg Cys Ala  Met Leu Gln
    1310                1315                1320

Phe Ser  Glu Phe His Glu Lys  Leu Leu Asn Thr Leu  Cys Arg Lys
    1325                1330                1335

Thr Asp  Asp Gly Gln Ile Thr  Glu His Ala Gln Ser  Leu Val Leu
    1340                1345                1350

Asp Thr  Leu Cys Trp Leu Ala  Gly Val His Ser Asn  Gly Pro Gly
    1355                1360                1365
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Ser Ser Lys Glu Gly Asn Glu Asn Leu Leu Ser Lys Thr Arg Lys
1370 1375 1380

Phe Leu Ser Asp Ile Val Arg Val Cys Phe Phe Glu Ala Gly Arg
1385 1390 1395

Ser Ile Ala His Lys Cys Ala Arg Phe Leu Ala Leu Cys Ile Ser
1400 1405 1410

Asn Gly Lys Cys Asp Pro Cys Gln Pro Ala Phe Gly Pro Val Leu
1415 1420 1425

Leu Lys Ala Leu Leu Asp Asn Met Ser Phe Leu Pro Ala Ala Thr
1430 1435 1440

Thr Gly Gly Ser Val Tyr Trp Tyr Phe Val Leu Leu Asn Tyr Val
1445 1450 1455

Lys Asp Glu Asp Leu Ala Gly Cys Ser Thr Ala Cys Ala Ser Leu
1460 1465 1470

Leu Thr Ala Val Ser Arg Gln Leu Gln Asp Arg Leu Thr Pro Met
1475 1480 1485

Glu Ala Leu Leu Gln Thr Arg Tyr Gly Leu Tyr Ser Ser Pro Phe
1490 1495 1500

Asp Pro Val Leu Phe Asp Leu Glu Met Ser Gly Ser Ser Cys Lys
1505 1510 1515

Asn Val Tyr Asn Ser Ser Ile Gly Val Gln Ser Asp Glu Ile Asp
1520 1525 1530

Leu Ser Asp Val Leu Ser Gly Asn Gly Lys Val Ser Ser Cys Thr
1535 1540 1545

Ala Ala Glu Gly Ser Phe Thr Ser Leu Thr Gly Leu Leu Glu Val
1550 1555 1560

Glu Pro Leu His Phe Thr Cys Val Ser Thr Ser Asp Gly Thr Arg
1565 1570 1575

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Ile Glu  Arg Asp Asp Ala Met  Ser Ser Phe Gly Val  Thr Pro Ala
    1580                 1585                 1590

Val Gly  Gly Leu Ser Ser Gly  Thr Val Gly Glu Ala  Ser Thr Ala
    1595                 1600                 1605

Leu Ser  Ser Ala Ala Gln Val  Ala Leu Gln Ser Leu  Ser His Ala
    1610                 1615                 1620

Met Ala  Ser Ala Glu Gln Gln  Leu Gln Val Leu Gln  Glu Lys Gln
    1625                 1630                 1635

Gln Gln  Leu Leu Lys Leu Gln  Gln Gln Lys Ala Lys  Leu Glu Ala
    1640                 1645                 1650

Lys Leu  His Gln Thr Thr Ala  Ala Ala Ala Ala Ala  Ala Ser Ala
    1655                 1660                 1665

Val Gly  Pro Val His Asn Ser  Val Pro Ser Asn Pro  Val Ala Ala
    1670                 1675                 1680

Pro Gly  Phe Phe Ile His Pro  Ser Asp Val Ile Pro  Pro Thr Pro
    1685                 1690                 1695

Lys Thr  Thr Pro Leu Phe Met  Thr Pro Pro Leu Thr  Pro Pro Asn
    1700                 1705                 1710

Glu Ala  Val Ser Val Val Ile  Asn Ala Glu Leu Ala  Gln Leu Phe
    1715                 1720                 1725

Pro Gly  Ser Val Ile Asp Pro  Pro Ala Val Asn Leu  Ala Ala His
    1730                 1735                 1740

Asn Lys  Asn Ser Asn Lys Ser  Arg Met Asn Pro Leu  Gly Ser Gly
    1745                 1750                 1755

Leu Ala  Leu Ala Ile Ser His  Ala Ser His Phe Leu  Gln Pro Pro
    1760                 1765                 1770

Pro His  Gln Ser Ile Ile Ile  Glu Arg Met His Ser  Gly Ala Arg
    1775                 1780                 1785

Arg Phe  Val Thr Leu Asp Phe  Gly Arg Pro Ile Leu  Leu Thr Asp
```

1790 1795 1800

Val Leu Ile Pro Thr Cys Gly Asp Leu Ala Ser Leu Ser Ile Asp
1805 1810 1815

Ile Trp Thr Leu Gly Glu Glu Val Asp Gly Arg Arg Leu Val Val
1820 1825 1830

Ala Thr Asp Ile Ser Thr His Ser Leu Ile Leu His Asp Leu Ile
1835 1840 1845

Pro Pro Pro Val Cys Arg Phe Met Lys Ile Thr Val Ile Gly Arg
1850 1855 1860

Tyr Gly Ser Thr Asn Ala Arg Ala Lys Ile Pro Leu Gly Phe Tyr
1865 1870 1875

Tyr Gly His Thr Tyr Ile Leu Pro Trp Glu Ser Glu Leu Lys Leu
1880 1885 1890

Met His Asp Pro Leu Lys Gly Glu Gly Glu Ser Ala Asn Gln Pro
1895 1900 1905

Glu Ile Asp Gln His Leu Ala Met Met Val Ala Leu Gln Glu Asp
1910 1915 1920

Ile Gln Cys Arg Tyr Asn Leu Ala Cys His Arg Leu Glu Thr Leu
1925 1930 1935

Leu Gln Ser Ile Asp Leu Pro Pro Leu Asn Ser Ala Asn Asn Ala
1940 1945 1950

Gln Tyr Phe Leu Arg Lys Pro Asp Lys Ala Val Glu Glu Asp Ser
1955 1960 1965

Arg Val Phe Ser Ala Tyr Gln Asp Cys Ile Gln Leu Gln Leu Gln
1970 1975 1980

Leu Asn Leu Ala His Asn Ala Val Gln Arg Leu Lys Val Ala Leu
1985 1990 1995

Gly Ala Ser Arg Lys Met Leu Ser Glu Thr Ser Asn Pro Glu Asp
2000 2005 2010

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Leu Ile  Gln Thr Ser Ser Thr  Glu Gln Leu Arg Thr  Ile Ile Arg
    2015                2020                2025

Tyr Leu  Leu Asp Thr Leu Leu  Ser Leu Leu His Ala  Ser Asn Gly
    2030                2035                2040

His Ser  Val Pro Ala Val Leu  Gln Ser Thr Phe His  Ala Gln Ala
    2045                2050                2055

Cys Glu  Glu Leu Phe Lys His  Leu Cys Ile Ser Gly  Thr Pro Lys
    2060                2065                2070

Ile Arg  Leu His Thr Gly Leu  Leu Leu Val Gln Leu  Cys Gly Gly
    2075                2080                2085

Glu Arg  Trp Trp Gly Gln Phe  Leu Ser Asn Val Leu  Gln Glu Leu
    2090                2095                2100

Tyr Asn  Ser Glu Gln Leu Leu  Ile Phe Pro Gln Asp  Arg Val Phe
    2105                2110                2115

Met Leu  Leu Ser Cys Ile Gly  Gln Arg Ser Leu Ser  Asn Ser Gly
    2120                2125                2130

Val Leu  Glu Ser Leu Leu Asn  Leu Leu Asp Asn Leu  Leu Ser Pro
    2135                2140                2145

Leu Gln  Pro Gln Leu Pro Met  His Arg Arg Thr Glu  Gly Val Leu
    2150                2155                2160

Asp Ile  Pro Met Ile Ser Trp  Val Val Met Leu Val  Ser Arg Leu
    2165                2170                2175

Leu Asp  Tyr Val Ala Thr Val  Glu Asp Glu Ala Ala  Ala Ala Lys
    2180                2185                2190

Lys Pro  Leu Asn Gly Asn Gln  Trp Ser Phe Ile Asn  Asn Asn Leu
    2195                2200                2205

His Thr  Gln Ser Leu Asn Arg  Ser Ser Lys Gly Ser  Ser Ser Leu
    2210                2215                2220
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Asp Arg Leu Tyr Ser Arg Lys Ile Arg Lys Gln Leu Val His His
2225 2230 2235

Lys Gln Gln Leu Asn Leu Leu Lys Ala Lys Gln Lys Ala Leu Val
2240 2245 2250

Glu Gln Met Glu Lys Glu Lys Ile Gln Ser Asn Lys Gly Ser Ser
2255 2260 2265

Tyr Lys Leu Leu Val Glu Gln Ala Lys Leu Lys Gln Ala Thr Ser
2270 2275 2280

Lys His Phe Lys Asp Leu Ile Arg Leu Arg Arg Thr Ala Glu Trp
2285 2290 2295

Ser Arg Ser Asn Leu Asp Thr Glu Val Thr Thr Ala Lys Glu Ser
2300 2305 2310

Pro Glu Ile Glu Pro Leu Pro Phe Thr Leu Ala His Glu Arg Cys
2315 2320 2325

Ile Ser Val Val Gln Lys Leu Val Leu Phe Leu Leu Ser Met Asp
2330 2335 2340

Phe Thr Cys His Ala Asp Leu Leu Leu Phe Val Cys Lys Val Leu
2345 2350 2355

Ala Arg Ile Ala Asn Ala Thr Arg Pro Thr Ile His Leu Cys Glu
2360 2365 2370

Ile Val Asn Glu Pro Gln Leu Glu Arg Leu Leu Leu Leu Leu Val
2375 2380 2385

Gly Thr Asp Phe Asn Arg Gly Asp Ile Ser Trp Gly Gly Ala Trp
2390 2395 2400

Ala Gln Tyr Ser Leu Thr Cys Met Leu Gln Asp Ile Leu Ala Gly
2405 2410 2415

Glu Leu Leu Ala Pro Val Ala Ala Glu Ala Met Glu Glu Gly Thr
2420 2425 2430

Val Gly Asp Asp Val Gly Ala Thr Ala Gly Asp Ser Asp Asp Ser
2435 2440 2445

Leu Gln Gln Ser Ser Val Gln Leu Leu Glu Thr Ile Asp Glu Pro
2450 2455 2460

Leu Thr His Asp Ile Thr Gly Ala Pro Pro Leu Ser Ser Leu Glu
2465 2470 2475

Lys Asp Lys Glu Ile Asp Leu Glu Leu Leu Gln Asp Leu Met Glu
2480 2485 2490

Val Asp Ile Asp Pro Leu Asp Ile Asp Leu Glu Lys Asp Pro Leu
2495 2500 2505

Ala Ala Lys Val Phe Lys Pro Ile Ser Ser Thr Trp Tyr Asp Tyr
2510 2515 2520

Trp Gly Ala Asp Tyr Gly Thr Tyr Asn Tyr Asn Pro Tyr Ile Gly
2525 2530 2535

Gly Leu Gly Ile Pro Val Ala Lys Pro Pro Ala Asn Thr Glu Lys
2540 2545 2550

Asn Gly Ser Gln Thr Val Ser Val Ser Val Ser Gln Ala Leu Asp
2555 2560 2565

Ala Arg Leu Glu Val Gly Leu Glu Gln Gln Ala Glu Leu Met Leu
2570 2575 2580

Lys Met Met Ser Thr Leu Glu Ala Asp Ser Ile Leu Gln Ala Leu
2585 2590 2595

Thr Asn Thr Ser Pro Thr Leu Ser Gln Ser Pro Thr Gly Thr Asp
2600 2605 2610

Asp Ser Leu Leu Gly Gly Leu Gln Ala Ala Asn Gln Thr Ser Gln
2615 2620 2625

Leu Ile Ile Gln Leu Ser Ser Val Pro Met Leu Asn Val Cys Phe
2630 2635 2640

Asn Lys Leu Phe Ser Met Leu Gln Val His His Val Gln Leu Glu

2645 2650 2655

Ser Leu Leu Gln Leu Trp Leu Thr Leu Ser Leu Asn Ser Ser Ser
2660 2665 2670

Thr Gly Asn Lys Glu Asn Gly Ala Asp Ile Phe Leu Tyr Asn Ala
2675 2680 2685

Asn Arg Ile Pro Val Ile Ser Leu Asn Gln Ala Ser Ile Thr Ser
2690 2695 2700

Phe Leu Thr Val Leu Ala Trp Tyr Pro Asn Thr Leu Leu Arg Thr
2705 2710 2715

Trp Cys Leu Val Leu His Ser Leu Thr Leu Met Thr Asn Met Gln
2720 2725 2730

Leu Asn Ser Gly Ser Ser Ser Ala Ile Gly Thr Gln Glu Ser Thr
2735 2740 2745

Ala His Leu Leu Val Ser Asp Pro Asn Leu Ile His Val Leu Val
2750 2755 2760

Lys Phe Leu Ser Gly Thr Ser Pro His Gly Thr Asn Gln His Ser
2765 2770 2775

Pro Gln Val Gly Pro Thr Ala Thr Gln Ala Met Gln Glu Phe Leu
2780 2785 2790

Thr Arg Leu Gln Val His Leu Ser Ser Thr Cys Pro Gln Ile Phe
2795 2800 2805

Ser Glu Phe Leu Leu Lys Leu Ile His Ile Leu Ser Thr Glu Arg
2810 2815 2820

Gly Ala Phe Gln Thr Gly Gln Gly Pro Leu Asp Ala Gln Val Lys
2825 2830 2835

Leu Leu Glu Phe Thr Leu Glu Gln Asn Phe Glu Val Val Ser Val
2840 2845 2850

Ser Thr Ile Ser Ala Val Ile Glu Ser Val Thr Phe Leu Val His
2855 2860 2865

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His Tyr  Ile Thr Cys Ser Asp  Lys Val Met Ser Arg  Ser Gly Ser
    2870                2875                2880

Asp Ser  Ser Val Gly Ala Arg  Ala Cys Phe Gly Gly  Leu Phe Ala
    2885                2890                2895

Asn Leu  Ile Arg Pro Gly Asp  Ala Lys Ala Val Cys  Gly Glu Met
    2900                2905                2910

Thr Arg  Asp Gln Leu Met Phe  Asp Leu Leu Lys Leu  Val Asn Ile
    2915                2920                2925

Leu Val  Gln Leu Pro Leu Ser  Gly Asn Arg Glu Tyr  Ser Ala Arg
    2930                2935                2940

Val Ser  Val Thr Thr Asn Thr  Thr Asp Ser Val Ser  Asp Glu Glu
    2945                2950                2955

Lys Val  Ser Gly Gly Lys Asp  Gly Asn Gly Ser Ser  Thr Ser Val
    2960                2965                2970

Gln Gly  Ser Pro Ala Tyr Val  Ala Asp Leu Val Leu  Ala Asn Gln
    2975                2980                2985

Gln Ile  Met Ser Gln Ile Leu  Ser Ala Leu Gly Leu  Cys Asn Ser
    2990                2995                3000

Ser Ala  Met Ala Met Ile Ile  Gly Ala Ser Gly Leu  His Leu Thr
    3005                3010                3015

Lys His  Glu Asn Phe His Gly  Gly Leu Asp Ala Ile  Ser Val Gly
    3020                3025                3030

Asp Gly  Leu Phe Thr Ile Leu  Thr Thr Leu Ser Lys  Lys Ala Ser
    3035                3040                3045

Thr Val  His Met Met Leu Gln  Pro Ile Leu Thr Tyr  Met Ala Cys
    3050                3055                3060

Gly Tyr  Met Gly Arg Gln Gly  Ser Leu Ala Thr Cys  Gln Leu Ser
    3065                3070                3075
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Glu Pro  Leu Leu Trp Phe Ile  Leu Arg Val Leu Asp  Thr Ser Asp
    3080                3085                3090

Ala Leu  Lys Ala Phe His Asp  Met Gly Gly Val Gln  Leu Ile Cys
    3095                3100                3105

Asn Asn  Met Val Thr Ser Thr  Arg Ala Ile Val Asn  Thr Ala Arg
    3110                3115                3120

Ser Met  Val Ser Thr Ile Met  Lys Phe Leu Asp Ser  Gly Pro Asn
    3125                3130                3135

Lys Ala  Val Asp Ser Thr Leu  Lys Thr Arg Ile Leu  Ala Ser Glu
    3140                3145                3150

Pro Asp  Asn Ala Glu Gly Ile  His Asn Phe Ala Pro  Leu Gly Thr
    3155                3160                3165

Ile Thr  Ser Ser Ser Pro Thr  Ala Gln Pro Ala Glu  Val Leu Leu
    3170                3175                3180

Gln Ala  Thr Pro Pro His Arg  Arg Ala Arg Ser Ala  Ala Trp Ser
    3185                3190                3195

Tyr Ile  Phe Leu Pro Glu Glu  Ala Trp Cys Asp Leu  Thr Ile His
    3200                3205                3210

Leu Pro  Ala Ala Val Leu Leu  Lys Glu Ile His Ile  Gln Pro His
    3215                3220                3225

Leu Ala  Ser Leu Ala Thr Cys  Pro Ser Ser Val Ser  Val Glu Val
    3230                3235                3240

Ser Ala  Asp Gly Val Asn Met  Leu Pro Leu Ser Thr  Pro Val Val
    3245                3250                3255

Thr Ser  Gly Leu Thr Tyr Ile  Lys Ile Gln Leu Val  Lys Ala Glu
    3260                3265                3270

Val Ala  Ser Ala Val Cys Leu  Arg Leu His Arg Pro  Arg Asp Ala
    3275                3280                3285
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Ser Thr  Leu Gly Leu Ser Gln  Ile Lys Leu Leu Gly  Leu Thr Ala
    3290                 3295                 3300

Phe Gly  Thr Thr Ser Ser Ala  Thr Val Asn Asn Pro  Phe Leu Pro
    3305                 3310                 3315

Ser Glu  Asp Gln Val Ser Lys  Thr Ser Ile Gly Trp  Leu Arg Leu
    3320                 3325                 3330

Leu His  His Cys Leu Thr His  Ile Ser Asp Leu Glu  Gly Met Met
    3335                 3340                 3345

Ala Ser  Ala Ala Ala Pro Thr  Ala Asn Leu Leu Gln  Thr Cys Ala
    3350                 3355                 3360

Ala Leu  Leu Met Ser Pro Tyr  Cys Gly Met His Ser  Pro Asn Ile
    3365                 3370                 3375

Glu Val  Val Leu Val Lys Ile  Gly Leu Gln Ser Thr  Arg Ile Gly
    3380                 3385                 3390

Leu Lys  Leu Ile Asp Ile Leu  Leu Arg Asn Cys Ala  Ala Ser Gly
    3395                 3400                 3405

Ser Asp  Pro Thr Asp Leu Asn  Ser Pro Leu Leu Phe  Gly Arg Leu
    3410                 3415                 3420

Asn Gly  Leu Ser Ser Asp Ser  Thr Ile Asp Ile Leu  Tyr Gln Leu
    3425                 3430                 3435

Gly Thr  Thr Gln Asp Pro Gly  Thr Lys Asp Arg Ile  Gln Ala Leu
    3440                 3445                 3450

Leu Lys  Trp Val Ser Asp Ser  Ala Arg Val Ala Ala  Met Lys Arg
    3455                 3460                 3465

Ser Gly  Arg Met Asn Tyr Met  Cys Pro Asn Ser Ser  Thr Val Glu
    3470                 3475                 3480

Tyr Gly  Leu Leu Met Pro Ser  Pro Ser His Leu His  Cys Val Ala
    3485                 3490                 3495

Ala Ile  Leu Trp His Ser Tyr  Glu Leu Leu Val Glu  Tyr Asp Leu
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3500 3505 3510

Pro Ala Leu Leu Asp Gln Glu Leu Phe Glu Leu Leu Phe Asn Trp
3515 3520 3525

Ser Met Ser Leu Pro Cys Asn Met Val Leu Lys Lys Ala Val Asp
3530 3535 3540

Ser Leu Leu Cys Ser Met Cys His Val His Pro Asn Tyr Phe Ser
3545 3550 3555

Leu Leu Met Gly Trp Met Gly Ile Thr Pro Pro Pro Val Gln Cys
3560 3565 3570

His His Arg Leu Ser Met Thr Asp Asp Ser Lys Lys Gln Asp Leu
3575 3580 3585

Ser Ser Ser Leu Thr Asp Asp Ser Lys Asn Ala Gln Ala Pro Leu
3590 3595 3600

Ala Leu Thr Glu Ser His Leu Ala Thr Leu Ala Ser Ser Ser Gln
3605 3610 3615

Ser Pro Glu Ala Ile Lys Gln Leu Leu Asp Ser Gly Leu Pro Ser
3620 3625 3630

Leu Leu Val Arg Ser Leu Ala Ser Phe Cys Phe Ser His Ile Ser
3635 3640 3645

Ser Ser Glu Ser Ile Ala Gln Ser Ile Asp Ile Ser Gln Asp Lys
3650 3655 3660

Leu Arg Arg His His Val Pro Gln Gln Cys Asn Lys Met Pro Ile
3665 3670 3675

Thr Ala Asp Leu Val Ala Pro Ile Leu Arg Phe Leu Thr Glu Val
3680 3685 3690

Gly Asn Ser His Ile Met Lys Asp Trp Leu Gly Gly Ser Glu Val
3695 3700 3705

Asn Pro Leu Trp Thr Ala Leu Leu Phe Leu Leu Cys His Ser Gly
3710 3715 3720

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Ser Thr  Ser Gly Ser His Asn  Leu Gly Ala Gln Gln  Thr Ser Ala
    3725                3730                3735

Arg Ser  Ala Ser Leu Ser Ser  Ala Ala Thr Thr Gly  Leu Thr Thr
    3740                3745                3750

Gln Gln  Arg Thr Ala Ile Glu  Asn Ala Thr Val Ala  Phe Phe Leu
    3755                3760                3765

Gln Cys  Ile Ser Cys His Pro  Asn Asn Gln Lys Leu  Met Ala Gln
    3770                3775                3780

Val Leu  Cys Glu Leu Phe Gln  Thr Ser Pro Gln Arg  Gly Asn Leu
    3785                3790                3795

Pro Thr  Ser Gly Asn Ile Ser  Gly Phe Ile Arg Arg  Leu Phe Leu
    3800                3805                3810

Gln Leu  Met Leu Glu Asp Glu  Lys Val Thr Met Phe  Leu Gln Ser
    3815                3820                3825

Pro Cys  Pro Leu Tyr Lys Gly  Arg Ile Asn Ala Thr  Ser His Val
    3830                3835                3840

Ile Gln  His Pro Met Tyr Gly  Ala Gly His Lys Phe  Arg Thr Leu
    3845                3850                3855

His Leu  Pro Val Ser Thr Thr  Leu Ser Asp Val Leu  Asp Arg Val
    3860                3865                3870

Ser Asp  Thr Pro Ser Ile Thr  Ala Lys Leu Ile Ser  Glu Gln Lys
    3875                3880                3885

Asp Asp  Lys Glu Lys Lys Asn  His Glu Glu Lys Glu  Lys Val Lys
    3890                3895                3900

Ala Glu  Asn Gly Phe Gln Asp  Asn Tyr Ser Val Val  Val Ala Ser
    3905                3910                3915

Gly Leu  Lys Ser Gln Ser Lys  Arg Ala Val Ser Ala  Thr Pro Pro
    3920                3925                3930
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Arg Pro  Pro Ser Arg Arg Gly  Arg Thr Ile Pro Asp  Lys Ile Gly
    3935                 3940                 3945

Ser Thr  Ser Gly Ala Glu Ala  Ala Asn Lys Ile Ile  Thr Val Pro
    3950                 3955                 3960

Val Phe  His Leu Phe His Lys  Leu Leu Ala Gly Gln  Pro Leu Pro
    3965                 3970                 3975

Ala Glu  Met Thr Leu Ala Gln  Leu Leu Thr Leu Leu  Tyr Asp Arg
    3980                 3985                 3990

Lys Leu  Pro Gln Gly Tyr Arg  Ser Ile Asp Leu Thr  Val Lys Leu
    3995                 4000                 4005

Gly Ser  Arg Val Ile Thr Asp  Pro Ser Leu Ser Lys  Thr Asp Ser
    4010                 4015                 4020

Tyr Lys  Arg Leu His Pro Glu  Lys Asp His Gly Asp  Leu Leu Ala
    4025                 4030                 4035

Ser Cys  Pro Glu Asp Glu Ala  Leu Thr Pro Gly Asp  Glu Cys Met
    4040                 4045                 4050

Asp Gly  Ile Leu Asp Glu Ser  Leu Leu Glu Thr Cys  Pro Ile Gln
    4055                 4060                 4065

Ser Pro  Leu Gln Val Phe Ala  Gly Met Gly Gly Leu  Ala Leu Ile
    4070                 4075                 4080

Ala Glu  Arg Leu Pro Met Leu  Tyr Pro Glu Val Ile  Gln Gln Val
    4085                 4090                 4095

Ser Ala  Pro Val Val Thr Ser  Thr Thr Gln Glu Lys  Pro Lys Asp
    4100                 4105                 4110

Ser Asp  Gln Phe Glu Trp Val  Thr Ile Glu Gln Ser  Gly Glu Leu
    4115                 4120                 4125

Val Tyr  Glu Ala Pro Glu Thr  Val Ala Ala Glu Pro  Pro Pro Ile
    4130                 4135                 4140
```

Lys Ser Ala Val Gln Thr Met Ser Pro Ile Pro Ala His Ser Leu
4145 4150 4155

Ala Ala Phe Gly Leu Phe Leu Arg Leu Pro Gly Tyr Ala Glu Val
4160 4165 4170

Leu Leu Lys Glu Arg Lys His Ala Gln Cys Leu Leu Arg Leu Val
4175 4180 4185

Leu Gly Val Thr Asp Asp Gly Glu Gly Ser His Ile Leu Gln Ser
4190 4195 4200

Pro Ser Ala Asn Val Leu Pro Thr Leu Pro Phe His Val Leu Arg
4205 4210 4215

Ser Leu Phe Ser Thr Thr Pro Leu Thr Thr Asp Asp Gly Val Leu
4220 4225 4230

Leu Arg Arg Met Ala Leu Glu Ile Gly Ala Leu His Leu Ile Leu
4235 4240 4245

Val Cys Leu Ser Ala Leu Ser His His Ser Pro Arg Val Pro Asn
4250 4255 4260

Ser Ser Val Asn Gln Thr Glu Pro Gln Val Ser Ser Ser His Asn
4265 4270 4275

Pro Thr Ser Thr Glu Glu Gln Gln Leu Tyr Trp Ala Lys Gly Thr
4280 4285 4290

Gly Phe Gly Thr Gly Ser Thr Ala Ser Gly Trp Asp Val Glu Gln
4295 4300 4305

Ala Leu Thr Lys Gln Arg Leu Glu Glu Glu His Val Thr Cys Leu
4310 4315 4320

Leu Gln Val Leu Ala Ser Tyr Ile Asn Pro Val Ser Ser Ala Val
4325 4330 4335

Asn Gly Glu Ala Gln Ser Ser His Glu Thr Arg Gly Gln Asn Ser
4340 4345 4350

Asn Ala Leu Pro Ser Val Leu Leu Glu Leu Leu Ser Gln Ser Cys

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    4355                4360                4365

Leu Ile  Pro Ala Met Ser Ser  Tyr Leu Arg Asn Asp  Ser Val Leu
    4370                4375                4380

Asp Met  Ala Arg His Val Pro  Leu Tyr Arg Ala Leu  Leu Glu Leu
    4385                4390                4395

Leu Arg  Ala Ile Ala Ser Cys  Ala Ala Met Val Pro  Leu Leu Leu
    4400                4405                4410

Pro Leu  Ser Thr Glu Asn Gly  Glu Glu Glu Glu Glu  Gln Ser Glu
    4415                4420                4425

Cys Gln  Thr Ser Val Gly Thr  Leu Leu Ala Lys Met  Lys Thr Cys
    4430                4435                4440

Val Asp  Thr Tyr Thr Asn Arg  Leu Arg Ser Lys Arg  Glu Asn Val
    4445                4450                4455

Lys Thr  Gly Val Lys Pro Asp  Ala Ser Asp Gln Glu  Pro Glu Gly
    4460                4465                4470

Leu Thr  Leu Leu Val Pro Asp  Ile Gln Lys Thr Ala  Glu Ile Val
    4475                4480                4485

Tyr Ala  Ala Thr Thr Ser Leu  Arg Gln Ala Asn Gln  Glu Lys Lys
    4490                4495                4500

Leu Gly  Glu Tyr Ser Lys Lys  Ala Ala Met Lys Pro  Lys Pro Leu
    4505                4510                4515

Ser Val  Leu Lys Ser Leu Glu  Glu Lys Tyr Val Ala  Val Met Lys
    4520                4525                4530

Lys Leu  Gln Phe Asp Thr Phe  Glu Met Val Ser Glu  Asp Glu Asp
    4535                4540                4545

Gly Lys  Leu Gly Phe Lys Val  Asn Tyr His Tyr Met  Ser Gln Val
    4550                4555                4560

Lys Asn  Ala Asn Asp Ala Asn  Ser Ala Ala Arg Ala  Arg Arg Leu
    4565                4570                4575
```

```
Ala Gln  Glu Ala Val Thr Leu  Ser Thr Ser Leu Pro  Leu Ser Ser
    4580                4585                4590

Ser Ser  Ser Val Phe Val Arg  Cys Asp Glu Glu Arg  Leu Asp Ile
    4595                4600                4605

Met Lys  Val Leu Ile Thr Gly  Pro Ala Asp Thr Pro  Tyr Ala Asn
    4610                4615                4620

Gly Cys  Phe Glu Phe Asp Val  Tyr Phe Pro Gln Asp  Tyr Pro Ser
    4625                4630                4635

Ser Pro  Pro Leu Val Asn Leu  Glu Thr Thr Gly Gly  His Ser Val
    4640                4645                4650

Arg Phe  Asn Pro Asn Leu Tyr  Asn Asp Gly Lys Val  Cys Leu Ser
    4655                4660                4665

Ile Leu  Asn Thr Trp His Gly  Arg Pro Glu Glu Lys  Trp Asn Pro
    4670                4675                4680

Gln Thr  Ser Ser Phe Leu Gln  Val Leu Val Ser Val  Gln Ser Leu
    4685                4690                4695

Ile Leu  Val Ala Glu Pro Tyr  Phe Asn Glu Pro Gly  Tyr Glu Arg
    4700                4705                4710

Ser Arg  Gly Thr Pro Ser Gly  Thr Gln Ser Ser Arg  Glu Tyr Asp
    4715                4720                4725

Gly Asn  Ile Arg Gln Ala Thr  Val Lys Trp Ala Met  Leu Glu Gln
    4730                4735                4740

Ile Arg  Asn Pro Ser Pro Cys  Phe Lys Glu Val Ile  His Lys His
    4745                4750                4755

Phe Tyr  Leu Lys Arg Val Glu  Ile Met Ala Gln Cys  Glu Glu Trp
    4760                4765                4770

Ile Ala  Asp Ile Gln Gln Tyr  Ser Ser Asp Lys Arg  Val Gly Arg
    4775                4780                4785
```

```
Thr Met  Ser His His Ala Ala  Ala Leu Lys Arg His  Thr Ala Gln
    4790                4795                4800

Leu Arg  Glu Glu Leu Leu Lys  Leu Pro Cys Pro Glu  Gly Leu Asp
    4805                4810                4815

Pro Asp  Thr Asp Asp Ala Pro  Glu Val Cys Arg Ala  Thr Thr Gly
    4820                4825                4830

Ala Glu  Glu Thr Leu Met His  Asp Gln Val Lys Pro  Ser Ser Ser
    4835                4840                4845

Lys Glu  Leu Pro Ser Asp Phe  Gln Leu
    4850                4855


<210> 8195
<211> 191
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1697; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC6; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413090"

<400> 8195
Ser Trp Asp Glu His Val Phe Glu Leu Val Leu Pro Lys Ala Cys Met
1               5                  10                  15

Val Gly His Val Asp Phe Lys Phe Val Leu Asn Ser Asn Ile Thr Asn
            20                  25                  30

Ile Pro Gln Ile Gln Val Thr Leu Leu Lys Asn Lys Ala Pro Gly Leu
        35                  40                  45

Gly Lys Val Asn Gly Leu Arg Leu Cys Pro Phe Leu Glu Asp His Lys
```

```
    50                  55                  60

Glu Asp Ile Leu Cys Gly Pro Val Trp Leu Ala Ser Gly Leu Asp Leu
65                  70                  75                  80

Ser Gly His Ala Gly Met Leu Thr Leu Thr Ser Pro Lys Leu Val Lys
                85                  90                  95

Gly Met Ala Gly Gly Lys Tyr Arg Ser Phe Leu Ile His Val Lys Ala
            100                 105                 110

Val Asn Glu Arg Gly Thr Glu Glu Ile Cys Asn Gly Gly Met Arg Pro
        115                 120                 125

Val Val Arg Leu Pro Ser Leu Lys His Gln Ser Asn Lys Gly Tyr Ser
    130                 135                 140

Leu Ala Ser Leu Leu Ala Lys Val Ala Ala Gly Lys Glu Lys Ser Ser
145                 150                 155                 160

Asn Val Lys Asn Glu Asn Thr Ser Gly Thr Arg Lys Ser Glu Asn Leu
                165                 170                 175

Arg Gly Cys Asp Leu Leu Gln Glu Val Ser Val Thr Ile Arg Arg
            180                 185                 190


<210> 8196
<211> 298
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1698; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC7; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 7; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96CA5; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000217169"

<400> 8196
Met Gly Pro Lys Asp Ser Ala Lys Cys Leu His Arg Gly Pro Gln Pro
1   5   10   15

Ser His Trp Ala Ala Gly Asp Gly Pro Thr Gln Glu Arg Cys Gly Pro
            20   25   30

Arg Ser Leu Gly Ser Pro Val Leu Gly Leu Asp Thr Cys Arg Ala Trp
        35   40   45

Asp His Val Asp Gly Gln Ile Leu Gly Gln Leu Arg Pro Leu Thr Glu
    50   55   60

Glu Glu Glu Glu Glu Gly Ala Gly Ala Thr Leu Ser Arg Gly Pro Ala
65   70   75   80

Phe Pro Gly Met Gly Ser Glu Glu Leu Arg Leu Ala Ser Phe Tyr Asp
                85   90   95

Trp Pro Leu Thr Ala Glu Val Pro Pro Glu Leu Leu Ala Ala Ala Gly
            100   105   110

Phe Phe His Thr Gly His Gln Asp Lys Val Arg Cys Phe Phe Cys Tyr
        115   120   125

Gly Gly Leu Gln Ser Trp Lys Arg Gly Asp Asp Pro Trp Thr Glu His
    130   135   140

Ala Lys Trp Phe Pro Ser Cys Gln Phe Leu Leu Arg Ser Lys Gly Arg
145   150   155   160

Asp Phe Val His Ser Val Gln Glu Thr His Ser Gln Leu Leu Gly Ser
                165   170   175

Trp Asp Pro Trp Glu Glu Pro Glu Asp Ala Ala Pro Val Ala Pro Ser
            180   185   190

Val Pro Ala Ser Gly Tyr Pro Glu Leu Pro Thr Pro Arg Arg Glu Val
        195   200   205

```
Gln Ser Glu Ser Ala Gln Glu Pro Gly Gly Val Ser Pro Ala Glu Ala
    210                 215                 220

Gln Arg Ala Trp Trp Val Leu Glu Pro Pro Gly Ala Arg Asp Val Glu
225                 230                 235                 240

Ala Gln Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Leu
                245                 250                 255

Asp Arg Ala Val Ser Ile Val Phe Val Pro Cys Gly His Leu Val Cys
            260                 265                 270

Ala Glu Cys Ala Pro Gly Leu Gln Leu Cys Pro Ile Cys Arg Ala Pro
        275                 280                 285

Val Arg Ser Arg Val Arg Thr Phe Leu Ser
    290                 295


<210> 8197
<211> 280
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1698; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC7; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 7; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96CA5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000345213"

<400> 8197
Met Gly Pro Lys Asp Ser Ala Lys Cys Leu His Arg Gly Pro Gln Pro
1               5                   10                  15

Ser His Trp Ala Ala Gly Asp Gly Pro Thr Gln Glu Arg Cys Gly Pro
            20                  25                  30
```

```
Arg Ser Leu Gly Ser Pro Val Leu Gly Leu Asp Thr Cys Arg Ala Trp
        35                  40                  45

Asp His Val Asp Gly Gln Ile Leu Gly Gln Leu Arg Pro Leu Thr Glu
    50                  55                  60

Glu Glu Glu Glu Glu Gly Ala Gly Ala Thr Leu Ser Arg Gly Pro Ala
65                  70                  75                  80

Phe Pro Gly Met Gly Ser Glu Glu Leu Arg Leu Ala Ser Phe Tyr Asp
                85                  90                  95

Trp Pro Leu Thr Ala Glu Val Pro Pro Glu Leu Leu Ala Ala Ala Gly
            100                 105                 110

Phe Phe His Thr Gly His Gln Asp Lys Val Arg Cys Phe Phe Cys Tyr
        115                 120                 125

Gly Gly Leu Gln Ser Trp Lys Arg Gly Asp Asp Pro Trp Thr Glu His
    130                 135                 140

Ala Lys Trp Phe Pro Ser Cys Gln Phe Leu Leu Arg Ser Lys Gly Arg
145                 150                 155                 160

Asp Phe Val His Ser Val Gln Glu Thr His Ser Gln Leu Leu Gly Ser
                165                 170                 175

Trp Asp Pro Trp Glu Glu Pro Glu Asp Ala Ala Pro Val Ala Pro Ser
            180                 185                 190

Val Pro Ala Ser Gly Tyr Pro Glu Leu Pro Thr Pro Arg Arg Glu Val
        195                 200                 205

Gln Ser Glu Ser Ala Gln Glu Pro Gly Ala Arg Asp Val Glu Ala Gln
    210                 215                 220

Leu Arg Arg Leu Gln Glu Glu Arg Thr Cys Lys Val Cys Leu Asp Arg
225                 230                 235                 240

Ala Val Ser Ile Val Phe Val Pro Cys Gly His Leu Val Cys Ala Glu
                245                 250                 255
```

```
Cys Ala Pro Gly Leu Gln Leu Cys Pro Ile Cys Arg Ala Pro Val Arg
            260                 265                 270

Ser Arg Val Arg Thr Phe Leu Ser
        275                 280


<210> 8198
<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1698; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC7; "

<220>
<221> source
<223> /note="Gene Name:
      baculoviral IAP repeat containing 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378717"

<400> 8198
Met Pro Leu Pro Trp Asp Tyr Pro Glu Ala Pro Trp Arg Arg Leu His
1               5                   10                  15

Ser Ser Pro Pro Arg Pro Cys Pro Arg Ala Leu Gln Gly Gly Gly Arg
            20                  25                  30

Arg Gly Pro Asn Pro Asp Pro Arg Gly Ser Lys Gly Leu Lys Gln Thr
        35                  40                  45

Val Gly Ala Leu Asn Pro Asn Leu His Leu Trp Gly Ile Cys Ser Cys
    50                  55                  60

Gln Phe Leu Leu Arg Ser Lys Gly Arg Asp Phe Val His Ser Val Gln
65                  70                  75                  80

Glu Thr His Ser Gln Leu Leu Gly Ser Trp Asp Pro Trp Glu Glu Pro
                85                  90                  95

Glu Asp Ala Ala Pro Val Ala Pro Ser Val Pro Ala Ser Gly Tyr Pro
```

```
            100                 105                 110

Glu Leu Pro Thr Pro Arg Arg Glu Val Gln Ser Glu Ser Ala Gln Glu
        115                 120                 125

Pro Gly Ala Arg Asp Val Glu Ala Gln Leu Arg Arg Leu Gln Glu Glu
    130                 135                 140

Arg Thr Cys Lys Val Cys Leu Asp Arg Ala Val Ser Ile Val Phe Val
145                 150                 155                 160

Pro Cys Gly His Leu Val Cys Ala Glu Cys Ala Pro Gly Leu Gln Leu
                165                 170                 175

Cys Pro Ile Cys Arg Ala Pro Val Arg Ser Arg Val Arg Thr Phe Leu
            180                 185                 190

Ser
```

<210> 8199
<211> 236
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1699; "

<220>
<221> source
<223> /note="Gene Symbol: BIRC8; "

<220>
<221> source
<223> /note="Gene Name:
baculoviral IAP repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q96P09; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412957"

<400> 8199

```
Met Thr Gly Tyr Glu Ala Arg Leu Ile Thr Phe Gly Thr Trp Met Tyr
1               5                   10                  15
```

```
Ser Val Asn Lys Glu Gln Leu Ala Arg Ala Gly Phe Tyr Ala Ile Gly
            20                  25                  30

Gln Glu Asp Lys Val Gln Cys Phe His Cys Gly Gly Gly Leu Ala Asn
        35                  40                  45

Trp Lys Pro Lys Glu Asp Pro Trp Glu Gln His Ala Lys Trp Tyr Pro
    50                  55                  60

Gly Cys Lys Tyr Leu Leu Glu Glu Lys Gly His Glu Tyr Ile Asn Asn
65                  70                  75                  80

Ile His Leu Thr Arg Ser Leu Glu Gly Ala Leu Val Gln Thr Thr Lys
                85                  90                  95

Lys Thr Pro Ser Leu Thr Lys Arg Ile Ser Asp Thr Ile Phe Pro Asn
            100                 105                 110

Pro Met Leu Gln Glu Ala Ile Arg Met Gly Phe Asp Phe Lys Asp Val
        115                 120                 125

Lys Lys Ile Met Glu Glu Arg Ile Gln Thr Ser Gly Ser Asn Tyr Lys
    130                 135                 140

Thr Leu Glu Val Leu Val Ala Asp Leu Val Ser Ala Gln Lys Asp Thr
145                 150                 155                 160

Thr Glu Asn Glu Leu Asn Gln Thr Ser Leu Gln Arg Glu Ile Ser Pro
                165                 170                 175

Glu Glu Pro Leu Arg Arg Leu Gln Glu Glu Lys Leu Cys Lys Ile Cys
            180                 185                 190

Met Asp Arg His Ile Ala Val Val Phe Ile Pro Cys Gly His Leu Val
        195                 200                 205

Thr Cys Lys Gln Cys Ala Glu Ala Val Asp Arg Cys Pro Met Cys Ser
    210                 215                 220

Ala Val Ile Asp Phe Lys Gln Arg Val Phe Met Ser
225                 230                 235
```

<210> 8200
<211> 2608
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1700; "

<220>
<221> source
<223> /note="Gene Symbol: BAHCC1; "

<220>
<221> source
<223> /note="Gene Name:
BAH domain and coiled-coil containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000303486"

<400> 8200
Met Asp Gly Arg Asp Phe Ala Pro Pro Pro His Leu Leu Ser Glu Arg
1 5 10 15

Gly Ser Leu Gly His Arg Ser Ala Ala Ala Ala Ala Arg Leu Ala Pro
20 25 30

Ala Gly Pro Ala Ala Gln Pro Pro Ala His Phe Gln Pro Gly Lys Tyr
35 40 45

Phe Pro Ser Pro Leu Pro Met Ala Ser His Thr Ala Ser Ser Arg Leu
50 55 60

Met Gly Ser Ser Pro Ala Ser Ser Phe Met Gly Ser Phe Leu Thr Ser
65 70 75 80

Ser Leu Gly Ser Ala Ala Ser Thr His Pro Ser Gly Pro Ser Ser Ser
85 90 95

Pro Pro Glu Gln Ala Tyr Arg Gly Ser His Pro Thr Thr Ser Gln Ile
100 105 110

Trp Phe Ser His Ser His Glu Ala Pro Gly Tyr Pro Arg Phe Ser Gly
115 120 125

Ser Leu Ala Ser Thr Phe Leu Pro Val Ser His Leu Asp His His Gly
130 135 140

```
Asn Ser Asn Val Leu Tyr Gly Gln His Arg Phe Tyr Gly Thr Gln Lys
145                 150                 155                 160

Asp Asn Phe Tyr Leu Arg Asn Leu Pro Pro Gln Pro Thr Leu Leu Pro
                165                 170                 175

Ala Asn His Asn Phe Pro Ser Val Ala Arg Ala Ala Pro Ala His Pro
            180                 185                 190

Met Gly Ser Cys Ser Arg Asp Arg Asp Arg Gly Glu Ala Gly Ser Leu
        195                 200                 205

Gln Lys Gly Pro Lys Asp Phe Asp Arg Phe Leu Val Gly Lys Glu Leu
    210                 215                 220

Gly Arg Glu Lys Ala Gly Lys Ala Ala Glu Gly Lys Glu Arg Pro Ala
225                 230                 235                 240

Ala Glu Glu Asp Gly Gly Lys Glu Arg His Lys Leu Val Leu Pro Val
                245                 250                 255

Pro Ala Asp Gly His Cys Arg Glu Gly Gly Pro Ala Pro Arg Gly Ala
            260                 265                 270

Cys Glu Gly Arg Pro Lys His Leu Thr Ser Cys Leu Leu Asn Thr Lys
        275                 280                 285

Val Leu Asn Gly Glu Met Gly Arg Ala Ala Leu Ala Ser Cys Ala Gly
    290                 295                 300

Gly Met Leu Gly Arg Pro Gly Thr Gly Val Val Thr Ser Gly Arg Cys
305                 310                 315                 320

Ala Lys Glu Ala Ala Gly Pro Pro Glu Pro Gly Pro Ala Phe Ser Glu
                325                 330                 335

Cys Leu Glu Arg Arg Gln Met Leu His His Thr Ala Ser Tyr Ala Gly
            340                 345                 350

Pro Pro Pro Pro Leu Ser Thr Ala Ala Gly Ser Phe Pro Cys Leu Gln
        355                 360                 365
```

```
Leu His Gly Gly Pro Asp Gly Leu Cys Pro Leu Gln Asp Lys Ala Pro
    370                 375                 380

Arg Asp Leu Lys Ala Ser Gly Pro Thr Phe Val Pro Ser Val Gly His
385                 390                 395                 400

Leu Ala Asp Lys Gly Arg Pro Phe Gln Ala Ala Glu Ala Cys Ala Val
                405                 410                 415

Ala Gly Glu Gly Lys Asp Arg His Leu Glu Gly Thr Met Ala Pro Asp
            420                 425                 430

His Ala Ala Pro Tyr Gly Val Ser Tyr Ala His Leu Lys Ala Glu Gly
        435                 440                 445

Lys Gly Glu Arg Arg Pro Gly Gly Phe Glu Ala Ala Leu Asn Pro Arg
    450                 455                 460

Leu Lys Gly Leu Asp Tyr Leu Ser Ser Ala Gly Pro Glu Ala Ser Phe
465                 470                 475                 480

Pro Gly Leu Pro Lys Ser Gly Leu Asp Lys Ser Gly Tyr Phe Glu Leu
                485                 490                 495

Pro Thr Ser Ser Gln Asp Cys Ala Arg Pro Gly His Gln Asp Pro Leu
            500                 505                 510

Gly Gly Lys Ala Pro Gln Ala Cys Cys Thr Leu Asp Lys Thr Val Gly
        515                 520                 525

Lys Glu Ala Pro Ala Gly Pro Pro Gly Ala Gln Lys Val Ala Arg Ile
    530                 535                 540

Arg His Gln Gln His Leu Met Ala Ala Glu Val Glu Gln Gly Gly Ile
545                 550                 555                 560

Gly Ala Glu Ala Lys Arg Lys Ser Leu Glu Leu Ala Ser Leu Gly Tyr
                565                 570                 575

Ser Gly Pro His Leu Pro Pro Trp Gly Val Gln Ala Gly Gln Gly Thr
            580                 585                 590
```

```
Ala Met Ala Ile Ser Glu Glu Arg Lys Ala Gly Ala Tyr Leu Asp Pro
        595                 600                 605

Phe Gly Ser Gly Leu Gln Gln Ala Ala Leu Leu Pro Gln Glu Leu Pro
    610                 615                 620

Ala Pro Pro Asp Glu Val Ser Ala Met Lys Asn Leu Leu Lys Tyr Ser
625                 630                 635                 640

Ser Gln Ala Leu Val Val Gly Gln Lys Ala Pro Leu Val Gly Leu Gly
                645                 650                 655

Gly Leu Lys Ala Ser Cys Ile Gln Gln Glu Ala Lys Phe Leu Ser Ser
            660                 665                 670

Lys Gly Pro Gly Gln Ser Glu Arg Pro Asp Cys Ala Arg Ser Arg Glu
        675                 680                 685

His Asp Thr Thr His Gly Asp Gly Glu Val Arg Gln Pro Pro Val Gly
    690                 695                 700

Ile Ala Val Ala Leu Ala Arg Gln Lys Asp Thr Val Ser Arg Ser Glu
705                 710                 715                 720

Ala Ala Tyr Gly Thr Asn Thr Ala Arg Gln Gly Arg Ala Ala Pro Ala
                725                 730                 735

Phe Lys Gly Gly Gly Gly Pro Arg Ser Thr His Ala Leu Asp Leu Glu
            740                 745                 750

Ala Glu Glu Glu Arg Thr Arg Leu Cys Asp Asp Arg Leu Gly Leu Ala
        755                 760                 765

Ser Arg Glu Leu Leu Leu Gln Asp Ser Lys Asp Arg Val Glu Phe Ala
    770                 775                 780

Arg Ile His Pro Pro Ser Ser Cys Pro Gly Asp Leu Ala Pro His Leu
785                 790                 795                 800

Met Met Gln Ser Gly Gln Leu Gly Gly Asp Pro Ala Pro His Thr His
                805                 810                 815

Pro His Pro Pro Trp Leu Pro Arg Thr Arg Ser Pro Ser Leu Trp Met
```

```
            820                 825                 830

Gly Gly His Ser Tyr Gly Leu Gly His Pro Ala Leu His Gln Asn Leu
        835                 840                 845

Pro Pro Gly Phe Pro Ala Ser Val Ala Gly Pro Val Pro Ser Val Phe
    850                 855                 860

Pro Leu Pro Gln Asp Ala Pro Thr Gln Leu Val Ile Leu Pro Ser Glu
865                 870                 875                 880

Pro Thr Pro His Ser Ala Pro His Ala Leu Ala Asp Val Met Asp Gln
                885                 890                 895

Ala Ser Leu Trp Pro Pro Met Tyr Gly Gly Arg Gly Pro Ala Ser His
            900                 905                 910

Met Gln His Pro Gly Gln Leu Pro Val Tyr Ser Arg Pro Gln Leu Leu
        915                 920                 925

Arg Gln Gln Glu Leu Tyr Ala Leu Gln Gln Gln Arg Ala Ala Gln Phe
    930                 935                 940

Gln Arg Lys Pro Glu Asp Gln His Leu Asp Leu Glu Glu Pro Ala Gln
945                 950                 955                 960

Glu Lys Ala Pro Lys Ser Thr His Lys Pro Val Ala Leu Thr Pro Thr
                965                 970                 975

Ala Pro Gly Ala Pro Ser Pro Ala Ala Gly Pro Thr Lys Leu Pro Pro
            980                 985                 990

Cys Cys His Pro Pro Asp Pro Lys  Pro Pro Ala Ser Ser  Pro Thr
Pro
        995                 1000                1005

Pro Pro  Arg Pro Ser Ala Pro  Cys Thr Leu Asn Val  Cys Pro Ala
    1010                1015                1020

Ser Ser  Pro Gly Pro Gly Ser  Arg Val Arg Ser Ala  Glu Glu Lys
    1025                1030                1035

Asn Gly  Glu Gly Gln Gln Ser  Thr Ala Asp Ile Ile  Thr Ser Glu
```

1040 1045 1050

Pro Asp Leu Pro Pro Gly Tyr Leu Arg Pro Met Ala Gly Leu Gly
1055 1060 1065

Phe Ser Leu Pro Ser Asp Val His Ser Ser Asn Leu Glu Asp Pro
1070 1075 1080

Glu Thr Met Gln Thr Thr Ala Pro Gly Ala Gln Pro Glu Pro Thr
1085 1090 1095

Arg Thr Phe Leu Pro Gly Glu Pro Pro Pro Cys Ser Pro Arg Ser
1100 1105 1110

Leu Glu Glu Pro Gly Leu Leu Ser Gly Ala Arg Glu Ala Thr Gln
1115 1120 1125

Asp Leu Ala Ala Thr Pro Tyr Pro Thr Glu Arg Gly Pro Gln Gly
1130 1135 1140

Lys Ala Ala Asp Pro Ser Pro Leu Glu Gly Leu Gln Glu Leu Gln
1145 1150 1155

Cys Ala Ala Leu Leu Glu Ala Gly Gly Pro Glu Ala Thr Gly Gln
1160 1165 1170

Ala His Ser Thr Gln Gly Gly Ala Arg Glu Glu Arg Ser Arg Glu
1175 1180 1185

Glu Gly Glu Gln Gly Pro Ser Ser Gly Ala Ser Ser Gln Val Leu
1190 1195 1200

Glu Gln Arg Ala Gly Ser Pro Gly Ala Leu Glu Asp Glu Gly Glu
1205 1210 1215

Gln Pro Ala Pro Glu Glu Asp Glu Leu Glu Glu Asp Glu Leu Gly
1220 1225 1230

Gln Gln Ser Met Glu Asp Ser Glu Glu Asp Cys Gly Gly Ala Pro
1235 1240 1245

Asp Asn Ser His Pro Pro Arg Ala Leu Pro Gly Leu Asp Ala Leu
1250 1255 1260

```
Val Ala  Ala Thr Ile Asn Leu  Gly Asp Leu Pro Ser  Asp Ser Pro
    1265                1270                1275

Pro Asp  Pro Gln Pro Pro Ala  Ala Ser Gly Pro Pro  Ser Thr Val
    1280                1285                1290

Pro Leu  Pro His Ser Ser Gly  Ile His Gly Ile Ala  Leu Leu Ser
    1295                1300                1305

Glu Leu  Ala Asp Leu Ala Ile  Gln Arg Gln Arg Ser  Glu Arg Thr
    1310                1315                1320

Val Pro  Glu Glu Glu Glu Asp  Val Leu Ala Phe Asn  Leu Gln His
    1325                1330                1335

Leu Ala  Thr Leu Ala Thr Ala  Trp Ser Leu Val Glu  Ala Ala Gly
    1340                1345                1350

Leu Asp  Ser Ser Thr Ala Pro  Ala Gln Pro Pro Thr  Ala Asn Pro
    1355                1360                1365

Cys Ser  Gly Pro Arg Leu Thr  Pro Arg Met Gln Ile  Leu Gln Arg
    1370                1375                1380

Lys Asp  Thr Trp Thr Pro Lys  Thr Lys Pro Val Cys  Pro Leu Lys
    1385                1390                1395

Ala Ala  Ile Asp Arg Leu Asp  Thr Gln Glu Val Gly  Met Arg Val
    1400                1405                1410

Arg Leu  Ala Glu Leu Gln Arg  Arg Tyr Lys Glu Lys  Gln Arg Glu
    1415                1420                1425

Leu Ala  Arg Leu Gln Arg Lys  His Asp His Glu Arg  Asp Glu Ser
    1430                1435                1440

Ser Arg  Ser Pro Ala Arg Arg  Gly Pro Gly Arg Pro  Arg Lys Arg
    1445                1450                1455

Lys His  Ser Ser Ser Leu Pro  Ala Pro Arg Pro Thr  Gly Pro Leu
    1460                1465                1470
```

```
Pro Arg  Ser Asp Gly Lys Lys  Val Lys Ala Val Arg  Thr Ser Leu
    1475                1480                1485

Gly Leu  Leu Cys Ala Glu Leu  Arg Gly Gly Ser Gly  Gly Glu Pro
    1490                1495                1500

Ala Lys  Lys Arg Ser Lys Leu  Glu Arg Ser Val Tyr  Ala Gly Leu
    1505                1510                1515

Gln Thr  Ala Ser Val Glu Lys  Ala Gln Cys Lys Lys  Ser Ser Cys
    1520                1525                1530

Gln Gly  Gly Leu Ala Pro Ser  Val Ala His Arg Val  Ala Gln Leu
    1535                1540                1545

Lys Pro  Lys Val Lys Ser Lys  Gly Leu Pro Thr Gly  Leu Ser Ser
    1550                1555                1560

Phe Gln  Gln Lys Glu Ala Thr  Pro Gly Gly Arg Ile  Arg Glu Lys
    1565                1570                1575

Leu Ser  Arg Ala Lys Ser Ala  Lys Val Ser Gly Ala  Thr Arg His
    1580                1585                1590

Pro Gln  Pro Lys Gly His Gly  Ser Arg Glu Thr Pro  Arg Cys Pro
    1595                1600                1605

Ala Gln  Pro Ser Val Ala Ala  Ser Gln Glu Ala Gly  Ser Gly Tyr
    1610                1615                1620

Asp Ser  Glu Asp Cys Glu Gly  Leu Leu Gly Thr Glu  Ala Pro Pro
    1625                1630                1635

Arg Glu  Ala Gly Leu Leu Leu  His Thr Gly Ala Ser  Val Ala Val
    1640                1645                1650

Leu Gly  Pro Ser Pro Ser Ser  Val Val Lys Met Glu  Ala Asn Gln
    1655                1660                1665

Lys Ala  Lys Lys Lys Lys Glu  Arg Gln Gly Leu Leu  Gly Ala Cys
    1670                1675                1680
```

```
Arg Leu  Ser Ser Pro Glu Ser  Glu Val Lys Ile Lys  Arg Arg Ser
    1685                1690                1695

Val Lys  Ala Lys Val Gly Thr  Thr Leu Glu Arg Ala  Pro Gly Gln
    1700                1705                1710

Arg Pro  Pro Gly Ala Leu Gly  Lys Lys Lys Ala Lys  Gly Lys Ala
    1715                1720                1725

Lys Gly  Ser Leu Arg Ala Glu  Pro Gly Ala Thr Pro  Ser Arg Asp
    1730                1735                1740

Ala Leu  Phe Asn Pro Ser Arg  Ala Phe Ala Cys Arg  Glu Glu Gly
    1745                1750                1755

Ser Gln  Leu Ala Ser Glu Arg  Leu Lys Arg Ala Thr  Arg Lys Gly
    1760                1765                1770

Thr Val  Leu Gln Pro Val Leu  Arg Arg Lys Asn Gly  Ala Leu Ser
    1775                1780                1785

Ile Thr  Leu Ala Thr Arg Asn  Ala Lys Ala Ile Leu  Gly Lys Gly
    1790                1795                1800

Arg Lys  Leu Ser Lys Val Lys  His Lys Ala Gly Lys  Gln Gly Lys
    1805                1810                1815

Gly Arg  Ala Val Ser Arg Leu  Leu Glu Ser Phe Ala  Val Glu Glu
    1820                1825                1830

Asp Phe  Glu Phe Asp Asp Asn  Ser Ser Phe Ser Glu  Glu Glu Glu
    1835                1840                1845

Asp Glu  Glu Glu Glu Glu Glu  Asp Ser Gly Pro Leu  Ser Ala Glu
    1850                1855                1860

Gln Ser  Ala Ala Leu Ala Arg  Ser Cys Ala Ile His  Lys Glu Asp
    1865                1870                1875

Leu Arg  Asp Gly Leu Pro Val  Leu Ile Pro Lys Glu  Asp Ser Leu
    1880                1885                1890

Leu Tyr  Ala Gly Ser Val Arg  Thr Leu Gln Pro Pro  Asp Ile Tyr
```

1895 1900 1905

Ser Ile Val Ile Glu Gly Glu Arg Gly Asn Arg Gln Arg Ile Tyr
1910 1915 1920

Ser Leu Glu Gln Leu Leu Gln Glu Ala Val Leu Asp Val Arg Pro
1925 1930 1935

Gln Ser Ser Arg Tyr Leu Pro Pro Gly Thr Arg Val Cys Ala Tyr
1940 1945 1950

Trp Ser Gln Lys Ser Arg Cys Leu Tyr Pro Gly Asn Val Val Arg
1955 1960 1965

Gly Ala Ser Gly Asp Glu Asp Glu Asp Leu Asp Ser Val Val Val
1970 1975 1980

Glu Phe Asp Asp Gly Asp Thr Gly His Ile Ala Val Ser Asn Val
1985 1990 1995

Arg Leu Leu Pro Pro Asp Phe Lys Ile Gln Cys Thr Glu Pro Ser
2000 2005 2010

Pro Ala Leu Leu Val Ser Ser Ser Cys Arg Arg Thr Lys Lys Val
2015 2020 2025

Ser Ser Glu Ala Pro Pro Pro Ser Glu Ala Ala Thr Pro Ser Leu
2030 2035 2040

Ser Pro Lys Ala Gln Asp Gly Pro Glu Ala Leu Lys Thr Pro Gly
2045 2050 2055

Lys Lys Ser Ile Ser Lys Asp Lys Ala Gly Lys Ala Glu Leu Leu
2060 2065 2070

Thr Ser Gly Ala Lys Ser Pro Thr Gly Ala Ser Asp His Phe Leu
2075 2080 2085

Gly Arg Arg Gly Ser Pro Leu Leu Ser Trp Ser Ala Val Ala Gln
2090 2095 2100

Thr Lys Arg Lys Ala Val Ala Ala Ala Ser Lys Gly Pro Gly Val
2105 2110 2115

```
Leu Gln  Asn Leu Phe Gln Leu  Asn Gly Ser Ser Lys  Lys Leu Arg
    2120                2125                2130

Ala Arg  Glu Ala Leu Phe Pro  Val His Ser Val Ala  Thr Pro Ile
    2135                2140                2145

Phe Gly  Asn Gly Phe Arg Ala  Asp Ser Phe Ser Ser  Leu Ala Ser
    2150                2155                2160

Ser Tyr  Ala Pro Phe Val Gly  Gly Thr Gly Pro Gly  Leu Pro Arg
    2165                2170                2175

Gly Ala  His Lys Leu Leu Arg  Ala Lys Lys Ala Glu  Arg Val Glu
    2180                2185                2190

Ala Glu  Lys Gly Gly Arg Arg  Arg Ala Gly Gly Glu  Phe Leu Val
    2195                2200                2205

Lys Leu  Asp His Glu Gly Val  Thr Ser Pro Lys Asn  Lys Thr Cys
    2210                2215                2220

Lys Ala  Leu Leu Met Gly Asp  Lys Asp Phe Ser Pro  Lys Leu Gly
    2225                2230                2235

Arg Pro  Leu Pro Ser Pro Ser  Tyr Val His Pro Ala  Leu Val Gly
    2240                2245                2250

Lys Asp  Lys Lys Gly Arg Ala  Pro Ile Pro Pro Leu  Pro Met Gly
    2255                2260                2265

Leu Ala  Leu Arg Lys Tyr Ala  Gly Gln Ala Glu Phe  Pro Leu Pro
    2270                2275                2280

Tyr Asp  Ser Asp Cys His Ser  Ser Phe Ser Asp Glu  Asp Glu Asp
    2285                2290                2295

Gly Pro  Gly Leu Ala Ala Gly  Val Pro Ser Arg Phe  Leu Ala Arg
    2300                2305                2310

Leu Ser  Val Ser Ser Ser Ser  Ser Gly Ser Ser Thr  Ser Ser Ser
    2315                2320                2325
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```
Ser Gly  Ser Val Ser Thr Ser  Ser Leu Cys Ser Ser  Asp Asn Glu
    2330                2335                2340

Asp Ser  Ser Tyr Ser Ser Asp  Asp Glu Asp Pro Ala  Leu Leu Leu
    2345                2350                2355

Gln Thr  Cys Leu Thr His Pro  Val Pro Thr Leu Leu  Ala Gln Pro
    2360                2365                2370

Glu Ala  Leu Arg Ser Lys Gly  Ser Gly Pro His Ala  His Ala Gln
    2375                2380                2385

Arg Cys  Phe Leu Ser Arg Ala  Thr Val Ala Gly Thr  Gly Ala Gly
    2390                2395                2400

Ser Gly  Pro Ser Ser Ser Ser  Lys Ser Lys Leu Lys  Arg Lys Glu
    2405                2410                2415

Ala Leu  Ser Phe Ser Lys Ala  Lys Glu Leu Ser Arg  Arg Gln Arg
    2420                2425                2430

Pro Pro  Ser Val Glu Asn Arg  Pro Lys Ile Ser Ala  Phe Leu Pro
    2435                2440                2445

Ala Arg  Gln Leu Trp Lys Trp  Ser Gly Asn Pro Thr  Gln Arg Arg
    2450                2455                2460

Gly Met  Lys Gly Lys Ala Arg  Lys Leu Phe Tyr Lys  Ala Ile Val
    2465                2470                2475

Arg Gly  Glu Glu Thr Leu Arg  Val Gly Asp Cys Ala  Val Phe Leu
    2480                2485                2490

Ser Ala  Gly Arg Pro Asn Leu  Pro Tyr Ile Gly Arg  Ile Glu Ser
    2495                2500                2505

Met Trp  Glu Ser Trp Gly Ser  Asn Met Val Val Lys  Val Lys Trp
    2510                2515                2520

Phe Tyr  His Pro Glu Glu Thr  Lys Leu Gly Lys Arg  Gln Cys Asp
    2525                2530                2535
```

```
Gly Lys  Asn Ala Leu Tyr Gln  Ser Cys His Glu Asp  Glu Asn Asp
    2540                2545                2550

Val Gln  Thr Ile Ser His Lys  Cys Gln Val Val Ala  Arg Glu Gln
    2555                2560                2565

Tyr Glu  Gln Met Ala Arg Ser  Arg Lys Cys Gln Asp  Arg Gln Asp
    2570                2575                2580

Leu Tyr  Tyr Leu Ala Gly Thr  Tyr Asp Pro Thr Thr  Gly Arg Leu
    2585                2590                2595

Val Thr  Ala Asp Gly Val Pro  Ile Leu Cys
    2600                2605
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<210> 8201
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<213> Homo sapiens

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<400> 8201

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Met Asp Gly Arg Asp Phe Ala Pro Pro Pro His Leu Leu Ser Glu Arg
1               5                  10                  15

Gly Ser Leu Gly His Arg Ser Ala Ala Ala Ala Ala Arg Leu Ala Pro
            20                  25                  30

Ala Gly Pro Ala Ala Gln Pro Pro Ala His Phe Gln Pro Gly Lys Tyr
        35                  40                  45

Phe Pro Ser Pro Leu Pro Met Ala Ser His Thr Ala Ser Ser Arg Leu
    50                  55                  60
```

```
Met Gly Ser Ser Pro Ala Ser Ser Phe Met Gly Ser Phe Leu Thr Ser
65                  70                  75                  80

Ser Leu Gly Ser Ala Ala Ser Thr His Pro Ser Gly Pro Ser Ser Ser
                85                  90                  95

Pro Pro Glu Gln Ala Tyr Arg Gly Ser His Pro Thr Thr Ser Gln Ile
            100                 105                 110

Trp Phe Ser His Ser His Glu Ala Pro Gly Tyr Pro Arg Phe Ser Gly
        115                 120                 125

Ser Leu Ala Ser Thr Phe Leu Pro Val Ser His Leu Asp His His Gly
    130                 135                 140

Asn Ser Asn Val Leu Tyr Gly Gln His Arg Phe Tyr Gly Thr Gln Lys
145                 150                 155                 160

Asp Asn Phe Tyr Leu Arg Asn Leu Pro Pro Gln Pro Thr Leu Leu Pro
                165                 170                 175

Ala Asn His Asn Phe Pro Ser Val Ala Arg Ala Ala Pro Ala His Pro
            180                 185                 190

Met Gly Ser Cys Ser Arg Asp Arg Asp Arg Gly Glu Ala Gly Ser Leu
        195                 200                 205

Gln Lys Gly Pro Lys Asp Phe Asp Arg Phe Leu Val Gly Lys Glu Leu
    210                 215                 220

Gly Arg Glu Lys Ala Gly Lys Ala Ala Glu Gly Lys Glu Arg Pro Ala
225                 230                 235                 240

Ala Glu Glu Asp Gly Gly Lys Glu Arg His Lys Leu Val Leu Pro Val
                245                 250                 255

Pro Ala Asp Gly His Cys Arg Glu Gly Gly Pro Ala Pro Arg Gly Ala
            260                 265                 270

Cys Glu Gly Arg Pro Lys His Leu Thr Ser Cys Leu Leu Asn Thr Lys
        275                 280                 285
```

```
Val Leu Asn Gly Glu Met Gly Arg Ala Ala Leu Ala Ser Cys Ala Gly
    290                 295                 300

Gly Met Leu Gly Arg Pro Gly Thr Gly Val Val Thr Ser Gly Arg Cys
305                 310                 315                 320

Ala Lys Glu Ala Ala Gly Pro Pro Glu Pro Gly Pro Ala Phe Ser Glu
                325                 330                 335

Cys Leu Glu Arg Arg Gln Met Leu His His Thr Ala Ser Tyr Ala Gly
            340                 345                 350

Pro Pro Pro Pro Leu Ser Thr Ala Ala Gly Ser Phe Pro Cys Leu Gln
        355                 360                 365

Leu His Gly Gly Pro Asp Gly Leu Cys Pro Leu Gln Asp Lys Ala Pro
    370                 375                 380

Arg Asp Leu Lys Ala Ser Gly Pro Thr Phe Val Pro Ser Val Gly His
385                 390                 395                 400

Leu Ala Asp Lys Gly Arg Pro Phe Gln Ala Ala Glu Ala Cys Ala Val
                405                 410                 415

Ala Gly Glu Gly Lys Asp Arg His Leu Glu Gly Thr Met Ala Pro Asp
            420                 425                 430

His Ala Ala Pro Tyr Gly Val Ser Tyr Ala His Leu Lys Ala Glu Gly
        435                 440                 445

Lys Gly Glu Arg Arg Pro Gly Gly Phe Glu Ala Ala Leu Asn Pro Arg
    450                 455                 460

Leu Lys Gly Leu Asp Tyr Leu Ser Ser Ala Gly Pro Glu Ala Ser Phe
465                 470                 475                 480

Pro Gly Leu Pro Lys Ser Gly Leu Asp Lys Ser Gly Tyr Phe Glu Leu
                485                 490                 495

Pro Thr Ser Ser Gln Asp Cys Ala Arg Pro Gly His Gln Asp Pro Leu
            500                 505                 510
```

```
Gly Gly Lys Ala Pro Gln Ala Cys Cys Thr Leu Asp Lys Thr Val Gly
        515                 520                 525

Lys Glu Ala Pro Ala Gly Pro Pro Gly Ala Gln Lys Val Ala Arg Ile
    530                 535                 540

Arg His Gln Gln His Leu Met Ala Ala Glu Val Glu Gln Gly Gly Ile
545                 550                 555                 560

Gly Ala Glu Ala Lys Arg Lys Ser Leu Glu Leu Ala Ser Leu Gly Tyr
                565                 570                 575

Ser Gly Pro His Leu Pro Pro Trp Gly Val Gln Ala Gly Gln Gly Thr
            580                 585                 590

Ala Met Ala Ile Ser Glu Glu Arg Lys Ala Gly Ala Tyr Leu Asp Pro
        595                 600                 605

Phe Gly Ser Gly Leu Gln Gln Ala Ala Leu Leu Pro Gln Glu Leu Pro
    610                 615                 620

Ala Pro Pro Asp Glu Val Ser Ala Met Lys Asn Leu Leu Lys Tyr Ser
625                 630                 635                 640

Ser Gln Ala Leu Val Val Gly Gln Lys Ala Pro Leu Val Gly Leu Gly
                645                 650                 655

Gly Leu Lys Ala Ser Cys Ile Gln Gln Glu Ala Lys Phe Leu Ser Ser
            660                 665                 670

Lys Gly Pro Gly Gln Ser Glu Arg Pro Asp Cys Ala Arg Ser Arg Glu
        675                 680                 685

His Asp Thr Thr His Gly Asp Gly Glu Val Arg Gln Pro Pro Val Gly
    690                 695                 700

Ile Ala Val Ala Leu Ala Arg Gln Lys Asp Thr Val Ser Arg Ser Glu
705                 710                 715                 720

Ala Ala Tyr Gly Thr Asn Thr Ala Arg Gln Gly Arg Ala Ala Pro Ala
                725                 730                 735

Phe Lys Gly Gly Gly Gly Pro Arg Ser Thr His Ala Leu Asp Leu Glu
```

740 745 750

Ala Glu Glu Glu Arg Thr Arg Leu Cys Asp Asp Arg Leu Gly Leu Ala
755 760 765

Ser Arg Glu Leu Leu Leu Gln Asp Ser Lys Asp Arg Val Glu Phe Ala
770 775 780

Arg Ile His Pro Pro Ser Ser Cys Pro Gly Asp Leu Ala Pro His Leu
785 790 795 800

Met Met Gln Ser Gly Gln Leu Gly Gly Asp Pro Ala Pro His Thr His
805 810 815

Pro His Pro Pro Trp Leu Pro Arg Thr Arg Ser Pro Ser Leu Trp Met
820 825 830

Gly Gly His Ser Tyr Gly Leu Gly His Pro Ala Leu His Gln Asn Leu
835 840 845

Pro Pro Gly Phe Pro Ala Ser Val Ala Gly Pro Val Pro Ser Val Phe
850 855 860

Pro Leu Pro Gln Asp Ala Pro Thr Gln Leu Val Ile Leu Pro Ser Glu
865 870 875 880

Pro Thr Pro His Ser Ala Pro His Ala Leu Ala Asp Val Met Asp Gln
885 890 895

Ala Ser Leu Trp Pro Pro Met Tyr Gly Gly Arg Gly Pro Ala Ser His
900 905 910

Met Gln His Pro Gly Gln Leu Pro Val Tyr Ser Arg Pro Gln Leu Leu
915 920 925

Arg Gln Gln Glu Leu Tyr Ala Leu Gln Gln Gln Arg Ala Ala Gln Phe
930 935 940

Gln Arg Lys Pro Glu Asp Gln His Leu Asp Leu Glu Glu Pro Ala Gln
945 950 955 960

Glu Lys Ala Pro Lys Ser Thr His Lys Pro Val Ala Leu Thr Pro Thr
965 970 975

Ala Pro Gly Ala Pro Ser Pro Ala Ala Gly Pro Thr Lys Leu Pro Pro
980 985 990

Cys Cys His Pro Pro Asp Pro Lys Pro Pro Ala Ser Ser Pro Thr Pro
995 1000 1005

Pro Pro Arg Pro Ser Ala Pro Cys Thr Leu Asn Val Cys Pro Ala
1010 1015 1020

Ser Ser Pro Gly Pro Gly Ser Arg Val Arg Ser Ala Glu Glu Lys
1025 1030 1035

Asn Gly Glu Gly Gln Gln Ser Thr Ala Asp Ile Ile Thr Ser Glu
1040 1045 1050

Pro Val Ala Arg Ala His Ser Val Ala His Ala Gly Leu Glu Phe
1055 1060 1065

Leu Ala Ser Asn Asp Pro Ser Thr Ser Ala Ser Gln Ser Phe Gly
1070 1075 1080

Ile Thr Asp Leu Pro Pro Gly Tyr Leu Arg Pro Met Ala Gly Leu
1085 1090 1095

Gly Phe Ser Leu Pro Ser Asp Val His Ser Ser Asn Leu Glu Asp
1100 1105 1110

Pro Glu Thr Met Gln Thr Thr Ala Pro Gly Ala Gln Pro Glu Pro
1115 1120 1125

Thr Arg Thr Phe Leu Pro Gly Glu Pro Pro Pro Cys Ser Pro Arg
1130 1135 1140

Ser Leu Glu Glu Pro Gly Leu Leu Ser Gly Ala Arg Glu Ala Thr
1145 1150 1155

Gln Asp Leu Ala Ala Thr Pro Tyr Pro Thr Glu Arg Gly Pro Gln
1160 1165 1170

Gly Lys Ala Ala Asp Pro Ser Pro Leu Glu Gly Leu Gln Glu Leu
1175 1180 1185

```
Gln Cys  Ala Ala Leu Leu Glu  Ala Gly Gly Pro Glu  Ala Thr Gly
    1190                 1195                 1200

Gln Ala  His Ser Thr Gln Gly  Gly Ala Arg Glu Glu  Arg Ser Arg
    1205                 1210                 1215

Glu Glu  Gly Glu Gln Gly Pro  Ser Ser Gly Ala Ser  Ser Gln Val
    1220                 1225                 1230

Leu Glu  Gln Arg Ala Gly Ser  Pro Gly Ala Leu Glu  Asp Glu Gly
    1235                 1240                 1245

Glu Gln  Pro Ala Pro Glu Glu  Asp Glu Leu Glu Glu  Asp Glu Leu
    1250                 1255                 1260

Gly Gln  Gln Ser Met Glu Asp  Ser Glu Glu Asp Cys  Gly Gly Ala
    1265                 1270                 1275

Pro Asp  Asn Ser His Pro Pro  Arg Ala Leu Pro Gly  Leu Asp Ala
    1280                 1285                 1290

Leu Val  Ala Ala Thr Ile Asn  Leu Gly Asp Leu Pro  Ser Asp Ser
    1295                 1300                 1305

Pro Pro  Asp Pro Gln Pro Pro  Ala Ala Ser Gly Pro  Pro Ser Thr
    1310                 1315                 1320

Val Pro  Leu Pro His Ser Ser  Gly Ile His Gly Ile  Ala Leu Leu
    1325                 1330                 1335

Ser Glu  Leu Ala Asp Leu Ala  Ile Gln Arg Gln Arg  Ser Glu Arg
    1340                 1345                 1350

Thr Val  Pro Glu Glu Glu Glu  Asp Val Leu Ala Phe  Asn Leu Gln
    1355                 1360                 1365

His Leu  Ala Thr Leu Ala Thr  Ala Trp Ser Leu Val  Glu Ala Ala
    1370                 1375                 1380

Gly Leu  Asp Ser Ser Thr Ala  Pro Ala Gln Pro Pro  Thr Ala Asn
    1385                 1390                 1395
```

```
Pro Cys  Ser Gly Pro Arg Leu  Thr Pro Arg Met Gln  Ile Leu Gln
    1400                1405                1410

Arg Lys  Asp Thr Trp Thr Pro  Lys Thr Lys Pro Val  Cys Pro Leu
    1415                1420                1425

Lys Ala  Ala Ile Asp Arg Leu  Asp Thr Gln Glu Val  Gly Met Arg
    1430                1435                1440

Val Arg  Leu Ala Glu Leu Gln  Arg Arg Tyr Lys Glu  Lys Gln Arg
    1445                1450                1455

Glu Leu  Ala Arg Leu Gln Arg  Lys His Asp His Glu  Arg Asp Glu
    1460                1465                1470

Ser Ser  Arg Ser Pro Ala Arg  Arg Gly Pro Gly Arg  Pro Arg Lys
    1475                1480                1485

Arg Lys  His Ser Ser Ser Leu  Pro Ala Pro Arg Pro  Thr Gly Pro
    1490                1495                1500

Leu Pro  Arg Ser Asp Gly Lys  Lys Val Lys Ala Val  Arg Thr Ser
    1505                1510                1515

Leu Gly  Leu Leu Cys Ala Glu  Leu Arg Gly Gly Ser  Gly Gly Glu
    1520                1525                1530

Pro Ala  Lys Lys Arg Ser Lys  Leu Glu Arg Ser Val  Tyr Ala Gly
    1535                1540                1545

Leu Gln  Thr Ala Ser Val Glu  Lys Ala Gln Cys Lys  Lys Ser Ser
    1550                1555                1560

Cys Gln  Gly Gly Leu Ala Pro  Ser Val Ala His Arg  Val Ala Gln
    1565                1570                1575

Leu Lys  Pro Lys Val Lys Ser  Lys Gly Leu Pro Thr  Gly Leu Ser
    1580                1585                1590

Ser Phe  Gln Gln Lys Glu Ala  Thr Pro Gly Gly Arg  Ile Arg Glu
    1595                1600                1605
```

```
Lys Leu  Ser Arg Ala Lys Ser  Ala Lys Val Ser Gly  Ala Thr Arg
    1610                 1615                 1620

His Pro  Gln Pro Lys Gly His  Gly Ser Arg Glu Thr  Pro Arg Cys
    1625                 1630                 1635

Pro Ala  Gln Pro Ser Val Ala  Ala Ser Gln Glu Ala  Gly Ser Gly
    1640                 1645                 1650

Tyr Asp  Ser Glu Asp Cys Glu  Gly Leu Leu Gly Thr  Glu Ala Pro
    1655                 1660                 1665

Pro Arg  Glu Ala Gly Leu Leu  Leu His Thr Gly Ala  Ser Val Ala
    1670                 1675                 1680

Val Leu  Gly Pro Ser Pro Ser  Ser Val Val Lys Met  Glu Ala Asn
    1685                 1690                 1695

Gln Lys  Ala Lys Lys Lys Lys  Glu Arg Gln Gly Leu  Leu Gly Ala
    1700                 1705                 1710

Cys Arg  Leu Ser Ser Pro Glu  Ser Glu Val Lys Ile  Lys Arg Arg
    1715                 1720                 1725

Ser Val  Lys Ala Lys Val Gly  Thr Thr Leu Glu Arg  Ala Pro Gly
    1730                 1735                 1740

Gln Arg  Pro Pro Gly Ala Leu  Gly Lys Lys Lys Ala  Lys Gly Lys
    1745                 1750                 1755

Ala Lys  Gly Ser Leu Arg Ala  Glu Pro Gly Ala Thr  Pro Ser Arg
    1760                 1765                 1770

Asp Ala  Leu Phe Asn Pro Ser  Arg Ala Phe Ala Cys  Arg Glu Glu
    1775                 1780                 1785

Gly Ser  Gln Leu Ala Ser Glu  Arg Leu Lys Arg Ala  Thr Arg Lys
    1790                 1795                 1800

Gly Thr  Val Leu Gln Pro Val  Leu Arg Arg Lys Asn  Gly Ala Leu
    1805                 1810                 1815

Ser Ile  Thr Leu Ala Thr Arg  Asn Ala Lys Ala Ile  Leu Gly Lys
```

1820 1825 1830

Gly Arg Lys Leu Ser Lys Val Lys His Lys Ala Gly Lys Gln Gly
1835 1840 1845

Lys Gly Arg Ala Val Ser Arg Leu Leu Glu Ser Phe Ala Val Glu
1850 1855 1860

Glu Asp Phe Glu Phe Asp Asp Asn Ser Ser Phe Ser Glu Glu Glu
1865 1870 1875

Glu Asp Glu Glu Glu Glu Glu Glu Asp Ser Gly Pro Leu Ser Ala
1880 1885 1890

Glu Gln Ser Ala Ala Leu Ala Arg Ser Cys Ala Ile His Lys Glu
1895 1900 1905

Asp Leu Arg Asp Gly Leu Pro Val Leu Ile Pro Lys Glu Asp Ser
1910 1915 1920

Leu Leu Tyr Ala Gly Ser Val Arg Thr Leu Gln Pro Pro Asp Ile
1925 1930 1935

Tyr Ser Ile Val Ile Glu Gly Glu Arg Gly Asn Arg Gln Arg Ile
1940 1945 1950

Tyr Ser Leu Glu Gln Leu Leu Gln Glu Ala Val Leu Asp Val Arg
1955 1960 1965

Pro Gln Ser Ser Arg Tyr Leu Pro Pro Gly Thr Arg Val Cys Ala
1970 1975 1980

Tyr Trp Ser Gln Lys Ser Arg Cys Leu Tyr Pro Gly Asn Val Val
1985 1990 1995

Arg Gly Ala Ser Gly Asp Glu Asp Glu Asp Leu Asp Ser Val Val
2000 2005 2010

Val Glu Phe Asp Asp Gly Asp Thr Gly His Ile Ala Val Ser Asn
2015 2020 2025

Val Arg Leu Leu Pro Pro Asp Phe Lys Ile Gln Cys Thr Glu Pro
2030 2035 2040

```
Ser Pro  Ala Leu Leu Val Ser  Ser Ser Cys Arg Arg  Thr Lys Lys
    2045                2050                2055

Val Ser  Ser Glu Ala Pro Pro  Pro Ser Glu Ala Ala  Thr Pro Ser
    2060                2065                2070

Leu Ser  Pro Lys Ala Gln Asp  Gly Pro Glu Ala Leu  Lys Thr Pro
    2075                2080                2085

Gly Lys  Lys Ser Ile Ser Lys  Asp Lys Ala Gly Lys  Ala Glu Leu
    2090                2095                2100

Leu Thr  Ser Gly Ala Lys Ser  Pro Thr Gly Ala Ser  Asp His Phe
    2105                2110                2115

Leu Gly  Arg Arg Gly Ser Pro  Leu Leu Ser Trp Ser  Ala Val Ala
    2120                2125                2130

Gln Thr  Lys Arg Lys Ala Val  Ala Ala Ala Ser Lys  Gly Pro Gly
    2135                2140                2145

Val Leu  Gln Asn Leu Phe Gln  Leu Asn Gly Ser Ser  Lys Lys Leu
    2150                2155                2160

Arg Ala  Arg Glu Ala Leu Phe  Pro Val His Ser Val  Ala Thr Pro
    2165                2170                2175

Ile Phe  Gly Asn Gly Phe Arg  Ala Asp Ser Phe Ser  Ser Leu Ala
    2180                2185                2190

Ser Ser  Tyr Ala Pro Phe Val  Gly Gly Thr Gly Pro  Gly Leu Pro
    2195                2200                2205

Arg Gly  Ala His Lys Leu Leu  Arg Ala Lys Lys Ala  Glu Arg Val
    2210                2215                2220

Glu Ala  Glu Lys Gly Gly Arg  Arg Arg Ala Gly Gly  Glu Phe Leu
    2225                2230                2235

Val Lys  Leu Asp His Glu Gly  Val Thr Ser Pro Lys  Asn Lys Thr
    2240                2245                2250
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Cys Lys Ala Leu Leu Met Gly Asp Lys Asp Phe Ser Pro Lys Leu
2255 2260 2265

Gly Arg Pro Leu Pro Ser Pro Ser Tyr Val His Pro Ala Leu Val
2270 2275 2280

Gly Lys Asp Lys Lys Gly Arg Ala Pro Ile Pro Pro Leu Pro Met
2285 2290 2295

Gly Leu Ala Leu Arg Lys Tyr Ala Gly Gln Ala Glu Phe Pro Leu
2300 2305 2310

Pro Tyr Asp Ser Asp Cys His Ser Ser Phe Ser Asp Glu Asp Glu
2315 2320 2325

Asp Gly Pro Gly Leu Ala Ala Gly Val Pro Ser Arg Phe Leu Ala
2330 2335 2340

Arg Leu Ser Val Ser Ser Ser Ser Ser Gly Ser Ser Thr Ser Ser
2345 2350 2355

Ser Ser Gly Ser Val Ser Thr Ser Ser Leu Cys Ser Ser Asp Asn
2360 2365 2370

Glu Asp Ser Ser Tyr Ser Ser Asp Asp Glu Asp Pro Ala Leu Leu
2375 2380 2385

Leu Gln Thr Cys Leu Thr His Pro Val Pro Thr Leu Leu Ala Gln
2390 2395 2400

Pro Glu Ala Leu Arg Ser Lys Gly Ser Gly Pro His Ala His Ala
2405 2410 2415

Gln Arg Cys Phe Leu Ser Arg Ala Thr Val Ala Gly Thr Gly Ala
2420 2425 2430

Gly Ser Gly Pro Ser Ser Ser Ser Lys Ser Lys Leu Lys Arg Lys
2435 2440 2445

Glu Ala Leu Ser Phe Ser Lys Ala Lys Glu Leu Ser Arg Arg Gln
2450 2455 2460

```
Arg Pro  Pro Ser Val Glu Asn  Arg Pro Lys Ile Ser  Ala Phe Leu
    2465                2470                2475

Pro Ala  Arg Gln Leu Trp Lys  Trp Ser Gly Asn Pro  Thr Gln Arg
    2480                2485                2490

Arg Gly  Met Lys Gly Lys Ala  Arg Lys Leu Phe Tyr  Lys Ala Ile
    2495                2500                2505

Val Arg  Gly Glu Glu Thr Leu  Arg Val Gly Asp Cys  Ala Val Phe
    2510                2515                2520

Leu Ser  Ala Gly Arg Pro Asn  Leu Pro Tyr Ile Gly  Arg Ile Glu
    2525                2530                2535

Ser Met  Trp Glu Ser Trp Gly  Ser Asn Met Val Val  Lys Val Lys
    2540                2545                2550

Trp Phe  Tyr His Pro Glu Glu  Thr Lys Leu Gly Lys  Arg Gln Cys
    2555                2560                2565

Asp Gly  Lys Asn Ala Leu Tyr  Gln Ser Cys His Glu  Asp Glu Asn
    2570                2575                2580

Asp Val  Gln Thr Ile Ser His  Lys Cys Gln Val Val  Ala Arg Glu
    2585                2590                2595

Gln Tyr  Glu Gln Met Ala Arg  Ser Arg Lys Cys Gln  Asp Arg Gln
    2600                2605                2610

Asp Leu  Tyr Tyr Leu Ala Gly  Thr Tyr Asp Pro Thr  Thr Gly Arg
    2615                2620                2625

Leu Val  Thr Ala Asp Gly Val  Pro Ile Leu Cys
    2630                2635
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<400> 8202

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Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1               5                  10                  15

Tyr Lys Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile
            20                  25                  30

Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala
        35                  40                  45

Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser
    50                  55                  60

Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala
65                  70                  75                  80

Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser
                85                  90                  95

Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp
            100                 105                 110

Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg
        115                 120                 125

Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu
    130                 135                 140

Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys
145                 150                 155                 160
```

```
Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu Glu
                165                 170                 175

Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg Arg
            180                 185                 190

Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala Val Ala Lys Asn Ser
        195                 200                 205

Ala Ala Tyr His Ser Lys Gly Lys Glu Leu Leu Ala Gln Lys Leu Pro
    210                 215                 220

Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser Lys Ile Pro Glu Arg Ala
225                 230                 235                 240

Val Gln Leu Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro Ser
                245                 250                 255

Ala Leu Ser Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile Pro
            260                 265                 270

Gly Ala Lys Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val Gly
        275                 280                 285

Arg Met Ser Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr Gly
    290                 295                 300

Pro Asp Gly Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala Gln
305                 310                 315                 320

Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp Ser
                325                 330                 335

Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn Ser
            340                 345                 350

Tyr Ala Thr Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met Ala
        355                 360                 365

Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile Phe Ser
    370                 375                 380
```

```
His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu Gly Asp
385                 390                 395                 400

Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His Tyr Gly
                405                 410                 415

Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser Tyr Thr
            420                 425                 430

Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser Leu Gln
        435                 440                 445

Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp Asp Leu
    450                 455                 460

Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe Pro Ala
465                 470                 475                 480

Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala Val Pro
                485                 490                 495

Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met Ser Ser
            500                 505                 510

Gly Ser Gly Thr Leu Val Ser Thr Val
        515                 520


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Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1   5   10   15

Tyr Lys Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile
            20   25   30

Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala
        35   40   45

Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser
    50   55   60

Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala
65   70   75   80

Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser
                85   90   95

Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp
            100   105   110

Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg
        115   120   125

Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu
    130   135   140

Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys
145   150   155   160

Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu Glu
                165   170   175

Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg Arg
            180   185   190

Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala Val Ala Lys Asn Ser
        195   200   205

```
Ala Ala Tyr His Ser Lys Gly Lys Glu Leu Leu Ala Gln Lys Leu Pro
    210                 215                 220

Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser Lys Ile Pro Glu Arg Ala
225                 230                 235                 240

Val Gln Leu Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro Ser
                245                 250                 255

Ala Leu Ser Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile Pro
            260                 265                 270

Gly Ala Lys Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val Gly
        275                 280                 285

Arg Met Ser Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr Gly
    290                 295                 300

Pro Asp Gly Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala Gln
305                 310                 315                 320

Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp Ser
                325                 330                 335

Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn Ser
            340                 345                 350

Tyr Ala Thr Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met Ala
        355                 360                 365

Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile Phe Ser
    370                 375                 380

His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu Gly Asp
385                 390                 395                 400

Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His Tyr Gly
                405                 410                 415

Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser Tyr Thr
            420                 425                 430
```

```
Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser Leu Gln
        435                 440                 445

Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp Asp Leu
    450                 455                 460

Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe Pro Ala
465                 470                 475                 480

Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala Val Pro
                485                 490                 495

Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met Ser Arg
            500                 505                 510

Asn Pro Phe Ala His Val Gln Leu Lys Pro Thr Val Thr Asn Asp Arg
        515                 520                 525

Cys Asp Leu Ser Ala Gln Gly Pro Glu Gly Arg Glu His Gly Asp Gly
    530                 535                 540

Ser Ala Arg Thr Leu Ala Gly Arg
545                 550


<210> 8204
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<400> 8204
Met Leu Leu Pro Glu Gly Gln Arg Gln Arg Ala Leu Gly Phe Gly Thr
1               5                   10                  15
```

```
Val Thr Ser Thr Tyr Ser Pro Val Gly Gln Tyr Ile Asp Ala Ile Ser
            20                  25                  30

Asn Lys Gln Gly Glu Leu Glu Asn Tyr Val Ser Asp Gly Tyr Lys Thr
        35                  40                  45

Ala Leu Thr Glu Glu Arg Arg Arg Phe Cys Phe Leu Val Glu Lys Gln
    50                  55                  60

Cys Ala Val Ala Lys Asn Ser Ala Ala Tyr His Ser Lys Gly Lys Glu
65                  70                  75                  80

Leu Leu Ala Gln Lys Leu Pro Leu Trp Gln Gln Ala Cys Ala Asp Pro
                85                  90                  95

Ser Lys Ile Pro Glu Arg Ala Val Gln Leu Met Gln Gln Val Ala Ser
            100                 105                 110

Asn Gly Ala Thr Leu Pro Ser Ala Leu Ser Ala Ser Lys Ser Asn Leu
        115                 120                 125

Val Ile Ser Asp Pro Ile Pro Gly Ala Lys Pro Leu Pro Val Pro Pro
    130                 135                 140

Glu Leu Ala Pro Phe Val Gly Arg Met Ser Ala Gln Glu Ser Thr Pro
145                 150                 155                 160

Ile Met Asn Gly Val Thr Gly Pro Asp Gly Glu Asp Tyr Ser Pro Trp
                165                 170                 175

Ala Asp Arg Lys Ala Ala Gln Pro Lys Ser Leu Ser Pro Pro Gln Ser
            180                 185                 190

Gln Ser Lys Leu Ser Asp Ser Tyr Ser Asn Thr Leu Pro Val Arg Lys
        195                 200                 205

Ser Val Thr Pro Lys Asn Ser Tyr Ala Thr Thr Glu Asn Lys Thr Leu
    210                 215                 220

Pro Arg Ser Ser Ser Met Ala Ala Gly Leu Glu Arg Asn Gly Arg Met
225                 230                 235                 240
```

```
Arg Val Lys Ala Ile Phe Ser His Ala Ala Gly Asp Asn Ser Thr Leu
                245                 250                 255

Leu Ser Phe Lys Glu Gly Asp Leu Ile Thr Leu Leu Val Pro Glu Ala
            260                 265                 270

Arg Asp Gly Trp His Tyr Gly Glu Ser Glu Lys Thr Lys Met Arg Gly
        275                 280                 285

Trp Phe Pro Phe Ser Tyr Thr Arg Val Leu Asp Ser Asp Gly Ser Asp
    290                 295                 300

Arg Leu His Met Ser Leu Gln Gln Gly Lys Ser Ser Ser Thr Gly Asn
305                 310                 315                 320

Leu Leu Asp Lys Asp Asp Leu Ala Ile Pro Pro Pro Asp Tyr Gly Ala
                325                 330                 335

Ala Ser Arg Ala Phe Pro Ala Gln Thr Ala Ser Gly Phe Lys Gln Arg
            340                 345                 350

Pro Tyr Ser Val Ala Val Pro Ala Phe Ser Gln Gly Leu Asp Asp Tyr
        355                 360                 365

Gly Ala Arg Ser Met Ser Arg
    370                 375


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<211> 534
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<223> /note="Uniprot ID: Q9UQB8; "

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<400> 8205

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Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1               5                  10                  15

Tyr Lys Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile
            20                  25                  30

Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala
        35                  40                  45

Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser
    50                  55                  60

Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala
65                  70                  75                  80

Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser
                85                  90                  95

Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp
            100                 105                 110

Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg
        115                 120                 125

Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu
    130                 135                 140

Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys
145                 150                 155                 160

Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu Glu
                165                 170                 175

Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg Arg
            180                 185                 190

Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala Val Ala Lys Asn Ser
        195                 200                 205
```

```
Ala Ala Tyr His Ser Lys Gly Lys Glu Leu Leu Ala Gln Lys Leu Pro
    210                 215                 220

Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser Lys Ile Pro Glu Arg Ala
225                 230                 235                 240

Val Gln Leu Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro Ser
                245                 250                 255

Ala Leu Ser Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile Pro
            260                 265                 270

Gly Ala Lys Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val Gly
        275                 280                 285

Arg Met Ser Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr Gly
    290                 295                 300

Pro Asp Gly Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala Gln
305                 310                 315                 320

Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp Ser
                325                 330                 335

Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn Ser
            340                 345                 350

Tyr Ala Thr Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met Ala
        355                 360                 365

Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile Phe Ser
    370                 375                 380

His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu Gly Asp
385                 390                 395                 400

Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His Tyr Gly
                405                 410                 415

Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser Tyr Thr
            420                 425                 430
```

```
Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser Leu Gln
        435                 440                 445

Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp Asp Leu
    450                 455                 460

Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe Pro Ala
465                 470                 475                 480

Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala Val Pro
                485                 490                 495

Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met Ser Arg
            500                 505                 510

Asn Pro Phe Ala His Val Gln Leu Lys Pro Thr Val Thr Asn Asp Arg
        515                 520                 525

Ser Ala Pro Leu Leu Ser
    530


<210> 8206
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<213> Homo sapiens

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<400> 8206
Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
```

```
1               5                   10                  15

Tyr Lys Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile
            20                  25                  30

Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala
        35                  40                  45

Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser
    50                  55                  60

Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala
65                  70                  75                  80

Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser
                85                  90                  95

Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp
            100                 105                 110

Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg
        115                 120                 125

Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu
    130                 135                 140

Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys
145                 150                 155                 160

Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu Glu
                165                 170                 175

Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg Arg
            180                 185                 190

Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala Val Ala Lys Asn Ser
        195                 200                 205

Ala Ala Tyr His Ser Lys Gly Lys Glu Leu Leu Ala Gln Lys Leu Pro
    210                 215                 220

Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser Lys Ile Pro Glu Arg Ala
225                 230                 235                 240
```

```
Val Gln Leu Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro Ser
                245                 250                 255

Ala Leu Ser Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile Pro
            260                 265                 270

Gly Ala Lys Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val Gly
        275                 280                 285

Arg Met Ser Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr Gly
    290                 295                 300

Pro Asp Gly Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala Gln
305                 310                 315                 320

Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp Ser
                325                 330                 335

Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn Ser
            340                 345                 350

Tyr Ala Thr Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met Ala
        355                 360                 365

Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile Phe Ser
    370                 375                 380

His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu Gly Asp
385                 390                 395                 400

Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His Tyr Gly
                405                 410                 415

Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser Tyr Thr
            420                 425                 430

Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser Leu Gln
        435                 440                 445

Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp Asp Leu
    450                 455                 460
```

```
Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe Pro Ala
465                 470                 475                 480


Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala Val Pro
                485                 490                 495


Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met Ser Ser
            500                 505                 510


Ala Asp Val Glu Val Ala Arg Phe
        515                 520


<210> 8207
<211> 140
<212> PRT
<213> Homo sapiens

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<400> 8207
Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile Ala Met Gly Lys
1               5                   10                  15


Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala Ala Lys Gly Tyr
            20                  25                  30


Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser Glu Ser Gln Gly
        35                  40                  45


Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala Glu Val His Arg
    50                  55                  60


Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser Phe His Asn Glu
```

65 70 75 80

Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu
85 90 95

Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp
100 105 110

Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu Arg Lys Lys Ser
115 120 125

Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys
130 135 140

<210> 8208
<211> 130
<212> PRT
<213> Homo sapiens

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<400> 8208
Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro Ser Ala Leu Ser
1 5 10 15

Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile Pro Gly Ala Lys
20 25 30

Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val Gly Arg Met Ser
35 40 45

Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr Gly Pro Asp Gly
50 55 60

```
Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala Gln Pro Lys Ser
65                  70                  75                  80

Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp Ser Tyr Ser Asn
                85                  90                  95

Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn Ser Tyr Ala Thr
            100                 105                 110

Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met Ala Ala Gly Leu
        115                 120                 125

Glu Arg
    130
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<210> 8209
<211> 79
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<223> /note="ENSP ID: ENSP00000458494"

<400> 8209

```
Met Gly Glu Leu Ala Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp
1               5                   10                  15

Val Leu Phe Gln Met Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu
            20                  25                  30

Glu Glu Met Leu Lys Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu
        35                  40                  45

Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys
```

50 55 60

Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys
65 70 75

<210> 8210
<211> 135
<212> PRT
<213> Homo sapiens

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<400> 8210
Met Gly Glu Leu Ala Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp
1 5 10 15

Val Leu Phe Gln Met Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu
20 25 30

Glu Glu Met Leu Lys Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu
35 40 45

Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys
50 55 60

Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln
65 70 75 80

Ala Glu Leu Lys Lys Leu Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro
85 90 95

Gln Lys Tyr Ser Asp Lys Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn
100 105 110

Lys Gln Gly Glu Leu Glu Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala
115 120 125

Leu Thr Glu Glu Arg Arg Arg
130 135

<210> 8211
<211> 180
<212> PRT
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<223> /note="ENSP ID: ENSP00000458735"

<400> 8211
Met Gly Glu Leu Ala Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp
1 5 10 15

Val Leu Phe Gln Met Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu
20 25 30

Glu Glu Met Leu Lys Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu
35 40 45

Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys
50 55 60

Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln
65 70 75 80

Ala Glu Leu Lys Lys Leu Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro
85 90 95

Gln Lys Tyr Ser Asp Lys Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn

```
            100                 105                 110

Lys Gln Gly Glu Leu Glu Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala
        115                 120                 125

Leu Thr Glu Glu Arg Arg Arg Phe Cys Phe Leu Val Glu Lys Gln Cys
    130                 135                 140

Ala Val Ala Lys Asn Ser Ala Ala Tyr His Ser Lys Gly Lys Glu Leu
145                 150                 155                 160

Leu Ala Gln Lys Leu Pro Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser
                165                 170                 175

Lys Ile Pro Glu
            180


<210> 8212
<211> 512
<212> PRT
<213> Homo sapiens

<220>
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<400> 8212
Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1               5                   10                  15

Tyr Lys Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile
            20                  25                  30
```

```
Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala
        35                  40                  45

Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser
    50                  55                  60

Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala
65                  70                  75                  80

Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser
                85                  90                  95

Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp
            100                 105                 110

Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg
        115                 120                 125

Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu
    130                 135                 140

Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys
145                 150                 155                 160

Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu Glu
                165                 170                 175

Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg Arg
            180                 185                 190

Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala Val Ala Lys Asn Ser
        195                 200                 205

Ala Ala Tyr His Ser Lys Gly Lys Glu Leu Leu Ala Gln Lys Leu Pro
    210                 215                 220

Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser Lys Ile Pro Glu Arg Ala
225                 230                 235                 240

Val Gln Leu Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro Ser
                245                 250                 255
```

```
Ala Leu Ser Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile Pro
            260                 265                 270

Gly Ala Lys Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val Gly
        275                 280                 285

Arg Met Ser Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr Gly
    290                 295                 300

Pro Asp Gly Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala Gln
305                 310                 315                 320

Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp Ser
                325                 330                 335

Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn Ser
            340                 345                 350

Tyr Ala Thr Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met Ala
        355                 360                 365

Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile Phe Ser
    370                 375                 380

His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu Gly Asp
385                 390                 395                 400

Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His Tyr Gly
                405                 410                 415

Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser Tyr Thr
            420                 425                 430

Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser Leu Gln
        435                 440                 445

Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp Asp Leu
    450                 455                 460

Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe Pro Ala
465                 470                 475                 480

Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala Val Pro
```

485 490 495

Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met Ser Arg
500 505 510

<210> 8213
<211> 58
<212> PRT
<213> Homo sapiens

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BAI1-associated prt 2; "

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<400> 8213
Met Gly Glu Leu Ala Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp
1 5 10 15

Val Leu Phe Gln Met Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu
20 25 30

Glu Glu Met Leu Lys Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu
35 40 45

Gln Lys Val Glu Leu Asp Ser Arg Leu Arg
50 55

<210> 8214
<211> 234
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000459787"

<400> 8214

```
Met Gly Glu Leu Ala Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp
1               5                  10                  15

Val Leu Phe Gln Met Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu
            20                  25                  30

Glu Glu Met Leu Lys Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu
        35                  40                  45

Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys
    50                  55                  60

Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln
65                  70                  75                  80

Ala Glu Leu Lys Lys Leu Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro
                85                  90                  95

Gln Lys Tyr Ser Asp Lys Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn
            100                 105                 110

Lys Gln Gly Glu Leu Glu Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala
        115                 120                 125

Leu Thr Glu Glu Arg Arg Arg Phe Cys Phe Leu Val Glu Lys Gln Cys
    130                 135                 140

Ala Val Ala Lys Asn Ser Ala Ala Tyr His Ser Lys Gly Lys Glu Leu
145                 150                 155                 160

Leu Ala Gln Lys Leu Pro Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser
                165                 170                 175

Lys Ile Pro Glu Arg Ala Val Gln Leu Met Gln Gln Val Ala Ser Asn
```

```
            180                 185                 190

Gly Ala Thr Leu Pro Ser Ala Leu Ser Ala Ser Lys Ser Asn Leu Val
        195                 200                 205

Ile Ser Asp Pro Ile Pro Gly Ala Lys Pro Leu Pro Val Pro Pro Glu
    210                 215                 220

Leu Ala Pro Phe Val Gly Arg Met Ser Ala
225                 230


<210> 8215
<211> 175
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1701; "

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<220>
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<223> /note="Gene Name:
      BAI1-associated prt 2; "

<220>
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<400> 8215
Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile Ala Met Gly Lys
1               5                   10                  15

Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala Ala Lys Gly Tyr
            20                  25                  30

Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser Glu Ser Gln Gly
        35                  40                  45

Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala Glu Val His Arg
    50                  55                  60

Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys Ser Phe His Asn Glu
65                  70                  75                  80
```

```
Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu
                85                  90                  95

Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp
            100                 105                 110

Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys Leu Arg Lys Lys Ser
        115                 120                 125

Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp Lys Glu Leu Gln Tyr
    130                 135                 140

Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu Glu Asn Tyr Val Ser
145                 150                 155                 160

Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg Arg Arg Phe Cys
                165                 170                 175


<210> 8216
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000460344"

<400> 8216
Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1               5                   10                  15

Tyr Lys Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe Ile
            20                  25                  30

Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr Ala
```

```
        35                  40                  45

Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala Ser
    50                  55                  60

Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met Ala
65                  70                  75                  80

Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Pro Cys Pro
                85                  90                  95

Ala Ser Cys Ser Gly Ser Met Cys Trp Ser
            100                 105


<210> 8217
<211> 216
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000460350"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8217
Xaa Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp
1               5                   10                  15

Ser Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn
            20                  25                  30

Ser Tyr Ala Thr Thr Ala Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser
```

```
        35                  40                  45

Met Ala Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile
    50                  55                  60

Phe Ser His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu
65                  70                  75                  80

Gly Asp Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His
                85                  90                  95

Tyr Gly Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser
            100                 105                 110

Tyr Thr Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser
        115                 120                 125

Leu Gln Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp
    130                 135                 140

Asp Leu Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe
145                 150                 155                 160

Pro Ala Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala
                165                 170                 175

Val Pro Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met
            180                 185                 190

Ser Arg Asn Pro Phe Ala His Val Gln Leu Lys Pro Thr Val Thr Asn
        195                 200                 205

Asp Arg Ser Ala Pro Leu Leu Ser
    210                 215


<210> 8218
<211> 149
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<221> source
<223> /note="Gene Symbol: BAIAP2; "

<220>
<221> source
<223> /note="Gene Name:
BAI1-associated prt 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460492"

<400> 8218
Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1 5 10 15

Tyr Lys Arg Val Glu Glu Lys Tyr Gln Arg Asn Leu Phe Pro Ile Phe
20 25 30

Ser Pro Ser Ala Leu Lys Pro Glu Ser Arg Asn Phe Arg Gly Glu Ser
35 40 45

Trp Gln Gly Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe
50 55 60

Ile Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr
65 70 75 80

Ala Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala
85 90 95

Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met
100 105 110

Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys
115 120 125

Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu
130 135 140

Asp Ser Arg Leu Arg
145

<210> 8219
<211> 97
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1701; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
BAI1-associated prt 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461101"

<400> 8219
Gln Thr Glu Gln Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala
1 5 10 15

Glu Leu Lys Lys Leu Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln
20 25 30

Lys Tyr Ser Asp Lys Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys
35 40 45

Gln Gly Glu Leu Glu Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu
50 55 60

Thr Glu Glu Arg Arg Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala
65 70 75 80

Val Ala Lys Asn Ser Ala Ala Tyr His Ser Lys Gly Gly Pro Gly Pro
85 90 95

Val

<210> 8220
<211> 553
<212> PRT
<213> Homo sapiens

<220>
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<220>

<221> source
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<220>
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<223> /note="Gene Name:
BAI1-associated prt 2; "

<220>
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<223> /note="ENSP ID: ENSP00000461144"

<400> 8220

```
Met Ser Leu Ser Arg Ser Glu Glu Met His Arg Leu Thr Glu Asn Val
1               5                  10                  15

Tyr Lys Arg Val Glu Glu Lys Tyr Gln Arg Asn Leu Phe Pro Ile Phe
            20                  25                  30

Ser Pro Ser Ala Leu Lys Pro Glu Ser Arg Asn Phe Arg Gly Glu Ser
        35                  40                  45

Trp Gln Gly Thr Ile Met Glu Gln Phe Asn Pro Ser Leu Arg Asn Phe
    50                  55                  60

Ile Ala Met Gly Lys Asn Tyr Glu Lys Ala Leu Ala Gly Val Thr Tyr
65                  70                  75                  80

Ala Ala Lys Gly Tyr Phe Asp Ala Leu Val Lys Met Gly Glu Leu Ala
                85                  90                  95

Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp Val Leu Phe Gln Met
            100                 105                 110

Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu Glu Glu Met Leu Lys
        115                 120                 125

Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu Gln Lys Val Glu Leu
    130                 135                 140

Asp Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys Tyr Gln Thr Glu Gln
145                 150                 155                 160

Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln Ala Glu Leu Lys Lys
                165                 170                 175
```

```
Leu Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro Gln Lys Tyr Ser Asp
            180                 185                 190

Lys Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn Lys Gln Gly Glu Leu
        195                 200                 205

Glu Asn Tyr Val Ser Asp Gly Tyr Lys Thr Ala Leu Thr Glu Glu Arg
    210                 215                 220

Arg Arg Phe Cys Phe Leu Val Glu Lys Gln Cys Ala Val Ala Lys Asn
225                 230                 235                 240

Ser Ala Ala Tyr His Ser Lys Gly Lys Glu Leu Leu Ala Gln Lys Leu
                245                 250                 255

Pro Leu Trp Gln Gln Ala Cys Ala Asp Pro Ser Lys Ile Pro Glu Arg
            260                 265                 270

Ala Val Gln Leu Met Gln Gln Val Ala Ser Asn Gly Ala Thr Leu Pro
        275                 280                 285

Ser Ala Leu Ser Ala Ser Lys Ser Asn Leu Val Ile Ser Asp Pro Ile
    290                 295                 300

Pro Gly Ala Lys Pro Leu Pro Val Pro Pro Glu Leu Ala Pro Phe Val
305                 310                 315                 320

Gly Arg Met Ser Ala Gln Glu Ser Thr Pro Ile Met Asn Gly Val Thr
                325                 330                 335

Gly Pro Asp Gly Glu Asp Tyr Ser Pro Trp Ala Asp Arg Lys Ala Ala
            340                 345                 350

Gln Pro Lys Ser Leu Ser Pro Pro Gln Ser Gln Ser Lys Leu Ser Asp
        355                 360                 365

Ser Tyr Ser Asn Thr Leu Pro Val Arg Lys Ser Val Thr Pro Lys Asn
    370                 375                 380

Ser Tyr Ala Thr Thr Glu Asn Lys Thr Leu Pro Arg Ser Ser Ser Met
385                 390                 395                 400

Ala Ala Gly Leu Glu Arg Asn Gly Arg Met Arg Val Lys Ala Ile Phe
```

405 410 415

Ser His Ala Ala Gly Asp Asn Ser Thr Leu Leu Ser Phe Lys Glu Gly
420 425 430

Asp Leu Ile Thr Leu Leu Val Pro Glu Ala Arg Asp Gly Trp His Tyr
435 440 445

Gly Glu Ser Glu Lys Thr Lys Met Arg Gly Trp Phe Pro Phe Ser Tyr
450 455 460

Thr Arg Val Leu Asp Ser Asp Gly Ser Asp Arg Leu His Met Ser Leu
465 470 475 480

Gln Gln Gly Lys Ser Ser Ser Thr Gly Asn Leu Leu Asp Lys Asp Asp
485 490 495

Leu Ala Ile Pro Pro Pro Asp Tyr Gly Ala Ala Ser Arg Ala Phe Pro
500 505 510

Ala Gln Thr Ala Ser Gly Phe Lys Gln Arg Pro Tyr Ser Val Ala Val
515 520 525

Pro Ala Phe Ser Gln Gly Leu Asp Asp Tyr Gly Ala Arg Ser Met Ser
530 535 540

Ser Ala Asp Val Glu Val Ala Arg Phe
545 550

<210> 8221
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1701; "

<220>
<221> source
<223> /note="Gene Symbol: BAIAP2; "

<220>
<221> source
<223> /note="Gene Name:
BAI1-associated prt 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461736"

<400> 8221
Met Gly Glu Leu Ala Ser Glu Ser Gln Gly Ser Lys Glu Leu Gly Asp
1   5   10   15

Val Leu Phe Gln Met Ala Glu Val His Arg Gln Ile Gln Asn Gln Leu
            20   25   30

Glu Glu Met Leu Lys Ser Phe His Asn Glu Leu Leu Thr Gln Leu Glu
        35   40   45

Gln Lys Val Glu Leu Asp Ser Arg Tyr Leu Ser Ala Ala Leu Lys Lys
    50   55   60

Tyr Gln Thr Glu Gln Arg Ser Lys Gly Asp Ala Leu Asp Lys Cys Gln
65   70   75   80

Ala Glu Leu Lys Lys Leu Arg Lys Lys Ser Gln Gly Ser Lys Asn Pro
                85   90   95

Gln Lys Tyr Ser Asp Lys Glu Leu Gln Tyr Ile Asp Ala Ile Ser Asn
            100   105   110

Lys Gln

<210> 8222
<211> 511
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1702; "

<220>
<221> source
<223> /note="Gene Symbol: BAIAP2L1; "

<220>
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<223> /note="Gene Name:
      BAI1-associated prt 2-like 1; "

<220>
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<223> /note="Uniprot ID: Q9UHR4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000005260"

<400> 8222
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Met Ser Arg Gly Pro Glu Glu Val Asn Arg Leu Thr Glu Ser Thr Tyr
1               5                  10                  15

Arg Asn Val Met Glu Gln Phe Asn Pro Gly Leu Arg Asn Leu Ile Asn
            20                  25                  30

Leu Gly Lys Asn Tyr Glu Lys Ala Val Asn Ala Met Ile Leu Ala Gly
        35                  40                  45

Lys Ala Tyr Tyr Asp Gly Val Ala Lys Ile Gly Glu Ile Ala Thr Gly
    50                  55                  60

Ser Pro Val Ser Thr Glu Leu Gly His Val Leu Ile Glu Ile Ser Ser
65                  70                  75                  80

Thr His Lys Lys Leu Asn Glu Ser Leu Asp Glu Asn Phe Lys Lys Phe
                85                  90                  95

His Lys Glu Ile Ile His Glu Leu Glu Lys Lys Ile Glu Leu Asp Val
            100                 105                 110

Lys Tyr Met Asn Ala Thr Leu Lys Arg Tyr Gln Thr Glu His Lys Asn
        115                 120                 125

Lys Leu Glu Ser Leu Glu Lys Ser Gln Ala Glu Leu Lys Lys Ile Arg
    130                 135                 140

Arg Lys Ser Gln Gly Ser Arg Asn Ala Leu Lys Tyr Glu His Lys Glu
145                 150                 155                 160

Ile Glu Tyr Val Glu Thr Val Thr Ser Arg Gln Ser Glu Ile Gln Lys
                165                 170                 175

Phe Ile Ala Asp Gly Cys Lys Glu Ala Leu Leu Glu Glu Lys Arg Arg
            180                 185                 190

Phe Cys Phe Leu Val Asp Lys His Cys Gly Phe Ala Asn His Ile His
        195                 200                 205
```

```
Tyr Tyr His Leu Gln Ser Ala Glu Leu Leu Asn Ser Lys Leu Pro Arg
    210                 215                 220

Trp Gln Glu Thr Cys Val Asp Ala Ile Lys Val Pro Glu Lys Ile Met
225                 230                 235                 240

Asn Met Ile Glu Glu Ile Lys Thr Pro Ala Ser Thr Pro Val Ser Gly
                245                 250                 255

Thr Pro Gln Ala Ser Pro Met Ile Glu Arg Ser Asn Val Val Arg Lys
            260                 265                 270

Asp Tyr Asp Thr Leu Ser Lys Cys Ser Pro Lys Met Pro Pro Ala Pro
        275                 280                 285

Ser Gly Arg Ala Tyr Thr Ser Pro Leu Ile Asp Met Phe Asn Asn Pro
    290                 295                 300

Ala Thr Ala Ala Pro Asn Ser Gln Arg Val Asn Asn Ser Thr Gly Thr
305                 310                 315                 320

Ser Glu Asp Pro Ser Leu Gln Arg Ser Val Ser Val Ala Thr Gly Leu
                325                 330                 335

Asn Met Met Lys Lys Gln Lys Val Lys Thr Ile Phe Pro His Thr Ala
            340                 345                 350

Gly Ser Asn Lys Thr Leu Leu Ser Phe Ala Gln Gly Asp Val Ile Thr
        355                 360                 365

Leu Leu Ile Pro Glu Glu Lys Asp Gly Trp Leu Tyr Gly Glu His Asp
    370                 375                 380

Val Ser Lys Ala Arg Gly Trp Phe Pro Ser Ser Tyr Thr Lys Leu Leu
385                 390                 395                 400

Glu Glu Asn Glu Thr Glu Ala Val Thr Val Pro Thr Pro Ser Pro Thr
                405                 410                 415

Pro Val Arg Ser Ile Ser Thr Val Asn Leu Ser Glu Asn Ser Ser Val
            420                 425                 430
```

```
Val Ile Pro Pro Pro Asp Tyr Leu Glu Cys Leu Ser Met Gly Ala Ala
        435                 440                 445

Ala Asp Arg Arg Ala Asp Ser Ala Arg Thr Thr Ser Thr Phe Lys Ala
    450                 455                 460

Pro Ala Ser Lys Pro Glu Thr Ala Ala Pro Asn Asp Ala Asn Gly Thr
465                 470                 475                 480

Ala Lys Pro Pro Phe Leu Ser Gly Glu Asn Pro Phe Ala Thr Val Lys
                485                 490                 495

Leu Arg Pro Thr Val Thr Asn Asp Arg Ser Ala Pro Ile Ile Arg
            500                 505                 510


<210> 8223
<211> 515
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1703; "

<220>
<221> source
<223> /note="Gene Symbol: BAIAP2L2; "

<220>
<221> source
<223> /note="Gene Name:
      BAI1-associated prt 2-like 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6UXY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000328876"

<400> 8223
Met Ala Pro Glu Met Asp Gln Phe Tyr Arg Ser Thr Met Ala Ile Tyr
1               5                   10                  15

Lys Ser Ile Met Glu Gln Phe Asn Pro Ala Leu Glu Asn Leu Val Tyr
            20                  25                  30

Leu Gly Asn Asn Tyr Leu Arg Ala Phe His Ala Leu Ser Glu Ala Ala
```

```
        35                  40                  45

Glu Val Tyr Phe Ser Ala Ile Gln Lys Ile Gly Glu Arg Ala Leu Gln
    50                  55                  60

Ser Pro Thr Ser Gln Ile Leu Gly Glu Ile Leu Val Gln Met Ser Asp
65                  70                  75                  80

Thr Gln Arg His Leu Asn Ser Asp Leu Glu Val Val Val Gln Thr Phe
                85                  90                  95

His Gly Gly Leu Leu Gln His Met Glu Lys Asn Thr Lys Leu Asp Met
            100                 105                 110

Gln Phe Ile Lys Asp Ser Arg Gln His Tyr Glu Leu Glu Tyr Arg His
        115                 120                 125

Arg Ala Ala Asn Leu Glu Lys Cys Met Ser Glu Leu Trp Arg Met Glu
    130                 135                 140

Arg Lys Arg Asp Lys Asn Val Arg Glu Met Lys Glu Ser Val Asn Arg
145                 150                 155                 160

Leu His Ala Gln Met Gln Ala Phe Val Ser Glu Ser Gln Arg Ala Ala
                165                 170                 175

Glu Leu Glu Glu Lys Arg Arg Tyr Arg Phe Leu Ala Glu Lys His Leu
            180                 185                 190

Leu Leu Ser Asn Thr Phe Leu Gln Phe Phe Gly Arg Ala Arg Gly Met
        195                 200                 205

Leu Gln Asn Arg Val Leu Leu Trp Lys Glu Gln Ser Glu Ala Ser Arg
    210                 215                 220

Ser Pro Ser Arg Ala His Ser Pro Gly Leu Leu Gly Pro Ala Leu Gly
225                 230                 235                 240

Pro Pro Tyr Pro Ser Gly Arg Leu Thr Pro Thr Cys Leu Asp Met Pro
                245                 250                 255

Pro Arg Pro Leu Gly Glu Phe Ser Ser Pro Arg Ser Arg His Gly Ser
            260                 265                 270
```

```
Gly Ser Tyr Gly Thr Glu Pro Asp Ala Arg Pro Ala Ser Gln Leu Glu
        275                 280                 285

Pro Asp Arg Arg Ser Leu Pro Arg Thr Pro Ser Ala Ser Ser Leu Tyr
    290                 295                 300

Ser Gly Ser Ala Gln Ser Ser Arg Ser Asn Ser Phe Gly Glu Arg Pro
305                 310                 315                 320

Gly Gly Gly Gly Gly Ala Arg Arg Val Arg Ala Leu Val Ser His Ser
                325                 330                 335

Glu Gly Ala Asn His Thr Leu Leu Arg Phe Ser Ala Gly Asp Val Val
            340                 345                 350

Glu Val Leu Val Pro Glu Ala Gln Asn Gly Trp Leu Tyr Gly Lys Leu
        355                 360                 365

Glu Gly Ser Ser Ala Ser Gly Trp Phe Pro Glu Ala Tyr Val Lys Ala
    370                 375                 380

Leu Glu Glu Gly Pro Val Asn Pro Met Thr Pro Val Thr Pro Met Thr
385                 390                 395                 400

Ser Met Thr Ser Met Ser Pro Met Thr Pro Met Asn Pro Gly Asn Glu
                405                 410                 415

Leu Pro Ser Arg Ser Tyr Pro Leu Arg Gly Ser His Ser Leu Asp Asp
            420                 425                 430

Leu Leu Asp Arg Pro Gly Asn Ser Thr Pro Ser Arg Val Pro Ser Arg
        435                 440                 445

Ala Pro Ser Pro Ala Pro Pro Pro Leu Pro Ser Ser Arg Arg Ser Ser
    450                 455                 460

Met Gly Ser Thr Ala Val Ala Thr Asp Val Lys Lys Leu Met Ser Ser
465                 470                 475                 480

Glu Gln Tyr Pro Pro Gln Glu Leu Phe Pro Arg Gly Thr Asn Pro Phe
                485                 490                 495
```

```
Ala Thr Val Lys Leu Arg Pro Thr Ile Thr Asn Asp Arg Ser Ala Pro
            500                 505                 510

Leu Ile Arg
        515

<210> 8224
<211> 529
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1703; "

<220>
<221> source
<223> /note="Gene Symbol: BAIAP2L2; "

<220>
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<223> /note="Gene Name:
      BAI1-associated prt 2-like 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6UXY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371085"

<400> 8224
Met Ala Pro Glu Met Asp Gln Phe Tyr Arg Ser Thr Met Ala Ile Tyr
1               5                  10                  15

Lys Ser Ile Met Glu Gln Phe Asn Pro Ala Leu Glu Asn Leu Val Tyr
            20                  25                  30

Leu Gly Asn Asn Tyr Leu Arg Ala Phe His Ala Leu Ser Glu Ala Ala
        35                  40                  45

Glu Val Tyr Phe Ser Ala Ile Gln Lys Ile Gly Glu Arg Ala Leu Gln
    50                  55                  60

Ser Pro Thr Ser Gln Ile Leu Gly Glu Ile Leu Val Gln Met Ser Asp
65                  70                  75                  80

Thr Gln Arg His Leu Asn Ser Asp Leu Glu Val Val Val Gln Thr Phe
```

```
                85                  90                  95

His Gly Gly Leu Leu Gln His Met Glu Lys Asn Thr Lys Leu Asp Met
            100                 105                 110

Gln Phe Ile Lys Asp Ser Arg Gln His Tyr Glu Leu Glu Tyr Arg His
        115                 120                 125

Arg Ala Ala Asn Leu Glu Lys Cys Met Ser Glu Leu Trp Arg Met Glu
    130                 135                 140

Arg Lys Arg Asp Lys Asn Val Arg Glu Met Lys Glu Ser Val Asn Arg
145                 150                 155                 160

Leu His Ala Gln Met Gln Ala Phe Val Ser Glu Ser Gln Arg Ala Ala
                165                 170                 175

Glu Leu Glu Glu Lys Arg Arg Tyr Arg Phe Leu Ala Glu Lys His Leu
            180                 185                 190

Leu Leu Ser Asn Thr Phe Leu Gln Phe Phe Gly Arg Ala Arg Gly Met
        195                 200                 205

Leu Gln Asn Arg Val Leu Leu Trp Lys Glu Gln Ser Glu Ala Ser Arg
    210                 215                 220

Ser Pro Ser Arg Ala His Ser Pro Gly Leu Leu Gly Pro Ala Leu Gly
225                 230                 235                 240

Pro Pro Tyr Pro Ser Gly Arg Leu Thr Pro Thr Cys Leu Asp Met Pro
                245                 250                 255

Pro Arg Pro Leu Gly Glu Phe Ser Ser Pro Arg Ser Arg His Gly Ser
            260                 265                 270

Gly Ser Tyr Gly Thr Glu Pro Asp Ala Arg Pro Ala Ser Gln Leu Glu
        275                 280                 285

Pro Asp Arg Arg Ser Leu Pro Arg Thr Pro Ser Ala Ser Ser Leu Tyr
    290                 295                 300

Ser Gly Ser Ala Gln Ser Ser Arg Ser Asn Ser Phe Gly Glu Arg Pro
305                 310                 315                 320
```

Gly Gly Gly Gly Gly Ala Arg Arg Val Arg Ala Leu Val Ser His Ser
325 330 335

Glu Gly Ala Asn His Thr Leu Leu Arg Phe Ser Ala Gly Asp Val Val
340 345 350

Glu Val Leu Val Pro Glu Ala Gln Asn Gly Trp Leu Tyr Gly Lys Leu
355 360 365

Glu Gly Ser Ser Ala Ser Gly Trp Phe Pro Glu Ala Tyr Val Lys Ala
370 375 380

Leu Glu Glu Gly Pro Val Asn Pro Met Thr Pro Val Thr Pro Met Thr
385 390 395 400

Ser Met Thr Ser Met Ser Pro Met Thr Pro Met Asn Pro Gly Asn Glu
405 410 415

Leu Pro Ser Arg Ser Tyr Pro Leu Arg Gly Ser His Ser Leu Asp Asp
420 425 430

Leu Leu Asp Arg Pro Gly Asn Ser Ile Ala Pro Ser Glu Tyr Trp Asp
435 440 445

Gly Gln Ser Arg Ser Arg Thr Pro Ser Arg Val Pro Ser Arg Ala Pro
450 455 460

Ser Pro Ala Pro Pro Pro Leu Pro Ser Ser Arg Arg Ser Ser Met Gly
465 470 475 480

Ser Thr Ala Val Ala Thr Asp Val Lys Lys Leu Met Ser Ser Glu Gln
485 490 495

Tyr Pro Pro Gln Glu Leu Phe Pro Arg Gly Thr Asn Pro Phe Ala Thr
500 505 510

Val Lys Leu Arg Pro Thr Ile Thr Asn Asp Arg Ser Ala Pro Leu Ile
515 520 525

Arg

<210> 8225
<211> 196
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1703; "

<220>
<221> source
<223> /note="Gene Symbol: BAIAP2L2; "

<220>
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<223> /note="Gene Name:
BAI1-associated prt 2-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410074"

<400> 8225
Ser Ser Arg Ser Asn Ser Phe Gly Glu Arg Pro Gly Gly Gly Gly Gly
1 5 10 15

Ala Arg Arg Val Arg Ala Leu Val Ser His Ser Glu Gly Ala Asn His
20 25 30

Thr Leu Leu Arg Phe Ser Ala Gly Asp Val Val Glu Val Leu Val Pro
35 40 45

Glu Ala Gln Asn Gly Trp Leu Tyr Gly Lys Leu Glu Gly Ser Ser Ala
50 55 60

Ser Gly Trp Phe Pro Glu Ala Tyr Val Lys Ala Leu Glu Glu Gly Pro
65 70 75 80

Val Asn Pro Met Thr Pro Val Thr Pro Met Thr Ser Met Thr Ser Met
85 90 95

Ser Pro Met Thr Pro Met Asn Pro Gly Asn Glu Leu Pro Ser Arg Ser
100 105 110

Tyr Pro Leu Arg Gly Ser His Ser Leu Asp Asp Leu Leu Asp Arg Pro
115 120 125

Gly Asn Ser Ile Ala Pro Ser Glu Tyr Trp Asp Gly Gln Ser Arg Ser

```
    130                 135                 140

Arg Thr Pro Ser Arg Val Pro Ser Arg Ala Pro Ser Pro Ala Pro Pro
145                 150                 155                 160

Pro Leu Pro Ser Ser Arg Arg Ser Ser Met Gly Ser Thr Ala Val Ala
                165                 170                 175

Thr Asp Val Lys Gly His Lys Ser Phe Cys His Cys Gln Ala Ser Ser
            180                 185                 190

His His His Gln
        195


<210> 8226
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Met Arg Pro Arg Gly Ala Ala Phe Ala Ala Gly Pro Pro Gly Asp Leu
1               5                   10                  15

His Leu Gly Thr Ala Ile Gly Phe Ala Gly Ala Ile Trp Arg Ser Arg
            20                  25                  30

Ser Pro Ala Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg
        35                  40                  45
```

```
Gln Val Gln Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro
    50                  55                  60

Gly Ser Ala Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys
65                  70                  75                  80

Pro Gly Asp Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys
                85                  90                  95

Lys Gly Glu Gly Arg Gln Gly Leu Pro Cys Leu Glu Val Pro Leu Arg
            100                 105                 110

Ser Gly Ser Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu
        115                 120                 125

Arg Ala Leu Ala Pro Glu Glu Val Glu Met Leu Tyr Glu Glu Ala Leu
    130                 135                 140

Tyr Thr Val Leu Tyr Arg Ala Gly Thr Met Gly Pro Asp Gln Val Asp
145                 150                 155                 160

Asp Glu Glu Ala Leu Leu Ser Tyr Leu Gln Gln Val Phe Gly Thr Ser
                165                 170                 175

Leu Glu Glu His Thr Glu Ala Ile Glu Arg Val Arg Lys Ala Lys Ala
            180                 185                 190

Pro Thr Tyr Ala Leu Lys Val Ser Val Met Arg Ala Lys Asn Leu Leu
        195                 200                 205

Ala Lys Asp Pro Asn Gly Phe Ser Asp Pro Tyr Cys Met Leu Gly Ile
    210                 215                 220

Leu Pro Ala Ser Asp Ala Thr Arg Glu Pro Arg Ala Gln Lys Glu Gln
225                 230                 235                 240

Arg Phe Gly Phe Arg Lys Gly Ser Lys Arg Gly Gly Pro Leu Pro Ala
                245                 250                 255

Lys Cys Ile Gln Val Thr Glu Val Lys Ser Ser Thr Leu Asn Pro Val
            260                 265                 270
```

```
Trp Lys Glu His Phe Leu Phe Glu Ile Glu Asp Val Ser Thr Asp Gln
        275                 280                 285

Leu His Leu Asp Ile Trp Asp His Asp Asp Asp Val Ser Leu Val Glu
    290                 295                 300

Ala Cys Arg Lys Leu Asn Glu Val Ile Gly Leu Lys Gly Met Gly Arg
305                 310                 315                 320

Tyr Phe Lys Gln Ile Val Lys Ser Ala Arg Ala Asn Gly Thr Ala Gly
                325                 330                 335

Pro Thr Glu Asp His Thr Asp Asp Phe Leu Gly Cys Leu Asn Ile Pro
            340                 345                 350

Val Arg Glu Val Pro Val Ala Gly Val Asp Arg Trp Phe Lys Leu Glu
        355                 360                 365

Pro Arg Ser Ser Ala Ser Arg Val Gln Gly His Cys His Leu Val Leu
    370                 375                 380

Lys Leu Ile Thr Thr Gln Arg Asp Thr Ala Met Ser Gln Arg Gly Arg
385                 390                 395                 400

Ser Gly Phe Leu Ser His Leu Leu Leu Leu Ser His Leu Leu Arg Leu
                405                 410                 415

Glu His Ser Ala Glu Glu Pro Asn Ser Ser Ser Trp Arg Gly Glu Leu
            420                 425                 430

Ser Thr Pro Ala Ala Thr Ile Leu Cys Leu His Gly Ala Gln Ser Asn
        435                 440                 445

Leu Ser Pro Leu Gln Leu Ala Val Leu His Trp Gln Val Ser Ser Arg
    450                 455                 460

His His Gln Thr Cys Thr Leu Asp Tyr Ser Tyr Leu Leu Gly Leu Leu
465                 470                 475                 480

Glu Asp Met Gln Ala His Trp Glu Glu Ala Pro Ser Leu Pro Gln Glu
                485                 490                 495

Gln Glu Glu Ser Leu Ala Asp Ser Leu Ser Ala Phe Ser Glu Phe Gly
```

```
            500                 505                 510

Leu Gln Leu Leu Arg Gln Leu Arg Asp Tyr Phe Pro Ala Thr Asn Ser
        515                 520                 525

Thr Ala Val His Arg Leu Glu Leu Leu Leu Lys Cys Leu Gly Lys Leu
    530                 535                 540

Gln Leu Phe Gln Pro Ser Phe Glu Ile Cys Pro Phe Glu Ser Glu Leu
545                 550                 555                 560

Asn Met Asp Ile Ala Ala Ala Leu Lys Arg Gly Asn Arg Glu Trp Tyr
                565                 570                 575

Asp Arg Ile Leu Asn Asp Lys Ser Pro Arg Glu Gln Pro Gly Pro Gln
            580                 585                 590

Arg Leu Pro Gly Leu Val Val Leu Ala Asp Ala Val Tyr Asp Asp Leu
        595                 600                 605

Gln Phe Cys Tyr Ser Val Tyr Ala Ser Leu Phe His Ser Ile Leu Asn
    610                 615                 620

Val Asp Val Phe Thr Leu Thr Phe Arg Gln Leu Glu Arg Leu Val Ala
625                 630                 635                 640

Glu Glu Ala Trp Val Leu Thr Glu Glu Leu Ser Pro Lys Met Thr Leu
                645                 650                 655

Glu Val Ala Ser Gly Leu Phe Glu Leu Tyr Leu Thr Leu Ala Asp Leu
            660                 665                 670

Gln Arg Phe Trp Asp Ser Ile Pro Gly Arg Asp Ser Arg Ser Leu Ala
        675                 680                 685

Leu Ala Gly Ile His Ala Pro Phe Leu Pro Ala Val Lys Leu Trp Phe
    690                 695                 700

Gln Val Leu Arg Asp Gln Ala Lys Trp Arg Leu Gln Gly Ala Val Asp
705                 710                 715                 720

Met Asp Thr Leu Glu Pro Val Asp Ala Ser Ser Arg His Ser Ser Ser
                725                 730                 735
```

```
Ala Ala Thr Ala Gly Leu Cys Leu Ser His Ile Gln Glu Leu Trp Val
            740                 745                 750

Arg Leu Ala Trp Pro Asp Pro Ala Gln Ala Gln Gly Leu Gly Thr Gln
        755                 760                 765

Leu Gly Gln Asp Val Cys Glu Ala Thr Leu Phe Tyr Thr Glu Leu Leu
    770                 775                 780

Arg Lys Lys Val Asp Thr Gln Pro Gly Ala Ala Gly Glu Ala Val Ser
785                 790                 795                 800

Glu Ala Leu Cys Val Val Leu Asn Asn Val Glu Leu Val Arg Lys Ala
                805                 810                 815

Ala Gly Gln Ala Leu Lys Gly Leu Ala Trp Pro Glu Gly Ala Thr Gly
            820                 825                 830

Pro Glu Gly Val Leu Pro Arg Pro Leu Leu Ser Cys Thr Gln Ala Leu
        835                 840                 845

Asp Asp Asp Leu Gln Arg Glu Ala His Thr Val Thr Ala His Leu Thr
    850                 855                 860

Ser Lys Met Val Gly Asp Ile Arg Lys Tyr Val Gln His Ile Ser Leu
865                 870                 875                 880

Ser Pro Asp Ser Ile Gln Asn Asp Glu Ala Val Ala Pro Leu Met Lys
                885                 890                 895

Tyr Leu Asp Glu Lys Leu Ala Leu Leu Asn Ala Ser Leu Val Lys Gly
            900                 905                 910

Asn Leu Ser Arg Val Leu Glu Ala Leu Trp Glu Leu Leu Leu Gln Ala
        915                 920                 925

Ile Leu Gln Ala Leu Gly Ala Asn Arg Asp Val Ser Ala Asp Phe Tyr
    930                 935                 940

Ser Arg Phe His Phe Thr Leu Glu Ala Leu Val Ser Phe Phe His Ala
945                 950                 955                 960
```

```
Glu Gly Gln Gly Leu Pro Leu Glu Ser Leu Arg Asp Gly Ser Tyr Lys
               965                 970                 975

Arg Leu Lys Glu Glu Leu Arg Leu His Lys Cys Ser Thr Arg Glu Cys
           980                 985                 990

Ile Glu Gln Phe Tyr Leu Asp Lys  Leu Lys Gln Arg Thr  Leu Glu
Gln
        995                 1000                1005

Asn Arg  Phe Gly Arg Leu Ser  Val Arg Cys His Tyr  Glu Ala Ala
    1010                1015                1020

Glu Gln  Arg Leu Ala Val Glu  Val Leu His Ala Ala  Asp Leu Leu
    1025                1030                1035

Pro Leu  Asp Ala Asn Gly Leu  Ser Asp Pro Phe Val  Ile Val Glu
    1040                1045                1050

Leu Gly  Pro Pro His Leu Phe  Pro Leu Val Arg Ser  Gln Arg Thr
    1055                1060                1065

Gln Val  Lys Thr Arg Thr Leu  His Pro Val Tyr Asp  Glu Leu Phe
    1070                1075                1080

Tyr Phe  Ser Val Pro Ala Glu  Ala Cys Arg Arg Arg  Ala Ala Cys
    1085                1090                1095

Val Leu  Phe Thr Val Met Asp  His Asp Trp Leu Ser  Thr Asn Asp
    1100                1105                1110

Phe Ala  Gly Glu Ala Ala Leu  Gly Leu Gly Gly Val  Thr Gly Val
    1115                1120                1125

Ala Arg  Pro Gln Val Gly Gly  Gly Ala Arg Ala Gly  Gln Pro Val
    1130                1135                1140

Thr Leu  His Leu Cys Arg Pro  Arg Ala Gln Val Arg  Ser Ala Leu
    1145                1150                1155

Arg Arg  Leu Glu Gly Arg Thr  Ser Lys Glu Ala Gln  Glu Phe Val
    1160                1165                1170
```

Lys Lys Leu Lys Glu Leu Glu Lys Cys Met Glu Ala Asp Pro
1175 1180 1185

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BAI1-associated prt 3; "

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Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg Gln Val Gln
1 5 10 15

Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro Gly Ser Ala
20 25 30

Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys Pro Gly Asp
35 40 45

Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys Lys Gly Glu
50 55 60

Gly Arg Gln Gly Leu Pro Cys Leu Glu Ala Trp Gly Ser Pro Cys Arg
65 70 75 80

Gln Ser Pro His Pro Gly Pro His Thr Gln Val Pro Leu Arg Ser Gly
85 90 95

Ser Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu Arg Ala

```
            100                 105                 110

Leu Ala Pro Glu Glu Val Glu Met Leu Tyr Glu Glu Ala Leu Tyr Thr
        115                 120                 125

Val Leu Tyr Arg Ala Gly Thr Met Gly Pro Asp Gln Val Asp Asp Glu
    130                 135                 140

Glu Ala Leu Leu Ser Tyr Leu Gln Gln Val Phe Gly Thr Ser Leu Glu
145                 150                 155                 160

Glu His Thr Glu Ala Ile Glu Arg Val Arg Lys Ala Lys Ala Pro Thr
                165                 170                 175

Tyr Ala Leu Lys Val Ser Val Met Arg Ala Lys Asn Leu Leu Ala Lys
            180                 185                 190

Asp Pro Asn Gly Phe Ser Asp Pro Tyr Cys Met Leu Gly Ile Leu Pro
        195                 200                 205

Ala Ser Asp Ala Thr Arg Glu Pro Arg Ala Gln Lys Glu Gln Arg Phe
    210                 215                 220

Gly Phe Arg Lys Gly Ser Lys Arg Gly Gly Pro Leu Pro Ala Lys Cys
225                 230                 235                 240

Ile Gln Val Thr Glu Val Lys Ser Ser Thr Leu Asn Pro Val Trp Lys
                245                 250                 255

Glu His Phe Leu Phe Glu Ile Glu Asp Val Ser Thr Asp Gln Leu His
            260                 265                 270

Leu Asp Ile Trp Asp His Asp Asp Asp Val Ser Leu Val Glu Ala Cys
        275                 280                 285

Arg Lys Leu Asn Glu Val Ile Gly Leu Lys Gly Met Gly Arg Tyr Phe
    290                 295                 300

Lys Gln Ile Val Lys Ser Ala Arg Ala Asn Gly Thr Ala Gly Pro Thr
305                 310                 315                 320

Glu Asp His Thr Asp Asp Phe Leu Gly Cys Leu Asn Ile Pro Val Arg
                325                 330                 335
```

```
Glu Val Pro Val Ala Gly Val Asp Arg Trp Phe Lys Leu Glu Pro Arg
            340                 345                 350

Ser Ser Ala Ser Arg Val Gln Gly His Cys His Leu Val Leu Lys Leu
        355                 360                 365

Ile Thr Thr Gln Arg Asp Thr Ala Met Ser Gln Arg Gly Arg Ser Gly
    370                 375                 380

Phe Leu Ser His Leu Leu Leu Leu Ser His Leu Leu Arg Leu Glu His
385                 390                 395                 400

Ser Ala Glu Glu Pro Asn Ser Ser Ser Trp Arg Gly Glu Leu Ser Thr
                405                 410                 415

Pro Ala Ala Thr Ile Leu Cys Leu His Gly Ala Gln Ser Asn Leu Ser
            420                 425                 430

Pro Leu Gln Leu Ala Val Leu His Trp Gln Val Ser Ser Arg His His
        435                 440                 445

Gln Thr Cys Thr Leu Asp Tyr Ser Tyr Leu Leu Gly Leu Leu Glu Asp
    450                 455                 460

Met Gln Ala His Trp Glu Glu Ala Pro Ser Leu Pro Gln Glu Gln Glu
465                 470                 475                 480

Glu Ser Leu Ala Asp Ser Leu Ser Ala Phe Ser Glu Phe Gly Leu Gln
                485                 490                 495

Leu Leu Arg Gln Leu Arg Asp Tyr Phe Pro Ala Thr Asn Ser Thr Ala
            500                 505                 510

Val His Arg Leu Glu Leu Leu Leu Lys Cys Leu Gly Lys Leu Gln Leu
        515                 520                 525

Phe Gln Pro Ser Phe Glu Ile Cys Pro Phe Glu Ser Glu Leu Asn Met
    530                 535                 540

Asp Ile Ala Ala Ala Leu Lys Arg Gly Asn Arg Glu Trp Tyr Asp Arg
545                 550                 555                 560
```

```
Ile Leu Asn Asp Lys Ser Pro Arg Glu Gln Pro Gly Pro Gln Arg Leu
                565                 570                 575

Pro Gly Leu Val Val Leu Ala Asp Ala Val Tyr Asp Asp Leu Gln Phe
            580                 585                 590

Cys Tyr Ser Val Tyr Ala Ser Leu Phe His Ser Ile Leu Asn Val Asp
        595                 600                 605

Val Phe Thr Leu Thr Phe Arg Gln Leu Glu Arg Leu Val Ala Glu Glu
    610                 615                 620

Ala Trp Val Leu Thr Glu Glu Leu Ser Pro Lys Met Thr Leu Glu Val
625                 630                 635                 640

Ala Ser Gly Leu Phe Glu Leu Tyr Leu Thr Leu Ala Asp Leu Gln Arg
                645                 650                 655

Phe Trp Asp Ser Ile Pro Gly Arg Asp Ser Arg Ser Leu Ala Leu Ala
            660                 665                 670

Gly Ile His Ala Pro Phe Leu Pro Ala Val Lys Leu Trp Phe Gln Val
        675                 680                 685

Leu Arg Asp Gln Ala Lys Trp Arg Leu Gln Gly Ala Val Asp Met Asp
    690                 695                 700

Thr Leu Glu Pro Val Asp Ala Ser Ser Arg His Ser Ser Ser Ala Ala
705                 710                 715                 720

Thr Ala Gly Leu Cys Leu Ser His Ile Gln Glu Leu Trp Val Arg Leu
                725                 730                 735

Ala Trp Pro Asp Pro Ala Gln Ala Gln Gly Leu Gly Thr Gln Leu Gly
            740                 745                 750

Gln Asp Val Cys Glu Ala Thr Leu Phe Tyr Thr Glu Leu Leu Arg Lys
        755                 760                 765

Lys Val Asp Thr Gln Pro Gly Ala Ala Gly Glu Ala Val Ser Glu Ala
    770                 775                 780
```

```
Leu Cys Val Val Leu Asn Asn Val Glu Leu Val Arg Lys Ala Ala Gly
785                 790                 795                 800

Gln Ala Leu Lys Gly Leu Ala Trp Pro Glu Gly Ala Thr Gly Pro Glu
                805                 810                 815

Gly Val Leu Pro Arg Pro Leu Leu Ser Cys Thr Gln Ala Leu Asp Asp
            820                 825                 830

Asp Leu Gln Arg Glu Ala His Thr Val Thr Ala His Leu Thr Ser Lys
        835                 840                 845

Met Val Gly Asp Ile Arg Lys Tyr Val Gln His Ile Ser Leu Ser Pro
    850                 855                 860

Asp Ser Ile Gln Asn Asp Glu Ala Val Ala Pro Leu Met Lys Tyr Leu
865                 870                 875                 880

Asp Glu Lys Leu Ala Leu Leu Asn Ala Ser Leu Val Lys Gly Asn Leu
                885                 890                 895

Ser Arg Val Leu Glu Ala Leu Trp Glu Leu Leu Leu Gln Ala Ile Leu
            900                 905                 910

Gln Ala Leu Gly Ala Asn Arg Asp Val Ser Ala Asp Phe Tyr Ser Arg
        915                 920                 925

Phe His Phe Thr Leu Glu Ala Leu Val Ser Phe Phe His Ala Glu Gly
    930                 935                 940

Gln Gly Leu Pro Leu Glu Ser Leu Arg Asp Gly Ser Tyr Lys Arg Leu
945                 950                 955                 960

Lys Glu Glu Leu Arg Leu His Lys Cys Ser Thr Arg Glu Cys Ile Glu
                965                 970                 975

Gln Phe Tyr Leu Asp Lys Leu Lys Gln Arg Thr Leu Glu Gln Asn Arg
            980                 985                 990

Phe Gly Arg Leu Ser Val Arg Cys  His Tyr Glu Ala Ala  Glu Gln
Arg
        995                 1000                1005
```

```
Leu Ala  Val Glu Val Leu His  Ala Ala Asp Leu Leu  Pro Leu Asp
    1010                1015                1020

Ala Asn  Gly Leu Ser Asp Pro  Phe Val Ile Val Glu  Leu Gly Pro
    1025                1030                1035

Pro His  Leu Phe Pro Leu Val  Arg Ser Gln Arg Thr  Gln Val Lys
    1040                1045                1050

Thr Arg  Thr Leu His Pro Val  Tyr Asp Glu Leu Phe  Tyr Phe Ser
    1055                1060                1065

Val Pro  Ala Glu Ala Cys Arg  Arg Arg Ala Ala Cys  Val Leu Phe
    1070                1075                1080

Thr Val  Met Asp His Asp Trp  Leu Ser Thr Asn Asp  Phe Ala Gly
    1085                1090                1095

Glu Ala  Ala Leu Gly Leu Gly  Gly Val Thr Gly Val  Ala Arg Pro
    1100                1105                1110

Gln Val  Gly Gly Gly Ala Arg  Ala Gly Gln Pro Val  Thr Leu His
    1115                1120                1125

Leu Cys  Arg Pro Arg Ala Gln  Val Arg Ser Ala Leu  Arg Arg Leu
    1130                1135                1140

Glu Gly  Arg Thr Ser Lys Glu  Ala Gln Glu Phe Val  Lys Lys Leu
    1145                1150                1155

Lys Glu  Leu Glu Lys Cys Met  Glu Ala Asp Pro
    1160                1165
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<210> 8228
<211> 1152
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<223> /note="ENSP ID: ENSP00000407242"

<400> 8228

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Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg Gln Val Gln
1               5                  10                  15

Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro Gly Ser Ala
            20                  25                  30

Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys Pro Gly Asp
        35                  40                  45

Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys Lys Gly Glu
    50                  55                  60

Gly Arg Gln Gly Leu Pro Cys Leu Glu Val Pro Leu Arg Ser Gly Ser
65                  70                  75                  80

Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu Arg Ala Leu
                85                  90                  95

Ala Pro Glu Glu Val Glu Met Leu Tyr Glu Glu Ala Leu Tyr Thr Val
            100                 105                 110

Leu Tyr Arg Ala Gly Thr Met Gly Pro Asp Gln Val Asp Asp Glu Glu
        115                 120                 125

Ala Leu Leu Ser Tyr Leu Gln Gln Val Phe Gly Thr Ser Leu Glu Glu
    130                 135                 140

His Thr Glu Ala Ile Glu Arg Val Arg Lys Ala Lys Ala Pro Thr Tyr
145                 150                 155                 160

Ala Leu Lys Val Ser Val Met Arg Ala Lys Asn Leu Leu Ala Lys Asp
                165                 170                 175
```

```
Pro Asn Gly Phe Ser Asp Pro Tyr Cys Met Leu Gly Ile Leu Pro Ala
            180                 185                 190

Ser Asp Ala Thr Arg Glu Pro Arg Ala Gln Lys Glu Gln Arg Phe Gly
        195                 200                 205

Phe Arg Lys Gly Ser Lys Arg Gly Gly Pro Leu Pro Ala Lys Cys Ile
    210                 215                 220

Gln Val Thr Glu Val Lys Ser Ser Thr Leu Asn Pro Val Trp Lys Glu
225                 230                 235                 240

His Phe Leu Phe Glu Ile Glu Asp Val Ser Thr Asp Gln Leu His Leu
                245                 250                 255

Asp Ile Trp Asp His Asp Asp Asp Val Ser Leu Val Glu Ala Cys Arg
            260                 265                 270

Lys Leu Asn Glu Val Ile Gly Leu Lys Gly Met Gly Arg Tyr Phe Lys
        275                 280                 285

Gln Ile Val Lys Ser Ala Arg Ala Asn Gly Thr Ala Gly Pro Thr Glu
    290                 295                 300

Asp His Thr Asp Asp Phe Leu Gly Cys Leu Asn Ile Pro Val Arg Glu
305                 310                 315                 320

Val Pro Val Ala Gly Val Asp Arg Trp Phe Lys Leu Glu Pro Arg Ser
                325                 330                 335

Ser Ala Ser Arg Val Gln Gly His Cys His Leu Val Leu Lys Leu Ile
            340                 345                 350

Thr Thr Gln Arg Asp Thr Ala Met Ser Gln Arg Gly Arg Ser Gly Phe
        355                 360                 365

Leu Ser His Leu Leu Leu Leu Ser His Leu Leu Arg Leu Glu His Ser
    370                 375                 380

Ala Glu Glu Pro Asn Ser Ser Ser Trp Arg Gly Glu Leu Ser Thr Pro
385                 390                 395                 400
```

```
Ala Ala Thr Ile Leu Cys Leu His Gly Ala Gln Ser Asn Leu Ser Pro
                405                 410                 415

Leu Gln Leu Ala Val Leu His Trp Gln Val Ser Ser Arg His His Gln
            420                 425                 430

Thr Cys Thr Leu Asp Tyr Ser Tyr Leu Leu Gly Leu Leu Glu Asp Met
        435                 440                 445

Gln Ala His Trp Glu Glu Ala Pro Ser Leu Pro Gln Glu Gln Glu Glu
    450                 455                 460

Ser Leu Ala Asp Ser Leu Ser Ala Phe Ser Glu Phe Gly Leu Gln Leu
465                 470                 475                 480

Leu Arg Gln Leu Arg Asp Tyr Phe Pro Ala Thr Asn Ser Thr Ala Val
                485                 490                 495

His Arg Leu Glu Leu Leu Leu Lys Cys Leu Gly Lys Leu Gln Leu Phe
            500                 505                 510

Gln Pro Ser Phe Glu Ile Cys Pro Phe Glu Ser Glu Leu Asn Met Asp
        515                 520                 525

Ile Ala Ala Ala Leu Lys Arg Gly Asn Arg Glu Trp Tyr Asp Arg Ile
    530                 535                 540

Leu Asn Asp Lys Ser Pro Arg Glu Gln Pro Gly Pro Gln Arg Leu Pro
545                 550                 555                 560

Gly Leu Val Val Leu Ala Asp Ala Val Tyr Asp Asp Leu Gln Phe Cys
                565                 570                 575

Tyr Ser Val Tyr Ala Ser Leu Phe His Ser Ile Leu Asn Val Asp Val
            580                 585                 590

Phe Thr Leu Thr Phe Arg Gln Leu Glu Arg Leu Val Ala Glu Glu Ala
        595                 600                 605

Trp Val Leu Thr Glu Glu Leu Ser Pro Lys Met Thr Leu Glu Val Ala
    610                 615                 620

Ser Gly Leu Phe Glu Leu Tyr Leu Thr Leu Ala Asp Leu Gln Arg Phe
```

625 630 635 640

Trp Asp Ser Ile Pro Gly Arg Asp Ser Arg Ser Leu Ala Leu Ala Gly
645 650 655

Ile His Ala Pro Phe Leu Pro Ala Val Lys Leu Trp Phe Gln Val Leu
660 665 670

Arg Asp Gln Ala Lys Trp Arg Leu Gln Gly Ala Val Asp Met Asp Thr
675 680 685

Leu Glu Pro Val Asp Ala Ser Ser Arg His Ser Ser Ser Ala Ala Thr
690 695 700

Ala Gly Leu Cys Leu Ser His Ile Gln Glu Leu Trp Val Arg Leu Ala
705 710 715 720

Trp Pro Asp Pro Ala Gln Ala Gln Gly Leu Gly Thr Gln Leu Gly Gln
725 730 735

Asp Val Cys Glu Ala Thr Leu Phe Tyr Thr Glu Leu Leu Arg Lys Lys
740 745 750

Val Asp Thr Gln Pro Gly Ala Ala Gly Glu Ala Val Ser Glu Ala Leu
755 760 765

Cys Val Val Leu Asn Asn Val Glu Leu Val Arg Lys Ala Ala Gly Gln
770 775 780

Ala Leu Lys Gly Leu Ala Trp Pro Glu Gly Ala Thr Gly Pro Glu Gly
785 790 795 800

Val Leu Pro Arg Pro Leu Leu Ser Cys Thr Gln Ala Leu Asp Asp Asp
805 810 815

Leu Gln Arg Glu Ala His Thr Val Thr Ala His Leu Thr Ser Lys Met
820 825 830

Val Gly Asp Ile Arg Lys Tyr Val Gln His Ile Ser Leu Ser Pro Asp
835 840 845

Ser Ile Gln Asn Asp Glu Ala Val Ala Pro Leu Met Lys Tyr Leu Asp
850 855 860

```
Glu Lys Leu Ala Leu Leu Asn Ala Ser Leu Val Lys Gly Asn Leu Ser
865                 870                 875                 880

Arg Val Leu Glu Ala Leu Trp Glu Leu Leu Leu Gln Ala Ile Leu Gln
                885                 890                 895

Ala Leu Gly Ala Asn Arg Asp Val Ser Ala Asp Phe Tyr Ser Arg Phe
            900                 905                 910

His Phe Thr Leu Glu Ala Leu Val Ser Phe Phe His Ala Glu Gly Gln
        915                 920                 925

Gly Leu Pro Leu Glu Ser Leu Arg Asp Gly Ser Tyr Lys Arg Leu Lys
    930                 935                 940

Glu Glu Leu Arg Leu His Lys Cys Ser Thr Arg Glu Cys Ile Glu Gln
945                 950                 955                 960

Phe Tyr Leu Asp Lys Leu Lys Gln Arg Thr Leu Glu Gln Asn Arg Phe
                965                 970                 975

Gly Arg Leu Ser Val Arg Cys His Tyr Glu Ala Ala Glu Gln Arg Leu
            980                 985                 990

Ala Val Glu Val Leu His Ala Ala  Asp Leu Leu Pro Leu  Asp Ala
Asn
        995                 1000                1005

Gly Leu  Ser Asp Pro Phe Val  Ile Val Glu Leu Gly  Pro Pro His
    1010                1015                1020

Leu Phe  Pro Leu Val Arg Ser  Gln Arg Thr Gln Val  Lys Thr Arg
    1025                1030                1035

Thr Leu  His Pro Val Tyr Asp  Glu Leu Phe Tyr Phe  Ser Val Pro
    1040                1045                1050

Ala Glu  Ala Cys Arg Arg Arg  Ala Ala Cys Val Leu  Phe Thr Val
    1055                1060                1065

Met Asp  His Asp Trp Leu Ser  Thr Asn Asp Phe Ala  Gly Glu Ala
    1070                1075                1080
```

```
Ala Leu  Gly Leu Gly Gly Val  Thr Gly Val Ala Arg  Pro Gln Val
    1085                1090                1095


Gly Gly  Gly Ala Arg Ala Gly  Gln Pro Val Thr Leu  His Leu Cys
    1100                1105                1110


Arg Pro  Arg Ala Gln Val Arg  Ser Ala Leu Arg Arg  Leu Glu Gly
    1115                1120                1125


Arg Thr  Ser Lys Glu Ala Gln  Glu Phe Val Lys Lys  Leu Lys Glu
    1130                1135                1140


Leu Glu  Lys Cys Met Glu Ala  Asp Pro
    1145                1150


<210> 8229
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Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg Gln Val Gln
1               5                  10                  15


Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro Gly Ser Ala
            20                  25                  30
```

```
Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys Pro Gly Asp
        35                  40                  45

Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys Lys Gly Glu
    50                  55                  60

Gly Arg Gln Gly Leu Pro Cys Leu Glu Val Pro Leu Arg Ser Gly Ser
65                  70                  75                  80

Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu Arg Ala Leu
                85                  90                  95

Ala Pro Glu Glu Val Glu Met Leu Tyr Glu Glu Ala Leu Tyr Thr Val
            100                 105                 110

Leu Tyr Arg Ala Gly Thr Met Gly Pro Asp Gln Val Asp Asp Glu Glu
        115                 120                 125

Ala Leu Leu Ser Tyr Leu Gln Gln Val Phe Gly Thr Ser Leu Glu Glu
    130                 135                 140

His Thr Glu Ala Ile Glu Arg Val Arg Lys Ala Lys Ala Pro Thr Tyr
145                 150                 155                 160

Ala Leu Lys Val Ser Val Met Arg Ala Lys Asn Leu Leu Ala Lys Asp
                165                 170                 175

Pro Asn Gly Phe Ser Asp Pro Tyr Cys Met Leu Gly Ile Leu Pro Ala
            180                 185                 190

Ser Asp Ala Thr Arg Glu Pro Arg Ala Gln Lys Glu Gln Arg Phe Gly
        195                 200                 205

Phe Arg Lys Gly Ser Lys Arg Gly Gly Pro Leu Pro Ala Lys Cys Ile
    210                 215                 220

Gln Val Thr Glu Val Lys Ser Ser Thr Leu Asn Pro Val Trp Lys Glu
225                 230                 235                 240

His Phe Leu Phe Glu Ile Glu Asp Val Ser Thr Asp Gln Leu His Leu
                245                 250                 255

Asp Ile Trp Asp His Asp Asp Asp Val Ser Leu Val Glu Ala Cys Arg
```

260 265 270

Lys Leu Asn Glu Val Ile Gly Leu Lys Gly Met Gly Arg Tyr Phe Lys
275 280 285

Gln Ile Val Lys Ser Ala Arg Ala Asn Gly Thr Ala Gly Pro Thr Glu
290 295 300

Asp His Thr Asp Asp Phe Leu Gly Cys Leu Asn Ile Pro Val Arg Arg
305 310 315 320

Asp Thr Ala Met Ser Gln Arg Gly Arg Ser Gly Phe Leu Ser His Leu
325 330 335

Leu Leu Leu Ser His Leu Leu Arg Leu Glu His Ser Ala Glu Glu Pro
340 345 350

Asn Ser Ser Ser Trp Arg Gly Glu Leu Ser Thr Pro Ala Ala Thr Ile
355 360 365

Leu Cys Leu His Gly Ala Gln Ser Asn Leu Ser Pro Leu Gln Leu Ala
370 375 380

Val Leu His Trp Gln Val Ser Ser Arg His His Gln Thr Cys Thr Leu
385 390 395 400

Asp Tyr Ser Tyr Leu Leu Gly Leu Leu Glu Asp Met Gln Ala His Trp
405 410 415

Glu Glu Ala Pro Ser Leu Pro Gln Glu Gln Glu Glu Ser Leu Ala Asp
420 425 430

Ser Leu Ser Ala Phe Ser Glu Phe Gly Leu Gln Leu Leu Arg Gln Leu
435 440 445

Arg Asp Tyr Phe Pro Ala Thr Asn Ser Thr Ala Val His Arg Leu Glu
450 455 460

Leu Leu Leu Lys Cys Leu Gly Lys Leu Gln Leu Phe Gln Pro Ser Phe
465 470 475 480

Glu Ile Cys Pro Phe Glu Ser Glu Leu Asn Met Asp Ile Ala Ala Ala
485 490 495

```
Leu Lys Arg Gly Asn Arg Glu Trp Tyr Asp Arg Ile Leu Asn Asp Lys
            500                 505                 510

Ser Pro Arg Glu Gln Pro Gly Pro Gln Arg Leu Pro Gly Leu Val Val
        515                 520                 525

Leu Ala Asp Ala Val Tyr Asp Asp Leu Gln Phe Cys Tyr Ser Val Tyr
    530                 535                 540

Ala Ser Leu Phe His Ser Ile Leu Asn Val Asp Val Phe Thr Leu Thr
545                 550                 555                 560

Phe Arg Gln Leu Glu Arg Leu Val Ala Glu Glu Ala Trp Val Leu Thr
                565                 570                 575

Glu Glu Leu Ser Pro Lys Met Thr Leu Glu Val Ala Ser Gly Leu Phe
            580                 585                 590

Glu Leu Tyr Leu Thr Leu Ala Asp Leu Gln Arg Phe Trp Asp Ser Ile
        595                 600                 605

Pro Gly Arg Asp Ser Arg Ser Leu Ala Leu Ala Gly Ile His Ala Pro
    610                 615                 620

Phe Leu Pro Ala Val Lys Leu Trp Phe Gln Val Leu Arg Asp Gln Ala
625                 630                 635                 640

Lys Trp Arg Leu Gln Gly Ala Val Asp Met Asp Thr Leu Glu Pro Val
                645                 650                 655

Asp Ala Ser Ser Arg His Ser Ser Ser Ala Ala Thr Ala Gly Leu Cys
            660                 665                 670

Leu Ser His Ile Gln Glu Leu Trp Val Arg Leu Ala Trp Pro Asp Pro
        675                 680                 685

Ala Gln Ala Gln Gly Leu Gly Thr Gln Leu Gly Gln Asp Val Cys Glu
    690                 695                 700

Ala Thr Leu Phe Tyr Thr Glu Leu Leu Arg Lys Lys Val Asp Thr Gln
705                 710                 715                 720
```

```
Pro Gly Ala Ala Gly Glu Ala Val Ser Glu Ala Leu Cys Val Val Leu
                725                 730                 735

Asn Asn Val Glu Leu Val Arg Lys Ala Ala Gly Gln Ala Leu Lys Gly
            740                 745                 750

Leu Ala Trp Pro Glu Gly Ala Thr Gly Pro Glu Gly Val Leu Pro Arg
        755                 760                 765

Pro Leu Leu Ser Cys Thr Gln Ala Leu Asp Asp Asp Leu Gln Arg Glu
    770                 775                 780

Ala His Thr Val Thr Ala His Leu Thr Ser Lys Met Val Gly Asp Ile
785                 790                 795                 800

Arg Lys Tyr Val Gln His Ile Ser Leu Ser Pro Asp Ser Ile Gln Asn
                805                 810                 815

Asp Glu Ala Val Ala Pro Leu Met Lys Tyr Leu Asp Glu Lys Leu Ala
            820                 825                 830

Leu Leu Asn Ala Ser Leu Val Lys Gly Asn Leu Ser Arg Val Leu Glu
        835                 840                 845

Ala Leu Trp Glu Leu Leu Leu Gln Ala Ile Leu Gln Ala Leu Gly Ala
    850                 855                 860

Asn Arg Asp Val Ser Ala Asp Phe Tyr Ser Arg Phe His Phe Thr Leu
865                 870                 875                 880

Glu Ala Leu Val Ser Phe Phe His Ala Glu Gly Gln Gly Leu Pro Leu
                885                 890                 895

Glu Ser Leu Arg Asp Gly Ser Tyr Lys Arg Leu Lys Glu Glu Leu Arg
            900                 905                 910

Leu His Lys Cys Ser Thr Arg Glu Cys Ile Glu Gln Phe Tyr Leu Asp
        915                 920                 925

Lys Leu Lys Gln Arg Thr Leu Glu Gln Asn Arg Phe Gly Arg Leu Ser
    930                 935                 940
```

```
Val Arg Cys His Tyr Glu Ala Ala Glu Gln Arg Leu Ala Val Glu Val
945                 950                 955                 960

Leu His Ala Ala Asp Leu Leu Pro Leu Asp Ala Asn Gly Leu Ser Asp
                965                 970                 975

Pro Phe Val Ile Val Glu Leu Gly Pro Pro His Leu Phe Pro Leu Val
            980                 985                 990

Arg Ser Gln Arg Thr Gln Val Lys  Thr Arg Thr Leu His  Pro Val
Tyr
        995                 1000                1005

Asp Glu  Leu Phe Tyr Phe Ser  Val Pro Ala Glu Ala  Cys Arg Arg
    1010                1015                1020

Arg Ala  Ala Cys Val Leu Phe  Thr Val Met Asp His  Asp Trp Leu
    1025                1030                1035

Ser Thr  Asn Asp Phe Ala Gly  Glu Ala Ala Leu Gly  Leu Gly Gly
    1040                1045                1050

Val Thr  Gly Val Ala Arg Pro  Gln Val Gly Gly Gly  Ala Arg Ala
    1055                1060                1065

Gly Gln  Pro Val Thr Leu His  Leu Cys Arg Pro Arg  Ala Gln Val
    1070                1075                1080

Arg Ser  Ala Leu Arg Arg Leu  Glu Gly Arg Thr Ser  Lys Glu Ala
    1085                1090                1095

Gln Glu  Phe Val Lys Lys Leu  Lys Glu Leu Glu Lys  Cys Met Glu
    1100                1105                1110

Ala Asp  Pro
    1115
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<210> 8230
<211> 191
<212> PRT
<213> Homo sapiens

<220>
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<220>
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BAI1-associated prt 3; "

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<222> (1)..(1)
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<400> 8230
Xaa Tyr Thr Glu Leu Leu Arg Lys Lys Val Asp Thr Gln Pro Gly Ala
1 5 10 15

Ala Gly Glu Ala Val Ser Glu Ala Leu Cys Val Val Leu Asn Asn Val
20 25 30

Glu Leu Val Arg Lys Ala Ala Gly Gln Ala Leu Lys Gly Leu Ala Trp
35 40 45

Pro Glu Gly Ala Thr Gly Pro Glu Gly Val Leu Pro Arg Pro Leu Leu
50 55 60

Ser Cys Thr Gln Ala Leu Asp Asp Asp Leu Gln Arg Glu Ala His Thr
65 70 75 80

Val Thr Ala His Leu Thr Ser Lys Met Val Gly Asp Ile Arg Lys Tyr
85 90 95

Val Gln His Ile Ser Leu Ser Pro Asp Ser Ile Gln Asn Asp Glu Ala
100 105 110

Val Ala Pro Leu Met Lys Tyr Leu Asp Glu Lys Leu Ala Leu Leu Asn
115 120 125

Ala Ser Leu Val Lys Gly Asn Leu Ser Ser Arg Phe His Phe Thr Leu
130 135 140

```
Glu Ala Leu Val Ser Phe Phe His Ala Glu Gly Gln Gly Leu Pro Leu
145                 150                 155                 160


Glu Ser Leu Arg Asp Gly Ser Tyr Lys Arg Leu Lys Glu Glu Leu Arg
                165                 170                 175


Leu His Lys Cys Ser Thr Arg Glu Cys Ile Glu Gln Phe Tyr Leu
            180                 185                 190


<210> 8231
<211> 1124
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000457644"

<400> 8231
Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg Gln Val Gln
1               5                   10                  15


Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro Gly Ser Ala
            20                  25                  30


Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys Pro Gly Asp
        35                  40                  45


Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys Lys Gly Glu
    50                  55                  60


Gly Arg Gln Gly Leu Pro Cys Leu Glu Val Pro Leu Arg Ser Gly Ser
65                  70                  75                  80
```

```
Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu Arg Ala Leu
                85                  90                  95

Ala Pro Glu Glu Ala Leu Leu Ser Tyr Leu Gln Gln Val Phe Gly Thr
            100                 105                 110

Ser Leu Glu Glu His Thr Glu Ala Ile Glu Arg Val Arg Lys Ala Lys
        115                 120                 125

Ala Pro Thr Tyr Ala Leu Lys Val Ser Val Met Arg Ala Lys Asn Leu
    130                 135                 140

Leu Ala Lys Asp Pro Asn Gly Phe Ser Asp Pro Tyr Cys Met Leu Gly
145                 150                 155                 160

Ile Leu Pro Ala Ser Asp Ala Thr Arg Glu Pro Arg Ala Gln Lys Glu
                165                 170                 175

Gln Arg Phe Gly Phe Arg Lys Gly Ser Lys Arg Gly Gly Pro Leu Pro
            180                 185                 190

Ala Lys Cys Ile Gln Val Thr Glu Val Lys Ser Ser Thr Leu Asn Pro
        195                 200                 205

Val Trp Lys Glu His Phe Leu Phe Glu Ile Glu Asp Val Ser Thr Asp
    210                 215                 220

Gln Leu His Leu Asp Ile Trp Asp His Asp Asp Asp Val Ser Leu Val
225                 230                 235                 240

Glu Ala Cys Arg Lys Leu Asn Glu Val Ile Gly Leu Lys Gly Met Gly
                245                 250                 255

Arg Tyr Phe Lys Gln Ile Val Lys Ser Ala Arg Ala Asn Gly Thr Ala
            260                 265                 270

Gly Pro Thr Glu Asp His Thr Asp Asp Phe Leu Gly Cys Leu Asn Ile
        275                 280                 285

Pro Val Arg Glu Val Pro Val Ala Gly Val Asp Arg Trp Phe Lys Leu
    290                 295                 300
```

```
Glu Pro Arg Ser Ser Ala Ser Arg Val Gln Gly His Cys His Leu Val
305                 310                 315                 320

Leu Lys Leu Ile Thr Thr Gln Arg Asp Thr Ala Met Ser Gln Arg Gly
                325                 330                 335

Arg Ser Gly Phe Leu Ser His Leu Leu Leu Leu Ser His Leu Leu Arg
            340                 345                 350

Leu Glu His Ser Ala Glu Glu Pro Asn Ser Ser Ser Trp Arg Gly Glu
        355                 360                 365

Leu Ser Thr Pro Ala Ala Thr Ile Leu Cys Leu His Gly Ala Gln Ser
    370                 375                 380

Asn Leu Ser Pro Leu Gln Leu Ala Val Leu His Trp Gln Val Ser Ser
385                 390                 395                 400

Arg His His Gln Thr Cys Thr Leu Asp Tyr Ser Tyr Leu Leu Gly Leu
                405                 410                 415

Leu Glu Asp Met Gln Ala His Trp Glu Glu Ala Pro Ser Leu Pro Gln
            420                 425                 430

Glu Gln Glu Glu Ser Leu Ala Asp Ser Leu Ser Ala Phe Ser Glu Phe
        435                 440                 445

Gly Leu Gln Leu Leu Arg Gln Leu Arg Asp Tyr Phe Pro Ala Thr Asn
    450                 455                 460

Ser Thr Ala Val His Arg Leu Glu Leu Leu Leu Lys Cys Leu Gly Lys
465                 470                 475                 480

Leu Gln Leu Phe Gln Pro Ser Phe Glu Ile Cys Pro Phe Glu Ser Glu
                485                 490                 495

Leu Asn Met Asp Ile Ala Ala Ala Leu Lys Arg Gly Asn Arg Glu Trp
            500                 505                 510

Tyr Asp Arg Ile Leu Asn Asp Lys Ser Pro Arg Glu Gln Pro Gly Pro
        515                 520                 525
```

```
Gln Arg Leu Pro Gly Leu Val Val Leu Ala Asp Ala Val Tyr Asp Asp
    530                 535                 540

Leu Gln Phe Cys Tyr Ser Val Tyr Ala Ser Leu Phe His Ser Ile Leu
545                 550                 555                 560

Asn Val Asp Val Phe Thr Leu Thr Phe Arg Gln Leu Glu Arg Leu Val
                565                 570                 575

Ala Glu Glu Ala Trp Val Leu Thr Glu Glu Leu Ser Pro Lys Met Thr
            580                 585                 590

Leu Glu Val Ala Ser Gly Leu Phe Glu Leu Tyr Leu Thr Leu Ala Asp
        595                 600                 605

Leu Gln Arg Phe Trp Asp Ser Ile Pro Gly Arg Asp Ser Arg Ser Leu
    610                 615                 620

Ala Leu Ala Gly Ile His Ala Pro Phe Leu Pro Ala Val Lys Leu Trp
625                 630                 635                 640

Phe Gln Val Leu Arg Asp Gln Ala Lys Trp Arg Leu Gln Gly Ala Val
                645                 650                 655

Asp Met Asp Thr Leu Glu Pro Val Asp Ala Ser Ser Arg His Ser Ser
            660                 665                 670

Ser Ala Ala Thr Ala Gly Leu Cys Leu Ser His Ile Gln Glu Leu Trp
        675                 680                 685

Val Arg Leu Ala Trp Pro Asp Pro Ala Gln Ala Gln Gly Leu Gly Thr
    690                 695                 700

Gln Leu Gly Gln Asp Val Cys Glu Ala Thr Leu Phe Tyr Thr Glu Leu
705                 710                 715                 720

Leu Arg Lys Lys Val Asp Thr Gln Pro Gly Ala Ala Gly Glu Ala Val
                725                 730                 735

Ser Glu Ala Leu Cys Val Val Leu Asn Asn Val Glu Leu Val Arg Lys
            740                 745                 750

Ala Ala Gly Gln Ala Leu Lys Gly Leu Ala Trp Pro Glu Gly Ala Thr
```

```
        755                 760                 765

Gly Pro Glu Gly Val Leu Pro Arg Pro Leu Leu Ser Cys Thr Gln Ala
    770                 775                 780

Leu Asp Asp Asp Leu Gln Arg Glu Ala His Thr Val Thr Ala His Leu
785                 790                 795                 800

Thr Ser Lys Met Val Gly Asp Ile Arg Lys Tyr Val Gln His Ile Ser
                805                 810                 815

Leu Ser Pro Asp Ser Ile Gln Asn Asp Glu Ala Val Ala Pro Leu Met
            820                 825                 830

Lys Tyr Leu Asp Glu Lys Leu Ala Leu Leu Asn Ala Ser Leu Val Lys
        835                 840                 845

Gly Asn Leu Ser Arg Val Leu Glu Ala Leu Trp Glu Leu Leu Leu Gln
    850                 855                 860

Ala Ile Leu Gln Ala Leu Gly Ala Asn Arg Asp Val Ser Ala Asp Phe
865                 870                 875                 880

Tyr Ser Arg Phe His Phe Thr Leu Glu Ala Leu Val Ser Phe Phe His
                885                 890                 895

Ala Glu Gly Gln Gly Leu Pro Leu Glu Ser Leu Arg Asp Gly Ser Tyr
            900                 905                 910

Lys Arg Leu Lys Glu Glu Leu Arg Leu His Lys Cys Ser Thr Arg Glu
        915                 920                 925

Cys Ile Glu Gln Phe Tyr Leu Asp Lys Leu Lys Gln Arg Thr Leu Glu
    930                 935                 940

Gln Asn Arg Phe Gly Arg Leu Ser Val Arg Cys His Tyr Glu Ala Ala
945                 950                 955                 960

Glu Gln Arg Leu Ala Val Glu Val Leu His Ala Ala Asp Leu Leu Pro
                965                 970                 975

Leu Asp Ala Asn Gly Leu Ser Asp Pro Phe Val Ile Val Glu Leu Gly
            980                 985                 990
```

```
Pro Pro His Leu Phe Pro Leu Val  Arg Ser Gln Arg Thr  Gln Val
Lys
        995                 1000                1005


Thr Arg  Thr Leu His Pro Val  Tyr Asp Glu Leu Phe  Tyr Phe Ser
    1010                1015                1020


Val Pro  Ala Glu Ala Cys Arg  Arg Arg Ala Ala Cys  Val Leu Phe
    1025                1030                1035


Thr Val  Met Asp His Asp Trp  Leu Ser Thr Asn Asp  Phe Ala Gly
    1040                1045                1050


Glu Ala  Ala Leu Gly Leu Gly  Gly Val Thr Gly Val  Ala Arg Pro
    1055                1060                1065


Gln Val  Gly Gly Gly Ala Arg  Ala Gly Gln Pro Val  Thr Leu His
    1070                1075                1080


Leu Cys  Arg Pro Arg Ala Gln  Val Arg Ser Ala Leu  Arg Arg Leu
    1085                1090                1095


Glu Gly  Arg Thr Ser Lys Glu  Ala Gln Glu Phe Val  Lys Lys Leu
    1100                1105                1110


Lys Glu  Leu Glu Lys Cys Met  Glu Ala Asp Pro
    1115                1120


<210> 8232
<211> 217
<212> PRT
<213> Homo sapiens

<220>
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      BAI1-associated prt 3; "
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<220>
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<223> Any amino acid

<400> 8232
Xaa Tyr Ser Val Tyr Ala Ser Leu Phe His Ser Ile Leu Asn Val Asp
1 5 10 15

Val Phe Thr Leu Thr Phe Arg Gln Leu Glu Arg Leu Val Ala Glu Glu
20 25 30

Ala Trp Val Leu Thr Glu Glu Leu Ser Pro Lys Met Thr Leu Glu Val
35 40 45

Ala Ser Gly Leu Phe Glu Leu Tyr Leu Thr Leu Ala Asp Leu Gln Arg
50 55 60

Phe Trp Asp Ser Ile Pro Gly Arg Asp Ser Arg Ser Leu Ala Leu Ala
65 70 75 80

Gly Ile His Ala Pro Phe Leu Pro Ala Val Lys Leu Trp Phe Gln Val
85 90 95

Leu Arg Asp Gln Ala Lys Trp Arg Leu Gln Gly Ala Val Asp Met Asp
100 105 110

Thr Leu Glu Pro Val Asp Ala Ser Ser Arg His Ser Ser Ser Ala Ala
115 120 125

Thr Ala Gly Leu Cys Leu Ser His Ile Gln Glu Leu Trp Val Arg Leu
130 135 140

Ala Trp Pro Asp Pro Ala Gln Ala Gln Gly Leu Gly Thr Gln Leu Gly
145 150 155 160

Gln Asp Val Cys Glu Ala Thr Leu Phe Tyr Thr Glu Leu Leu Arg Lys
165 170 175

Lys Val Asp Thr Gln Pro Gly Ala Ala Gly Glu Ala Val Ser Glu Ala
180 185 190

Leu Cys Val Val Leu Asn Asn Val Glu Leu Val Arg Lys Ala Ala Gly
195 200 205

Gln Ala His Leu Cys Pro Ser Cys Leu
210 215

<210> 8233
<211> 1129
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: O94812; "

<220>
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<400> 8233
Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg Gln Val Gln
1 5 10 15

Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro Gly Ser Ala
20 25 30

Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys Pro Gly Asp
35 40 45

Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys Lys Gly Glu
50 55 60

Gly Arg Gln Gly Leu Pro Cys Leu Glu Val Pro Leu Arg Ser Gly Ser
65 70 75 80

```
Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu Arg Ala Leu
                85                  90                  95

Ala Pro Glu Glu Val Asp Asp Glu Glu Ala Leu Leu Ser Tyr Leu Gln
            100                 105                 110

Gln Val Phe Gly Thr Ser Leu Glu Glu His Thr Glu Ala Ile Glu Arg
        115                 120                 125

Val Arg Lys Ala Lys Ala Pro Thr Tyr Ala Leu Lys Val Ser Val Met
    130                 135                 140

Arg Ala Lys Asn Leu Leu Ala Lys Asp Pro Asn Gly Phe Ser Asp Pro
145                 150                 155                 160

Tyr Cys Met Leu Gly Ile Leu Pro Ala Ser Asp Ala Thr Arg Glu Pro
                165                 170                 175

Arg Ala Gln Lys Glu Gln Arg Phe Gly Phe Arg Lys Gly Ser Lys Arg
            180                 185                 190

Gly Gly Pro Leu Pro Ala Lys Cys Ile Gln Val Thr Glu Val Lys Ser
        195                 200                 205

Ser Thr Leu Asn Pro Val Trp Lys Glu His Phe Leu Phe Glu Ile Glu
    210                 215                 220

Asp Val Ser Thr Asp Gln Leu His Leu Asp Ile Trp Asp His Asp Asp
225                 230                 235                 240

Asp Val Ser Leu Val Glu Ala Cys Arg Lys Leu Asn Glu Val Ile Gly
                245                 250                 255

Leu Lys Gly Met Gly Arg Tyr Phe Lys Gln Ile Val Lys Ser Ala Arg
            260                 265                 270

Ala Asn Gly Thr Ala Gly Pro Thr Glu Asp His Thr Asp Asp Phe Leu
        275                 280                 285

Gly Cys Leu Asn Ile Pro Val Arg Glu Val Pro Val Ala Gly Val Asp
    290                 295                 300

Arg Trp Phe Lys Leu Glu Pro Arg Ser Ser Ala Ser Arg Val Gln Gly
```

305 310 315 320

His Cys His Leu Val Leu Lys Leu Ile Thr Thr Gln Arg Asp Thr Ala
325 330 335

Met Ser Gln Arg Gly Arg Ser Gly Phe Leu Ser His Leu Leu Leu Leu
340 345 350

Ser His Leu Leu Arg Leu Glu His Ser Ala Glu Glu Pro Asn Ser Ser
355 360 365

Ser Trp Arg Gly Glu Leu Ser Thr Pro Ala Ala Thr Ile Leu Cys Leu
370 375 380

His Gly Ala Gln Ser Asn Leu Ser Pro Leu Gln Leu Ala Val Leu His
385 390 395 400

Trp Gln Val Ser Ser Arg His His Gln Thr Cys Thr Leu Asp Tyr Ser
405 410 415

Tyr Leu Leu Gly Leu Leu Glu Asp Met Gln Ala His Trp Glu Glu Ala
420 425 430

Pro Ser Leu Pro Gln Glu Gln Glu Glu Ser Leu Ala Asp Ser Leu Ser
435 440 445

Ala Phe Ser Glu Phe Gly Leu Gln Leu Leu Arg Gln Leu Arg Asp Tyr
450 455 460

Phe Pro Ala Thr Asn Ser Thr Ala Val His Arg Leu Glu Leu Leu Leu
465 470 475 480

Lys Cys Leu Gly Lys Leu Gln Leu Phe Gln Pro Ser Phe Glu Ile Cys
485 490 495

Pro Phe Glu Ser Glu Leu Asn Met Asp Ile Ala Ala Ala Leu Lys Arg
500 505 510

Gly Asn Arg Glu Trp Tyr Asp Arg Ile Leu Asn Asp Lys Ser Pro Arg
515 520 525

Glu Gln Pro Gly Pro Gln Arg Leu Pro Gly Leu Val Val Leu Ala Asp
530 535 540

```
Ala Val Tyr Asp Asp Leu Gln Phe Cys Tyr Ser Val Tyr Ala Ser Leu
545                 550                 555                 560

Phe His Ser Ile Leu Asn Val Asp Val Phe Thr Leu Thr Phe Arg Gln
                565                 570                 575

Leu Glu Arg Leu Val Ala Glu Glu Ala Trp Val Leu Thr Glu Glu Leu
            580                 585                 590

Ser Pro Lys Met Thr Leu Glu Val Ala Ser Gly Leu Phe Glu Leu Tyr
        595                 600                 605

Leu Thr Leu Ala Asp Leu Gln Arg Phe Trp Asp Ser Ile Pro Gly Arg
    610                 615                 620

Asp Ser Arg Ser Leu Ala Leu Ala Gly Ile His Ala Pro Phe Leu Pro
625                 630                 635                 640

Ala Val Lys Leu Trp Phe Gln Val Leu Arg Asp Gln Ala Lys Trp Arg
                645                 650                 655

Leu Gln Gly Ala Val Asp Met Asp Thr Leu Glu Pro Val Asp Ala Ser
            660                 665                 670

Ser Arg His Ser Ser Ser Ala Ala Thr Ala Gly Leu Cys Leu Ser His
        675                 680                 685

Ile Gln Glu Leu Trp Val Arg Leu Ala Trp Pro Asp Pro Ala Gln Ala
    690                 695                 700

Gln Gly Leu Gly Thr Gln Leu Gly Gln Asp Val Cys Glu Ala Thr Leu
705                 710                 715                 720

Phe Tyr Thr Glu Leu Leu Arg Lys Lys Val Asp Thr Gln Pro Gly Ala
                725                 730                 735

Ala Gly Glu Ala Val Ser Glu Ala Leu Cys Val Val Leu Asn Asn Val
            740                 745                 750

Glu Leu Val Arg Lys Ala Ala Gly Gln Ala Leu Lys Gly Leu Ala Trp
        755                 760                 765
```

```
Pro Glu Gly Ala Thr Gly Pro Glu Gly Val Leu Pro Arg Pro Leu Leu
    770                 775                 780

Ser Cys Thr Gln Ala Leu Asp Asp Asp Leu Gln Arg Glu Ala His Thr
785                 790                 795                 800

Val Thr Ala His Leu Thr Ser Lys Met Val Gly Asp Ile Arg Lys Tyr
                805                 810                 815

Val Gln His Ile Ser Leu Ser Pro Asp Ser Ile Gln Asn Asp Glu Ala
            820                 825                 830

Val Ala Pro Leu Met Lys Tyr Leu Asp Glu Lys Leu Ala Leu Leu Asn
        835                 840                 845

Ala Ser Leu Val Lys Gly Asn Leu Ser Arg Val Leu Glu Ala Leu Trp
    850                 855                 860

Glu Leu Leu Leu Gln Ala Ile Leu Gln Ala Leu Gly Ala Asn Arg Asp
865                 870                 875                 880

Val Ser Ala Asp Phe Tyr Ser Arg Phe His Phe Thr Leu Glu Ala Leu
                885                 890                 895

Val Ser Phe Phe His Ala Glu Gly Gln Gly Leu Pro Leu Glu Ser Leu
            900                 905                 910

Arg Asp Gly Ser Tyr Lys Arg Leu Lys Glu Glu Leu Arg Leu His Lys
        915                 920                 925

Cys Ser Thr Arg Glu Cys Ile Glu Gln Phe Tyr Leu Asp Lys Leu Lys
    930                 935                 940

Gln Arg Thr Leu Glu Gln Asn Arg Phe Gly Arg Leu Ser Val Arg Cys
945                 950                 955                 960

His Tyr Glu Ala Ala Glu Gln Arg Leu Ala Val Glu Val Leu His Ala
                965                 970                 975

Ala Asp Leu Leu Pro Leu Asp Ala Asn Gly Leu Ser Asp Pro Phe Val
            980                 985                 990
```

Ile Val Glu Leu Gly Pro Pro His Leu Phe Pro Leu Val Arg Ser Gln
995 1000 1005

Arg Thr Gln Val Lys Thr Arg Thr Leu His Pro Val Tyr Asp Glu
1010 1015 1020

Leu Phe Tyr Phe Ser Val Pro Ala Glu Ala Cys Arg Arg Arg Ala
1025 1030 1035

Ala Cys Val Leu Phe Thr Val Met Asp His Asp Trp Leu Ser Thr
1040 1045 1050

Asn Asp Phe Ala Gly Glu Ala Ala Leu Gly Leu Gly Gly Val Thr
1055 1060 1065

Gly Val Ala Arg Pro Gln Val Gly Gly Gly Ala Arg Ala Gly Gln
1070 1075 1080

Pro Val Thr Leu His Leu Cys Arg Pro Arg Ala Gln Val Arg Ser
1085 1090 1095

Ala Leu Arg Arg Leu Glu Gly Arg Thr Ser Lys Glu Ala Gln Glu
1100 1105 1110

Phe Val Lys Lys Leu Lys Glu Leu Glu Lys Cys Met Glu Ala Asp
1115 1120 1125

Pro

<210> 8234
<211> 1169
<212> PRT
<213> Homo sapiens

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BAI1-associated prt 3; "

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<220>
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<400> 8234

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Met Ser Thr Leu Leu Asp Ile Lys Ser Ser Val Leu Arg Gln Val Gln
1               5                  10                  15

Val Cys Pro Ser Phe Arg Arg Arg Thr Glu Gln Asp Pro Gly Ser Ala
            20                  25                  30

Ser Ala Asp Pro Gln Glu Pro Ala Thr Gly Ala Trp Lys Pro Gly Asp
        35                  40                  45

Gly Val Glu Phe Phe Ala His Met Arg Leu Met Leu Lys Lys Gly Glu
    50                  55                  60

Gly Arg Gln Gly Leu Pro Cys Leu Glu Ala Trp Gly Ser Pro Cys Arg
65                  70                  75                  80

Gln Ser Pro His Pro Gly Pro His Thr Gln Val Pro Leu Arg Ser Gly
                85                  90                  95

Ser Pro Ala Pro Pro Glu Pro Val Asp Pro Ser Leu Gly Leu Arg Ala
            100                 105                 110

Leu Ala Pro Glu Glu Val Glu Met Leu Tyr Glu Glu Ala Leu Tyr Thr
        115                 120                 125

Val Leu Tyr Arg Ala Gly Thr Met Gly Pro Asp Gln Val Asp Asp Glu
    130                 135                 140

Glu Ala Leu Leu Ser Tyr Leu Gln Gln Val Phe Gly Thr Ser Leu Glu
145                 150                 155                 160

Glu His Thr Glu Ala Ile Glu Arg Val Arg Lys Ala Lys Ala Pro Thr
                165                 170                 175

Tyr Ala Leu Lys Val Ser Val Met Arg Ala Lys Asn Leu Leu Ala Lys
            180                 185                 190
```

```
Asp Pro Asn Gly Phe Ser Asp Pro Tyr Cys Met Leu Gly Ile Leu Pro
        195                 200                 205

Ala Ser Asp Ala Thr Arg Glu Pro Arg Ala Gln Lys Glu Gln Arg Phe
    210                 215                 220

Gly Phe Arg Lys Gly Ser Lys Arg Gly Gly Pro Leu Pro Ala Lys Cys
225                 230                 235                 240

Ile Gln Val Thr Glu Val Lys Ser Ser Thr Leu Asn Pro Val Trp Lys
                245                 250                 255

Glu His Phe Leu Phe Glu Ile Glu Asp Val Ser Thr Asp Gln Leu His
            260                 265                 270

Leu Asp Ile Trp Asp His Asp Asp Asp Val Ser Leu Val Glu Ala Cys
        275                 280                 285

Arg Lys Leu Asn Glu Val Ile Gly Leu Lys Gly Met Gly Arg Tyr Phe
    290                 295                 300

Lys Gln Ile Val Lys Ser Ala Arg Ala Asn Gly Thr Ala Gly Pro Thr
305                 310                 315                 320

Glu Asp His Thr Asp Asp Phe Leu Gly Cys Leu Asn Ile Pro Val Arg
                325                 330                 335

Glu Val Pro Val Ala Gly Val Asp Arg Trp Phe Lys Leu Glu Pro Arg
            340                 345                 350

Ser Ser Ala Ser Arg Val Gln Gly His Cys His Leu Val Leu Lys Leu
        355                 360                 365

Ile Thr Thr Gln Arg Asp Thr Ala Met Ser Gln Arg Gly Arg Ser Gly
    370                 375                 380

Phe Leu Ser His Leu Leu Leu Leu Ser His Leu Leu Arg Leu Glu His
385                 390                 395                 400

Ser Ala Glu Glu Pro Asn Ser Ser Ser Trp Arg Gly Glu Leu Ser Thr
                405                 410                 415
```

```
Pro Ala Ala Thr Ile Leu Cys Leu His Gly Ala Gln Ser Asn Leu Ser
            420                 425                 430

Pro Leu Gln Leu Ala Val Leu His Trp Gln Val Ser Ser Arg His His
        435                 440                 445

Gln Thr Cys Thr Leu Asp Tyr Ser Tyr Leu Leu Gly Leu Leu Glu Asp
    450                 455                 460

Met Gln Ala His Trp Glu Glu Ala Pro Ser Leu Pro Gln Glu Gln Glu
465                 470                 475                 480

Glu Ser Leu Ala Asp Ser Leu Ser Ala Phe Ser Glu Phe Gly Leu Gln
                485                 490                 495

Leu Leu Arg Gln Leu Arg Asp Tyr Phe Pro Ala Thr Asn Ser Thr Ala
            500                 505                 510

Val His Arg Leu Glu Leu Leu Leu Lys Cys Leu Gly Lys Leu Gln Leu
        515                 520                 525

Phe Gln Pro Ser Phe Glu Ile Cys Pro Phe Glu Ser Glu Leu Asn Met
    530                 535                 540

Asp Ile Ala Ala Ala Leu Lys Arg Gly Asn Arg Glu Trp Tyr Asp Arg
545                 550                 555                 560

Ile Leu Asn Asp Lys Ser Pro Arg Glu Gln Pro Gly Pro Gln Arg Leu
                565                 570                 575

Pro Gly Leu Val Val Leu Ala Asp Ala Val Tyr Asp Asp Leu Gln Phe
            580                 585                 590

Cys Tyr Ser Val Tyr Ala Ser Leu Phe His Ser Ile Leu Asn Val Asp
        595                 600                 605

Val Phe Thr Leu Thr Phe Arg Gln Leu Glu Arg Leu Val Ala Glu Glu
    610                 615                 620

Ala Trp Val Leu Thr Glu Glu Leu Ser Pro Lys Met Thr Leu Glu Val
625                 630                 635                 640
```

```
Ala Ser Gly Leu Phe Glu Leu Tyr Leu Thr Leu Ala Asp Leu Gln Arg
                645                 650                 655

Phe Trp Asp Ser Ile Pro Gly Arg Asp Ser Arg Ser Leu Ala Leu Ala
            660                 665                 670

Gly Ile His Ala Pro Phe Leu Pro Ala Val Lys Leu Trp Phe Gln Val
        675                 680                 685

Leu Arg Asp Gln Ala Lys Trp Arg Leu Gln Gly Ala Val Asp Met Asp
    690                 695                 700

Thr Leu Glu Pro Val Asp Ala Ser Ser Arg His Ser Ser Ser Ala Ala
705                 710                 715                 720

Thr Ala Gly Leu Cys Leu Ser His Ile Gln Glu Leu Trp Val Arg Leu
                725                 730                 735

Ala Trp Pro Asp Pro Ala Gln Ala Gln Gly Leu Gly Thr Gln Leu Gly
            740                 745                 750

Gln Asp Val Cys Glu Ala Thr Leu Phe Tyr Thr Glu Leu Leu Arg Lys
        755                 760                 765

Lys Val Asp Thr Gln Pro Gly Ala Ala Gly Glu Ala Val Ser Glu Ala
    770                 775                 780

Leu Cys Val Val Leu Asn Asn Val Glu Leu Val Arg Lys Ala Ala Gly
785                 790                 795                 800

Gln Ala Leu Lys Gly Leu Ala Trp Pro Glu Gly Ala Thr Gly Pro Glu
                805                 810                 815

Gly Val Leu Pro Arg Pro Leu Leu Ser Cys Thr Gln Ala Leu Asp Asp
            820                 825                 830

Asp Leu Gln Arg Glu Ala His Thr Val Thr Ala His Leu Thr Ser Lys
        835                 840                 845

Met Val Gly Asp Ile Arg Lys Tyr Val Gln His Ile Ser Leu Ser Pro
    850                 855                 860

Asp Ser Ile Gln Asn Asp Glu Ala Val Ala Pro Leu Met Lys Tyr Leu
```

865 870 875 880

Asp Glu Lys Leu Ala Leu Leu Asn Ala Ser Leu Val Lys Gly Asn Leu
885 890 895

Ser Arg Val Leu Glu Ala Leu Trp Glu Leu Leu Leu Gln Ala Ile Leu
900 905 910

Gln Ala Leu Gly Ala Asn Arg Asp Val Ser Ala Asp Phe Tyr Ser Arg
915 920 925

Phe His Phe Thr Leu Glu Ala Leu Val Ser Phe Phe His Ala Glu Gly
930 935 940

Gln Gly Leu Pro Leu Glu Ser Leu Arg Asp Gly Ser Tyr Lys Arg Leu
945 950 955 960

Lys Glu Glu Leu Arg Leu His Lys Cys Ser Thr Arg Glu Cys Ile Glu
965 970 975

Gln Phe Tyr Leu Asp Lys Leu Lys Gln Arg Thr Leu Glu Gln Asn Arg
980 985 990

Phe Gly Arg Leu Ser Val Arg Cys His Tyr Glu Ala Ala Glu Gln
Arg
995 1000 1005

Leu Ala Val Glu Val Leu His Ala Ala Asp Leu Leu Pro Leu Asp
1010 1015 1020

Ala Asn Gly Leu Ser Asp Pro Phe Val Ile Val Glu Leu Gly Pro
1025 1030 1035

Pro His Leu Phe Pro Leu Val Arg Ser Gln Arg Thr Gln Val Lys
1040 1045 1050

Thr Arg Thr Leu His Pro Val Tyr Asp Glu Leu Phe Tyr Phe Ser
1055 1060 1065

Val Pro Ala Glu Ala Cys Arg Arg Arg Ala Ala Cys Val Leu Phe
1070 1075 1080

Thr Val Met Asp His Asp Trp Leu Ser Thr Asn Asp Phe Ala Gly

```
    1085                1090                1095

Glu Ala  Ala Leu Gly Leu Gly  Gly Val Thr Gly Val  Ala Arg Pro
    1100                1105                1110

Gln Val  Gly Gly Gly Ala Arg  Ala Gly Gln Pro Val  Thr Leu His
    1115                1120                1125

Leu Cys  Arg Pro Arg Ala Gln  Val Arg Ser Ala Leu  Arg Arg Leu
    1130                1135                1140

Glu Gly  Arg Thr Ser Lys Glu  Ala Gln Glu Phe Val  Lys Lys Leu
    1145                1150                1155

Lys Glu  Leu Glu Lys Cys Met  Glu Ala Asp Pro
    1160                1165


<210> 8235
<211> 593
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NFJ9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000317469"

<400> 8235
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1               5                  10                  15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
            20                  25                  30
```

```
Asn Ile His Thr Phe Ser Ala Cys Leu Ala Leu Ala Asp Leu His Gly
        35                  40                  45

Asp Gly Glu Tyr Lys Leu Val Val Gly Asp Leu Gly Pro Gly Gly Gln
    50                  55                  60

Gln Pro Arg Leu Lys Val Leu Lys Gly Pro Leu Val Met Thr Glu Ser
65                  70                  75                  80

Pro Leu Pro Ala Leu Pro Ala Ala Ala Ala Thr Phe Leu Met Glu Gln
                85                  90                  95

His Glu Pro Arg Thr Pro Ala Leu Ala Leu Ala Ser Gly Pro Cys Val
            100                 105                 110

Tyr Val Tyr Lys Asn Leu Arg Pro Tyr Phe Lys Phe Ser Leu Pro Gln
        115                 120                 125

Leu Pro Pro Asn Pro Leu Glu Gln Asp Leu Trp Asn Gln Ala Lys Glu
    130                 135                 140

Asp Arg Ile Asp Pro Leu Thr Leu Lys Glu Met Leu Glu Ser Ile Arg
145                 150                 155                 160

Glu Thr Ala Glu Glu Pro Leu Ser Ile Gln Ser Leu Arg Phe Leu Gln
                165                 170                 175

Leu Glu Leu Ser Glu Met Glu Ala Phe Val Asn Gln His Lys Ser Asn
            180                 185                 190

Ser Ile Lys Arg Gln Thr Val Ile Thr Thr Met Thr Thr Leu Lys Lys
        195                 200                 205

Asn Leu Ala Asp Glu Asp Ala Val Ser Cys Leu Val Leu Gly Thr Glu
    210                 215                 220

Asn Lys Glu Leu Leu Val Leu Asp Pro Glu Ala Phe Thr Ile Leu Ala
225                 230                 235                 240

Lys Met Ser Leu Pro Ser Val Pro Val Phe Leu Glu Val Ser Gly Gln
                245                 250                 255
```

```
Phe Asp Val Glu Phe Arg Leu Ala Ala Ala Cys Arg Asn Gly Asn Ile
            260                 265                 270

Tyr Ile Leu Arg Arg Asp Ser Lys His Pro Lys Tyr Cys Ile Glu Leu
        275                 280                 285

Ser Ala Gln Pro Val Gly Leu Ile Arg Val His Lys Val Leu Val Val
    290                 295                 300

Gly Ser Thr Gln Asp Ser Leu His Gly Phe Thr His Lys Gly Lys Lys
305                 310                 315                 320

Leu Trp Thr Val Gln Met Pro Ala Ala Ile Leu Thr Met Asn Leu Leu
                325                 330                 335

Glu Gln His Ser Arg Gly Leu Gln Ala Val Met Ala Gly Leu Ala Asn
            340                 345                 350

Gly Glu Val Arg Ile Tyr Arg Asp Lys Ala Leu Leu Asn Val Ile His
        355                 360                 365

Thr Pro Asp Ala Val Thr Ser Leu Cys Phe Gly Arg Tyr Gly Arg Glu
    370                 375                 380

Asp Asn Thr Leu Ile Met Thr Thr Arg Gly Gly Gly Leu Ile Ile Lys
385                 390                 395                 400

Ile Leu Lys Arg Thr Ala Val Phe Val Glu Gly Gly Ser Glu Val Gly
                405                 410                 415

Pro Pro Pro Ala Gln Ala Met Lys Leu Asn Val Pro Arg Lys Thr Arg
            420                 425                 430

Leu Tyr Val Asp Gln Thr Leu Arg Glu Arg Glu Ala Gly Thr Ala Met
        435                 440                 445

His Arg Ala Phe Gln Thr Asp Leu Tyr Leu Leu Arg Leu Arg Ala Ala
    450                 455                 460

Arg Ala Tyr Leu Gln Ala Leu Glu Ser Ser Leu Ser Pro Leu Ser Thr
465                 470                 475                 480

Thr Ala Arg Glu Pro Leu Lys Leu His Ala Val Val Gln Gly Leu Gly
```

```
                485                 490                 495

Pro Thr Phe Lys Leu Thr Leu His Leu Gln Asn Thr Ser Thr Thr Arg
            500                 505                 510

Pro Val Leu Gly Leu Leu Val Cys Phe Leu Tyr Asn Glu Ala Leu Tyr
        515                 520                 525

Ser Leu Pro Arg Ala Phe Phe Lys Val Pro Leu Leu Val Pro Gly Leu
    530                 535                 540

Asn Tyr Pro Leu Glu Thr Phe Val Glu Ser Leu Ser Asn Lys Gly Ile
545                 550                 555                 560

Ser Asp Ile Ile Lys Val Leu Val Leu Arg Glu Gly Gln Ser Ala Pro
                565                 570                 575

Leu Leu Ser Ala His Val Asn Met Pro Gly Ser Glu Gly Leu Ala Ala
            580                 585                 590

Ala
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<210> 8236
<211> 446
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NFJ9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377563"

<400> 8236
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1 5 10 15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
20 25 30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Leu Ala Asp Leu His Gly
35 40 45

Asp Gly Glu Tyr Lys Leu Val Val Gly Asp Leu Gly Pro Gly Gly Gln
50 55 60

Gln Pro Arg Leu Lys Val Leu Lys Gly Pro Leu Val Met Thr Glu Ser
65 70 75 80

Pro Leu Pro Ala Leu Pro Ala Ala Ala Ala Thr Phe Leu Met Glu Gln
85 90 95

His Glu Pro Arg Thr Pro Ala Leu Ala Leu Ala Ser Gly Pro Cys Val
100 105 110

Tyr Val Tyr Lys Asn Leu Arg Pro Tyr Phe Lys Phe Ser Leu Pro Gln
115 120 125

Leu Pro Pro Asn Pro Leu Glu Gln Asp Leu Trp Asn Gln Ala Lys Glu
130 135 140

Asp Arg Ile Asp Pro Leu Thr Leu Lys Glu Met Leu Glu Ser Ile Arg
145 150 155 160

Glu Thr Ala Glu Glu Pro Leu Ser Ile Gln Ser Leu Arg Phe Leu Gln
165 170 175

Leu Glu Leu Ser Glu Met Glu Ala Phe Val Asn Gln His Lys Ser Asn
180 185 190

Ser Ile Lys Arg Gln Thr Val Ile Thr Thr Met Thr Thr Leu Lys Lys
195 200 205

Asn Leu Ala Asp Glu Asp Ala Val Ser Cys Leu Val Leu Gly Thr Glu
210 215 220

```
Asn Lys Glu Leu Leu Val Leu Asp Pro Glu Ala Phe Thr Ile Leu Ala
225                 230                 235                 240

Lys Asp Ala Val Thr Ser Leu Cys Phe Gly Arg Tyr Gly Arg Glu Asp
                245                 250                 255

Asn Thr Leu Ile Met Thr Thr Arg Gly Gly Gly Leu Ile Ile Lys Ile
            260                 265                 270

Leu Lys Arg Thr Ala Val Phe Val Glu Gly Gly Ser Glu Val Gly Pro
        275                 280                 285

Pro Pro Ala Gln Ala Met Lys Leu Asn Val Pro Arg Lys Thr Arg Leu
    290                 295                 300

Tyr Val Asp Gln Thr Leu Arg Glu Arg Glu Ala Gly Thr Ala Met His
305                 310                 315                 320

Arg Ala Phe Gln Thr Asp Leu Tyr Leu Leu Arg Leu Arg Ala Ala Arg
                325                 330                 335

Ala Tyr Leu Gln Ala Leu Glu Ser Ser Leu Ser Pro Leu Ser Thr Thr
            340                 345                 350

Ala Arg Glu Pro Leu Lys Leu His Ala Val Val Gln Gly Leu Gly Pro
        355                 360                 365

Thr Phe Lys Leu Thr Leu His Leu Gln Asn Thr Ser Thr Thr Arg Pro
    370                 375                 380

Val Leu Gly Leu Leu Val Cys Phe Leu Tyr Asn Glu Ala Leu Tyr Ser
385                 390                 395                 400

Leu Pro Arg Ala Phe Phe Lys Val Pro Leu Leu Val Pro Gly Leu Asn
                405                 410                 415

Tyr Pro Leu Glu Thr Phe Val Glu Ser Leu Ser Asn Lys Gly Ile Ser
            420                 425                 430

Asp Ile Ile Lys Val Gly Pro Ala Leu Val Pro Arg Gly Arg
        435                 440                 445
```

<210> 8237

<211> 496
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405764"

<400> 8237

```
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1               5                  10                  15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
            20                  25                  30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Leu Ala Asp Leu His Gly
        35                  40                  45

Asp Gly Glu Tyr Lys Leu Val Val Gly Asp Leu Gly Pro Gly Gly Gln
    50                  55                  60

Gln Pro Arg Leu Lys Val Leu Lys Gly Pro Leu Val Met Thr Glu Ser
65                  70                  75                  80

Pro Leu Pro Ala Leu Pro Ala Ala Ala Ala Thr Phe Leu Met Glu Gln
                85                  90                  95

His Glu Pro Arg Thr Pro Ala Leu Ala Leu Ala Ser Gly Pro Cys Val
            100                 105                 110

Tyr Val Tyr Lys Asn Leu Arg Pro Tyr Phe Lys Phe Ser Leu Pro Gln
        115                 120                 125

Leu Pro Pro Asn Pro Leu Glu Gln Asp Leu Trp Asn Gln Ala Lys Glu
    130                 135                 140
```

```
Met Ser Leu Pro Ser Val Pro Val Phe Leu Glu Val Ser Gly Gln Phe
145                 150                 155                 160

Asp Val Glu Phe Arg Leu Ala Ala Ala Cys Arg Asn Gly Asn Ile Tyr
                165                 170                 175

Ile Leu Arg Arg Asp Ser Lys His Pro Lys Tyr Cys Ile Glu Leu Ser
            180                 185                 190

Ala Gln Pro Val Gly Leu Ile Arg Val His Lys Val Leu Val Val Gly
        195                 200                 205

Ser Thr Gln Asp Ser Leu His Gly Phe Thr His Lys Gly Lys Lys Leu
    210                 215                 220

Trp Thr Val Gln Met Pro Ala Ala Ile Leu Thr Met Asn Leu Leu Glu
225                 230                 235                 240

Gln His Ser Arg Gly Leu Gln Ala Val Met Ala Gly Leu Ala Asn Gly
                245                 250                 255

Glu Val Arg Ile Tyr Arg Asp Lys Ala Leu Leu Asn Val Ile His Thr
            260                 265                 270

Pro Asp Ala Val Thr Ser Leu Cys Phe Gly Arg Tyr Gly Arg Glu Asp
        275                 280                 285

Asn Thr Leu Ile Met Thr Thr Arg Gly Gly Gly Leu Ile Ile Lys Ile
    290                 295                 300

Leu Lys Arg Thr Ala Val Phe Val Glu Gly Gly Ser Glu Val Gly Pro
305                 310                 315                 320

Pro Pro Ala Gln Ala Met Lys Leu Asn Val Pro Arg Lys Thr Arg Leu
                325                 330                 335

Tyr Val Asp Gln Thr Leu Arg Glu Arg Glu Ala Gly Thr Ala Met His
            340                 345                 350

Arg Ala Phe Gln Thr Asp Leu Tyr Leu Leu Arg Leu Arg Ala Ala Arg
        355                 360                 365
```

```
Ala Tyr Leu Gln Ala Leu Glu Ser Ser Leu Ser Pro Leu Ser Thr Thr
    370                 375                 380

Ala Arg Glu Pro Leu Lys Leu His Ala Val Val Gln Gly Leu Gly Pro
385                 390                 395                 400

Thr Phe Lys Leu Thr Leu His Leu Gln Asn Thr Ser Thr Thr Arg Pro
                405                 410                 415

Val Leu Gly Leu Leu Val Cys Phe Leu Tyr Asn Glu Ala Leu Tyr Ser
            420                 425                 430

Leu Pro Arg Ala Phe Phe Lys Val Pro Leu Leu Val Pro Gly Leu Asn
        435                 440                 445

Tyr Pro Leu Glu Thr Phe Val Glu Ser Leu Ser Asn Lys Gly Ile Ser
    450                 455                 460

Asp Ile Ile Lys Val Leu Val Leu Arg Glu Gly Gln Ser Ala Pro Leu
465                 470                 475                 480

Leu Ser Ala His Val Asn Met Pro Gly Ser Glu Gly Leu Ala Ala Ala
                485                 490                 495


<210> 8238
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431187"

<400> 8238
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1               5                   10                  15
```

```
Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
            20                  25                  30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Leu Ala Asp Leu His Gly
        35                  40                  45

Asp Gly Glu Tyr Lys Asp Arg Ile Asp Pro Leu Thr Leu Lys Glu Met
    50                  55                  60

Leu Glu Ser Ile Arg Glu Thr Ala Glu Glu Pro Leu Ser Ile Gln Ser
65                  70                  75                  80

Leu Arg Phe Leu Gln Leu Glu Leu Ser Glu Met Glu Ala Phe Val Asn
                85                  90                  95

Gln His Lys Ser Asn Ser Ile Lys Arg Gln Thr Val Ile Thr Thr Met
            100                 105                 110

Thr Thr Leu Lys Lys Asn Leu Ala Asp Glu Asp Ala Val Ser Cys Leu
        115                 120                 125

Val Leu Gly Thr Glu Asn Lys Glu Leu Leu Val Leu Asp Pro Glu Ala
    130                 135                 140

Phe Thr Ile Leu Ala Lys Met Ser Leu Pro Ser Val Pro Val Phe Leu
145                 150                 155                 160

Glu Val Ser Gly Gln Phe Asp Val Glu Phe Arg Leu Ala Ala Ala Cys
                165                 170                 175

Arg Asn Gly Asn Ile Tyr Ile Leu Arg Arg Asp Ser Lys His Pro Lys
            180                 185                 190


<210> 8239
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
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<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431866"

<400> 8239
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1 5 10 15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
20 25 30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly Pro Trp
35 40 45

Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr Thr Gly
50 55 60

Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys His Leu
65 70 75 80

Pro His Gly Ala Thr
85

<210> 8240
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432140"

<400> 8240
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1   5   10   15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
            20   25   30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly Pro Trp
        35   40   45

Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr Thr Gly
    50   55   60

Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys His Leu
65   70   75   80

Pro His Gly Ala Thr
                85

<210> 8241
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434197"

<400> 8241
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1   5   10   15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
            20   25   30

```
Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly Pro Trp
        35                  40                  45

Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr Thr Gly
    50                  55                  60

Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys His Leu
65                  70                  75                  80

Pro His Gly Ala Thr
                85
```

<210> 8242
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434360"

<400> 8242

```
Met Ala Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly
1               5                   10                  15

Pro Trp Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr
            20                  25                  30

Thr Gly Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys
        35                  40                  45

His Leu Pro His Gly Ala Thr
    50                  55
```

<210> 8243
<211> 85

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434619"

<400> 8243
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1 5 10 15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
20 25 30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly Pro Trp
35 40 45

Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr Thr Gly
50 55 60

Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys His Leu
65 70 75 80

Pro His Gly Ala Thr
85

<210> 8244
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
<221> source
<223> /note="Gene Symbol: BBS1; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436073"

<400> 8244
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1 5 10 15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
20 25 30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Leu Ala Asp Leu His Gly
35 40 45

Asp Gly Glu Tyr Lys Leu Val Val Gly Asp Leu Gly Pro Gly Gly Gln
50 55 60

Gln Pro Arg Leu Lys Val Leu Lys Gly Pro Leu Val Met Thr Glu Ser
65 70 75 80

Pro Leu Pro Ala Leu Pro Ala Ala Ala Ala Thr Phe Leu Met Glu Gln
85 90 95

His Glu Pro Arg Thr Pro Ala Leu Ala Leu Ala Ser Gly Pro Cys Val
100 105 110

Tyr Val Tyr Lys Asn Leu Arg Pro Tyr Phe Lys Phe Ser Leu Pro Gln
115 120 125

Leu Pro Pro Asn Pro Leu Glu Gln Asp Leu Trp Asn Gln Ala Lys Glu
130 135 140

Gly Asp Gly Arg Gly Ala Phe Val His Pro Val Thr Gln Val Ser Ala
145 150 155 160

Ala Gly Ala Lys

<210> 8245
<211> 55

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1705; "

<220>
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<223> /note="Gene Symbol: BBS1; "

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<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
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<223> /note="ENSP ID: ENSP00000436195"

<400> 8245
Met Ala Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly
1 5 10 15

Pro Trp Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr
20 25 30

Thr Gly Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys
35 40 45

His Leu Pro His Gly Ala Thr
50 55

<210> 8246
<211> 54
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
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<223> /note="ENSP ID: ENSP00000436860"

<400> 8246
Met Ala Asn Ile His Thr Phe Ser Ala Cys Leu Ala Leu Ala Asp Leu
1   5   10   15

His Gly Asp Gly Glu Tyr Lys Leu Val Val Gly Asp Leu Gly Pro Gly
            20   25   30

Gly Gln Gln Pro Arg Leu Lys Val Leu Lys Gly Pro Leu Val Met Thr
        35   40   45

Glu Ser Pro Leu Pro Ala
    50

<210> 8247
<211> 66
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 1; "

<220>
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<223> /note="ENSP ID: ENSP00000436927"

<400> 8247
Met Glu Gln His Glu Pro Arg Thr Pro Ala Leu Ala Leu Ala Ser Gly
1   5   10   15

Pro Cys Val Tyr Val Tyr Lys Asn Leu Arg Pro Tyr Phe Lys Phe Ser
            20   25   30

Leu Pro Gln Leu Pro Pro Asn Pro Leu Glu Gln Asp Leu Trp Asn Gln
        35   40   45

Ala Lys Glu Asp Arg Ile Asp Pro Leu Thr Leu Lys Glu Met Leu Glu
    50   55   60

Ser Ile
65

<210> 8248
<211> 85
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 1; "

<220>
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<400> 8248
Met Ala Ala Ala Ser Ser Ser Asp Ser Asp Ala Cys Gly Ala Glu Ser
1 5 10 15

Asn Glu Ala Asn Ser Lys Trp Leu Asp Ala His Tyr Asp Pro Met Ala
20 25 30

Asn Ile His Thr Phe Ser Ala Cys Leu Ala Gly Gly Arg Gly Pro Trp
35 40 45

Pro Trp Trp Ala Ala Ala Pro Pro Glu Gly Ala Gln Arg Thr Thr Gly
50 55 60

Asp Asp Arg Lys Pro Ala Thr Cys Ser Ala Ser Cys Cys Cys His Leu
65 70 75 80

Pro His Gly Ala Thr
85

<210> 8249
<211> 723
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BBS10; "

<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 10; "

<220>
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<223> /note="Uniprot ID: Q8TAM1; "

<220>
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<223> /note="ENSP ID: ENSP00000376946"

<400> 8249

```
Met Leu Ser Ser Met Ala Ala Ala Gly Ser Val Lys Ala Ala Leu Gln
1               5                   10                  15


Val Ala Glu Val Leu Glu Ala Ile Val Ser Cys Cys Val Gly Pro Glu
            20                  25                  30


Gly Arg Gln Val Leu Cys Thr Lys Pro Thr Gly Glu Val Leu Leu Ser
        35                  40                  45


Arg Asn Gly Gly Arg Leu Leu Glu Ala Leu His Leu Glu His Pro Ile
    50                  55                  60


Ala Arg Met Ile Val Asp Cys Val Ser Ser His Leu Lys Lys Thr Gly
65                  70                  75                  80


Asp Gly Ala Lys Thr Phe Ile Ile Phe Leu Cys His Leu Leu Arg Gly
                85                  90                  95


Leu His Ala Ile Thr Asp Arg Glu Lys Asp Pro Leu Met Cys Glu Asn
            100                 105                 110


Ile Gln Thr His Gly Arg His Trp Lys Asn Cys Ser Arg Trp Lys Phe
        115                 120                 125


Ile Ser Gln Ala Leu Leu Thr Phe Gln Thr Gln Ile Leu Asp Gly Ile
    130                 135                 140
```

Met Asp Gln Tyr Leu Ser Arg His Phe Leu Ser Ile Phe Ser Ser Ala
145 150 155 160

Lys Glu Arg Thr Leu Cys Arg Ser Ser Leu Glu Leu Leu Leu Glu Ala
165 170 175

Tyr Phe Cys Gly Arg Val Gly Arg Asn Asn His Lys Phe Ile Ser Gln
180 185 190

Leu Met Cys Asp Tyr Phe Phe Lys Cys Met Thr Cys Lys Ser Gly Ile
195 200 205

Gly Val Phe Glu Leu Val Asp Asp His Phe Val Glu Leu Asn Val Gly
210 215 220

Val Thr Gly Leu Pro Val Ser Asp Ser Arg Ile Ile Ala Gly Leu Val
225 230 235 240

Leu Gln Lys Asp Phe Ser Val Tyr Arg Pro Ala Asp Gly Asp Met Arg
245 250 255

Met Val Ile Val Thr Glu Thr Ile Gln Pro Leu Phe Ser Thr Ser Gly
260 265 270

Ser Glu Phe Ile Leu Asn Ser Glu Ala Gln Phe Gln Thr Ser Gln Phe
275 280 285

Trp Ile Met Glu Lys Thr Lys Ala Ile Met Lys His Leu His Ser Gln
290 295 300

Asn Val Lys Leu Leu Ile Ser Ser Val Lys Gln Pro Asp Leu Val Ser
305 310 315 320

Tyr Tyr Ala Gly Val Asn Gly Ile Ser Val Val Glu Cys Leu Ser Ser
325 330 335

Glu Glu Val Ser Leu Ile Arg Arg Ile Ile Gly Leu Ser Pro Phe Val
340 345 350

Pro Pro Gln Ala Phe Ser Gln Cys Glu Ile Pro Asn Thr Ala Leu Val
355 360 365

```
Lys Phe Cys Lys Pro Leu Ile Leu Arg Ser Lys Arg Tyr Val His Leu
    370                 375                 380

Gly Leu Ile Ser Thr Cys Ala Phe Ile Pro His Ser Ile Val Leu Cys
385                 390                 395                 400

Gly Pro Val His Gly Leu Ile Glu Gln His Glu Asp Ala Leu His Gly
                405                 410                 415

Ala Leu Lys Met Leu Arg Gln Leu Phe Lys Asp Leu Asp Leu Asn Tyr
            420                 425                 430

Met Thr Gln Thr Asn Asp Gln Asn Gly Thr Ser Ser Leu Phe Ile Tyr
        435                 440                 445

Lys Asn Ser Gly Glu Ser Tyr Gln Ala Pro Asp Pro Gly Asn Gly Ser
    450                 455                 460

Ile Gln Arg Pro Tyr Gln Asp Thr Val Ala Glu Asn Lys Asp Ala Leu
465                 470                 475                 480

Glu Lys Thr Gln Thr Tyr Leu Lys Val His Ser Asn Leu Val Ile Pro
                485                 490                 495

Asp Val Glu Leu Glu Thr Tyr Ile Pro Tyr Ser Thr Pro Thr Leu Thr
            500                 505                 510

Pro Thr Asp Thr Phe Gln Thr Val Glu Thr Leu Thr Cys Leu Ser Leu
        515                 520                 525

Glu Arg Asn Arg Leu Thr Asp Tyr Tyr Glu Pro Leu Leu Lys Asn Asn
    530                 535                 540

Ser Thr Ala Tyr Ser Thr Arg Gly Asn Arg Ile Glu Ile Ser Tyr Glu
545                 550                 555                 560

Asn Leu Gln Val Thr Asn Ile Thr Arg Lys Gly Ser Met Leu Pro Val
                565                 570                 575

Ser Cys Lys Leu Pro Asn Met Gly Thr Ser Gln Ser Tyr Leu Ser Ser
            580                 585                 590

Ser Met Pro Ala Gly Cys Val Leu Pro Val Gly Gly Asn Phe Glu Ile
```

595 600 605

Leu Leu His Tyr Tyr Leu Leu Asn Tyr Ala Lys Lys Cys His Gln Ser
610 615 620

Glu Glu Thr Met Val Ser Met Ile Ile Ala Asn Ala Leu Leu Gly Ile
625 630 635 640

Pro Lys Val Leu Tyr Lys Ser Lys Thr Gly Lys Tyr Ser Phe Pro His
645 650 655

Thr Tyr Ile Arg Ala Val His Ala Leu Gln Thr Asn Gln Pro Leu Val
660 665 670

Ser Ser Gln Thr Gly Leu Glu Ser Val Met Gly Lys Tyr Gln Leu Leu
675 680 685

Thr Ser Val Leu Gln Cys Leu Thr Lys Ile Leu Thr Ile Asp Met Val
690 695 700

Ile Thr Val Lys Arg His Pro Gln Lys Val His Asn Gln Asp Ser Glu
705 710 715 720

Asp Glu Leu

<210> 8250
<211> 710
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1707; "

<220>
<221> source
<223> /note="Gene Symbol: BBS12; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZW61; "

<220>
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<223> /note="ENSP ID: ENSP00000319062"

<400> 8250
Met Val Met Ala Cys Arg Val Val Asn Lys Arg Arg His Met Gly Leu
1   5   10   15

Gln Gln Leu Ser Ser Phe Ala Glu Thr Gly Arg Thr Phe Leu Gly Pro
            20   25   30

Leu Lys Ser Ser Lys Phe Ile Ile Asp Glu Glu Cys His Glu Ser Val
        35   40   45

Leu Ile Ser Ser Thr Val Arg Leu Leu Glu Ser Leu Asp Leu Thr Ser
    50   55   60

Ala Val Gly Gln Leu Leu Asn Glu Ala Val Gln Ala Gln Asn Asn Thr
65   70   75   80

Tyr Arg Thr Gly Ile Ser Thr Leu Leu Phe Leu Val Gly Ala Trp Ser
                85   90   95

Ser Ala Val Glu Glu Cys Leu His Leu Gly Val Pro Ile Ser Ile Ile
            100   105   110

Val Ser Val Met Ser Glu Gly Leu Asn Phe Cys Ser Glu Glu Val Val
        115   120   125

Ser Leu His Val Pro Val His Asn Ile Phe Asp Cys Met Asp Ser Thr
    130   135   140

Lys Thr Phe Ser Gln Leu Glu Thr Phe Ser Val Ser Leu Cys Pro Phe
145   150   155   160

Leu Gln Val Pro Ser Asp Thr Asp Leu Ile Glu Glu Leu His Gly Leu
                165   170   175

Lys Asp Val Ala Ser Gln Thr Leu Thr Ile Ser Asn Leu Ser Gly Arg
            180   185   190

Pro Leu Lys Ser Tyr Glu Leu Phe Lys Pro Gln Thr Lys Val Glu Ala
        195   200   205

```
Asp Asn Asn Thr Ser Arg Thr Leu Lys Asn Ser Leu Leu Ala Asp Thr
    210                 215                 220

Cys Cys Arg Gln Ser Ile Leu Ile His Ser Arg His Phe Asn Arg Thr
225                 230                 235                 240

Asp Asn Thr Glu Gly Val Ser Lys Pro Asp Gly Phe Gln Glu His Val
                245                 250                 255

Thr Ala Thr His Lys Thr Tyr Arg Cys Asn Asp Leu Val Glu Leu Ala
            260                 265                 270

Val Gly Leu Ser His Gly Asp His Ser Ser Met Lys Leu Val Glu Glu
        275                 280                 285

Ala Val Gln Leu Gln Tyr Gln Asn Ala Cys Val Gln Gln Gly Asn Cys
    290                 295                 300

Thr Lys Pro Phe Met Phe Asp Ile Ser Arg Ile Phe Thr Cys Cys Leu
305                 310                 315                 320

Pro Gly Leu Pro Glu Thr Ser Ser Cys Val Cys Pro Gly Tyr Ile Thr
                325                 330                 335

Val Val Ser Val Ser Asn Asn Pro Val Ile Lys Glu Leu Gln Asn Gln
            340                 345                 350

Pro Val Arg Ile Val Leu Ile Glu Gly Asp Leu Thr Glu Asn Tyr Arg
        355                 360                 365

His Leu Gly Phe Asn Lys Ser Ala Asn Ile Lys Thr Val Leu Asp Ser
    370                 375                 380

Met Arg Leu Gln Glu Asp Ser Ser Glu Glu Leu Trp Ala Asn His Val
385                 390                 395                 400

Leu Gln Val Leu Ile Gln Phe Lys Val Asn Leu Val Leu Val Gln Gly
                405                 410                 415

Asn Val Ser Glu Arg Leu Ile Glu Lys Cys Ile Asn Ser Lys Arg Leu
            420                 425                 430

Val Ile Gly Ser Val Asn Gly Ser Val Met Gln Ala Phe Ala Glu Ala
```

```
        435                 440                 445

Ala Gly Ala Val Gln Val Ala Tyr Ile Thr Gln Val Asn Glu Asp Cys
    450                 455                 460

Val Gly Asp Gly Val Cys Val Thr Phe Trp Arg Ser Ser Pro Leu Asp
465                 470                 475                 480

Val Val Asp Arg Asn Asn Arg Ile Ala Ile Leu Leu Lys Thr Glu Gly
                485                 490                 495

Ile Asn Leu Val Thr Ala Val Leu Thr Asn Pro Val Thr Ala Gln Met
            500                 505                 510

Gln Ile Lys Glu Asp Arg Phe Trp Thr Cys Ala Tyr Arg Leu Tyr Tyr
        515                 520                 525

Ala Leu Lys Glu Glu Lys Val Phe Leu Gly Gly Gly Ala Val Glu Phe
    530                 535                 540

Leu Cys Leu Ser Cys Leu His Ile Leu Ala Glu Gln Ser Leu Lys Lys
545                 550                 555                 560

Glu Asn His Ala Cys Ser Gly Trp Leu His Asn Thr Ser Ser Trp Leu
                565                 570                 575

Ala Ser Ser Leu Ala Ile Tyr Arg Pro Thr Val Leu Lys Phe Leu Ala
            580                 585                 590

Asn Gly Trp Gln Lys Tyr Leu Ser Thr Leu Leu Tyr Asn Thr Ala Asn
        595                 600                 605

Tyr Ser Ser Glu Phe Glu Ala Ser Thr Tyr Ile Gln His His Leu Gln
    610                 615                 620

Asn Ala Thr Asp Ser Gly Ser Pro Ser Ser Tyr Ile Leu Asn Glu Tyr
625                 630                 635                 640

Ser Lys Leu Asn Ser Arg Ile Phe Asn Ser Asp Ile Ser Asn Lys Leu
                645                 650                 655

Glu Gln Ile Pro Arg Val Tyr Asp Val Val Thr Pro Lys Ile Glu Ala
            660                 665                 670
```

```
Trp Arg Arg Ala Leu Asp Leu Val Leu Leu Val Leu Gln Thr Asp Ser
        675                 680                 685

Glu Ile Ile Thr Gly His Gly His Thr Gln Ile Asn Ser Gln Glu Leu
    690                 695                 700

Thr Gly Phe Leu Phe Leu
705                 710


<210> 8251
<211> 191
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1707; "

<220>
<221> source
<223> /note="Gene Symbol: BBS12; "

<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 12; "

<220>
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<223> /note="ENSP ID: ENSP00000398912"

<400> 8251
Met Val Met Ala Cys Arg Val Val Asn Lys Arg Arg His Met Gly Leu
1               5                   10                  15

Gln Gln Leu Ser Ser Phe Ala Glu Thr Gly Arg Thr Phe Leu Gly Pro
            20                  25                  30

Leu Lys Ser Ser Lys Phe Ile Ile Asp Glu Glu Cys His Glu Ser Val
        35                  40                  45

Leu Ile Ser Ser Thr Val Arg Leu Leu Glu Ser Leu Asp Leu Thr Ser
    50                  55                  60

Ala Val Gly Gln Leu Leu Asn Glu Ala Val Gln Ala Gln Asn Asn Thr
65                  70                  75                  80
```

```
Tyr Arg Thr Gly Ile Ser Thr Leu Leu Phe Leu Val Gly Ala Trp Ser
                85                  90                  95

Ser Ala Val Glu Glu Cys Leu His Leu Gly Val Pro Ile Ser Ile Ile
            100                 105                 110

Val Ser Val Met Ser Glu Gly Leu Asn Phe Cys Ser Glu Glu Val Val
        115                 120                 125

Ser Leu His Val Pro Val His Asn Ile Phe Asp Cys Met Asp Ser Thr
    130                 135                 140

Lys Thr Phe Ser Gln Leu Glu Thr Phe Ser Val Ser Leu Cys Pro Phe
145                 150                 155                 160

Leu Gln Val Pro Ser Asp Thr Asp Leu Ile Glu Glu Leu His Gly Leu
                165                 170                 175

Lys Asp Val Ala Ser Gln Thr Leu Thr Ile Ser Asn Leu Ser Gly
            180                 185                 190


<210> 8252
<211> 710
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1707; "

<220>
<221> source
<223> /note="Gene Symbol: BBS12; "

<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 12; "

<220>
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<223> /note="Uniprot ID:  Q6ZW61; "

<220>
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<223> /note="ENSP ID: ENSP00000438273"

<400> 8252
Met Val Met Ala Cys Arg Val Val Asn Lys Arg Arg His Met Gly Leu
1               5                   10                  15
```

```
Gln Gln Leu Ser Ser Phe Ala Glu Thr Gly Arg Thr Phe Leu Gly Pro
            20                  25                  30

Leu Lys Ser Ser Lys Phe Ile Ile Asp Glu Glu Cys His Glu Ser Val
        35                  40                  45

Leu Ile Ser Ser Thr Val Arg Leu Leu Glu Ser Leu Asp Leu Thr Ser
    50                  55                  60

Ala Val Gly Gln Leu Leu Asn Glu Ala Val Gln Ala Gln Asn Asn Thr
65                  70                  75                  80

Tyr Arg Thr Gly Ile Ser Thr Leu Leu Phe Leu Val Gly Ala Trp Ser
                85                  90                  95

Ser Ala Val Glu Glu Cys Leu His Leu Gly Val Pro Ile Ser Ile Ile
            100                 105                 110

Val Ser Val Met Ser Glu Gly Leu Asn Phe Cys Ser Glu Glu Val Val
        115                 120                 125

Ser Leu His Val Pro Val His Asn Ile Phe Asp Cys Met Asp Ser Thr
    130                 135                 140

Lys Thr Phe Ser Gln Leu Glu Thr Phe Ser Val Ser Leu Cys Pro Phe
145                 150                 155                 160

Leu Gln Val Pro Ser Asp Thr Asp Leu Ile Glu Glu Leu His Gly Leu
                165                 170                 175

Lys Asp Val Ala Ser Gln Thr Leu Thr Ile Ser Asn Leu Ser Gly Arg
            180                 185                 190

Pro Leu Lys Ser Tyr Glu Leu Phe Lys Pro Gln Thr Lys Val Glu Ala
        195                 200                 205

Asp Asn Asn Thr Ser Arg Thr Leu Lys Asn Ser Leu Leu Ala Asp Thr
    210                 215                 220

Cys Cys Arg Gln Ser Ile Leu Ile His Ser Arg His Phe Asn Arg Thr
225                 230                 235                 240
```

```
Asp Asn Thr Glu Gly Val Ser Lys Pro Asp Gly Phe Gln Glu His Val
                245                 250                 255

Thr Ala Thr His Lys Thr Tyr Arg Cys Asn Asp Leu Val Glu Leu Ala
            260                 265                 270

Val Gly Leu Ser His Gly Asp His Ser Ser Met Lys Leu Val Glu Glu
        275                 280                 285

Ala Val Gln Leu Gln Tyr Gln Asn Ala Cys Val Gln Gln Gly Asn Cys
    290                 295                 300

Thr Lys Pro Phe Met Phe Asp Ile Ser Arg Ile Phe Thr Cys Cys Leu
305                 310                 315                 320

Pro Gly Leu Pro Glu Thr Ser Ser Cys Val Cys Pro Gly Tyr Ile Thr
                325                 330                 335

Val Val Ser Val Ser Asn Asn Pro Val Ile Lys Glu Leu Gln Asn Gln
            340                 345                 350

Pro Val Arg Ile Val Leu Ile Glu Gly Asp Leu Thr Glu Asn Tyr Arg
        355                 360                 365

His Leu Gly Phe Asn Lys Ser Ala Asn Ile Lys Thr Val Leu Asp Ser
    370                 375                 380

Met Arg Leu Gln Glu Asp Ser Ser Glu Glu Leu Trp Ala Asn His Val
385                 390                 395                 400

Leu Gln Val Leu Ile Gln Phe Lys Val Asn Leu Val Leu Val Gln Gly
                405                 410                 415

Asn Val Ser Glu Arg Leu Ile Glu Lys Cys Ile Asn Ser Lys Arg Leu
            420                 425                 430

Val Ile Gly Ser Val Asn Gly Ser Val Met Gln Ala Phe Ala Glu Ala
        435                 440                 445

Ala Gly Ala Val Gln Val Ala Tyr Ile Thr Gln Val Asn Glu Asp Cys
    450                 455                 460
```

```
Val Gly Asp Gly Val Cys Val Thr Phe Trp Arg Ser Ser Pro Leu Asp
465                 470                 475                 480

Val Val Asp Arg Asn Asn Arg Ile Ala Ile Leu Leu Lys Thr Glu Gly
                485                 490                 495

Ile Asn Leu Val Thr Ala Val Leu Thr Asn Pro Val Thr Ala Gln Met
            500                 505                 510

Gln Ile Lys Glu Asp Arg Phe Trp Thr Cys Ala Tyr Arg Leu Tyr Tyr
        515                 520                 525

Ala Leu Lys Glu Glu Lys Val Phe Leu Gly Gly Gly Ala Val Glu Phe
    530                 535                 540

Leu Cys Leu Ser Cys Leu His Ile Leu Ala Glu Gln Ser Leu Lys Lys
545                 550                 555                 560

Glu Asn His Ala Cys Ser Gly Trp Leu His Asn Thr Ser Ser Trp Leu
                565                 570                 575

Ala Ser Ser Leu Ala Ile Tyr Arg Pro Thr Val Leu Lys Phe Leu Ala
            580                 585                 590

Asn Gly Trp Gln Lys Tyr Leu Ser Thr Leu Leu Tyr Asn Thr Ala Asn
        595                 600                 605

Tyr Ser Ser Glu Phe Glu Ala Ser Thr Tyr Ile Gln His His Leu Gln
    610                 615                 620

Asn Ala Thr Asp Ser Gly Ser Pro Ser Ser Tyr Ile Leu Asn Glu Tyr
625                 630                 635                 640

Ser Lys Leu Asn Ser Arg Ile Phe Asn Ser Asp Ile Ser Asn Lys Leu
                645                 650                 655

Glu Gln Ile Pro Arg Val Tyr Asp Val Val Thr Pro Lys Ile Glu Ala
            660                 665                 670

Trp Arg Arg Ala Leu Asp Leu Val Leu Leu Val Leu Gln Thr Asp Ser
        675                 680                 685

Glu Ile Ile Thr Gly His Gly His Thr Gln Ile Asn Ser Gln Glu Leu
```

690 695 700

Thr Gly Phe Leu Phe Leu
705 710

<210> 8253
<211> 721
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1708; "

<220>
<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000245157"

<400> 8253
Met Leu Leu Pro Val Phe Thr Leu Lys Leu Arg His Lys Ile Ser Pro
1 5 10 15

Arg Met Val Ala Ile Gly Arg Tyr Asp Gly Thr His Pro Cys Leu Ala
20 25 30

Ala Ala Thr Gln Thr Gly Lys Val Phe Ile His Asn Pro His Thr Arg
35 40 45

Asn Gln His Val Ser Ala Ser Arg Val Phe Gln Ser Pro Leu Glu Ser
50 55 60

Asp Val Ser Leu Leu Ser Ile Asn Gln Ala Val Ser Cys Leu Thr Ala
65 70 75 80

Gly Val Leu Asn Pro Glu Leu Gly Tyr Asp Ala Leu Leu Val Gly Thr
85 90 95

```
Gln Thr Asn Leu Leu Ala Tyr Asp Val Tyr Asn Asn Ser Asp Leu Phe
            100                 105                 110

Tyr Arg Glu Val Ala Asp Gly Ala Asn Ala Ile Val Leu Gly Thr Leu
        115                 120                 125

Gly Asp Ile Ser Ser Pro Leu Ala Ile Ile Gly Gly Asn Cys Ala Leu
    130                 135                 140

Gln Gly Phe Asn His Glu Gly Ser Asp Leu Phe Trp Thr Val Thr Gly
145                 150                 155                 160

Asp Asn Val Asn Ser Leu Ala Leu Cys Asp Phe Asp Gly Asp Gly Lys
                165                 170                 175

Lys Glu Leu Leu Val Gly Ser Glu Asp Phe Asp Ile Arg Val Phe Lys
            180                 185                 190

Glu Asp Glu Ile Val Ala Glu Met Thr Glu Thr Glu Ile Val Thr Ser
        195                 200                 205

Leu Cys Pro Met Tyr Gly Ser Arg Phe Gly Tyr Ala Leu Ser Asn Gly
    210                 215                 220

Thr Val Gly Val Tyr Asp Lys Thr Ser Arg Tyr Trp Arg Ile Lys Ser
225                 230                 235                 240

Lys Asn His Ala Met Ser Ile His Ala Phe Asp Leu Asn Ser Asp Gly
                245                 250                 255

Val Asn Glu Leu Ile Thr Gly Trp Ser Asn Gly Lys Val Asp Ala Arg
            260                 265                 270

Ser Asp Arg Thr Gly Glu Val Ile Phe Lys Asp Asn Phe Ser Ser Ala
        275                 280                 285

Ile Ala Gly Val Val Glu Gly Asp Tyr Arg Met Asp Gly His Ile Gln
    290                 295                 300

Leu Ile Cys Cys Ser Val Asp Gly Glu Ile Arg Gly Tyr Leu Pro Gly
305                 310                 315                 320
```

```
Thr Ala Glu Met Arg Gly Asn Leu Met Asp Thr Ser Ala Glu Gln Asp
                325                 330                 335

Leu Ile Arg Glu Leu Ser Gln Lys Lys Gln Asn Leu Leu Leu Glu Leu
            340                 345                 350

Arg Asn Tyr Glu Glu Asn Ala Lys Ala Glu Leu Ala Ser Pro Leu Asn
        355                 360                 365

Glu Ala Asp Gly His Arg Gly Ile Ile Pro Ala Asn Thr Arg Leu His
    370                 375                 380

Thr Thr Leu Ser Val Ser Leu Gly Asn Glu Thr Gln Thr Ala His Thr
385                 390                 395                 400

Glu Leu Arg Ile Ser Thr Ser Asn Asp Thr Ile Ile Arg Ala Val Leu
                405                 410                 415

Ile Phe Ala Glu Gly Ile Phe Thr Gly Glu Ser His Val Val His Pro
            420                 425                 430

Ser Ile His Asn Leu Ser Ser Ser Ile Cys Ile Pro Ile Val Pro Pro
        435                 440                 445

Lys Asp Val Pro Val Asp Leu His Leu Lys Ala Phe Val Gly Tyr Arg
    450                 455                 460

Ser Ser Thr Gln Phe His Val Phe Glu Ser Thr Arg Gln Leu Pro Arg
465                 470                 475                 480

Phe Ser Met Tyr Ala Leu Thr Ser Leu Asp Pro Ala Ser Glu Pro Ile
                485                 490                 495

Ser Tyr Val Asn Phe Thr Ile Ala Glu Arg Ala Gln Arg Val Val Val
            500                 505                 510

Trp Leu Gly Gln Asn Phe Leu Leu Pro Glu Asp Thr His Ile Gln Asn
        515                 520                 525

Ala Pro Phe Gln Val Cys Phe Thr Ser Leu Arg Asn Gly Gly His Leu
    530                 535                 540

His Ile Lys Ile Lys Leu Ser Gly Glu Ile Thr Ile Asn Thr Asp Asp
```

545 550 555 560

Ile Asp Leu Ala Gly Asp Ile Ile Gln Ser Met Ala Ser Phe Phe Ala
565 570 575

Ile Glu Asp Leu Gln Val Glu Ala Asp Phe Pro Val Tyr Phe Glu Glu
580 585 590

Leu Arg Lys Val Leu Val Lys Val Asp Glu Tyr His Ser Val His Gln
595 600 605

Lys Leu Ser Ala Asp Met Ala Asp His Ser Asn Leu Ile Arg Ser Leu
610 615 620

Leu Val Gly Ala Glu Asp Ala Arg Leu Met Arg Asp Met Lys Thr Met
625 630 635 640

Lys Ser Arg Tyr Met Glu Leu Tyr Asp Leu Asn Arg Asp Leu Leu Asn
645 650 655

Gly Tyr Lys Ile Arg Cys Asn Asn His Thr Glu Leu Leu Gly Asn Leu
660 665 670

Lys Ala Val Asn Gln Ala Ile Gln Arg Ala Gly Arg Leu Arg Val Gly
675 680 685

Lys Pro Lys Asn Gln Val Ile Thr Ala Cys Arg Asp Ala Ile Arg Ser
690 695 700

Asn Asn Ile Asn Thr Leu Phe Lys Ile Met Arg Val Gly Thr Ala Ser
705 710 715 720

Ser

<210> 8254
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1708; "

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<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 2; "

<220>
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<223> /note="ENSP ID: ENSP00000454986"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8254
Xaa Asn Leu Ser Ser Ser Ile Cys Ile Pro Ile Val Pro Pro Lys Asp
1 5 10 15

Val Pro Val Asp Leu His Leu Lys Ala Phe Val Gly Tyr Arg Ser Ser
20 25 30

Thr Gln Phe His Val Phe Glu Ser Thr Arg Gln Leu Pro Arg Phe Ser
35 40 45

Met Tyr Ala Leu Thr Ser Leu Asp Pro Ala Ser Glu Pro Ile Ser Tyr
50 55 60

Val Asn Phe Thr Ile Ala Glu Arg Ala Gln Arg Gln
65 70 75

<210> 8255
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1708; "

<220>
<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 2; "

<220>
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<223> /note="ENSP ID: ENSP00000455651"

<400> 8255
Asp Glu Ile Val Ala Glu Met Thr Glu Thr Glu Ile Val Thr Ser Leu
1   5   10   15

Cys Pro Met Tyr Gly Ser Arg Phe Gly Tyr Ala Leu Ser Asn Gly Thr
            20   25   30

Val Gly Val Tyr Asp Lys Thr Ser Arg Tyr Trp Arg Ile Lys Ser Lys
        35   40   45

Asn His Ala Met Ser Ile His Ala Phe Asp Leu Asn Ser Asp Gly Val
    50   55   60

Asn Glu Leu Ile Thr Gly Trp Ser Asn Gly Lys Val Asp Ala Arg Ser
65   70   75   80

Asp Arg Thr Gly Glu Val Ile Phe Lys Asp Asn Phe Ser Ser Ala Ile
                85   90   95

Ala Gly Val Val Glu Gly Asp Tyr Arg Met Asp Gly His Ile His Pro
            100   105   110

Gly Leu Pro Ala Trp His Gly
        115

<210> 8256
<211> 675
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1708; "

<220>
<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 2; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000456289"

<400> 8256

```
Met Leu Leu Pro Val Phe Thr Leu Lys Leu Arg His Lys Ile Ser Pro
1               5                  10                  15

Arg Met Val Ala Ile Gly Arg Tyr Asp Gly Thr His Pro Cys Leu Ala
            20                  25                  30

Ala Ala Thr Gln Thr Gly Lys Val Phe Ile His Asn Pro His Thr Arg
        35                  40                  45

Asn Gln His Val Ser Ala Ser Arg Val Phe Gln Ser Pro Leu Glu Ser
    50                  55                  60

Asp Val Ser Leu Leu Ser Ile Asn Gln Ala Val Ser Cys Leu Thr Ala
65                  70                  75                  80

Gly Val Leu Asn Pro Glu Leu Gly Tyr Asp Ala Leu Leu Val Gly Thr
                85                  90                  95

Gln Thr Asn Leu Leu Ala Tyr Asp Val Tyr Asn Asn Ser Asp Leu Phe
            100                 105                 110

Tyr Arg Glu Val Ala Asp Gly Ala Asn Ala Ile Val Leu Gly Thr Leu
        115                 120                 125

Gly Asp Ile Ser Ser Pro Leu Ala Ile Ile Gly Gly Asn Cys Ala Leu
    130                 135                 140

Gln Gly Phe Asn His Glu Gly Ser Asp Leu Phe Trp Thr Val Thr Gly
145                 150                 155                 160

Asp Asn Val Asn Ser Leu Ala Leu Cys Asp Phe Asp Gly Asp Gly Lys
                165                 170                 175

Lys Glu Leu Leu Val Gly Ser Glu Asp Phe Asp Ile Arg Val Phe Lys
            180                 185                 190

Glu Asp Glu Ile Val Ala Glu Met Thr Glu Thr Glu Ile Val Thr Ser
        195                 200                 205

Leu Cys Pro Met Tyr Gly Ser Arg Phe Gly Tyr Ala Leu Ser Asn Gly
    210                 215                 220
```

Thr Val Gly Val Tyr Asp Lys Thr Ser Arg Tyr Trp Arg Ile Lys Ser
225 230 235 240

Lys Asn His Ala Met Ser Ile His Ala Phe Asp Leu Asn Ser Asp Gly
245 250 255

Val Asn Glu Leu Ile Thr Gly Trp Ser Asn Gly Lys Val Asp Ala Arg
260 265 270

Ser Asp Arg Thr Gly Glu Val Ile Phe Lys Asp Asn Phe Ser Ser Ala
275 280 285

Ile Ala Gly Val Val Glu Gly Asp Tyr Arg Met Asp Gly His Ile Gln
290 295 300

Leu Ile Cys Cys Ser Val Asp Gly Glu Ile Arg Gly Tyr Leu Pro Gly
305 310 315 320

Thr Ala Glu Met Arg Gly Asn Leu Met Asp Thr Ser Ala Glu Gln Asp
325 330 335

Leu Ile Arg Glu Leu Ser Gln Lys Lys Gln Asn Leu Leu Leu Glu Leu
340 345 350

Arg Asn Tyr Glu Glu Asn Ala Lys Ala Glu Leu Ala Ser Pro Leu Asn
355 360 365

Glu Ala Asp Gly His Arg Gly Ile Ile Pro Ala Asn Thr Arg Leu His
370 375 380

Thr Thr Leu Ser Val Ser Leu Gly Asn Glu Thr Gln Thr Ala His Thr
385 390 395 400

Glu Leu Arg Ile Ser Thr Ser Asn Asp Thr Ile Ile Arg Ala Val Leu
405 410 415

Ile Phe Ala Glu Gly Ile Phe Thr Gly Glu Ser His Val Val His Pro
420 425 430

Ser Ile His Asn Leu Ser Ser Ser Ile Cys Ile Pro Ile Val Pro Pro
435 440 445

```
Lys Asp Val Pro Val Asp Leu His Leu Lys Ala Phe Val Gly Tyr Arg
    450                 455                 460

Ser Ser Thr Gln Phe His Val Phe Glu Ser Thr Arg Gln Leu Pro Arg
465                 470                 475                 480

Phe Ser Met Tyr Ala Leu Thr Ser Leu Asp Pro Ala Ser Glu Pro Ile
                485                 490                 495

Ser Tyr Val Asn Phe Thr Ile Ala Glu Arg Ala Gln Arg Val Val Val
            500                 505                 510

Trp Leu Gly Gln Asn Phe Leu Leu Pro Glu Asp Thr His Ile Gln Asn
        515                 520                 525

Ala Pro Phe Gln Val Cys Phe Thr Ser Leu Arg Asn Gly Gly His Leu
    530                 535                 540

His Ile Lys Ile Lys Leu Ser Gly Glu Val Asp Glu Tyr His Ser Val
545                 550                 555                 560

His Gln Lys Leu Ser Ala Asp Met Ala Asp His Ser Asn Leu Ile Arg
                565                 570                 575

Ser Leu Leu Val Gly Ala Glu Asp Ala Arg Leu Met Arg Asp Met Lys
            580                 585                 590

Thr Met Lys Ser Arg Tyr Met Glu Leu Tyr Asp Leu Asn Arg Asp Leu
        595                 600                 605

Leu Asn Gly Tyr Lys Ile Arg Cys Asn Asn His Thr Glu Leu Leu Gly
    610                 615                 620

Asn Leu Lys Ala Val Asn Gln Ala Ile Gln Arg Ala Gly Arg Leu Arg
625                 630                 635                 640

Val Gly Lys Pro Lys Asn Gln Val Ile Thr Ala Cys Arg Asp Ala Ile
                645                 650                 655

Arg Ser Asn Asn Ile Asn Thr Leu Phe Lys Ile Met Arg Val Gly Thr
            660                 665                 670
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Ala Ser Ser
        675

<210> 8257
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1708; "

<220>
<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456741"

<400> 8257
Met Thr Glu Thr Glu
1   5

<210> 8258
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 2; "

<220>
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<223> /note="ENSP ID: ENSP00000463176"

<220>
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<222> (1)..(1)

<223> Any amino acid

<400> 8258
Xaa Lys Thr Met Lys Ser Arg Tyr Met Glu Leu Tyr Asp Leu Asn Arg
1   5   10   15

Asp Leu Leu Asn Gly Tyr Lys Ile Arg Cys Asn Asn His Thr Glu Leu
            20   25   30

Leu Gly Asn Leu Lys Ala Val Asn Gln Ala Ile Gln Arg Ala Gly Arg
        35   40   45

Leu Arg Val Gly Lys Pro Lys Asn Gln Val Ile Thr Ala Cys Arg Asp
    50   55   60

Ala Ile Arg Ser Asn Asn Ile Asn Thr Leu Phe Lys Ile Met Arg Val
65   70   75   80

Gly Thr Ala Ser Ser
                85

<210> 8259
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1708; "

<220>
<221> source
<223> /note="Gene Symbol: BBS2; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463731"

<400> 8259
Leu Gln Val Glu Ala Asp Phe Pro Val Tyr Phe Glu Glu Leu Arg Lys
1   5   10   15

Val Leu Val Lys Val Asp Glu Tyr His Ser Val His Gln Lys Leu Ser
            20   25   30

```
Ala Asp Met Ala Asp His Ser Asn Leu Ile Arg Ser Leu Leu Val Gly
        35                  40                  45

Ala Glu Asp Ala Arg Leu Met Arg Asp Met Lys Thr Met Lys Ser Arg
    50                  55                  60

Tyr Met Glu Leu Tyr Asp Leu Asn Arg Asp Leu Leu Asn Gly Tyr Lys
65                  70                  75                  80

Ile Arg Cys Asn Asn His Thr Glu Leu Leu Gly Asn Leu Lys Ala Val
                85                  90                  95

Asn Gln Ala Ile Gln Arg Ala Gly Arg Leu Arg Val Gly Lys Pro Lys
            100                 105                 110

Asn Gln Val Ile Thr Ala Cys Arg Asp Ala Ile Arg Ser Asn Asn Ile
        115                 120                 125

Asn Thr Leu Phe Lys Ile Met Arg Val Gly Thr Ala Ser Ser
    130                 135                 140


<210> 8260
<211> 519
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96RK4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000268057"

<400> 8260
Met Ala Glu Glu Arg Val Ala Thr Arg Thr Gln Phe Pro Val Ser Thr
```

```
1               5                   10                  15

Glu Ser Gln Lys Pro Arg Gln Lys Lys Ala Pro Glu Phe Pro Ile Leu
            20                  25                  30

Glu Lys Gln Asn Trp Leu Ile His Leu His Tyr Ile Arg Lys Asp Tyr
        35                  40                  45

Glu Ala Cys Lys Ala Val Ile Lys Glu Gln Leu Gln Glu Thr Gln Gly
    50                  55                  60

Leu Cys Glu Tyr Ala Ile Tyr Val Gln Ala Leu Ile Phe Arg Leu Glu
65                  70                  75                  80

Gly Asn Ile Gln Glu Ser Leu Glu Leu Phe Gln Thr Cys Ala Val Leu
                85                  90                  95

Ser Pro Gln Ser Ala Asp Asn Leu Lys Gln Val Ala Arg Ser Leu Phe
            100                 105                 110

Leu Leu Gly Lys His Lys Ala Ala Ile Glu Val Tyr Asn Glu Ala Ala
        115                 120                 125

Lys Leu Asn Gln Lys Asp Trp Glu Ile Ser His Asn Leu Gly Val Cys
    130                 135                 140

Tyr Ile Tyr Leu Lys Gln Phe Asn Lys Ala Gln Asp Gln Leu His Asn
145                 150                 155                 160

Ala Leu Asn Leu Asn Arg His Asp Leu Thr Tyr Ile Met Leu Gly Lys
                165                 170                 175

Ile His Leu Leu Glu Gly Asp Leu Asp Lys Ala Ile Glu Val Tyr Lys
            180                 185                 190

Lys Ala Val Glu Phe Ser Pro Glu Asn Thr Glu Leu Leu Thr Thr Leu
        195                 200                 205

Gly Leu Leu Tyr Leu Gln Leu Gly Ile Tyr Gln Lys Ala Phe Glu His
    210                 215                 220

Leu Gly Asn Ala Leu Thr Tyr Asp Pro Thr Asn Tyr Lys Ala Ile Leu
225                 230                 235                 240
```

```
Ala Ala Gly Ser Met Met Gln Thr His Gly Asp Phe Asp Val Ala Leu
                245                 250                 255

Thr Lys Tyr Arg Val Val Ala Cys Ala Val Pro Glu Ser Pro Pro Leu
            260                 265                 270

Trp Asn Asn Ile Gly Met Cys Phe Phe Gly Lys Lys Lys Tyr Val Ala
        275                 280                 285

Ala Ile Ser Cys Leu Lys Arg Ala Asn Tyr Leu Ala Pro Phe Asp Trp
    290                 295                 300

Lys Ile Leu Tyr Asn Leu Gly Leu Val His Leu Thr Met Gln Gln Tyr
305                 310                 315                 320

Ala Ser Ala Phe His Phe Leu Ser Ala Ala Ile Asn Phe Gln Pro Lys
                325                 330                 335

Met Gly Glu Leu Tyr Met Leu Leu Ala Val Ala Leu Thr Asn Leu Glu
            340                 345                 350

Asp Ile Glu Asn Ala Lys Arg Ala Tyr Ala Glu Ala Val His Leu Asp
        355                 360                 365

Lys Cys Asn Pro Leu Val Asn Leu Asn Tyr Ala Val Leu Leu Tyr Asn
    370                 375                 380

Gln Gly Glu Lys Lys Asn Ala Leu Ala Gln Tyr Gln Glu Met Glu Lys
385                 390                 395                 400

Lys Val Ser Leu Leu Lys Asp Asn Ser Ser Leu Glu Phe Asp Ser Glu
                405                 410                 415

Met Val Glu Met Ala Gln Lys Leu Gly Ala Ala Leu Gln Val Gly Glu
            420                 425                 430

Ala Leu Val Trp Thr Lys Pro Val Lys Asp Pro Lys Ser Lys His Gln
        435                 440                 445

Thr Thr Ser Thr Ser Lys Pro Ala Ser Phe Gln Gln Pro Leu Gly Ser
    450                 455                 460
```

```
Asn Gln Ala Leu Gly Gln Ala Met Ser Ser Ala Ala Ala Tyr Arg Thr
465                 470                 475                 480


Leu Pro Ser Gly Ala Gly Gly Thr Ser Gln Phe Thr Lys Pro Pro Ser
                485                 490                 495


Leu Pro Leu Glu Pro Glu Pro Ala Val Glu Ser Ser Pro Thr Glu Thr
            500                 505                 510


Ser Glu Gln Ile Arg Glu Lys
        515


<210> 8261
<211> 347
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96RK4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378631"

<400> 8261
Met Leu Gly Lys Ile His Leu Leu Glu Gly Asp Leu Asp Lys Ala Ile
1               5                   10                  15


Glu Val Tyr Lys Lys Ala Val Glu Phe Ser Pro Glu Asn Thr Glu Leu
            20                  25                  30


Leu Thr Thr Leu Gly Leu Leu Tyr Leu Gln Leu Gly Ile Tyr Gln Lys
        35                  40                  45


Ala Phe Glu His Leu Gly Asn Ala Leu Thr Tyr Asp Pro Thr Asn Tyr
```

```
    50                  55                  60

Lys Ala Ile Leu Ala Ala Gly Ser Met Met Gln Thr His Gly Asp Phe
65                  70                  75                  80

Asp Val Ala Leu Thr Lys Tyr Arg Val Val Ala Cys Ala Val Pro Glu
                85                  90                  95

Ser Pro Pro Leu Trp Asn Asn Ile Gly Met Cys Phe Phe Gly Lys Lys
            100                 105                 110

Lys Tyr Val Ala Ala Ile Ser Cys Leu Lys Arg Ala Asn Tyr Leu Ala
        115                 120                 125

Pro Phe Asp Trp Lys Ile Leu Tyr Asn Leu Gly Leu Val His Leu Thr
    130                 135                 140

Met Gln Gln Tyr Ala Ser Ala Phe His Phe Leu Ser Ala Ala Ile Asn
145                 150                 155                 160

Phe Gln Pro Lys Met Gly Glu Leu Tyr Met Leu Leu Ala Val Ala Leu
                165                 170                 175

Thr Asn Leu Glu Asp Ile Glu Asn Ala Lys Arg Ala Tyr Ala Glu Ala
            180                 185                 190

Val His Leu Asp Lys Cys Asn Pro Leu Val Asn Leu Asn Tyr Ala Val
        195                 200                 205

Leu Leu Tyr Asn Gln Gly Glu Lys Lys Asn Ala Leu Ala Gln Tyr Gln
    210                 215                 220

Glu Met Glu Lys Lys Val Ser Leu Leu Lys Asp Asn Ser Ser Leu Glu
225                 230                 235                 240

Phe Asp Ser Glu Met Val Glu Met Ala Gln Lys Leu Gly Ala Ala Leu
                245                 250                 255

Gln Val Gly Glu Ala Leu Val Trp Thr Lys Pro Val Lys Asp Pro Lys
            260                 265                 270

Ser Lys His Gln Thr Thr Ser Thr Ser Lys Pro Ala Ser Phe Gln Gln
        275                 280                 285
```

```
Pro Leu Gly Ser Asn Gln Ala Leu Gly Gln Ala Met Ser Ser Ala Ala
    290                 295                 300

Ala Tyr Arg Thr Leu Pro Ser Gly Ala Gly Gly Thr Ser Gln Phe Thr
305                 310                 315                 320

Lys Pro Pro Ser Leu Pro Leu Glu Pro Glu Pro Ala Val Glu Ser Ser
                325                 330                 335

Pro Thr Glu Thr Ser Glu Gln Ile Arg Glu Lys
            340                 345
```

<210> 8262
<211> 77
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454718"

<400> 8262

```
Met Ala Glu Glu Arg Val Ala Thr Val Ser Ala Glu Ile Leu Phe Ser
1               5                   10                  15

Cys Pro Ala Ala Gly Gln Gly Lys Leu Ala Gly Gly Phe Cys Pro Met
            20                  25                  30

Gln Arg Phe Leu Glu Arg Gly Gly Ala Gly Cys Arg Ala Ser Gln Gly
        35                  40                  45

Gly Arg Gly Asp Thr Val Pro Phe Leu Leu Ser Arg Glu Leu Val Ala
    50                  55                  60
```

```
Trp Gly Lys Ser Gly Tyr Leu Ala Ala Gln Val Leu Phe
65                  70                  75


<210> 8263
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
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<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455412"

<400> 8263
Met Ala Glu Glu Arg Val Ala Thr Arg Thr Gln Phe Pro Val Ser Thr
1               5                   10                  15


Glu Ser Gln Lys Pro Arg Gln Lys Lys Ala Pro Glu Phe Pro Ile Leu
            20                  25                  30


Glu Lys Gln Asn Trp Leu Ile His Leu His Tyr Ile Arg Lys Asp Tyr
        35                  40                  45


Glu Ala Cys Lys Ala Val Ile Lys Glu Gln Leu Gln Glu Thr Gln Gly
    50                  55                  60


Leu Cys Glu Tyr Ala Ile Tyr Val Gln Ala Leu Ile Phe Arg Leu Glu
65                  70                  75                  80


Gly Asn Ile Gln Glu Ser Leu Glu Leu Phe Gln Thr Cys Ala Val Leu
                85                  90                  95


Ser Pro Gln Ser Ala Asp Asn Leu Lys Gln Val Ala Arg Ser Leu Phe
            100                 105                 110


Leu Leu Gly Lys His Lys Ala Ala Ile Glu Val Tyr Asn Glu Ala Ala
        115                 120                 125
```

```
Lys Leu Asn Gln Lys Asp Trp Pro Arg Arg Ser Ala Ile Thr
    130                 135                 140


<210> 8264
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455958"

<400> 8264
Met Ala Leu Thr Val Val Pro Ser Phe Ser Val Ser Gly Val Trp Lys
1               5                   10                  15


Arg Thr Gln Phe Pro Val Ser Thr Glu Ser Gln Lys Pro Arg Gln Lys
            20                  25                  30


Lys Glu Phe Pro Ile Leu Glu Lys Gln Asn Trp Leu Ile His Leu His
        35                  40                  45


Tyr Ile Arg Lys Asp Tyr Glu Ala Cys Lys Ala Val Ile Lys Glu Gln
    50                  55                  60


Leu Gln Glu Thr Gln Gly Leu Cys Glu Tyr Ala Ile Tyr Val Gln Ala
65                  70                  75                  80


Leu Ile Phe Arg Leu Glu Gly Asn Ile Gln Glu Ser Leu Glu Leu Phe
                85                  90                  95


Gln Thr Cys Ala Val Leu Ser Pro Gln Ser Ala Asp Asn Leu Lys Gln
            100                 105                 110
```

Val Ala Arg Ser Leu Phe Leu Leu Gly Lys His Lys Ala Ala Ile Glu
        115   120   125

Val Tyr Asn Glu Ala Ala Lys Leu Asn Gln Lys Asp Trp
    130   135   140

<210> 8265
<211> 20
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456463"

<400> 8265
Met Ala Glu Glu Arg Val Ala Thr Leu Gln Ser Phe Leu Phe Trp Arg
1   5   10   15

Ser Arg Thr Gly
            20

<210> 8266
<211> 67
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456664"

<400> 8266
Met Ala Glu Glu Arg Val Ala Thr Arg Thr Gln Phe Pro Val Ser Thr
1   5   10   15

Glu Ser Gln Lys Pro Arg Gln Lys Lys Gly Gly Val Gly Val Ser Asn
            20   25   30

Asp Leu Glu Tyr Gln Lys Phe Asn Leu Tyr Ile Tyr Ser Ser Arg Val
        35   40   45

Ser Tyr Phe Gly Glu Ala Glu Leu Val Asp Ser Ser Ser Leu Tyr Pro
    50   55   60

Glu Arg Leu
65

<210> 8267
<211> 281
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456758"

<400> 8267
Glu Arg Val Ala Thr Arg Thr Gln Phe Pro Val Ser Thr Glu Ser Gln
1   5   10   15

Lys Pro Arg Gln Lys Lys Ala Pro Glu Phe Pro Ile Leu Glu Lys Gln
            20   25   30

Asn Trp Leu Ile His Leu His Tyr Ile Arg Lys Asp Tyr Glu Ala Cys

```
        35                  40                  45

Lys Ala Val Ile Lys Glu Gln Leu Gln Glu Thr Gln Gly Leu Cys Glu
    50                  55                  60

Tyr Ala Ile Tyr Val Gln Ala Leu Ile Phe Arg Leu Glu Gly Asn Ile
65                  70                  75                  80

Gln Glu Ser Leu Glu Leu Phe Gln Thr Cys Ala Val Leu Ser Pro Gln
                85                  90                  95

Ser Ala Asp Asn Leu Lys Gln Val Ala Arg Ser Leu Phe Leu Leu Gly
            100                 105                 110

Lys His Lys Ala Ala Ile Glu Val Tyr Asn Glu Ala Ala Lys Leu Asn
        115                 120                 125

Gln Lys Asp Trp Glu Ile Ser His Asn Leu Gly Val Cys Tyr Ile Tyr
    130                 135                 140

Leu Lys Gln Phe Asn Lys Ala Gln Asp Gln Leu His Asn Ala Leu Asn
145                 150                 155                 160

Leu Asn Arg His Asp Leu Thr Tyr Ile Met Leu Gly Lys Ile His Leu
                165                 170                 175

Leu Glu Gly Asp Leu Asp Lys Ala Ile Glu Val Tyr Lys Lys Ala Val
            180                 185                 190

Glu Phe Ser Pro Glu Asn Thr Glu Leu Leu Thr Thr Leu Gly Leu Leu
        195                 200                 205

Tyr Leu Gln Ala Ile Leu Ala Ala Gly Ser Met Met Gln Thr His Gly
    210                 215                 220

Asp Phe Asp Val Ala Leu Thr Lys Tyr Arg Val Val Ala Cys Ala Val
225                 230                 235                 240

Pro Glu Ser Pro Pro Leu Trp Asn Asn Ile Gly Met Cys Phe Phe Gly
                245                 250                 255

Lys Lys Lys Tyr Val Ala Ala Ile Ser Cys Leu Lys Arg Ala Asn Tyr
            260                 265                 270
```

Leu Ala Pro Phe Asp Trp Lys Ile Leu
275 280

<210> 8268
<211> 20
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456759"

<400> 8268
Met Ala Glu Glu Arg Val Ala Thr Leu Gln Ser Phe Leu Phe Trp Arg
1 5 10 15

Ser Arg Thr Gly
20

<210> 8269
<211> 180
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 4; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000457479"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8269

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Xaa Asn Phe Gln Pro Lys Met Gly Glu Leu Tyr Met Leu Leu Ala Ala
1               5                  10                  15

Glu Leu Ser Ser Cys Ser Ala Phe Phe Val Ala Val Ala Leu Thr Asn
            20                  25                  30

Leu Glu Asp Ile Glu Asn Ala Lys Arg Ala Tyr Ala Glu Ala Val His
        35                  40                  45

Leu Asp Lys Cys Asn Pro Leu Val Asn Leu Asn Tyr Ala Val Leu Leu
    50                  55                  60

Tyr Asn Gln Gly Glu Lys Lys Asn Ala Leu Ala Gln Tyr Gln Glu Met
65                  70                  75                  80

Glu Lys Lys Val Ser Leu Leu Lys Asp Asn Ser Ser Leu Glu Phe Asp
                85                  90                  95

Ser Glu Met Val Glu Met Ala Gln Lys Leu Gly Ala Ala Leu Gln Val
            100                 105                 110

Gly Glu Ala Leu Val Trp Thr Lys Pro Val Lys Asp Pro Lys Ser Lys
        115                 120                 125

His Gln Thr Thr Ser Thr Ser Lys Pro Ala Ser Phe Gln Gln Pro Leu
    130                 135                 140

Gly Ser Asn Gln Ala Leu Gly Gln Ala Met Ser Ser Ala Ala Ala Tyr
145                 150                 155                 160

Arg Thr Leu Pro Ser Gly Ala Gly Gly Thr Ser Gln Phe Thr Lys Pro
                165                 170                 175

Pro Ser Leu Pro
            180
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<210> 8270
<211> 50
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 4; "

<220>
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<223> /note="ENSP ID: ENSP00000457753"

<400> 8270
Met Ala Glu Glu Arg Val Ala Thr Asp Cys Ser Pro Ser Trp Gly Ala
1 5 10 15

Leu Asp Gly Glu Gly Arg Leu Phe Thr Ser Asn Gly Ser Tyr Arg Ser
20 25 30

Ala Ile Phe Phe Cys Leu Gly Gly Leu Glu Glu Asn Ser Ile Ser Cys
35 40 45

Ile Tyr
50

<210> 8271
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457795"

<400> 8271
Met Ala Glu Glu Arg Val Ala Thr Arg Thr Gln Phe Pro Val Ser Thr
1   5   10   15

Glu Ser Gln Lys Pro Arg Gln Lys Lys Ala Pro Glu Phe Pro Ile Leu
            20   25   30

Glu Lys Gln Asn Trp Leu Ile His Leu His Tyr Ile Arg Lys Asp Tyr
        35   40   45

Glu Ala Cys Lys Ala Val Ile Lys Glu Gln Leu Gln Glu Thr Gln Gly
    50   55   60

Leu Cys Glu Tyr Ala Ile Tyr Val Gln Asp Phe Phe Trp Glu Asn Ile
65   70   75   80

Lys Leu Pro Leu Lys Tyr Ile Met Lys Gln Leu Asn Ser Thr Arg Lys
                85   90   95

Ile Gly Arg Ser Ala Ile Thr
            100

<210> 8272
<211> 33
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1709; "

<220>
<221> source
<223> /note="Gene Symbol: BBS4; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457958"

<400> 8272
Met Ala Glu Glu Arg Val Ala Thr Arg Thr Gln Phe Pro Val Ser Thr

1 5 10 15

Glu Ser Gln Lys Pro Arg Gln Lys Lys Gly Asp Phe Leu Leu Ala Phe
20 25 30

Ser

<210> 8273
<211> 341
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1710; "

<220>
<221> source
<223> /note="Gene Symbol: BBS5; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N3I7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295240"

<400> 8273
Met Ser Val Leu Asp Ala Leu Trp Glu Asp Arg Asp Val Arg Phe Asp
1 5 10 15

Leu Ser Ala Gln Gln Met Lys Thr Arg Pro Gly Glu Val Leu Ile Asp
20 25 30

Cys Leu Asp Ser Ile Glu Asp Thr Lys Gly Asn Asn Gly Asp Arg Gly
35 40 45

Arg Leu Leu Val Thr Asn Leu Arg Ile Leu Trp His Ser Leu Ala Leu
50 55 60

Ser Arg Val Asn Val Ser Val Gly Tyr Asn Cys Ile Leu Asn Ile Thr
65 70 75 80

```
Thr Arg Thr Ala Asn Ser Lys Leu Arg Gly Gln Thr Glu Ala Leu Tyr
                85                  90                  95

Ile Leu Thr Lys Cys Asn Ser Thr Arg Phe Glu Phe Ile Phe Thr Asn
            100                 105                 110

Leu Val Pro Gly Ser Pro Arg Leu Phe Thr Ser Val Met Ala Val His
        115                 120                 125

Arg Ala Tyr Glu Thr Ser Lys Met Tyr Arg Asp Phe Lys Leu Arg Ser
    130                 135                 140

Ala Leu Ile Gln Asn Lys Gln Leu Arg Leu Leu Pro Gln Glu His Val
145                 150                 155                 160

Tyr Asp Lys Ile Asn Gly Val Trp Asn Leu Ser Ser Asp Gln Gly Asn
                165                 170                 175

Leu Gly Thr Phe Phe Ile Thr Asn Val Arg Ile Val Trp His Ala Asn
            180                 185                 190

Met Asn Asp Ser Phe Asn Val Ser Ile Pro Tyr Leu Gln Ile Arg Ser
        195                 200                 205

Ile Lys Ile Arg Asp Ser Lys Phe Gly Leu Ala Leu Val Ile Glu Ser
    210                 215                 220

Ser Gln Gln Ser Gly Gly Tyr Val Leu Gly Phe Lys Ile Asp Pro Val
225                 230                 235                 240

Glu Lys Leu Gln Glu Ser Val Lys Glu Ile Asn Ser Leu His Lys Val
                245                 250                 255

Tyr Ser Ala Ser Pro Ile Phe Gly Val Asp Tyr Glu Met Glu Glu Lys
            260                 265                 270

Pro Gln Pro Leu Glu Ala Leu Thr Val Glu Gln Ile Gln Asp Asp Val
        275                 280                 285

Glu Ile Asp Ser Asp Gly His Thr Asp Ala Phe Val Ala Tyr Phe Ala
    290                 295                 300
```

```
Asp Gly Asn Lys Gln Gln Asp Arg Glu Pro Val Phe Ser Glu Glu Leu
305                 310                 315                 320


Gly Leu Ala Ile Glu Lys Leu Lys Asp Gly Phe Thr Leu Gln Gly Leu
                325                 330                 335


Trp Glu Val Met Ser
            340


<210> 8274
<211> 320
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1710; "

<220>
<221> source
<223> /note="Gene Symbol: BBS5; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N3I7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376431"

<400> 8274
Met Ser Val Leu Asp Ala Leu Trp Glu Asp Arg Asp Val Arg Phe Asp
1               5                   10                  15


Leu Ser Ala Gln Gln Met Lys Thr Arg Pro Gly Glu Val Leu Ile Asp
            20                  25                  30


Cys Leu Asp Ser Ile Glu Asp Thr Lys Gly Asn Asn Gly Asp Arg Gly
        35                  40                  45


Arg Leu Leu Val Thr Asn Leu Arg Ile Leu Trp His Ser Leu Ala Leu
    50                  55                  60


Ser Arg Val Asn Val Ser Val Gly Tyr Asn Cys Ile Leu Asn Ile Thr
65                  70                  75                  80
```

```
Thr Arg Thr Ala Asn Ser Lys Leu Arg Gly Gln Thr Glu Ala Leu Tyr
                85                  90                  95

Ile Leu Thr Lys Cys Asn Ser Thr Arg Phe Glu Phe Ile Phe Thr Asn
            100                 105                 110

Leu Val Pro Gly Ser Pro Arg Leu Phe Thr Ser Val Met Ala Val His
        115                 120                 125

Arg Ala Tyr Glu Thr Ser Lys Met Tyr Arg Asp Phe Lys Leu Arg Ser
    130                 135                 140

Ala Leu Ile Gln Asn Lys Gln Leu Arg Leu Leu Pro Gln Glu His Val
145                 150                 155                 160

Tyr Asp Lys Ile Asn Gly Val Trp Asn Leu Ser Ser Asp Gln Gly Asn
                165                 170                 175

Leu Gly Thr Phe Phe Ile Thr Asn Val Arg Ile Val Trp His Ala Asn
            180                 185                 190

Met Asn Asp Ser Phe Asn Val Ser Ile Pro Tyr Leu Gln Ile Ser Gly
        195                 200                 205

Gly Tyr Val Leu Gly Phe Lys Ile Asp Pro Val Glu Lys Leu Gln Glu
    210                 215                 220

Ser Val Lys Glu Ile Asn Ser Leu His Lys Val Tyr Ser Ala Ser Pro
225                 230                 235                 240

Ile Phe Gly Val Asp Tyr Glu Met Glu Glu Lys Pro Gln Pro Leu Glu
                245                 250                 255

Ala Leu Thr Val Glu Gln Ile Gln Asp Asp Val Glu Ile Asp Ser Asp
            260                 265                 270

Gly His Thr Asp Ala Phe Val Ala Tyr Phe Ala Asp Gly Asn Lys Gln
        275                 280                 285

Gln Asp Arg Glu Pro Val Phe Ser Glu Glu Leu Gly Leu Ala Ile Glu
    290                 295                 300
```

```
Lys Leu Lys Asp Gly Phe Thr Leu Gln Gly Leu Trp Glu Val Met Ser
305                 310                 315                 320


<210> 8275
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1710; "

<220>
<221> source
<223> /note="Gene Symbol: BBS5; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406182"

<400> 8275
Met Ser Val Leu Asp Ala Leu Trp Glu Asp Arg Asp Val Arg Phe Asp
1               5                   10                  15


Leu Ser Ala Gln Gln Met Lys Thr Arg Pro Gly Glu Val Leu Ile Asp
            20                  25                  30


Cys Leu Asp Ser Ile Glu Asp Thr Lys Gly Asn Asn Gly Asp Arg Glu
        35                  40                  45


Ile Thr Arg Pro Asn
    50


<210> 8276
<211> 715
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1711; "

<220>
<221> source
<223> /note="Gene Symbol: BBS7; "
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<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IWZ6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264499"

<400> 8276

```
Met Asp Leu Ile Leu Asn Arg Met Asp Tyr Leu Gln Val Gly Val Thr
1               5                  10                  15

Ser Gln Lys Thr Met Lys Leu Ile Pro Ala Ser Arg His Arg Ala Thr
            20                  25                  30

Gln Lys Val Val Ile Gly Asp His Asp Gly Val Val Met Cys Phe Gly
        35                  40                  45

Met Lys Lys Gly Glu Ala Ala Ala Val Phe Lys Thr Leu Pro Gly Pro
    50                  55                  60

Lys Ile Ala Arg Leu Glu Leu Gly Gly Val Ile Asn Thr Pro Gln Glu
65                  70                  75                  80

Lys Ile Phe Ile Ala Ala Ala Ser Glu Ile Arg Gly Phe Thr Lys Arg
                85                  90                  95

Gly Lys Gln Phe Leu Ser Phe Glu Thr Asn Leu Thr Glu Ser Ile Lys
            100                 105                 110

Ala Met His Ile Ser Gly Ser Asp Leu Phe Leu Ser Ala Ser Tyr Ile
        115                 120                 125

Tyr Asn His Tyr Cys Asp Cys Lys Asp Gln His Tyr Tyr Leu Ser Gly
    130                 135                 140

Asp Lys Ile Asn Asp Val Ile Cys Leu Pro Val Glu Arg Leu Ser Arg
145                 150                 155                 160

Ile Thr Pro Val Leu Ala Cys Gln Asp Arg Val Leu Arg Val Leu Gln
                165                 170                 175
```

```
Gly Ser Asp Val Met Tyr Ala Val Glu Val Pro Gly Pro Pro Thr Val
            180                 185                 190

Leu Ala Leu His Asn Gly Asn Gly Gly Asp Ser Gly Glu Asp Leu Leu
        195                 200                 205

Phe Gly Thr Ser Asp Gly Lys Leu Ala Leu Ile Gln Ile Thr Thr Ser
    210                 215                 220

Lys Pro Val Arg Lys Trp Glu Ile Gln Asn Glu Lys Lys Arg Gly Gly
225                 230                 235                 240

Ile Leu Cys Ile Asp Ser Phe Asp Ile Val Gly Asp Gly Val Lys Asp
                245                 250                 255

Leu Leu Val Gly Arg Asp Asp Gly Met Val Glu Val Tyr Ser Phe Asp
            260                 265                 270

Asn Ala Asn Glu Pro Val Leu Arg Phe Asp Gln Met Leu Ser Glu Ser
        275                 280                 285

Val Thr Ser Ile Gln Gly Gly Cys Val Gly Lys Asp Ser Tyr Asp Glu
    290                 295                 300

Ile Val Val Ser Thr Tyr Ser Gly Trp Val Thr Gly Leu Thr Thr Glu
305                 310                 315                 320

Pro Ile His Lys Glu Ser Gly Pro Gly Glu Glu Leu Lys Ile Asn Gln
                325                 330                 335

Glu Met Gln Asn Lys Ile Ser Ser Leu Arg Asn Glu Leu Glu His Leu
            340                 345                 350

Gln Tyr Lys Val Leu Gln Glu Arg Glu Asn Tyr Gln Gln Ser Ser Gln
        355                 360                 365

Ser Ser Lys Ala Lys Ser Ala Val Pro Ser Phe Gly Ile Asn Asp Lys
    370                 375                 380

Phe Thr Leu Asn Lys Asp Asp Ala Ser Tyr Ser Leu Ile Leu Glu Val
385                 390                 395                 400
```

```
Gln Thr Ala Ile Asp Asn Val Leu Ile Gln Ser Asp Val Pro Ile Asp
                405                 410                 415

Leu Leu Asp Val Asp Lys Asn Ser Ala Val Val Ser Phe Ser Ser Cys
            420                 425                 430

Asp Ser Glu Ser Asn Asp Asn Phe Leu Leu Ala Thr Tyr Arg Cys Gln
        435                 440                 445

Ala Asp Thr Thr Arg Leu Glu Leu Lys Ile Arg Ser Ile Glu Gly Gln
    450                 455                 460

Tyr Gly Thr Leu Gln Ala Tyr Val Thr Pro Arg Ile Gln Pro Lys Thr
465                 470                 475                 480

Cys Gln Val Arg Gln Tyr His Ile Lys Pro Leu Ser Leu His Gln Arg
                485                 490                 495

Thr His Phe Ile Asp His Asp Arg Pro Met Asn Thr Leu Thr Leu Thr
            500                 505                 510

Gly Gln Phe Ser Phe Ala Glu Val His Ser Trp Val Val Phe Cys Leu
        515                 520                 525

Pro Glu Val Pro Glu Lys Pro Pro Ala Gly Glu Cys Val Thr Phe Tyr
    530                 535                 540

Phe Gln Asn Thr Phe Leu Asp Thr Gln Leu Glu Ser Thr Tyr Arg Lys
545                 550                 555                 560

Gly Glu Gly Val Phe Lys Ser Asp Asn Ile Ser Thr Ile Ser Ile Leu
                565                 570                 575

Lys Asp Val Leu Ser Lys Glu Ala Thr Lys Arg Lys Ile Asn Leu Asn
            580                 585                 590

Ile Ser Tyr Glu Ile Asn Glu Val Ser Val Lys His Thr Leu Lys Leu
        595                 600                 605

Ile His Pro Lys Leu Glu Tyr Gln Leu Leu Leu Ala Lys Lys Val Gln
    610                 615                 620

Leu Ile Asp Ala Leu Lys Glu Leu Gln Ile His Glu Gly Asn Thr Asn
```

625 630 635 640

Phe Leu Ile Pro Glu Tyr His Cys Ile Leu Glu Glu Ala Asp His Leu
645 650 655

Gln Glu Glu Tyr Lys Lys Gln Pro Ala His Leu Glu Arg Leu Tyr Gly
660 665 670

Met Ile Thr Asp Leu Phe Ile Asp Lys Phe Lys Phe Lys Gly Thr Asn
675 680 685

Val Lys Thr Lys Val Pro Leu Leu Leu Glu Ile Leu Asp Ser Tyr Asp
690 695 700

Gln Asn Ala Leu Ile Ser Phe Phe Asp Ala Ala
705 710 715

<210> 8277
<211> 138
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1711; "

<220>
<221> source
<223> /note="Gene Symbol: BBS7; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423250"

<400> 8277
Asp Val Leu Ser Lys Glu Ala Thr Lys Arg Lys Ile Asn Leu Asn Ile
1 5 10 15

Ser Tyr Glu Ile Asn Glu Val Ser Val Lys His Thr Leu Lys Leu Ile
20 25 30

His Pro Lys Leu Glu Tyr Gln Leu Leu Leu Ala Lys Lys Val Gln Leu
35 40 45

```
Ile Asp Ala Leu Lys Glu Leu Gln Ile His Glu Gly Asn Thr Asn Phe
    50                  55                  60

Leu Ile Pro Glu Tyr His Cys Ile Leu Glu Glu Ala Asp His Leu Gln
65                  70                  75                  80

Glu Glu Tyr Lys Lys Gln Pro Ala His Leu Glu Arg Leu Tyr Gly Met
                85                  90                  95

Ile Thr Asp Leu Phe Ile Asp Lys Phe Lys Phe Lys Gly Thr Asn Val
            100                 105                 110

Lys Thr Lys Val Pro Leu Leu Leu Glu Ile Leu Asp Ser Tyr Asp Gln
        115                 120                 125

Asn Ala Leu Ile Ser Phe Phe Asp Ala Ala
    130                 135


<210> 8278
<211> 672
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1711; "

<220>
<221> source
<223> /note="Gene Symbol: BBS7; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 7; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IWZ6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423626"

<400> 8278
Met Asp Leu Ile Leu Asn Arg Met Asp Tyr Leu Gln Val Gly Val Thr
1               5                   10                  15

Ser Gln Lys Thr Met Lys Leu Ile Pro Ala Ser Arg His Arg Ala Thr
```

```
            20                  25                  30

Gln Lys Val Val Ile Gly Asp His Asp Gly Val Val Met Cys Phe Gly
        35                  40                  45

Met Lys Lys Gly Glu Ala Ala Ala Val Phe Lys Thr Leu Pro Gly Pro
    50                  55                  60

Lys Ile Ala Arg Leu Glu Leu Gly Gly Val Ile Asn Thr Pro Gln Glu
65                  70                  75                  80

Lys Ile Phe Ile Ala Ala Ala Ser Glu Ile Arg Gly Phe Thr Lys Arg
                85                  90                  95

Gly Lys Gln Phe Leu Ser Phe Glu Thr Asn Leu Thr Glu Ser Ile Lys
            100                 105                 110

Ala Met His Ile Ser Gly Ser Asp Leu Phe Leu Ser Ala Ser Tyr Ile
        115                 120                 125

Tyr Asn His Tyr Cys Asp Cys Lys Asp Gln His Tyr Tyr Leu Ser Gly
    130                 135                 140

Asp Lys Ile Asn Asp Val Ile Cys Leu Pro Val Glu Arg Leu Ser Arg
145                 150                 155                 160

Ile Thr Pro Val Leu Ala Cys Gln Asp Arg Val Leu Arg Val Leu Gln
                165                 170                 175

Gly Ser Asp Val Met Tyr Ala Val Glu Val Pro Gly Pro Pro Thr Val
            180                 185                 190

Leu Ala Leu His Asn Gly Asn Gly Gly Asp Ser Gly Glu Asp Leu Leu
        195                 200                 205

Phe Gly Thr Ser Asp Gly Lys Leu Ala Leu Ile Gln Ile Thr Thr Ser
    210                 215                 220

Lys Pro Val Arg Lys Trp Glu Ile Gln Asn Glu Lys Lys Arg Gly Gly
225                 230                 235                 240

Ile Leu Cys Ile Asp Ser Phe Asp Ile Val Gly Asp Gly Val Lys Asp
                245                 250                 255
```

```
Leu Leu Val Gly Arg Asp Asp Gly Met Val Glu Val Tyr Ser Phe Asp
            260                 265                 270

Asn Ala Asn Glu Pro Val Leu Arg Phe Asp Gln Met Leu Ser Glu Ser
        275                 280                 285

Val Thr Ser Ile Gln Gly Gly Cys Val Gly Lys Asp Ser Tyr Asp Glu
    290                 295                 300

Ile Val Val Ser Thr Tyr Ser Gly Trp Val Thr Gly Leu Thr Thr Glu
305                 310                 315                 320

Pro Ile His Lys Glu Ser Gly Pro Gly Glu Glu Leu Lys Ile Asn Gln
                325                 330                 335

Glu Met Gln Asn Lys Ile Ser Ser Leu Arg Asn Glu Leu Glu His Leu
            340                 345                 350

Gln Tyr Lys Val Leu Gln Glu Arg Glu Asn Tyr Gln Gln Ser Ser Gln
        355                 360                 365

Ser Ser Lys Ala Lys Ser Ala Val Pro Ser Phe Gly Ile Asn Asp Lys
    370                 375                 380

Phe Thr Leu Asn Lys Asp Asp Ala Ser Tyr Ser Leu Ile Leu Glu Val
385                 390                 395                 400

Gln Thr Ala Ile Asp Asn Val Leu Ile Gln Ser Asp Val Pro Ile Asp
                405                 410                 415

Leu Leu Asp Val Asp Lys Asn Ser Ala Val Val Ser Phe Ser Ser Cys
            420                 425                 430

Asp Ser Glu Ser Asn Asp Asn Phe Leu Leu Ala Thr Tyr Arg Cys Gln
        435                 440                 445

Ala Asp Thr Thr Arg Leu Glu Leu Lys Ile Arg Ser Ile Glu Gly Gln
    450                 455                 460

Tyr Gly Thr Leu Gln Ala Tyr Val Thr Pro Arg Ile Gln Pro Lys Thr
465                 470                 475                 480
```

```
Cys Gln Val Arg Gln Tyr His Ile Lys Pro Leu Ser Leu His Gln Arg
                485                 490                 495

Thr His Phe Ile Asp His Asp Arg Pro Met Asn Thr Leu Thr Leu Thr
            500                 505                 510

Gly Gln Phe Ser Phe Ala Glu Val His Ser Trp Val Val Phe Cys Leu
        515                 520                 525

Pro Glu Val Pro Glu Lys Pro Pro Ala Gly Glu Cys Val Thr Phe Tyr
    530                 535                 540

Phe Gln Asn Thr Phe Leu Asp Thr Gln Leu Glu Ser Thr Tyr Arg Lys
545                 550                 555                 560

Gly Glu Gly Val Phe Lys Ser Asp Asn Ile Ser Thr Ile Ser Ile Leu
                565                 570                 575

Lys Asp Val Leu Ser Lys Glu Ala Thr Lys Arg Lys Ile Asn Leu Asn
            580                 585                 590

Ile Ser Tyr Glu Ile Asn Glu Val Ser Val Lys His Thr Leu Lys Leu
        595                 600                 605

Ile His Pro Lys Leu Glu Tyr Gln Leu Leu Leu Ala Lys Lys Val Gln
    610                 615                 620

Leu Ile Asp Ala Leu Lys Glu Leu Gln Ile His Glu Gly Asn Thr Asn
625                 630                 635                 640

Phe Leu Ile Pro Glu Tyr His Cys Ile Leu Glu Glu Ala Asp His Leu
                645                 650                 655

Gln Glu Glu Tyr Lys Lys Gln Pro Ala His Leu Glu Arg Leu Tyr Gly
            660                 665                 670
```

<210> 8279
<211> 887
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q3SYG4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000242067"

<400> 8279
Met Ser Leu Phe Lys Ala Arg Asp Trp Trp Ser Thr Ile Leu Gly Asp
1   5   10   15

Lys Glu Glu Phe Asp Gln Gly Cys Leu Cys Leu Ala Asn Val Asp Asn
            20   25   30

Ser Gly Asn Gly Gln Asp Lys Ile Ile Val Gly Ser Phe Met Gly Tyr
        35   40   45

Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp Gly Ala Gln
    50   55   60

Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro Val Leu Gln
65   70   75   80

Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu His Leu Ala
                85   90   95

Val Leu His Ser Arg Lys Leu Cys Val Tyr Ser Val Ser Gly Thr Leu
            100   105   110

Gly Asn Val Glu His Gly Asn Gln Cys Gln Met Lys Leu Met Tyr Glu
        115   120   125

His Asn Leu Gln Arg Thr Ala Cys Asn Met Thr Tyr Gly Ser Phe Gly
    130   135   140

Gly Val Lys Gly Arg Asp Leu Ile Cys Ile Gln Ser Met Asp Gly Met
145   150   155   160

```
Leu Met Val Phe Glu Gln Glu Ser Tyr Ala Phe Gly Arg Phe Leu Pro
                165                 170                 175

Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr Ser Ser Arg Thr Asp Ser
            180                 185                 190

Phe Leu Thr Val Ser Ser Cys Gln Gln Val Glu Ser Tyr Lys Tyr Gln
        195                 200                 205

Val Leu Ala Phe Ala Thr Asp Ala Asp Lys Arg Gln Glu Thr Glu Gln
    210                 215                 220

Gln Lys Leu Gly Ser Gly Lys Arg Leu Val Val Asp Trp Thr Leu Asn
225                 230                 235                 240

Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile Val Ser Phe Asn Gln Ser
                245                 250                 255

Ala Ser Ser Val Phe Val Leu Gly Glu Arg Asn Phe Phe Cys Leu Lys
            260                 265                 270

Asp Asn Gly Gln Ile Arg Phe Met Lys Lys Leu Asp Trp Ser Pro Ser
        275                 280                 285

Cys Phe Leu Pro Tyr Cys Ser Val Ser Glu Gly Thr Ile Asn Thr Leu
    290                 295                 300

Ile Gly Asn His Asn Asn Met Leu His Ile Tyr Gln Asp Val Thr Leu
305                 310                 315                 320

Lys Trp Ala Thr Gln Leu Pro His Ile Pro Val Ala Val Arg Val Gly
                325                 330                 335

Cys Leu His Asp Leu Lys Gly Val Ile Val Thr Leu Ser Asp Asp Gly
            340                 345                 350

His Leu Gln Cys Ser Tyr Leu Gly Thr Asp Pro Ser Leu Phe Gln Ala
        355                 360                 365

Pro Asn Val Gln Ser Arg Glu Leu Asn Tyr Asp Glu Leu Asp Val Glu
    370                 375                 380
```

```
Met Lys Glu Leu Gln Lys Ile Ile Lys Asp Val Asn Lys Ser Gln Gly
385                 390                 395                 400

Val Trp Pro Met Thr Glu Arg Glu Asp Asp Leu Asn Val Ser Val Val
                405                 410                 415

Val Ser Pro Asn Phe Asp Ser Val Ser Gln Ala Thr Asp Val Glu Val
            420                 425                 430

Gly Thr Asp Leu Val Pro Ser Val Thr Val Lys Val Thr Leu Gln Asn
        435                 440                 445

Arg Val Ile Leu Gln Lys Ala Lys Leu Ser Val Tyr Val Gln Pro Pro
    450                 455                 460

Leu Glu Leu Thr Cys Asp Gln Phe Thr Phe Glu Phe Met Thr Pro Asp
465                 470                 475                 480

Leu Thr Arg Thr Val Ser Phe Ser Val Tyr Leu Lys Arg Ser Tyr Thr
                485                 490                 495

Pro Ser Glu Leu Glu Gly Asn Ala Val Val Ser Tyr Ser Arg Pro Thr
            500                 505                 510

Asp Arg Asn Pro Asp Gly Ile Pro Arg Val Ile Gln Cys Lys Phe Arg
        515                 520                 525

Leu Pro Leu Lys Leu Ile Cys Leu Pro Gly Gln Pro Ser Lys Thr Ala
    530                 535                 540

Ser His Lys Ile Thr Ile Asp Thr Asn Lys Ser Pro Val Ser Leu Leu
545                 550                 555                 560

Ser Leu Phe Pro Gly Phe Ala Ser Gln Ser Asp Asp Asp Gln Val Asn
                565                 570                 575

Val Met Gly Phe His Phe Leu Gly Gly Ala Arg Ile Thr Val Leu Ala
            580                 585                 590

Ser Lys Thr Ser Gln Arg Tyr Arg Ile Gln Ser Glu Gln Phe Glu Asp
        595                 600                 605
```

```
Leu Trp Leu Ile Thr Asn Glu Leu Ile Leu Arg Leu Gln Glu Tyr Phe
    610                 615                 620

Glu Lys Gln Gly Val Lys Asp Phe Ala Cys Ser Phe Ser Gly Ser Ile
625                 630                 635                 640

Pro Leu Gln Glu Tyr Phe Glu Leu Ile Asp His His Phe Glu Leu Arg
                645                 650                 655

Ile Asn Gly Glu Lys Leu Glu Glu Leu Leu Ser Glu Arg Ala Val Gln
            660                 665                 670

Phe Arg Ala Ile Gln Arg Arg Leu Leu Ala Arg Phe Lys Asp Lys Thr
        675                 680                 685

Pro Ala Pro Leu Gln His Leu Asp Thr Leu Leu Asp Gly Thr Tyr Lys
    690                 695                 700

Gln Val Ile Ala Leu Ala Asp Ala Val Glu Glu Asn Gln Gly Asn Leu
705                 710                 715                 720

Phe Gln Ser Phe Thr Arg Leu Lys Ser Ala Thr His Leu Val Ile Leu
                725                 730                 735

Leu Ile Ala Leu Trp Gln Lys Leu Ser Ala Asp Gln Val Ala Ile Leu
            740                 745                 750

Glu Ala Ala Phe Leu Pro Leu Gln Glu Asp Thr Gln Glu Leu Gly Trp
        755                 760                 765

Glu Glu Thr Val Asp Ala Ala Ile Ser His Leu Leu Lys Thr Cys Leu
    770                 775                 780

Ser Lys Ser Ser Lys Glu Gln Ala Leu Asn Leu Asn Ser Gln Leu Asn
785                 790                 795                 800

Ile Pro Lys Asp Thr Ser Gln Leu Lys Lys His Ile Thr Leu Leu Cys
                805                 810                 815

Asp Arg Leu Ser Lys Gly Gly Arg Leu Cys Leu Ser Thr Asp Ala Ala
            820                 825                 830

Ala Pro Gln Thr Met Val Met Pro Gly Gly Cys Thr Thr Ile Pro Glu
```

```
        835                 840                 845

Ser Asp Leu Glu Glu Arg Ser Val Glu Gln Asp Ser Thr Glu Leu Phe
    850                 855                 860

Thr Asn His Arg His Leu Thr Ala Glu Thr Pro Arg Pro Glu Val Ser
865                 870                 875                 880

Pro Leu Gln Gly Val Ser Glu
                885

<210> 8280
<211> 847
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1712; "

<220>
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<220>
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<223> /note="Gene Name:
      Bardet-Biedl syndrome 9; "

<220>
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<223> /note="Uniprot ID:  Q3SYG4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000313122"

<400> 8280
Met Ser Leu Phe Lys Ala Arg Asp Trp Trp Ser Thr Ile Leu Gly Asp
1               5                   10                  15

Lys Glu Glu Phe Asp Gln Gly Cys Leu Cys Leu Ala Asn Val Asp Asn
            20                  25                  30

Ser Gly Asn Gly Gln Asp Lys Ile Ile Val Gly Ser Phe Met Gly Tyr
        35                  40                  45

Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp Gly Ala Gln
    50                  55                  60
```

```
Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro Val Leu Gln
65                  70                  75                  80

Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu His Leu Ala
                85                  90                  95

Val Leu His Ser Arg Lys Leu Cys Val Tyr Ser Val Ser Gly Thr Leu
            100                 105                 110

Gly Asn Val Glu His Gly Asn Gln Cys Gln Met Lys Leu Met Tyr Glu
        115                 120                 125

His Asn Leu Gln Arg Thr Ala Cys Asn Met Thr Tyr Gly Ser Phe Gly
    130                 135                 140

Gly Val Lys Gly Arg Asp Leu Ile Cys Ile Gln Ser Met Asp Gly Met
145                 150                 155                 160

Leu Met Val Phe Glu Gln Glu Ser Tyr Ala Phe Gly Arg Phe Leu Pro
                165                 170                 175

Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr Ser Ser Arg Thr Asp Ser
            180                 185                 190

Phe Leu Thr Val Ser Ser Cys Gln Gln Val Glu Ser Tyr Lys Tyr Gln
        195                 200                 205

Val Leu Ala Phe Ala Thr Asp Ala Asp Lys Arg Gln Glu Thr Glu Gln
    210                 215                 220

Gln Lys Leu Gly Ser Gly Lys Arg Leu Val Val Asp Trp Thr Leu Asn
225                 230                 235                 240

Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile Val Ser Phe Asn Gln Ser
                245                 250                 255

Ala Ser Ser Val Phe Val Leu Gly Glu Arg Asn Phe Phe Cys Leu Lys
            260                 265                 270

Asp Asn Gly Gln Ile Arg Phe Met Lys Lys Leu Asp Trp Ser Pro Ser
        275                 280                 285
```

```
Cys Phe Leu Pro Tyr Cys Ser Val Ser Glu Gly Thr Ile Asn Thr Leu
    290                 295                 300

Ile Gly Asn His Asn Asn Met Leu His Ile Tyr Gln Asp Val Thr Leu
305                 310                 315                 320

Lys Trp Ala Thr Gln Leu Pro His Ile Pro Val Ala Val Arg Val Gly
                325                 330                 335

Cys Leu His Asp Leu Lys Gly Val Ile Val Thr Leu Ser Asp Asp Gly
            340                 345                 350

His Leu Gln Cys Ser Tyr Leu Gly Thr Asp Pro Ser Leu Phe Gln Ala
        355                 360                 365

Pro Asn Val Gln Ser Arg Glu Leu Asn Tyr Asp Glu Leu Asp Val Glu
    370                 375                 380

Met Lys Glu Leu Gln Lys Ile Ile Lys Asp Val Asn Lys Ser Gln Gly
385                 390                 395                 400

Val Trp Pro Met Thr Glu Arg Glu Asp Asp Leu Asn Val Ser Val Val
                405                 410                 415

Val Ser Pro Asn Phe Asp Ser Val Ser Gln Ala Thr Asp Val Glu Val
            420                 425                 430

Gly Thr Asp Leu Val Pro Ser Val Thr Val Lys Val Thr Leu Gln Asn
        435                 440                 445

Arg Val Ile Leu Gln Lys Ala Lys Leu Ser Val Tyr Val Gln Pro Pro
    450                 455                 460

Leu Glu Leu Thr Cys Asp Gln Phe Thr Phe Glu Phe Met Ser Ile Pro
465                 470                 475                 480

Arg Val Ile Gln Cys Lys Phe Arg Leu Pro Leu Lys Leu Ile Cys Leu
                485                 490                 495

Pro Gly Gln Pro Ser Lys Thr Ala Ser His Lys Ile Thr Ile Asp Thr
            500                 505                 510

Asn Lys Ser Pro Val Ser Leu Leu Ser Leu Phe Pro Gly Phe Ala Ser
```

```
        515                 520                 525

Gln Ser Asp Asp Asp Gln Val Asn Val Met Gly Phe His Phe Leu Gly
    530                 535                 540

Gly Ala Arg Ile Thr Val Leu Ala Ser Lys Thr Ser Gln Arg Tyr Arg
545                 550                 555                 560

Ile Gln Ser Glu Gln Phe Glu Asp Leu Trp Leu Ile Thr Asn Glu Leu
                565                 570                 575

Ile Leu Arg Leu Gln Glu Tyr Phe Glu Lys Gln Gly Val Lys Asp Phe
            580                 585                 590

Ala Cys Ser Phe Ser Gly Ser Ile Pro Leu Gln Glu Tyr Phe Glu Leu
        595                 600                 605

Ile Asp His His Phe Glu Leu Arg Ile Asn Gly Glu Lys Leu Glu Glu
    610                 615                 620

Leu Leu Ser Glu Arg Ala Val Gln Phe Arg Ala Ile Gln Arg Arg Leu
625                 630                 635                 640

Leu Ala Arg Phe Lys Asp Lys Thr Pro Ala Pro Leu Gln His Leu Asp
                645                 650                 655

Thr Leu Leu Asp Gly Thr Tyr Lys Gln Val Ile Ala Leu Ala Asp Ala
            660                 665                 670

Val Glu Glu Asn Gln Gly Asn Leu Phe Gln Ser Phe Thr Arg Leu Lys
        675                 680                 685

Ser Ala Thr His Leu Val Ile Leu Leu Ile Ala Leu Trp Gln Lys Leu
    690                 695                 700

Ser Ala Asp Gln Val Ala Ile Leu Glu Ala Ala Phe Leu Pro Leu Gln
705                 710                 715                 720

Glu Asp Thr Gln Glu Leu Gly Trp Glu Glu Thr Val Asp Ala Ala Ile
                725                 730                 735

Ser His Leu Leu Lys Thr Cys Leu Ser Lys Ser Ser Lys Glu Gln Ala
            740                 745                 750
```

```
Leu Asn Leu Asn Ser Gln Leu Asn Ile Pro Lys Asp Thr Ser Gln Leu
        755                 760                 765

Lys Lys His Ile Thr Leu Leu Cys Asp Arg Leu Ser Lys Gly Gly Arg
    770                 775                 780

Leu Cys Leu Ser Thr Asp Ala Ala Ala Pro Gln Thr Met Val Met Pro
785                 790                 795                 800

Gly Gly Cys Thr Thr Ile Pro Glu Ser Asp Leu Glu Glu Arg Ser Val
                805                 810                 815

Glu Gln Asp Ser Thr Glu Leu Phe Thr Asn His Arg His Leu Thr Ala
            820                 825                 830

Glu Thr Pro Arg Pro Glu Val Ser Pro Leu Gln Gly Val Ser Glu
        835                 840                 845


<210> 8281
<211> 882
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q3SYG4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347182"

<400> 8281
Met Ser Leu Phe Lys Ala Arg Asp Trp Trp Ser Thr Ile Leu Gly Asp
1               5                   10                  15
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Lys Glu Glu Phe Asp Gln Gly Cys Leu Cys Leu Ala Asn Val Asp Asn
            20                  25                  30

Ser Gly Asn Gly Gln Asp Lys Ile Ile Val Gly Ser Phe Met Gly Tyr
        35                  40                  45

Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp Gly Ala Gln
    50                  55                  60

Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro Val Leu Gln
65                  70                  75                  80

Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu His Leu Ala
                85                  90                  95

Val Leu His Ser Arg Lys Leu Cys Val Tyr Ser Val Ser Gly Thr Leu
            100                 105                 110

Gly Asn Val Glu His Gly Asn Gln Cys Gln Met Lys Leu Met Tyr Glu
        115                 120                 125

His Asn Leu Gln Arg Thr Ala Cys Asn Met Thr Tyr Gly Ser Phe Gly
    130                 135                 140

Gly Val Lys Gly Arg Asp Leu Ile Cys Ile Gln Ser Met Asp Gly Met
145                 150                 155                 160

Leu Met Val Phe Glu Gln Glu Ser Tyr Ala Phe Gly Arg Phe Leu Pro
                165                 170                 175

Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr Ser Ser Arg Thr Asp Ser
            180                 185                 190

Phe Leu Thr Val Ser Ser Cys Gln Gln Val Glu Ser Tyr Lys Tyr Gln
        195                 200                 205

Val Leu Ala Phe Ala Thr Asp Ala Asp Lys Arg Gln Glu Thr Glu Gln
    210                 215                 220

Gln Lys Leu Gly Ser Gly Lys Arg Leu Val Val Asp Trp Thr Leu Asn
225                 230                 235                 240

Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile Val Ser Phe Asn Gln Ser
```

245 250 255

Ala Ser Ser Val Phe Val Leu Gly Glu Arg Asn Phe Phe Cys Leu Lys
260 265 270

Asp Asn Gly Gln Ile Arg Phe Met Lys Lys Leu Asp Trp Ser Pro Ser
275 280 285

Cys Phe Leu Pro Tyr Cys Ser Val Ser Glu Gly Thr Ile Asn Thr Leu
290 295 300

Ile Gly Asn His Asn Asn Met Leu His Ile Tyr Gln Asp Val Thr Leu
305 310 315 320

Lys Trp Ala Thr Gln Leu Pro His Ile Pro Val Ala Val Arg Val Gly
325 330 335

Cys Leu His Asp Leu Lys Gly Val Ile Val Thr Leu Ser Asp Asp Gly
340 345 350

His Leu Gln Cys Ser Tyr Leu Gly Thr Asp Pro Ser Leu Phe Gln Ala
355 360 365

Pro Asn Val Gln Ser Arg Glu Leu Asn Tyr Asp Glu Leu Asp Val Glu
370 375 380

Met Lys Glu Leu Gln Lys Ile Ile Lys Asp Val Asn Lys Ser Gln Gly
385 390 395 400

Val Trp Pro Met Thr Glu Arg Glu Asp Asp Leu Asn Val Ser Val Val
405 410 415

Val Ser Pro Asn Phe Asp Ser Val Ser Gln Ala Thr Asp Val Glu Val
420 425 430

Gly Thr Asp Leu Val Pro Ser Val Thr Val Lys Val Thr Leu Gln Asn
435 440 445

Arg Val Ile Leu Gln Lys Ala Lys Leu Ser Val Tyr Val Gln Pro Pro
450 455 460

Leu Glu Leu Thr Cys Asp Gln Phe Thr Phe Glu Phe Met Thr Pro Asp
465 470 475 480

```
Leu Thr Arg Thr Val Ser Phe Ser Val Tyr Leu Lys Arg Ser Tyr Thr
                485                 490                 495

Pro Ser Glu Leu Glu Gly Asn Ala Val Val Ser Tyr Ser Arg Pro Thr
            500                 505                 510

Gly Ile Pro Arg Val Ile Gln Cys Lys Phe Arg Leu Pro Leu Lys Leu
        515                 520                 525

Ile Cys Leu Pro Gly Gln Pro Ser Lys Thr Ala Ser His Lys Ile Thr
    530                 535                 540

Ile Asp Thr Asn Lys Ser Pro Val Ser Leu Leu Ser Leu Phe Pro Gly
545                 550                 555                 560

Phe Ala Ser Gln Ser Asp Asp Asp Gln Val Asn Val Met Gly Phe His
                565                 570                 575

Phe Leu Gly Gly Ala Arg Ile Thr Val Leu Ala Ser Lys Thr Ser Gln
            580                 585                 590

Arg Tyr Arg Ile Gln Ser Glu Gln Phe Glu Asp Leu Trp Leu Ile Thr
        595                 600                 605

Asn Glu Leu Ile Leu Arg Leu Gln Glu Tyr Phe Glu Lys Gln Gly Val
    610                 615                 620

Lys Asp Phe Ala Cys Ser Phe Ser Gly Ser Ile Pro Leu Gln Glu Tyr
625                 630                 635                 640

Phe Glu Leu Ile Asp His His Phe Glu Leu Arg Ile Asn Gly Glu Lys
                645                 650                 655

Leu Glu Glu Leu Leu Ser Glu Arg Ala Val Gln Phe Arg Ala Ile Gln
            660                 665                 670

Arg Arg Leu Leu Ala Arg Phe Lys Asp Lys Thr Pro Ala Pro Leu Gln
        675                 680                 685

His Leu Asp Thr Leu Leu Asp Gly Thr Tyr Lys Gln Val Ile Ala Leu
    690                 695                 700
```

```
Ala Asp Ala Val Glu Glu Asn Gln Gly Asn Leu Phe Gln Ser Phe Thr
705                 710                 715                 720

Arg Leu Lys Ser Ala Thr His Leu Val Ile Leu Leu Ile Ala Leu Trp
                725                 730                 735

Gln Lys Leu Ser Ala Asp Gln Val Ala Ile Leu Glu Ala Ala Phe Leu
            740                 745                 750

Pro Leu Gln Glu Asp Thr Gln Glu Leu Gly Trp Glu Glu Thr Val Asp
        755                 760                 765

Ala Ala Ile Ser His Leu Leu Lys Thr Cys Leu Ser Lys Ser Ser Lys
    770                 775                 780

Glu Gln Ala Leu Asn Leu Asn Ser Gln Leu Asn Ile Pro Lys Asp Thr
785                 790                 795                 800

Ser Gln Leu Lys Lys His Ile Thr Leu Leu Cys Asp Arg Leu Ser Lys
                805                 810                 815

Gly Gly Arg Leu Cys Leu Ser Thr Asp Ala Ala Ala Pro Gln Thr Met
            820                 825                 830

Val Met Pro Gly Gly Cys Thr Thr Ile Pro Glu Ser Asp Leu Glu Glu
        835                 840                 845

Arg Ser Val Glu Gln Asp Ser Thr Glu Leu Phe Thr Asn His Arg His
    850                 855                 860

Leu Thr Ala Glu Thr Pro Arg Pro Glu Val Ser Pro Leu Gln Gly Val
865                 870                 875                 880

Ser Glu
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<210> 8282
<211> 852
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q3SYG4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379433"

<400> 8282
Met Ser Leu Phe Lys Ala Arg Asp Trp Trp Ser Thr Ile Leu Gly Asp
1   5   10   15

Lys Glu Glu Phe Asp Gln Gly Cys Leu Cys Leu Ala Asn Val Asp Asn
            20   25   30

Ser Gly Asn Gly Gln Asp Lys Ile Ile Val Gly Ser Phe Met Gly Tyr
        35   40   45

Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp Gly Ala Gln
    50   55   60

Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro Val Leu Gln
65   70   75   80

Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu His Leu Ala
                85   90   95

Val Leu His Ser Arg Lys Leu Cys Val Tyr Ser Val Ser Gly Thr Leu
            100   105   110

Gly Asn Val Glu His Gly Asn Gln Cys Gln Met Lys Leu Met Tyr Glu
        115   120   125

His Asn Leu Gln Arg Thr Ala Cys Asn Met Thr Tyr Gly Ser Phe Gly
    130   135   140

Gly Val Lys Gly Arg Asp Leu Ile Cys Ile Gln Ser Met Asp Gly Met
145   150   155   160

```
Leu Met Val Phe Glu Gln Glu Ser Tyr Ala Phe Gly Arg Phe Leu Pro
                165                 170                 175

Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr Ser Ser Arg Thr Asp Ser
            180                 185                 190

Phe Leu Thr Val Ser Ser Cys Gln Gln Val Glu Ser Tyr Lys Tyr Gln
        195                 200                 205

Val Leu Ala Phe Ala Thr Asp Ala Asp Lys Arg Gln Glu Thr Glu Gln
    210                 215                 220

Gln Lys Leu Gly Ser Gly Lys Arg Leu Val Val Asp Trp Thr Leu Asn
225                 230                 235                 240

Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile Val Ser Phe Asn Gln Ser
                245                 250                 255

Ala Ser Ser Val Phe Val Leu Gly Glu Arg Asn Phe Phe Cys Leu Lys
            260                 265                 270

Asp Asn Gly Gln Ile Arg Phe Met Lys Lys Leu Asp Trp Ser Pro Ser
        275                 280                 285

Cys Phe Leu Pro Tyr Cys Ser Val Ser Glu Gly Thr Ile Asn Thr Leu
    290                 295                 300

Ile Gly Asn His Asn Asn Met Leu His Ile Tyr Gln Asp Val Thr Leu
305                 310                 315                 320

Lys Trp Ala Thr Gln Leu Pro His Ile Pro Val Ala Val Arg Val Gly
                325                 330                 335

Cys Leu His Asp Leu Lys Gly Val Ile Val Thr Leu Ser Asp Asp Gly
            340                 345                 350

His Leu Gln Cys Ser Tyr Leu Gly Thr Asp Pro Ser Leu Phe Gln Ala
        355                 360                 365

Pro Asn Val Gln Ser Arg Glu Leu Asn Tyr Asp Glu Leu Asp Val Glu
    370                 375                 380
```

```
Met Lys Glu Leu Gln Lys Ile Ile Lys Asp Val Asn Lys Ser Gln Gly
385                 390                 395                 400

Val Trp Pro Met Thr Glu Arg Glu Asp Asp Leu Asn Val Ser Val Val
                405                 410                 415

Val Ser Pro Asn Phe Asp Ser Val Ser Gln Ala Thr Asp Val Glu Val
            420                 425                 430

Gly Thr Asp Leu Val Pro Ser Val Thr Val Lys Val Thr Leu Gln Asn
        435                 440                 445

Arg Val Ile Leu Gln Lys Ala Lys Leu Ser Val Tyr Val Gln Pro Pro
    450                 455                 460

Leu Glu Leu Thr Cys Asp Gln Phe Thr Phe Glu Phe Met Asn Arg Asn
465                 470                 475                 480

Pro Asp Gly Ile Pro Arg Val Ile Gln Cys Lys Phe Arg Leu Pro Leu
                485                 490                 495

Lys Leu Ile Cys Leu Pro Gly Gln Pro Ser Lys Thr Ala Ser His Lys
            500                 505                 510

Ile Thr Ile Asp Thr Asn Lys Ser Pro Val Ser Leu Leu Ser Leu Phe
        515                 520                 525

Pro Gly Phe Ala Ser Gln Ser Asp Asp Asp Gln Val Asn Val Met Gly
    530                 535                 540

Phe His Phe Leu Gly Gly Ala Arg Ile Thr Val Leu Ala Ser Lys Thr
545                 550                 555                 560

Ser Gln Arg Tyr Arg Ile Gln Ser Glu Gln Phe Glu Asp Leu Trp Leu
                565                 570                 575

Ile Thr Asn Glu Leu Ile Leu Arg Leu Gln Glu Tyr Phe Glu Lys Gln
            580                 585                 590

Gly Val Lys Asp Phe Ala Cys Ser Phe Ser Gly Ser Ile Pro Leu Gln
        595                 600                 605
```

```
Glu Tyr Phe Glu Leu Ile Asp His His Phe Glu Leu Arg Ile Asn Gly
    610                 615                 620

Glu Lys Leu Glu Glu Leu Leu Ser Glu Arg Ala Val Gln Phe Arg Ala
625                 630                 635                 640

Ile Gln Arg Arg Leu Leu Ala Arg Phe Lys Asp Lys Thr Pro Ala Pro
                645                 650                 655

Leu Gln His Leu Asp Thr Leu Leu Asp Gly Thr Tyr Lys Gln Val Ile
            660                 665                 670

Ala Leu Ala Asp Ala Val Glu Glu Asn Gln Gly Asn Leu Phe Gln Ser
        675                 680                 685

Phe Thr Arg Leu Lys Ser Ala Thr His Leu Val Ile Leu Leu Ile Ala
    690                 695                 700

Leu Trp Gln Lys Leu Ser Ala Asp Gln Val Ala Ile Leu Glu Ala Ala
705                 710                 715                 720

Phe Leu Pro Leu Gln Glu Asp Thr Gln Glu Leu Gly Trp Glu Glu Thr
                725                 730                 735

Val Asp Ala Ala Ile Ser His Leu Leu Lys Thr Cys Leu Ser Lys Ser
            740                 745                 750

Ser Lys Glu Gln Ala Leu Asn Leu Asn Ser Gln Leu Asn Ile Pro Lys
        755                 760                 765

Asp Thr Ser Gln Leu Lys Lys His Ile Thr Leu Leu Cys Asp Arg Leu
    770                 775                 780

Ser Lys Gly Gly Arg Leu Cys Leu Ser Thr Asp Ala Ala Ala Pro Gln
785                 790                 795                 800

Thr Met Val Met Pro Gly Gly Cys Thr Thr Ile Pro Glu Ser Asp Leu
                805                 810                 815

Glu Glu Arg Ser Val Glu Gln Asp Ser Thr Glu Leu Phe Thr Asn His
            820                 825                 830

Arg His Leu Thr Ala Glu Thr Pro Arg Pro Glu Val Ser Pro Leu Gln
```

835 840 845

Gly Val Ser Glu
850

<210> 8283
<211> 454
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388114"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8283
Xaa Asp Leu Val Pro Ser Val Thr Val Lys Val Thr Leu Gln Asn Arg
1 5 10 15

Val Ile Leu Gln Lys Ala Lys Leu Ser Val Tyr Val Gln Pro Pro Leu
20 25 30

Glu Leu Thr Cys Asp Gln Phe Thr Phe Glu Phe Met Thr Pro Asp Leu
35 40 45

Thr Arg Thr Val Ser Phe Ser Val Tyr Leu Lys Arg Ser Tyr Thr Pro
50 55 60

Ser Glu Leu Glu Gly Asn Ala Val Val Ser Tyr Ser Arg Pro Thr Asp
65 70 75 80

Arg Asn Pro Asp Gly Ile Pro Arg Val Ile Gln Cys Lys Phe Arg Leu

```
                85                  90                  95

Pro Leu Lys Leu Ile Cys Leu Pro Gly Gln Pro Ser Lys Thr Ala Ser
            100                 105                 110

His Lys Ile Thr Ile Asp Thr Asn Lys Ser Pro Val Ser Leu Leu Ser
        115                 120                 125

Leu Phe Pro Gly Phe Ala Ser Gln Ser Asp Asp Asp Gln Val Asn Val
    130                 135                 140

Met Gly Phe His Phe Leu Gly Gly Ala Arg Ile Thr Val Leu Ala Ser
145                 150                 155                 160

Lys Thr Ser Gln Arg Tyr Arg Ile Gln Ser Glu Gln Phe Glu Asp Leu
                165                 170                 175

Trp Leu Ile Thr Asn Glu Leu Ile Leu Arg Leu Gln Glu Tyr Phe Glu
            180                 185                 190

Lys Gln Gly Val Lys Asp Phe Ala Cys Ser Phe Ser Gly Ser Ile Pro
        195                 200                 205

Leu Gln Glu Tyr Phe Glu Leu Ile Asp His His Phe Glu Leu Arg Ile
    210                 215                 220

Asn Gly Glu Lys Leu Glu Glu Leu Leu Ser Glu Arg Ala Val Gln Phe
225                 230                 235                 240

Arg Ala Ile Gln Arg Arg Leu Leu Ala Arg Phe Lys Asp Lys Thr Pro
                245                 250                 255

Ala Pro Leu Gln His Leu Asp Thr Leu Leu Asp Gly Thr Tyr Lys Gln
            260                 265                 270

Val Ile Ala Leu Ala Asp Ala Val Glu Glu Asn Gln Gly Asn Leu Phe
        275                 280                 285

Gln Ser Phe Thr Arg Leu Lys Ser Ala Thr His Leu Val Ile Leu Leu
    290                 295                 300

Ile Ala Leu Trp Gln Lys Leu Ser Ala Asp Gln Val Ala Ile Leu Glu
305                 310                 315                 320
```

```
Ala Ala Phe Leu Pro Leu Gln Glu Asp Thr Gln Glu Leu Gly Trp Glu
                325                 330                 335

Glu Thr Val Asp Ala Ala Ile Ser His Leu Leu Lys Thr Cys Leu Ser
            340                 345                 350

Lys Ser Ser Lys Glu Gln Ala Leu Asn Leu Asn Ser Gln Leu Asn Ile
        355                 360                 365

Pro Lys Asp Thr Ser Gln Leu Lys Lys His Ile Thr Leu Leu Cys Asp
    370                 375                 380

Arg Leu Ser Lys Gly Gly Arg Leu Cys Leu Ser Thr Asp Ala Ala Ala
385                 390                 395                 400

Pro Gln Thr Met Val Met Pro Gly Gly Cys Thr Thr Ile Pro Glu Ser
                405                 410                 415

Asp Leu Glu Glu Arg Ser Val Glu Gln Asp Ser Thr Glu Leu Phe Thr
            420                 425                 430

Asn His Arg His Leu Thr Ala Glu Thr Pro Arg Pro Gly Lys Arg Leu
        435                 440                 445

Asp Gly Leu His Lys Arg
    450


<210> 8284
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 9; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000388646"

<400> 8284
Met Lys Leu Met Tyr Glu His Asn Leu Gln Arg Thr Ala Cys Asn Met
1   5   10   15

Thr Tyr Gly Ser Phe Gly Gly Val Lys Gly Arg Asp Leu Ile Cys Ile
            20   25   30

Gln Ser Met Asp Gly Met Leu Met Val Phe Glu Gln Glu Ser Tyr Ala
        35   40   45

Phe Gly Arg Phe Leu Pro Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr
    50   55   60

Ser Ser Arg Thr Asp Ser Phe Leu Thr Val Ser Ser Cys Gln Gln Val
65   70   75   80

Glu Ser Tyr Lys Tyr Gln Val Leu Ala Phe Ala Thr Asp Ala Asp Lys
                85   90   95

Arg Gln Glu Thr Glu Gln Gln Lys Leu Gly Ser Gly Lys Arg Leu Val
            100   105   110

Val Asp Trp Thr Leu Asn Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile
        115   120   125

Val Ser Phe Asn Gln Ser Ala Ser Ser Val Phe Val Leu Gly Glu Arg
    130   135   140

Asn Phe
145

<210> 8285
<211> 310
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
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<223> /note="Gene Name:
Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q3SYG4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405151"

<400> 8285

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Met Gly Tyr Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp
1               5                  10                  15

Gly Ala Gln Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro
            20                  25                  30

Val Leu Gln Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu
        35                  40                  45

His Leu Ala Val Leu His Ser Arg Lys Leu Cys Val Tyr Ser Val Ser
    50                  55                  60

Gly Thr Leu Gly Asn Val Glu His Gly Asn Gln Cys Gln Met Lys Leu
65                  70                  75                  80

Met Tyr Glu His Asn Leu Gln Arg Thr Ala Cys Asn Met Thr Tyr Gly
                85                  90                  95

Ser Phe Gly Gly Val Lys Gly Arg Asp Leu Ile Cys Ile Gln Ser Met
            100                 105                 110

Asp Gly Met Leu Met Val Phe Glu Gln Glu Ser Tyr Ala Phe Gly Arg
        115                 120                 125

Phe Leu Pro Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr Ser Ser Arg
    130                 135                 140

Thr Asp Ser Phe Leu Thr Val Ser Ser Cys Gln Gln Val Glu Ser Tyr
145                 150                 155                 160

Lys Tyr Gln Val Leu Ala Phe Ala Thr Asp Ala Asp Lys Arg Gln Glu
                165                 170                 175
```

```
Thr Glu Gln Gln Lys Leu Gly Ser Gly Lys Arg Leu Val Val Asp Trp
            180                 185                 190

Thr Leu Asn Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile Val Ser Phe
        195                 200                 205

Asn Gln Ser Ala Ser Ser Val Phe Val Leu Gly Glu Arg Asn Phe Phe
    210                 215                 220

Cys Leu Lys Asp Asn Gly Gln Ile Arg Phe Met Lys Lys Leu Asp Trp
225                 230                 235                 240

Ser Pro Ser Cys Phe Leu Pro Tyr Cys Ser Val Ser Glu Gly Thr Ile
                245                 250                 255

Asn Thr Leu Ile Gly Asn His Asn Asn Met Leu His Ile Tyr Gln Asp
            260                 265                 270

Val Thr Leu Lys Trp Ala Thr Gln Leu Pro His Ile Pro Val Ala Val
        275                 280                 285

Arg Val Gly Cys Leu Gln Phe Ser Leu Trp Lys His Leu Leu Pro Arg
    290                 295                 300

Ser Ser Thr Leu Glu Lys
305                 310


<210> 8286
<211> 460
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 9; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000412159"

<400> 8286

```
Met Ser Leu Phe Lys Ala Arg Asp Trp Trp Ser Thr Ile Leu Gly Asp
1               5                  10                  15

Lys Glu Glu Phe Asp Gln Gly Cys Leu Cys Leu Ala Asn Val Asp Asn
            20                  25                  30

Ser Gly Asn Gly Gln Asp Lys Ile Ile Val Gly Ser Phe Met Gly Tyr
        35                  40                  45

Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp Gly Ala Gln
    50                  55                  60

Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro Val Leu Gln
65                  70                  75                  80

Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu His Leu Ala
                85                  90                  95

Val Leu His Ser Arg Lys Leu Cys Val Tyr Ser Val Ser Gly Thr Leu
            100                 105                 110

Gly Asn Val Glu His Gly Asn Gln Cys Gln Met Lys Leu Met Tyr Glu
        115                 120                 125

His Asn Leu Gln Arg Thr Ala Cys Asn Met Thr Tyr Gly Ser Phe Gly
    130                 135                 140

Gly Val Lys Gly Arg Asp Leu Ile Cys Ile Gln Ser Met Asp Gly Met
145                 150                 155                 160

Leu Met Val Phe Glu Gln Glu Ser Tyr Ala Phe Gly Arg Phe Leu Pro
                165                 170                 175

Gly Phe Leu Leu Pro Gly Pro Leu Ala Tyr Ser Ser Arg Thr Asp Ser
            180                 185                 190

Phe Leu Thr Val Ser Ser Cys Gln Gln Val Glu Ser Tyr Lys Tyr Gln
        195                 200                 205

Val Leu Ala Phe Ala Thr Asp Ala Asp Lys Arg Gln Glu Thr Glu Gln
    210                 215                 220
```

```
Gln Lys Leu Gly Ser Gly Lys Arg Leu Val Val Asp Trp Thr Leu Asn
225                 230                 235                 240

Ile Gly Glu Gln Ala Leu Asp Ile Cys Ile Val Ser Phe Asn Gln Ser
                245                 250                 255

Ala Ser Ser Val Phe Val Leu Gly Glu Arg Asn Phe Phe Cys Leu Lys
            260                 265                 270

Asp Asn Gly Gln Ile Arg Phe Met Lys Lys Leu Asp Trp Ser Pro Ser
        275                 280                 285

Cys Phe Leu Pro Tyr Cys Ser Val Ser Glu Gly Thr Ile Asn Thr Leu
    290                 295                 300

Ile Gly Asn His Asn Asn Met Leu His Ile Tyr Gln Asp Val Thr Leu
305                 310                 315                 320

Lys Trp Ala Thr Gln Leu Pro His Ile Pro Val Ala Val Arg Val Gly
                325                 330                 335

Cys Leu His Asp Leu Lys Gly Val Ile Val Thr Leu Ser Asp Asp Gly
            340                 345                 350

His Leu Gln Cys Ser Tyr Leu Gly Thr Asp Pro Ser Leu Phe Gln Ala
        355                 360                 365

Pro Asn Val Gln Ser Arg Glu Leu Asn Tyr Asp Glu Leu Asp Val Glu
    370                 375                 380

Met Lys Glu Leu Gln Lys Ile Ile Lys Asp Val Asn Lys Ser Gln Gly
385                 390                 395                 400

Val Trp Pro Met Thr Glu Arg Glu Asp Asp Leu Asn Val Ser Val Val
                405                 410                 415

Val Ser Pro Asn Phe Asp Ser Val Ser Gln Ala Thr Asp Val Glu Val
            420                 425                 430

Gly Thr Asp Leu Val Pro Ser Val Thr Val Lys Gln Pro Arg Tyr Thr
        435                 440                 445
```

```
Thr Met Gln Val Ser Ile Ile Ile Asn Pro Val Asn
    450                 455                 460


<210> 8287
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
      Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415794"

<400> 8287
Met Ser Leu Phe Lys Ala Arg Asp Trp Trp Ser Thr Ile Leu Gly Asp
1               5                   10                  15


Lys Glu Glu Phe Asp Gln Gly Cys Leu Cys Leu Ala Asn Val Asp Asn
            20                  25                  30


Ser Gly Asn Gly Gln Asp Lys Ile Ile Val Gly Ser Phe Met Gly Tyr
        35                  40                  45


Leu Arg Ile Phe Ser Pro His Pro Ala Lys Thr Gly Asp Gly Ala Gln
    50                  55                  60


Ala Glu Asp Leu Leu Leu Glu Val Asp Leu Arg Asp Pro Val Leu Gln
65                  70                  75                  80


Val Glu Val Gly Lys Phe Val Ser Gly Thr Glu Met Leu His Leu Ala
                85                  90                  95


Val



<210> 8288
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<211> 183
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1712; "

<220>
<221> source
<223> /note="Gene Symbol: BBS9; "

<220>
<221> source
<223> /note="Gene Name:
Bardet-Biedl syndrome 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485871"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8288

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Xaa Ile Gln Lys Glu Ser Ile Gly Lys Gly Gln Ala His Arg Asp Arg
1               5                  10                  15

Ser Ser Ser Gly Phe Trp Val Ser Ser Arg Thr Ser Ser Thr Val Phe
            20                  25                  30

Gln Pro Ser Gly Cys Phe Lys Pro Glu Gly Ile Pro Arg Val Ile Gln
        35                  40                  45

Cys Lys Phe Arg Leu Pro Leu Lys Leu Ile Cys Leu Pro Gly Gln Pro
    50                  55                  60

Ser Lys Thr Ala Ser His Lys Ile Thr Ile Asp Thr Asn Lys Ser Pro
65                  70                  75                  80

Val Ser Leu Leu Ser Leu Phe Pro Gly Phe Ala Ser Gln Ser Asp Asp
                85                  90                  95

Asp Gln Val Asn Val Met Gly Phe His Phe Leu Gly Gly Ala Arg Ile
            100                 105                 110

Thr Val Leu Ala Ser Lys Thr Ser Gln Arg Tyr Arg Ile Gln Ser Glu
```

```
        115                 120                 125

Gln Phe Glu Asp Leu Trp Leu Ile Thr Asn Glu Leu Ile Leu Arg Leu
    130                 135                 140

Gln Glu Tyr Phe Glu Lys Gln Gly Val Lys Asp Phe Ala Cys Ser Phe
145                 150                 155                 160

Ser Gly Ser Ile Pro Leu Gln Glu Tyr Phe Glu Leu Ile Asp His His
                165                 170                 175

Phe Glu Leu Arg Ile Asn Gly
            180


<210> 8289
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1713; "

<220>
<221> source
<223> /note="Gene Symbol: BARHL1; "

<220>
<221> source
<223> /note="Gene Name:
      BarH-like homeobox 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BZE3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263610"

<400> 8289
Met Glu Gly Ser Asn Gly Phe Gly Ile Asp Ser Ile Leu Ser His Arg
1               5                   10                  15

Ala Gly Ser Pro Ala Leu Pro Lys Gly Asp Pro Leu Leu Gly Asp Cys
            20                  25                  30

Arg Ser Pro Leu Glu Leu Ser Pro Arg Ser Glu Ser Ser Ser Asp Cys
        35                  40                  45
```

```
Ser Ser Pro Ala Ser Pro Gly Arg Asp Cys Leu Glu Thr Gly Thr Pro
    50                  55                  60

Arg Pro Gly Gly Ala Ser Gly Pro Gly Leu Asp Ser His Leu Gln Pro
65                  70                  75                  80

Gly Gln Leu Ser Ala Pro Ala Gln Ser Arg Thr Val Thr Ser Ser Phe
                85                  90                  95

Leu Ile Arg Asp Ile Leu Ala Asp Cys Lys Pro Leu Ala Ala Cys Ala
            100                 105                 110

Pro Tyr Ser Ser Ser Gly Gln Pro Ala Ala Pro Glu Pro Gly Gly Arg
        115                 120                 125

Leu Ala Ala Lys Ala Ala Glu Asp Phe Arg Asp Lys Leu Asp Lys Ser
    130                 135                 140

Gly Ser Asn Ala Ser Ser Asp Ser Glu Tyr Lys Val Lys Glu Glu Gly
145                 150                 155                 160

Asp Arg Glu Ile Ser Ser Ser Arg Asp Ser Pro Pro Val Arg Leu Lys
                165                 170                 175

Lys Pro Arg Lys Ala Arg Thr Ala Phe Thr Asp His Gln Leu Ala Gln
            180                 185                 190

Leu Glu Arg Ser Phe Glu Arg Gln Lys Tyr Leu Ser Val Gln Asp Arg
        195                 200                 205

Met Glu Leu Ala Ala Ser Leu Asn Leu Thr Asp Thr Gln Val Lys Thr
    210                 215                 220

Trp Tyr Gln Asn Arg Arg Thr Lys Trp Lys Arg Gln Thr Ala Val Gly
225                 230                 235                 240

Leu Glu Leu Leu Ala Glu Ala Gly Asn Tyr Ser Ala Leu Gln Arg Met
                245                 250                 255

Phe Pro Ser Pro Tyr Phe Tyr Pro Gln Ser Leu Val Ser Asn Leu Asp
            260                 265                 270
```

```
Pro Gly Ala Ala Leu Tyr Leu Tyr Arg Gly Pro Ser Ala Pro Pro Pro
        275                 280                 285


Ala Leu Gln Arg Pro Leu Val Pro Arg Ile Leu Ile His Gly Leu Gln
    290                 295                 300


Gly Ala Ser Glu Pro Pro Pro Pro Leu Pro Pro Leu Ala Gly Val Leu
305                 310                 315                 320


Pro Arg Ala Ala Gln Pro Arg
                325


<210> 8290
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1713; "

<220>
<221> source
<223> /note="Gene Symbol: BARHL1; "

<220>
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<223> /note="Gene Name:
      BarH-like homeobox 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BZE3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444704"

<400> 8290
Met Glu Gly Ser Asn Gly Phe Gly Ile Asp Ser Ile Leu Ser His Arg
1               5                   10                  15


Ala Gly Ser Pro Ala Leu Pro Lys Gly Asp Pro Leu Leu Gly Asp Cys
            20                  25                  30


Arg Ser Pro Leu Glu Leu Ser Pro Arg Ser Glu Ser Ser Ser Asp Cys
        35                  40                  45


Ser Ser Pro Ala Ser Pro Gly Arg Asp Cys Leu Glu Thr Gly Thr Pro
    50                  55                  60
```

```
Arg Pro Gly Gly Ala Ser Gly Pro Gly Leu Asp Ser His Leu Gln Pro
65                  70                  75                  80

Gly Gln Leu Ser Ala Pro Ala Gln Ser Arg Thr Val Thr Ser Ser Phe
                85                  90                  95

Leu Ile Arg Asp Ile Leu Ala Asp Cys Lys Pro Leu Ala Ala Cys Ala
            100                 105                 110

Pro Tyr Ser Ser Ser Gly Gln Pro Ala Ala Pro Glu Pro Gly Gly Arg
        115                 120                 125

Leu Ala Ala Lys Ala Ala Glu Asp Phe Arg Asp Lys Leu Asp Lys Ser
    130                 135                 140

Gly Ser Asn Ala Ser Ser Asp Ser Glu Tyr Lys Val Lys Glu Glu Gly
145                 150                 155                 160

Asp Arg Glu Ile Ser Ser Ser Arg Asp Ser Pro Pro Val Arg Leu Lys
                165                 170                 175

Lys Pro Arg Lys Ala Arg Thr Ala Phe Thr Asp His Gln Leu Ala Gln
            180                 185                 190

Leu Glu Arg Ser Phe Glu Arg Gln Lys Tyr Leu Ser Val Gln Asp Arg
        195                 200                 205

Met Glu Leu Ala Ala Ser Leu Asn Leu Thr Asp Thr Gln Val Lys Thr
    210                 215                 220

Trp Tyr Gln Asn Arg Arg Thr Lys Trp Lys Arg Gln Thr Ala Val Gly
225                 230                 235                 240

Leu Glu Leu Leu Ala Glu Ala Gly Asn Tyr Ser Ala Leu Gln Arg Met
                245                 250                 255

Phe Pro Ser Pro Tyr Phe Tyr Pro Gln Ser Leu Val Ser Asn Leu Asp
            260                 265                 270

Pro Gly Ala Ala Leu Tyr Leu Tyr Arg Gly Pro Ser Ala Pro Pro Pro
        275                 280                 285
```

```
Ala Leu Gln Arg Pro Leu Val Pro Arg Ile Leu Ile His Gly Leu Gln
    290                 295                 300

Gly Ala Ser Glu Pro Pro Pro Pro Leu Pro Pro Leu Ala Gly Val Leu
305                 310                 315                 320

Pro Arg Ala Ala Gln Pro Arg
                325
```

<210> 8291
<211> 387
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1714; "

<220>
<221> source
<223> /note="Gene Symbol: BARHL2; "

<220>
<221> source
<223> /note="Gene Name:
BarH-like homeobox 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NY43; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359474"

<400> 8291

```
Met Thr Met Glu Gly Ala Ser Gly Ser Ser Phe Gly Ile Asp Thr Ile
1               5                   10                  15

Leu Ser Ser Ala Ser Ser Gly Ser Pro Gly Met Met Asn Gly Asp Phe
            20                  25                  30

Arg Pro Leu Gly Glu Ala Arg Thr Ala Asp Phe Arg Ser Gln Ala Thr
        35                  40                  45

Pro Ser Pro Cys Ser Glu Ile Asp Thr Val Gly Thr Ala Pro Ser Ser
    50                  55                  60

Pro Ile Ser Val Thr Met Glu Pro Pro Glu Pro His Leu Val Ala Asp
```

65 70 75 80

Ala Thr Gln His His His His Leu His His Ser Gln Gln Pro Pro Pro
85 90 95

Pro Ala Ala Ala Pro Thr Gln Ser Leu Gln Pro Leu Pro Gln Gln Gln
100 105 110

Gln Pro Leu Pro Pro Gln Gln Pro Pro Pro Pro Pro Pro Gln Gln Leu
115 120 125

Gly Ser Ala Ala Ser Ala Pro Arg Thr Ser Thr Ser Ser Phe Leu Ile
130 135 140

Lys Asp Ile Leu Gly Asp Ser Lys Pro Leu Ala Ala Cys Ala Pro Tyr
145 150 155 160

Ser Thr Ser Val Ser Ser Pro His His Thr Pro Lys Gln Glu Ser Asn
165 170 175

Ala Val His Glu Ser Phe Arg Pro Lys Leu Glu Gln Glu Asp Ser Lys
180 185 190

Thr Lys Leu Asp Lys Arg Glu Asp Ser Gln Ser Asp Ile Lys Cys His
195 200 205

Gly Thr Lys Glu Glu Gly Asp Arg Glu Ile Thr Ser Ser Arg Glu Ser
210 215 220

Pro Pro Val Arg Ala Lys Lys Pro Arg Lys Ala Arg Thr Ala Phe Ser
225 230 235 240

Asp His Gln Leu Asn Gln Leu Glu Arg Ser Phe Glu Arg Gln Lys Tyr
245 250 255

Leu Ser Val Gln Asp Arg Met Asp Leu Ala Ala Ala Leu Asn Leu Thr
260 265 270

Asp Thr Gln Val Lys Thr Trp Tyr Gln Asn Arg Arg Thr Lys Trp Lys
275 280 285

Arg Gln Thr Ala Val Gly Leu Glu Leu Leu Ala Glu Ala Gly Asn Tyr
290 295 300

```
Ser Ala Leu Gln Arg Met Phe Pro Ser Pro Tyr Phe Tyr His Pro Ser
305                 310                 315                 320

Leu Leu Gly Ser Met Asp Ser Thr Thr Ala Ala Ala Ala Ala Ala Ala
                325                 330                 335

Met Tyr Ser Ser Met Tyr Arg Thr Pro Pro Ala Pro His Pro Gln Leu
            340                 345                 350

Gln Arg Pro Leu Val Pro Arg Val Leu Ile His Gly Leu Gly Pro Gly
        355                 360                 365

Gly Gln Pro Ala Leu Asn Pro Leu Ser Ser Pro Ile Pro Gly Thr Pro
    370                 375                 380

His Pro Arg
385


<210> 8292
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1715; "

<220>
<221> source
<223> /note="Gene Symbol: BANF1; "

<220>
<221> source
<223> /note="Gene Name:
      barrier to autointegration  factor
      1; "

<220>
<221> source
<223> /note="Uniprot ID:  O75531; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000310275"

<400> 8292
Met Thr Thr Ser Gln Lys His Arg Asp Phe Val Ala Glu Pro Met Gly
1               5                   10                  15
```

```
Glu Lys Pro Val Gly Ser Leu Ala Gly Ile Gly Glu Val Leu Gly Lys
            20                  25                  30

Lys Leu Glu Glu Arg Gly Phe Asp Lys Ala Tyr Val Val Leu Gly Gln
        35                  40                  45

Phe Leu Val Leu Lys Lys Asp Glu Asp Leu Phe Arg Glu Trp Leu Lys
    50                  55                  60

Asp Thr Cys Gly Ala Asn Ala Lys Gln Ser Arg Asp Cys Phe Gly Cys
65                  70                  75                  80

Leu Arg Glu Trp Cys Asp Ala Phe Leu
                85


<210> 8293
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1715; "

<220>
<221> source
<223> /note="Gene Symbol: BANF1; "

<220>
<221> source
<223> /note="Gene Name:
      barrier to autointegration  factor
      1; "

<220>
<221> source
<223> /note="Uniprot ID:  O75531; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416128"

<400> 8293
Met Thr Thr Ser Gln Lys His Arg Asp Phe Val Ala Glu Pro Met Gly
1               5                   10                  15

Glu Lys Pro Val Gly Ser Leu Ala Gly Ile Gly Glu Val Leu Gly Lys
            20                  25                  30
```

Lys Leu Glu Glu Arg Gly Phe Asp Lys Ala Tyr Val Val Leu Gly Gln
        35   40   45

Phe Leu Val Leu Lys Lys Asp Glu Asp Leu Phe Arg Glu Trp Leu Lys
    50   55   60

Asp Thr Cys Gly Ala Asn Ala Lys Gln Ser Arg Asp Cys Phe Gly Cys
65   70   75   80

Leu Arg Glu Trp Cys Asp Ala Phe Leu
                85

<210> 8294
<211> 28
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1715; "

<220>
<221> source
<223> /note="Gene Symbol: BANF1; "

<220>
<221> source
<223> /note="Gene Name:
      barrier to autointegration factor
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431785"

<400> 8294
Met Thr Thr Ser Gln Lys His Arg Asp Phe Val Ala Glu Pro Met Gly
1   5   10   15

Glu Lys Pro Val Gly Ser Leu Ala Gly Ile Gly Glu
            20   25

<210> 8295
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1715; "

<220>
<221> source
<223> /note="Gene Symbol: BANF1; "

<220>
<221> source
<223> /note="Gene Name:
barrier to autointegration factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: O75531; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432867"

<400> 8295
Met Thr Thr Ser Gln Lys His Arg Asp Phe Val Ala Glu Pro Met Gly
1   5   10   15

Glu Lys Pro Val Gly Ser Leu Ala Gly Ile Gly Glu Val Leu Gly Lys
            20   25   30

Lys Leu Glu Glu Arg Gly Phe Asp Lys Ala Tyr Val Val Leu Gly Gln
        35   40   45

Phe Leu Val Leu Lys Lys Asp Glu Asp Leu Phe Arg Glu Trp Leu Lys
    50   55   60

Asp Thr Cys Gly Ala Asn Ala Lys Gln Ser Arg Asp Cys Phe Gly Cys
65   70   75   80

Leu Arg Glu Trp Cys Asp Ala Phe Leu
                85

<210> 8296
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1715; "

<220>
<221> source
<223> /note="Gene Symbol: BANF1; "

<220>

<221> source
<223> /note="Gene Name:
barrier to autointegration factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: O75531; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433760"

<400> 8296
Met Thr Thr Ser Gln Lys His Arg Asp Phe Val Ala Glu Pro Met Gly
1   5   10   15

Glu Lys Pro Val Gly Ser Leu Ala Gly Ile Gly Glu Val Leu Gly Lys
            20   25   30

Lys Leu Glu Glu Arg Gly Phe Asp Lys Ala Tyr Val Val Leu Gly Gln
        35   40   45

Phe Leu Val Leu Lys Lys Asp Glu Asp Leu Phe Arg Glu Trp Leu Lys
    50   55   60

Asp Thr Cys Gly Ala Asn Ala Lys Gln Ser Arg Asp Cys Phe Gly Cys
65   70   75   80

Leu Arg Glu Trp Cys Asp Ala Phe Leu
                85

<210> 8297
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1716; "

<220>
<221> source
<223> /note="Gene Symbol: BANF2; "

<220>
<221> source
<223> /note="Gene Name:
barrier to autointegration factor
2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H503; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000246090"

<400> 8297
Met Asp Asn Met Ser Pro Arg Leu Arg Ala Phe Leu Ser Glu Pro Ile
1   5   10   15

Gly Glu Lys Asp Val Cys Trp Val Asp Gly Ile Ser His Glu Leu Ala
            20   25   30

Ile Asn Leu Val Thr Lys Gly Ile Asn Lys Ala Tyr Ile Leu Leu Gly
        35   40   45

Gln Phe Leu Leu Met His Lys Asn Glu Ala Glu Phe Gln Arg Trp Leu
    50   55   60

Ile Cys Cys Phe Gly Ala Thr Glu Cys Glu Ala Gln Gln Thr Ser His
65   70   75   80

Cys Leu Lys Glu Trp Cys Ala Cys Phe Leu
                85   90

<210> 8298
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1716; "

<220>
<221> source
<223> /note="Gene Symbol: BANF2; "

<220>
<221> source
<223> /note="Gene Name:
      barrier to autointegration factor
      2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H503; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000367036"

<400> 8298
Met Asp Asn Met Ser Pro Arg Leu Arg Ala Phe Leu Ser Glu Pro Ile
1   5   10   15

Gly Glu Lys Asp Val Cys Trp Val Asp Gly Ile Ser His Glu Leu Ala
            20   25   30

Ile Asn Leu Val Thr Lys Gly Ile Asn Lys Ala Tyr Ile Leu Leu Gly
        35   40   45

Gln Phe Leu Leu Met His Lys Asn Glu Ala Glu Phe Gln Arg Trp Leu
    50   55   60

Ile Cys Cys Phe Gly Ala Thr Glu Cys Glu Ala Gln Gln Thr Ser His
65   70   75   80

Cys Leu Lys Glu Trp Cys Ala Cys Phe Leu
                85   90

<210> 8299
<211> 42
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1716; "

<220>
<221> source
<223> /note="Gene Symbol: BANF2; "

<220>
<221> source
<223> /note="Gene Name:
      barrier to autointegration factor
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398738"

<400> 8299
Met Asp Asn Met Ser Pro Arg Leu Arg Ala Phe Leu Ser Glu Pro Ile
1   5   10   15

Gly Glu Lys Asp Val Cys Trp Val Asp Gly Ile Ser His Glu Leu Ala

```
            20                  25                  30

Ile Asn Leu Val Thr Lys Gly Ile Asn Lys
        35                  40


<210> 8300
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1716; "

<220>
<221> source
<223> /note="Gene Symbol: BANF2; "

<220>
<221> source
<223> /note="Gene Name:
      barrier to autointegration  factor
      2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H503; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439128"

<400> 8300
Met Leu Arg Gly Thr Lys Glu Met Asp Asn Met Ser Pro Arg Leu Arg
1               5                   10                  15


Ala Phe Leu Ser Glu Pro Ile Gly Glu Lys Asp Val Cys Trp Val Asp
            20                  25                  30


Gly Ile Ser His Glu Leu Ala Ile Asn Leu Val Thr Lys Gly Ile Asn
        35                  40                  45


Lys Ala Tyr Ile Leu Leu Gly Gln Phe Leu Leu Met His Lys Asn Glu
    50                  55                  60


Ala Glu Phe Gln Arg Trp Leu Ile Cys Cys Phe Gly Ala Thr Glu Cys
65                  70                  75                  80


Glu Ala Gln Gln Thr Ser His Cys Leu Lys Glu Trp Cys Ala Cys Phe
                85                  90                  95
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Leu

<210> 8301
<211> 320
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1717; "

<220>
<221> source
<223> /note="Gene Symbol: BSND; "

<220>
<221> source
<223> /note="Gene Name:
barttin CLCNK-type chloride channel accessory beta
subunit;"

<220>
<221> source
<223> /note="Uniprot ID: Q8WZ55; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360312"

<400> 8301
Met Ala Asp Glu Lys Thr Phe Arg Ile Gly Phe Ile Val Leu Gly Leu
1   5   10   15

Phe Leu Leu Ala Leu Gly Thr Phe Leu Met Ser His Asp Arg Pro Gln
            20   25   30

Val Tyr Gly Thr Phe Tyr Ala Met Gly Ser Val Met Val Ile Gly Gly
        35   40   45

Ile Ile Trp Ser Met Cys Gln Cys Tyr Pro Lys Ile Thr Phe Val Pro
    50   55   60

Ala Asp Ser Asp Phe Gln Gly Ile Leu Ser Pro Lys Ala Met Gly Leu
65   70   75   80

Leu Glu Asn Gly Leu Ala Ala Glu Met Lys Ser Pro Ser Pro Gln Pro
                85   90   95

```
Pro Tyr Val Arg Leu Trp Glu Glu Ala Ala Tyr Asp Gln Ser Leu Pro
            100                 105                 110

Asp Phe Ser His Ile Gln Met Lys Val Met Ser Tyr Ser Glu Asp His
        115                 120                 125

Arg Ser Leu Leu Ala Pro Glu Met Gly Gln Pro Lys Leu Gly Thr Ser
    130                 135                 140

Asp Gly Gly Glu Gly Gly Pro Gly Asp Val Gln Ala Trp Met Glu Ala
145                 150                 155                 160

Ala Val Val Ile His Lys Gly Ser Asp Glu Ser Glu Gly Glu Arg Arg
                165                 170                 175

Leu Thr Gln Ser Trp Pro Gly Pro Leu Ala Cys Pro Gln Gly Pro Ala
            180                 185                 190

Pro Leu Ala Ser Phe Gln Asp Asp Leu Asp Met Asp Ser Ser Glu Gly
        195                 200                 205

Ser Ser Pro Asn Ala Ser Pro His Asp Arg Glu Glu Ala Cys Ser Pro
    210                 215                 220

Gln Gln Glu Pro Gln Gly Cys Arg Cys Pro Leu Asp Arg Phe Gln Asp
225                 230                 235                 240

Phe Ala Leu Ile Asp Ala Pro Thr Leu Glu Asp Glu Pro Gln Glu Gly
                245                 250                 255

Gln Gln Trp Glu Ile Ala Leu Pro Asn Asn Trp Gln Arg Tyr Pro Arg
            260                 265                 270

Thr Lys Val Glu Glu Lys Glu Ala Ser Asp Thr Gly Gly Glu Glu Pro
        275                 280                 285

Glu Lys Glu Glu Glu Asp Leu Tyr Tyr Gly Leu Pro Asp Gly Ala Gly
    290                 295                 300

Asp Leu Leu Pro Asp Lys Glu Leu Gly Phe Glu Pro Asp Thr Gln Gly
305                 310                 315                 320
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<210> 8302
<211> 254
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1718; "

<220>
<221> source
<223> /note="Gene Symbol: BARX1; "

<220>
<221> source
<223> /note="Gene Name:
BARX homeobox 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HBU1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000253968"

<400> 8302
Met Gln Arg Pro Gly Glu Pro Gly Ala Ala Arg Phe Gly Pro Pro Glu
1   5   10   15

Gly Cys Ala Asp His Arg Pro His Arg Tyr Arg Ser Phe Met Ile Glu
            20   25   30

Glu Ile Leu Thr Glu Pro Pro Gly Pro Lys Gly Ala Ala Pro Ala Ala
        35   40   45

Ala Ala Ala Ala Ala Gly Glu Leu Leu Lys Phe Gly Val Gln Ala Leu
    50   55   60

Leu Ala Ala Arg Pro Phe His Ser His Leu Ala Val Leu Lys Ala Glu
65   70   75   80

Gln Ala Ala Val Phe Lys Phe Pro Leu Ala Pro Leu Gly Cys Ser Gly
                85   90   95

Leu Ser Ser Ala Leu Leu Ala Ala Gly Pro Gly Leu Pro Gly Ala Ala
            100   105   110

Gly Ala Pro His Leu Pro Leu Glu Leu Gln Leu Arg Gly Lys Leu Glu
        115   120   125

```
Ala Ala Gly Pro Gly Glu Pro Gly Thr Lys Ala Lys Lys Gly Arg Arg
    130                 135                 140

Ser Arg Thr Val Phe Thr Glu Leu Gln Leu Met Gly Leu Glu Lys Arg
145                 150                 155                 160

Phe Glu Lys Gln Lys Tyr Leu Ser Thr Pro Asp Arg Ile Asp Leu Ala
                165                 170                 175

Glu Ser Leu Gly Leu Ser Gln Leu Gln Val Lys Thr Trp Tyr Gln Asn
            180                 185                 190

Arg Arg Met Lys Trp Lys Lys Ile Val Leu Gln Gly Gly Gly Leu Glu
        195                 200                 205

Ser Pro Thr Lys Pro Lys Gly Arg Pro Lys Lys Asn Ser Ile Pro Thr
    210                 215                 220

Ser Glu Gln Leu Thr Glu Gln Glu Arg Ala Lys Asp Ala Glu Lys Pro
225                 230                 235                 240

Ala Glu Val Pro Gly Glu Pro Ser Asp Arg Ser Arg Glu Asp
                245                 250
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<210> 8303
<211> 100
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1718; "

<220>
<221> source
<223> /note="Gene Symbol: BARX1; "

<220>
<221> source
<223> /note="Gene Name:
BARX homeobox 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HBU1; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000385613"

<400> 8303
Met Gly Leu Glu Lys Arg Phe Glu Lys Gln Lys Tyr Leu Ser Thr Pro
1   5   10   15

Asp Arg Ile Asp Leu Ala Glu Ser Leu Gly Leu Ser Gln Leu Gln Val
            20   25   30

Lys Thr Trp Tyr Gln Asn Arg Arg Met Lys Trp Lys Lys Ile Val Leu
        35   40   45

Gln Gly Gly Gly Leu Glu Ser Pro Thr Lys Pro Lys Gly Arg Pro Lys
    50   55   60

Lys Asn Ser Ile Pro Thr Ser Glu Gln Leu Thr Glu Gln Glu Arg Ala
65   70   75   80

Lys Asp Ala Glu Lys Pro Ala Glu Val Pro Gly Glu Pro Ser Asp Arg
                85   90   95

Ser Arg Glu Asp
            100

<210> 8304
<211> 279
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1719; "

<220>
<221> source
<223> /note="Gene Symbol: BARX2; "

<220>
<221> source
<223> /note="Gene Name:
      BARX homeobox 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UMQ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000281437"

<400> 8304
Met His Cys His Ala Glu Leu Arg Leu Ser Ser Pro Gly Gln Leu Lys
1 5 10 15

Ala Ala Arg Arg Arg Tyr Lys Thr Phe Met Ile Asp Glu Ile Leu Ser
20 25 30

Lys Glu Thr Cys Asp Tyr Phe Glu Lys Leu Ser Leu Tyr Ser Val Cys
35 40 45

Pro Ser Leu Val Val Arg Pro Lys Pro Leu His Ser Cys Thr Gly Ser
50 55 60

Pro Ser Leu Arg Ala Tyr Pro Leu Leu Ser Val Ile Thr Arg Gln Pro
65 70 75 80

Thr Val Ile Ser His Leu Val Pro Ala Thr Pro Gly Ile Ala Gln Ala
85 90 95

Leu Ser Cys His Gln Val Thr Glu Ala Val Ser Ala Glu Ala Pro Gly
100 105 110

Gly Glu Ala Leu Ala Ser Ser Glu Ser Glu Thr Glu Gln Pro Thr Pro
115 120 125

Arg Gln Lys Lys Pro Arg Arg Ser Arg Thr Ile Phe Thr Glu Leu Gln
130 135 140

Leu Met Gly Leu Glu Lys Lys Phe Gln Lys Gln Lys Tyr Leu Ser Thr
145 150 155 160

Pro Asp Arg Leu Asp Leu Ala Gln Ser Leu Gly Leu Thr Gln Leu Gln
165 170 175

Val Lys Thr Trp Tyr Gln Asn Arg Arg Met Lys Trp Lys Lys Met Val
180 185 190

Leu Lys Gly Gly Gln Glu Ala Pro Thr Lys Pro Lys Gly Arg Pro Lys
195 200 205

Lys Asn Ser Ile Pro Thr Ser Glu Glu Ile Glu Ala Glu Glu Lys Met
210 215 220

```
Asn Ser Gln Ala Gln Gly Gln Glu Gln Leu Glu Pro Ser Gln Gly Gln
225                 230                 235                 240


Glu Glu Leu Cys Glu Ala Gln Glu Pro Lys Ala Arg Asp Val Pro Leu
                245                 250                 255


Glu Met Ala Glu Pro Pro Asp Pro Pro Gln Glu Leu Pro Ile Pro Ser
            260                 265                 270


Ser Glu Pro Pro Pro Leu Ser
        275


<210> 8305
<211> 529
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1720; "

<220>
<221> source
<223> /note="Gene Symbol: BBOF1; "

<220>
<221> source
<223> /note="Gene Name:
      basal body orientation  factor
      1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8ND07; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377577"

<400> 8305
Met Pro Ser Lys Gly Lys Asp Lys Lys Lys Gly Lys Ser Lys Gly Lys
1               5                   10                  15


Asp Thr Lys Lys Leu Ile Lys Thr Asp Glu Ser Val Val Asp Arg Ala
            20                  25                  30


Lys Ala Asn Ala Ser Leu Trp Glu Ala Arg Leu Glu Val Thr Glu Leu
        35                  40                  45
```

```
Ser Arg Ile Lys Tyr Arg Asp Thr Ser Arg Ile Leu Ala Lys Ser Asn
    50                  55                  60

Glu Asp Leu Lys Lys Lys Gln Cys Lys Met Glu Lys Asp Ile Met Ser
65                  70                  75                  80

Val Leu Ser Tyr Leu Lys Lys Gln Asp Gln Glu Lys Asp Asn Met Ile
                85                  90                  95

Glu Lys Leu Lys Gln Gln Leu Asn Glu Thr Lys Glu Lys Ala Gln Glu
            100                 105                 110

Glu Lys Asp Lys Leu Glu Gln Lys Tyr Thr Arg Gln Ile Asn Glu Leu
        115                 120                 125

Glu Gly Gln Phe His Gln Lys Ala Lys Glu Ile Gly Met Ile His Thr
    130                 135                 140

Glu Leu Lys Ala Val Arg Gln Phe Gln Lys Arg Lys Ile Gln Val Glu
145                 150                 155                 160

Arg Glu Leu Asp Asp Leu Lys Glu Asn Leu Arg Asn Thr Glu Arg Ile
                165                 170                 175

His Gln Glu Thr Leu Arg Arg Leu Glu Ser Arg Phe Phe Glu Glu Lys
            180                 185                 190

His Arg Leu Glu Gln Glu Ala Glu Lys Lys Ile Ile Met Leu Ala Glu
        195                 200                 205

Arg Ala His His Glu Ala Ile Val Gln Leu Asn Asp Ala Gly Arg Asn
    210                 215                 220

Val Phe Lys Glu Asn Asp Tyr Leu Gln Lys Ala Leu Ala Tyr His Leu
225                 230                 235                 240

Lys Glu Thr Asp Ala Leu Gln Lys Asn Ser Gln Lys Leu Gln Glu Ser
                245                 250                 255

His Thr Leu Leu Leu His Gln Lys Glu Ile Asn Asp Leu Leu Val Lys
            260                 265                 270

Glu Lys Ile Met Gln Leu Val Gln Gln Arg Ser Gln Ile Gln Thr Leu
```

```
        275                 280                 285

Gln Lys Lys Val Val Asn Leu Glu Thr Ala Leu Ser Tyr Met Thr Lys
    290                 295                 300

Glu Phe Glu Ser Glu Val Leu Lys Leu Gln Gln His Ala Met Ile Glu
305                 310                 315                 320

Asn Gln Ala Gly Gln Val Glu Ile Asp Lys Leu Gln His Leu Leu Gln
                325                 330                 335

Met Lys Asp Arg Glu Met Asn Arg Val Lys Lys Leu Ala Lys Asn Ile
            340                 345                 350

Leu Asp Glu Arg Thr Glu Val Glu Arg Phe Phe Leu Asp Ala Leu His
        355                 360                 365

Gln Val Lys Gln Gln Ile Leu Ile Ser Arg Lys His Tyr Lys Gln Ile
    370                 375                 380

Ala Gln Ala Ala Phe Asn Leu Lys Met Arg Ala Ala Cys Thr Gly Arg
385                 390                 395                 400

Thr Glu Tyr Pro Lys Ile Arg Thr Phe Asp Gly Arg Glu His Ser Thr
                405                 410                 415

Asn Ser Val Asn Gln Asp Leu Leu Glu Ala Glu Lys Trp Thr His Ile
            420                 425                 430

Glu Gly Asn Val Asp Ile Gly Asp Leu Thr Trp Glu Gln Lys Glu Lys
        435                 440                 445

Val Leu Arg Leu Leu Phe Ala Lys Met Asn Gly Cys Pro Ser Arg Lys
    450                 455                 460

Tyr Asn Gln Ser Ser Arg Pro Pro Val Pro Asp Tyr Val Val Ser Asp
465                 470                 475                 480

Ser Gly Glu Thr Lys Glu Phe Gly Asp Glu Ser Lys Leu Gln Asp Lys
                485                 490                 495

Ile Phe Ile Thr Gln Gln Ile Ala Ile Ser Asp Ser Ser Gly Glu Val
            500                 505                 510
```

Val Leu Pro Thr Ile Pro Lys Glu Pro Gln Glu Ser Asp Thr Gly Thr
515 520 525

Phe

<210> 8306
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1720; "

<220>
<221> source
<223> /note="Gene Symbol: BBOF1; "

<220>
<221> source
<223> /note="Gene Name:
basal body orientation factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451659"

<400> 8306
Met Ile His Thr Glu Leu Lys Ala Val Arg Gln Phe Gln Lys Arg Lys
1 5 10 15

Ile Gln Val Glu Arg Glu Leu Asp Asp Leu Lys Glu Asn Leu Arg Asn
20 25 30

Thr Glu Arg Ile His Gln Glu Thr Leu Arg Arg Leu Glu Ser Arg Phe
35 40 45

Phe Glu Glu Lys His Arg Leu Glu Gln Glu Ala Glu Lys Lys Ile Ile
50 55 60

Met Leu Ala Glu Arg Ala His His Glu Ala Ile Val Gln Leu Asn Asp
65 70 75 80

Ala Gly Arg Asn Val Phe Lys Glu Asn Asp Tyr Leu Gln Lys Ala Leu
85 90 95

Ala Tyr His Leu Lys Glu Thr Asp Ala Leu Gln Lys Asn Ser Gln Lys
100 105 110

Leu Gln Glu Ser His Thr Leu Leu Leu His Gln Lys
115 120

<210> 8307
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1720; "

<220>
<221> source
<223> /note="Gene Symbol: BBOF1; "

<220>
<221> source
<223> /note="Gene Name:
basal body orientation factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480689"

<400> 8307
Met Ile His Thr Glu Leu Lys Ala Val Arg Gln Phe Gln Lys Arg Lys
1 5 10 15

Ile Gln Val Glu Arg Glu Leu Asp Asp Leu Lys Glu Asn Leu Arg Asn
20 25 30

Thr Glu Arg Ile His Gln Glu Thr Leu Arg Arg Leu Glu Ser Arg Phe
35 40 45

Phe Glu Glu Lys Val Gln Ile Ile Arg Val Asn Leu Lys Cys Phe Val
50 55 60

Tyr
65

<210> 8308
<211> 628
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1721; "

<220>
<221> source
<223> /note="Gene Symbol: BCAM; "

<220>
<221> source
<223> /note="Gene Name:
basal cell adhesion
molecule (Lutheran
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: P50895; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000270233"

<400> 8308
Met Glu Pro Pro Asp Ala Pro Ala Gln Ala Arg Gly Ala Pro Arg Leu
1   5   10   15

Leu Leu Leu Ala Val Leu Leu Ala Ala His Pro Asp Ala Gln Ala Glu
            20   25   30

Val Arg Leu Ser Val Pro Pro Leu Val Glu Val Met Arg Gly Lys Ser
        35   40   45

Val Ile Leu Asp Cys Thr Pro Thr Gly Thr His Asp His Tyr Met Leu
    50   55   60

Glu Trp Phe Leu Thr Asp Arg Ser Gly Ala Arg Pro Arg Leu Ala Ser
65   70   75   80

Ala Glu Met Gln Gly Ser Glu Leu Gln Val Thr Met His Asp Thr Arg
                85   90   95

Gly Arg Ser Pro Pro Tyr Gln Leu Asp Ser Gln Gly Arg Leu Val Leu
            100   105   110

Ala Glu Ala Gln Val Gly Asp Glu Arg Asp Tyr Val Cys Val Val Arg
        115   120   125

```
Ala Gly Ala Ala Gly Thr Ala Glu Ala Thr Ala Arg Leu Asn Val Phe
    130                 135                 140

Ala Lys Pro Glu Ala Thr Glu Val Ser Pro Asn Lys Gly Thr Leu Ser
145                 150                 155                 160

Val Met Glu Asp Ser Ala Gln Glu Ile Ala Thr Cys Asn Ser Arg Asn
                165                 170                 175

Gly Asn Pro Ala Pro Lys Ile Thr Trp Tyr Arg Asn Gly Gln Arg Leu
            180                 185                 190

Glu Val Pro Val Glu Met Asn Pro Glu Gly Tyr Met Thr Ser Arg Thr
        195                 200                 205

Val Arg Glu Ala Ser Gly Leu Leu Ser Leu Thr Ser Thr Leu Tyr Leu
    210                 215                 220

Arg Leu Arg Lys Asp Asp Arg Asp Ala Ser Phe His Cys Ala Ala His
225                 230                 235                 240

Tyr Ser Leu Pro Glu Gly Arg His Gly Arg Leu Asp Ser Pro Thr Phe
                245                 250                 255

His Leu Thr Leu His Tyr Pro Thr Glu His Val Gln Phe Trp Val Gly
            260                 265                 270

Ser Pro Ser Thr Pro Ala Gly Trp Val Arg Glu Gly Asp Thr Val Gln
        275                 280                 285

Leu Leu Cys Arg Gly Asp Gly Ser Pro Ser Pro Glu Tyr Thr Leu Phe
    290                 295                 300

Arg Leu Gln Asp Glu Gln Glu Glu Val Leu Asn Val Asn Leu Glu Gly
305                 310                 315                 320

Asn Leu Thr Leu Glu Gly Val Thr Arg Gly Gln Ser Gly Thr Tyr Gly
                325                 330                 335

Cys Arg Val Glu Asp Tyr Asp Ala Ala Asp Asp Val Gln Leu Ser Lys
            340                 345                 350

Thr Leu Glu Leu Arg Val Ala Tyr Leu Asp Pro Leu Glu Leu Ser Glu
```

```
        355                 360                 365

Gly Lys Val Leu Ser Leu Pro Leu Asn Ser Ser Ala Val Val Asn Cys
    370                 375                 380

Ser Val His Gly Leu Pro Thr Pro Ala Leu Arg Trp Thr Lys Asp Ser
385                 390                 395                 400

Thr Pro Leu Gly Asp Gly Pro Met Leu Ser Leu Ser Ser Ile Thr Phe
                405                 410                 415

Asp Ser Asn Gly Thr Tyr Val Cys Glu Ala Ser Leu Pro Thr Val Pro
            420                 425                 430

Val Leu Ser Arg Thr Gln Asn Phe Thr Leu Leu Val Gln Gly Ser Pro
        435                 440                 445

Glu Leu Lys Thr Ala Glu Ile Glu Pro Lys Ala Asp Gly Ser Trp Arg
    450                 455                 460

Glu Gly Asp Glu Val Thr Leu Ile Cys Ser Ala Arg Gly His Pro Asp
465                 470                 475                 480

Pro Lys Leu Ser Trp Ser Gln Leu Gly Gly Ser Pro Ala Glu Pro Ile
                485                 490                 495

Pro Gly Arg Gln Gly Trp Val Ser Ser Ser Leu Thr Leu Lys Val Thr
            500                 505                 510

Ser Ala Leu Ser Arg Asp Gly Ile Ser Cys Glu Ala Ser Asn Pro His
        515                 520                 525

Gly Asn Lys Arg His Val Phe His Phe Gly Thr Val Ser Pro Gln Thr
    530                 535                 540

Ser Gln Ala Gly Val Ala Val Met Ala Val Ala Val Ser Val Gly Leu
545                 550                 555                 560

Leu Leu Leu Val Val Ala Val Phe Tyr Cys Val Arg Arg Lys Gly Gly
                565                 570                 575

Pro Cys Cys Arg Gln Arg Arg Glu Lys Gly Ala Pro Pro Pro Gly Glu
            580                 585                 590
```

```
Pro Gly Leu Ser His Ser Gly Ser Glu Gln Pro Glu Gln Thr Gly Leu
        595                 600                 605


Leu Met Gly Gly Ala Ser Gly Gly Ala Arg Gly Gly Ser Gly Gly Phe
    610                 615                 620


Gly Asp Glu Cys
625


<210> 8309
<211> 291
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1721; "

<220>
<221> source
<223> /note="Gene Symbol: BCAM; "

<220>
<221> source
<223> /note="Gene Name:
      basal cell adhesion
      molecule (Lutheran
      blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467100"

<400> 8309
Met Glu Pro Pro Asp Ala Pro Ala Gln Ala Arg Gly Ala Pro Arg Leu
1               5                  10                  15


Leu Leu Leu Ala Val Leu Leu Ala Ala His Pro Asp Ala Gln Ala Glu
            20                  25                  30


Val Arg Leu Ser Val Pro Pro Leu Val Glu Val Met Arg Gly Lys Ser
        35                  40                  45


Val Ile Leu Asp Cys Thr Pro Thr Gly Thr His Asp His Tyr Met Leu
    50                  55                  60


Glu Trp Phe Leu Val Thr Met His Asp Thr Arg Gly Arg Ser Pro Pro
65                  70                  75                  80
```

```
Tyr Gln Leu Asp Ser Gln Gly Arg Leu Val Leu Ala Glu Ala Gln Val
                 85                  90                  95

Gly Asp Glu Arg Asp Tyr Val Cys Val Val Arg Ala Gly Ala Ala Gly
            100                 105                 110

Thr Ala Glu Ala Thr Ala Arg Leu Asn Val Phe Ala Lys Pro Glu Ala
        115                 120                 125

Thr Glu Val Ser Pro Asn Lys Gly Thr Leu Ser Val Met Glu Asp Ser
    130                 135                 140

Ala Gln Glu Ile Ala Thr Cys Asn Ser Arg Asn Gly Asn Pro Ala Pro
145                 150                 155                 160

Lys Ile Thr Trp Tyr Arg Asn Gly Gln Arg Leu Glu Val Pro Val Glu
                165                 170                 175

Met Asn Pro Glu Gly Tyr Met Thr Ser Arg Thr Val Arg Glu Ala Ser
            180                 185                 190

Gly Leu Leu Ser Leu Thr Ser Thr Leu Tyr Leu Arg Leu Arg Lys Asp
        195                 200                 205

Asp Arg Asp Ala Ser Phe His Cys Ala Ala His Tyr Ser Leu Pro Glu
    210                 215                 220

Gly Arg His Gly Arg Leu Asp Ser Pro Thr Phe His Leu Thr Leu His
225                 230                 235                 240

Tyr Pro Thr Glu His Val Gln Phe Trp Val Gly Ser Pro Ser Thr Pro
                245                 250                 255

Ala Gly Trp Val Arg Glu Gly Asp Thr Val Gln Leu Leu Cys Arg Gly
            260                 265                 270

Asp Gly Ser Pro Ser Pro Glu Tyr Thr Leu Phe Arg Leu Gln Val Thr
        275                 280                 285

His Pro Arg
    290
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<210> 8310
<211> 61
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1721; "

<220>
<221> source
<223> /note="Gene Symbol: BCAM; "

<220>
<221> source
<223> /note="Gene Name:
basal cell adhesion
molecule (Lutheran
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468189"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8310
Xaa Gly Tyr Met Thr Ser Arg Thr Val Arg Glu Ala Ser Gly Leu Leu
1 5 10 15

Ser Leu Thr Ser Thr Leu Tyr Leu Arg Leu Arg Lys Asp Asp Arg Asp
20 25 30

Ala Ser Phe His Cys Ala Ala His Tyr Ser Leu Pro Glu Gly Arg His
35 40 45

Gly Arg Leu Asp Ser Pro Thr Phe His Leu Thr Leu His
50 55 60

<210> 8311
<211> 588
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1721; "

<220>
<221> source
<223> /note="Gene Symbol: BCAM; "

<220>
<221> source
<223> /note="Gene Name:
basal cell adhesion
molecule (Lutheran
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476710"

<400> 8311
Met Glu Pro Pro Asp Ala Pro Ala Gln Ala Arg Gly Ala Pro Arg Leu
1 5 10 15

Leu Leu Leu Ala Val Leu Leu Ala Ala His Pro Asp Ala Gln Ala Glu
20 25 30

Val Arg Leu Ser Val Pro Pro Leu Val Glu Val Met Arg Gly Lys Ser
35 40 45

Val Ile Leu Asp Cys Thr Pro Thr Gly Thr His Asp His Tyr Met Leu
50 55 60

Glu Trp Phe Leu Thr Asp Arg Ser Gly Ala Arg Pro Arg Leu Ala Ser
65 70 75 80

Ala Glu Met Gln Gly Ser Glu Leu Gln Val Thr Met His Asp Thr Arg
85 90 95

Gly Arg Ser Pro Pro Tyr Gln Leu Asp Ser Gln Gly Arg Leu Val Leu
100 105 110

Ala Glu Ala Gln Val Gly Asp Glu Arg Asp Tyr Val Cys Val Val Arg
115 120 125

Ala Gly Ala Ala Gly Thr Ala Glu Ala Thr Ala Arg Leu Asn Val Phe
130 135 140

Ala Lys Pro Glu Ala Thr Glu Val Ser Pro Asn Lys Gly Thr Leu Ser
145 150 155 160

Val Met Glu Asp Ser Ala Gln Glu Ile Ala Thr Cys Asn Ser Arg Asn

```
                165                 170                 175

Gly Asn Pro Ala Pro Lys Ile Thr Trp Tyr Arg Asn Gly Gln Arg Leu
            180                 185                 190

Glu Val Pro Val Glu Met Asn Pro Glu Gly Tyr Met Thr Ser Arg Thr
        195                 200                 205

Val Arg Glu Ala Ser Gly Leu Leu Ser Leu Thr Ser Thr Leu Tyr Leu
    210                 215                 220

Arg Leu Arg Lys Asp Asp Arg Asp Ala Ser Phe His Cys Ala Ala His
225                 230                 235                 240

Tyr Ser Leu Pro Glu Gly Arg His Gly Arg Leu Asp Ser Pro Thr Phe
                245                 250                 255

His Leu Thr Leu His Tyr Pro Thr Glu His Val Gln Phe Trp Val Gly
            260                 265                 270

Ser Pro Ser Thr Pro Ala Gly Trp Val Arg Glu Gly Asp Thr Val Gln
        275                 280                 285

Leu Leu Cys Arg Gly Asp Gly Ser Pro Ser Pro Glu Tyr Thr Leu Phe
    290                 295                 300

Arg Leu Gln Asp Glu Gln Glu Glu Val Leu Asn Val Asn Leu Glu Gly
305                 310                 315                 320

Asn Leu Thr Leu Glu Gly Val Thr Arg Gly Gln Ser Gly Thr Tyr Gly
                325                 330                 335

Cys Arg Val Glu Asp Tyr Asp Ala Ala Asp Asp Val Gln Leu Ser Lys
            340                 345                 350

Thr Leu Glu Leu Arg Val Ala Tyr Leu Asp Pro Leu Glu Leu Ser Glu
        355                 360                 365

Gly Lys Val Leu Ser Leu Pro Leu Asn Ser Ser Ala Val Val Asn Cys
    370                 375                 380

Ser Val His Gly Leu Pro Thr Pro Ala Leu Arg Trp Thr Lys Asp Ser
385                 390                 395                 400
```

```
Thr Pro Leu Gly Asp Gly Pro Met Leu Ser Leu Ser Ser Ile Thr Phe
                405                 410                 415

Asp Ser Asn Gly Thr Tyr Val Cys Glu Ala Ser Leu Pro Thr Val Pro
            420                 425                 430

Val Leu Ser Arg Thr Gln Asn Phe Thr Leu Leu Val Gln Gly Ser Pro
        435                 440                 445

Glu Leu Lys Thr Ala Glu Ile Glu Pro Lys Ala Asp Gly Ser Trp Arg
    450                 455                 460

Glu Gly Asp Glu Val Thr Leu Ile Cys Ser Ala Arg Gly His Pro Asp
465                 470                 475                 480

Pro Lys Leu Ser Trp Ser Gln Leu Gly Gly Ser Pro Ala Glu Pro Ile
                485                 490                 495

Pro Gly Arg Gln Gly Trp Val Ser Ser Ser Leu Thr Leu Lys Val Thr
            500                 505                 510

Ser Ala Leu Ser Arg Asp Gly Ile Ser Cys Glu Ala Ser Asn Pro His
        515                 520                 525

Gly Asn Lys Arg His Val Phe His Phe Gly Thr Val Ser Pro Gln Thr
    530                 535                 540

Ser Gln Ala Gly Val Ala Val Met Ala Val Ala Val Ser Val Gly Leu
545                 550                 555                 560

Leu Leu Leu Val Val Ala Val Phe Tyr Cys Val Arg Arg Lys Gly Gly
                565                 570                 575

Pro Cys Cys Arg Gln Arg Arg Glu Lys Gly Ala Pro
            580                 585
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<210> 8312
<211> 588
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1721; "

<220>
<221> source
<223> /note="Gene Symbol: BCAM; "

<220>
<221> source
<223> /note="Gene Name:
basal cell adhesion
molecule (Lutheran
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481153"

<400> 8312

```
Met Glu Pro Pro Asp Ala Pro Ala Gln Ala Arg Gly Ala Pro Arg Leu
1               5                  10                  15

Leu Leu Leu Ala Val Leu Leu Ala Ala His Pro Asp Ala Gln Ala Glu
            20                  25                  30

Val Arg Leu Ser Val Pro Pro Leu Val Glu Val Met Arg Gly Lys Ser
        35                  40                  45

Val Ile Leu Asp Cys Thr Pro Thr Gly Thr His Asp His Tyr Met Leu
    50                  55                  60

Glu Trp Phe Leu Thr Asp Arg Ser Gly Ala Arg Pro Arg Leu Ala Ser
65                  70                  75                  80

Ala Glu Met Gln Gly Ser Glu Leu Gln Val Thr Met His Asp Thr Arg
                85                  90                  95

Gly Arg Ser Pro Pro Tyr Gln Leu Asp Ser Gln Gly Arg Leu Val Leu
            100                 105                 110

Ala Glu Ala Gln Val Gly Asp Glu Arg Asp Tyr Val Cys Val Val Arg
        115                 120                 125

Ala Gly Ala Ala Gly Thr Ala Glu Ala Thr Ala Arg Leu Asn Val Phe
    130                 135                 140

Ala Lys Pro Glu Ala Thr Glu Val Ser Pro Asn Lys Gly Thr Leu Ser
145                 150                 155                 160
```

Val Met Glu Asp Ser Ala Gln Glu Ile Ala Thr Cys Asn Ser Arg Asn
165 170 175

Gly Asn Pro Ala Pro Lys Ile Thr Trp Tyr Arg Asn Gly Gln Arg Leu
180 185 190

Glu Val Pro Val Glu Met Asn Pro Glu Gly Tyr Met Thr Ser Arg Thr
195 200 205

Val Arg Glu Ala Ser Gly Leu Leu Ser Leu Thr Ser Thr Leu Tyr Leu
210 215 220

Arg Leu Arg Lys Asp Asp Arg Asp Ala Ser Phe His Cys Ala Ala His
225 230 235 240

Tyr Ser Leu Pro Glu Gly Arg His Gly Arg Leu Asp Ser Pro Thr Phe
245 250 255

His Leu Thr Leu His Tyr Pro Thr Glu His Val Gln Phe Trp Val Gly
260 265 270

Ser Pro Ser Thr Pro Ala Gly Trp Val Arg Glu Gly Asp Thr Val Gln
275 280 285

Leu Leu Cys Arg Gly Asp Gly Ser Pro Ser Pro Glu Tyr Thr Leu Phe
290 295 300

Arg Leu Gln Asp Glu Gln Glu Glu Val Leu Asn Val Asn Leu Glu Gly
305 310 315 320

Asn Leu Thr Leu Glu Gly Val Thr Arg Gly Gln Ser Gly Thr Tyr Gly
325 330 335

Cys Arg Val Glu Asp Tyr Asp Ala Ala Asp Asp Val Gln Leu Ser Lys
340 345 350

Thr Leu Glu Leu Arg Val Ala Tyr Leu Asp Pro Leu Glu Leu Ser Glu
355 360 365

Gly Lys Val Leu Ser Leu Pro Leu Asn Ser Ser Ala Val Val Asn Cys
370 375 380

```
Ser Val His Gly Leu Pro Thr Pro Ala Leu Arg Trp Thr Lys Asp Ser
385                 390                 395                 400

Thr Pro Leu Gly Asp Gly Pro Met Leu Ser Leu Ser Ser Ile Thr Phe
                405                 410                 415

Asp Ser Asn Gly Thr Tyr Val Cys Glu Ala Ser Leu Pro Thr Val Pro
            420                 425                 430

Val Leu Ser Arg Thr Gln Asn Phe Thr Leu Leu Val Gln Gly Ser Pro
        435                 440                 445

Glu Leu Lys Thr Ala Glu Ile Glu Pro Lys Ala Asp Gly Ser Trp Arg
    450                 455                 460

Glu Gly Asp Glu Val Thr Leu Ile Cys Ser Ala Arg Gly His Pro Asp
465                 470                 475                 480

Pro Lys Leu Ser Trp Ser Gln Leu Gly Gly Ser Pro Ala Glu Pro Ile
                485                 490                 495

Pro Gly Arg Gln Gly Trp Val Ser Ser Ser Leu Thr Leu Lys Val Thr
            500                 505                 510

Ser Ala Leu Ser Arg Asp Gly Ile Ser Cys Glu Ala Ser Asn Pro His
        515                 520                 525

Gly Asn Lys Arg His Val Phe His Phe Gly Thr Val Ser Pro Gln Thr
    530                 535                 540

Ser Gln Ala Gly Val Ala Val Met Ala Val Ala Val Ser Val Gly Leu
545                 550                 555                 560

Leu Leu Leu Val Val Ala Val Phe Tyr Cys Val Arg Arg Lys Gly Gly
                565                 570                 575

Pro Cys Cys Arg Gln Arg Arg Glu Lys Gly Ala Pro
            580                 585
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<210> 8313
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1722; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2; "

<220>
<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2; "

<220>
<221> source
<223> /note="Uniprot ID: O14599; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000329106"

<400> 8313
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg Ala Gly Gln Asp His
1   5   10   15

Tyr Ser His Pro Cys Pro Arg Phe Ser Gln Val Leu Leu Thr Glu Gly
            20   25   30

Ile Met Thr Tyr Cys Leu Thr Lys Asn Leu Ser Asp Val Asn Ile Leu
        35   40   45

His Arg Leu Leu Lys Asn Gly Asn Val Arg Asn Thr Leu Leu Gln Ser
    50   55   60

Lys Val Gly Leu Leu Thr Tyr Tyr Val Lys Leu Tyr Pro Gly Glu Val
65   70   75   80

Thr Leu Leu Thr Arg Pro Ser Ile Gln Met Arg Leu Cys Cys Ile Thr
                85   90   95

Gly Ser Val Ser Arg Pro Arg Ser Gln Lys
            100   105

<210> 8314
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1722; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2; "

<220>
<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2; "

<220>
<221> source
<223> /note="Uniprot ID: O14599; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000372028"

<400> 8314
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg Ala Gly Gln Asp His
1   5   10   15

Tyr Ser His Pro Cys Pro Arg Phe Ser Gln Val Leu Leu Thr Glu Gly
            20   25   30

Ile Met Thr Tyr Cys Leu Thr Lys Asn Leu Ser Asp Val Asn Ile Leu
        35   40   45

His Arg Leu Leu Lys Asn Gly Asn Val Arg Asn Thr Leu Leu Gln Ser
    50   55   60

Lys Val Gly Leu Leu Thr Tyr Tyr Val Lys Leu Tyr Pro Gly Glu Val
65   70   75   80

Thr Leu Leu Thr Arg Pro Ser Ile Gln Met Arg Leu Cys Cys Ile Thr
                85   90   95

Gly Ser Val Ser Arg Pro Arg Ser Gln Lys
            100   105

<210> 8315
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1722; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2; "

<220>
<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473270"

<400> 8315
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg
1 5 10

<210> 8316
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1723; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2B; "

<220>
<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2B; "

<220>
<221> source
<223> /note="Uniprot ID: O14599; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371829"

<400> 8316
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg Ala Gly Gln Asp His
1 5 10 15

Tyr Ser His Pro Cys Pro Arg Phe Ser Gln Val Leu Leu Thr Glu Gly
20 25 30

Ile Met Thr Tyr Cys Leu Thr Lys Asn Leu Ser Asp Val Asn Ile Leu
35 40 45

```
His Arg Leu Leu Lys Asn Gly Asn Val Arg Asn Thr Leu Leu Gln Ser
    50                  55                  60

Lys Val Gly Leu Leu Thr Tyr Tyr Val Lys Leu Tyr Pro Gly Glu Val
65                  70                  75                  80

Thr Leu Leu Thr Arg Pro Ser Ile Gln Met Arg Leu Cys Cys Ile Thr
                85                  90                  95

Gly Ser Val Ser Arg Pro Arg Ser Gln Lys
            100                 105
```

<210> 8317
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1723; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2B; "

<220>
<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473491"

<400> 8317
```
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg
1               5                   10
```

<210> 8318
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1723; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2B; "

<220>

<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2B; "

<220>
<221> source
<223> /note="Uniprot ID: O14599; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480184"

<400> 8318
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg Ala Gly Gln Asp His
1 5 10 15

Tyr Ser His Pro Cys Pro Arg Phe Ser Gln Val Leu Leu Thr Glu Gly
20 25 30

Ile Met Thr Tyr Cys Leu Thr Lys Asn Leu Ser Asp Val Asn Ile Leu
35 40 45

His Arg Leu Leu Lys Asn Gly Asn Val Arg Asn Thr Leu Leu Gln Ser
50 55 60

Lys Val Gly Leu Leu Thr Tyr Tyr Val Lys Leu Tyr Pro Gly Glu Val
65 70 75 80

Thr Leu Leu Thr Arg Pro Ser Ile Gln Met Arg Leu Cys Cys Ile Thr
85 90 95

Gly Ser Val Ser Arg Pro Arg Ser Gln Lys
100 105

<210> 8319
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1724; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2C; "

<220>
<221> source
<223> /note="Gene Name:

basic charge, Y-linked, 2C; "

<220>
<221> source
<223> /note="Uniprot ID: O14599; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371724"

<400> 8319
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg Ala Gly Gln Asp His
1   5   10   15

Tyr Ser His Pro Cys Pro Arg Phe Ser Gln Val Leu Leu Thr Glu Gly
            20   25   30

Ile Met Thr Tyr Cys Leu Thr Lys Asn Leu Ser Asp Val Asn Ile Leu
        35   40   45

His Arg Leu Leu Lys Asn Gly Asn Val Arg Asn Thr Leu Leu Gln Ser
    50   55   60

Lys Val Gly Leu Leu Thr Tyr Tyr Val Lys Leu Tyr Pro Gly Glu Val
65   70   75   80

Thr Leu Leu Thr Arg Pro Ser Ile Gln Met Arg Leu Cys Cys Ile Thr
                85   90   95

Gly Ser Val Ser Arg Pro Arg Ser Gln Lys
            100   105

<210> 8320
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1724; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2C; "

<220>
<221> source
<223> /note="Gene Name:
basic charge, Y-linked, 2C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473549"

<400> 8320
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg
1   5   10

<210> 8321
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1724; "

<220>
<221> source
<223> /note="Gene Symbol: BPY2C; "

<220>
<221> source
<223> /note="Gene Name:
      basic charge, Y-linked, 2C; "

<220>
<221> source
<223> /note="Uniprot ID: O14599; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480751"

<400> 8321
Met Met Thr Leu Val Pro Arg Ala Arg Thr Arg Ala Gly Gln Asp His
1   5   10   15

Tyr Ser His Pro Cys Pro Arg Phe Ser Gln Val Leu Leu Thr Glu Gly
            20   25   30

Ile Met Thr Tyr Cys Leu Thr Lys Asn Leu Ser Asp Val Asn Ile Leu
        35   40   45

His Arg Leu Leu Lys Asn Gly Asn Val Arg Asn Thr Leu Leu Gln Ser
    50   55   60

Lys Val Gly Leu Leu Thr Tyr Tyr Val Lys Leu Tyr Pro Gly Glu Val
65   70   75   80

Thr Leu Leu Thr Arg Pro Ser Ile Gln Met Arg Leu Cys Cys Ile Thr

```
                85                  90                  95

Gly Ser Val Ser Arg Pro Arg Ser Gln Lys
            100                 105


<210> 8322
<211> 638
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1725; "

<220>
<221> source
<223> /note="Gene Symbol: BHMG1; "

<220>
<221> source
<223> /note="Gene Name:
      basic helix-loop-helix and HMG box
      domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  C9JSJ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402674"

<400> 8322
Met Phe Gly Ser Ser Arg Tyr Leu Gly Ser Ser Glu Gln Pro Arg Ala
1               5                   10                  15


Asn Ser Leu Gly Pro Ser Asp Arg Thr Leu Val Leu Cys Ser Leu Val
            20                  25                  30


Glu Gly Glu Asp Lys Val Asn Pro Ser Glu Pro His Gly Leu Arg Met
        35                  40                  45


Glu Glu Lys Trp Leu Leu Lys Gly Lys Leu Arg Asn Gln Arg Asn Gln
    50                  55                  60


Asn Lys Leu Leu Ser Pro Asn Lys Lys Gln Arg Lys Asn His Thr Ser
65                  70                  75                  80


Lys Leu Gln Glu Leu Ala Leu Leu Leu Pro Ile Ala Leu Lys Thr Gly
                85                  90                  95
```

```
Thr Lys Lys Leu Thr Lys Lys Glu Ile Leu Val His Val Leu Gln Tyr
            100                 105                 110

Ile Gln Tyr Leu Gln Arg Asn Ile Asp Ala Ala Lys Ala Leu Phe Lys
        115                 120                 125

Cys His Ile Thr Thr Gly Glu Gly Gly Leu Ala Gly Leu Gly Gln Lys
    130                 135                 140

Pro Ala Trp Gly Pro Ala Arg Arg Arg Arg His Ser Thr Pro Ser Ser
145                 150                 155                 160

Ser Pro Ser Ser Gln Lys Ser Cys Leu Gln Gly Ala Cys Gln Lys Pro
                165                 170                 175

Arg Lys Lys Lys Leu Thr Gln Ala Ser Glu Ser Gln Thr Arg Thr Pro
            180                 185                 190

Lys Pro Arg Arg Ser Leu Ala Leu Asn Lys Pro Glu Lys Leu Val Ala
        195                 200                 205

Pro Ser Pro Asp Gln Lys Gly Ser Gly Thr Gly Gly Thr Thr Thr Pro
    210                 215                 220

Pro Arg Cys Pro Asp Ser Cys Gly His Pro Arg Pro Ala Ser Ser Ser
225                 230                 235                 240

Pro Pro Gly Asp Arg Lys Gly Gly Gln Ser Gln Leu Thr Leu Leu Asp
                245                 250                 255

Leu Ala Glu Asp Thr Ile His Cys Asp Ile Ser Ser Cys Trp Cys Gln
            260                 265                 270

Gly Ser Val Gln Asp Asp Ala Pro Phe Pro Ala Leu Leu Ala Gln Glu
        275                 280                 285

Asp Val Ala Arg Ile His Phe Leu Asn Lys Thr Gln Pro His Pro Arg
    290                 295                 300

Gln Lys Leu Val Phe Tyr Asp Ser Ser Glu Asp Val Asp Lys Gly Ser
305                 310                 315                 320
```

```
Leu Asp Ala Asp Pro Trp Leu Pro Ala Trp Thr Pro Glu Asn Ser Pro
                325                 330                 335

Gln Gly Ser Pro Leu Phe Leu Gly Pro Pro Gln Ile Asp Val Trp Ser
            340                 345                 350

Gly Thr Gly His Pro Ser Glu Ile Leu Gly Leu Ser Pro Ser Leu Phe
        355                 360                 365

Ser Ser Pro Gly Lys Leu Leu Pro Asp Glu Ile Leu Glu Asp Asp Met
    370                 375                 380

Glu Tyr Leu Thr Gln Ala Ala Phe Phe Glu Glu Val Cys Leu Asp Leu
385                 390                 395                 400

Glu Ser Ser Pro Ser Ala Tyr Thr Gln Glu Ala Pro Gln Glu Lys Asp
                405                 410                 415

Thr Ala Ser Lys Ala Pro Lys Asp Pro Pro Glu Ser His Ser Leu His
            420                 425                 430

Arg Ser Ser Val Ser Leu Asp His Cys Tyr Leu Ser Leu Ser Gly Asn
        435                 440                 445

Ser Lys Ala Pro Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser
    450                 455                 460

Ser Glu Asp Ser Asp Ser Glu Pro Leu Trp Lys Gln Arg Glu Asp Met
465                 470                 475                 480

Gln Ala Asn Pro Val Gly Thr Pro Gly Ser Ser Glu Glu Asp Glu Asp
                485                 490                 495

Thr Thr Trp Thr Pro Thr Arg Leu Ala Ser Pro Leu Leu Ala Ala Glu
            500                 505                 510

Lys Lys Ala Thr Lys Gly Gln Val Ala Arg Ala Pro Val Lys Pro Lys
        515                 520                 525

Glu Lys Lys Lys Gly Pro Cys Pro Pro Gln Met Lys Lys Lys Cys Val
    530                 535                 540
```

```
Asn Gly Phe Ile Met Phe Cys Arg Met Asn Arg Lys Gln Tyr Ile Arg
545                 550                 555                 560


Ser Cys Pro Gly Thr Ala Ser Thr Ala Ala Thr Lys Glu Leu Ala Gln
                565                 570                 575


Leu Trp Arg Val Met Thr Gln Gln Glu Arg Arg Pro Tyr Cys Thr Lys
            580                 585                 590


Ala Arg Arg Phe Ser Arg Gln His Asn Arg Ile Val Lys Gln Asp Gly
        595                 600                 605


Ser Ser Ser Glu Ala Glu Asp Trp Glu Thr Pro Lys Pro Phe Tyr Gln
    610                 615                 620


Leu Leu Ala Glu Lys Ala Leu Pro Leu Pro Pro His Leu Gln
625                 630                 635


<210> 8323
<211> 547
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1726; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHB9; "

<220>
<221> source
<223> /note="Gene Name:
      basic helix-loop-helix domain containing,
      class B, 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6PI77; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354675"

<400> 8323
Met Ala Gly Thr Lys Asn Lys Thr Arg Ala Gln Ala Lys Thr Glu Lys
1               5                   10                  15


Lys Ala Ala Ile Gln Ala Lys Ala Gly Ala Glu Arg Glu Ala Thr Gly
```

```
            20                  25                  30

Val Val Arg Pro Val Ala Lys Thr Arg Ala Lys Ala Lys Ala Lys Thr
        35                  40                  45

Gly Ser Lys Thr Asp Ala Val Ala Glu Met Lys Ala Val Ser Lys Asn
    50                  55                  60

Lys Val Val Ala Glu Thr Lys Glu Gly Ala Leu Ser Glu Pro Lys Thr
65                  70                  75                  80

Leu Gly Lys Ala Met Gly Asp Phe Thr Pro Lys Ala Gly Asn Glu Ser
                85                  90                  95

Thr Ser Ser Thr Cys Lys Asn Glu Ala Gly Thr Asp Ala Trp Phe Trp
            100                 105                 110

Ala Gly Glu Glu Ala Thr Ile Asn Ser Trp Phe Trp Asn Gly Glu Glu
        115                 120                 125

Ala Gly Asn Ser Phe Ser Thr Lys Asn Asp Lys Pro Glu Ile Gly Ala
    130                 135                 140

Gln Val Cys Ala Glu Glu Leu Glu Pro Ala Ala Gly Ala Asp Cys Lys
145                 150                 155                 160

Pro Arg Ser Gly Ala Glu Glu Glu Glu Glu Glu Asn Val Ile Gly Asn
                165                 170                 175

Trp Phe Trp Glu Gly Asp Asp Thr Ser Phe Asp Pro Asn Pro Lys Pro
            180                 185                 190

Val Ser Arg Ile Val Lys Pro Gln Pro Val Tyr Glu Ile Asn Glu Lys
        195                 200                 205

Asn Arg Pro Lys Asp Trp Ser Glu Val Thr Ile Trp Pro Asn Ala Pro
    210                 215                 220

Ala Val Thr Pro Ala Val Leu Gly Phe Arg Ser Gln Ala Pro Ser Glu
225                 230                 235                 240

Ala Ser Pro Pro Ser Tyr Ile Val Leu Ala Ser Ala Glu Glu Asn Ala
                245                 250                 255
```

```
Cys Ser Leu Pro Val Ala Thr Ala Cys Arg Pro Ser Arg Asn Thr Arg
            260                 265                 270

Ser Cys Ser Gln Pro Ile Pro Glu Cys Arg Phe Asp Ser Asp Pro Cys
        275                 280                 285

Ile Gln Thr Ile Asp Glu Ile Arg Arg Gln Ile Arg Ile Arg Glu Val
    290                 295                 300

Asn Gly Ile Lys Pro Phe Ala Cys Pro Cys Lys Met Glu Cys Tyr Met
305                 310                 315                 320

Asp Ser Glu Glu Phe Glu Lys Leu Val Ser Leu Leu Lys Ser Thr Thr
                325                 330                 335

Asp Pro Leu Ile His Lys Ile Ala Arg Ile Ala Met Gly Val His Asn
            340                 345                 350

Val His Pro Phe Ala Gln Glu Phe Ile Asn Glu Val Gly Val Val Thr
        355                 360                 365

Leu Ile Glu Ser Leu Leu Ser Phe Pro Ser Pro Glu Met Arg Lys Lys
    370                 375                 380

Thr Val Ile Thr Leu Asn Pro Pro Ser Gly Asp Glu Arg Gln Arg Lys
385                 390                 395                 400

Ile Glu Leu His Val Lys His Met Cys Lys Glu Thr Met Ser Phe Pro
                405                 410                 415

Leu Asn Ser Pro Gly Gln Gln Ser Gly Leu Lys Ile Leu Gly Gln Leu
            420                 425                 430

Thr Thr Asp Phe Val His His Tyr Ile Val Ala Asn Tyr Phe Ser Glu
        435                 440                 445

Leu Phe His Leu Leu Ser Ser Gly Asn Cys Lys Thr Arg Asn Leu Val
    450                 455                 460

Leu Lys Leu Leu Leu Asn Met Ser Glu Asn Pro Thr Ala Ala Arg Asp
465                 470                 475                 480
```

```
Met Ile Asn Met Lys Ala Leu Ala Ala Leu Lys Leu Ile Phe Asn Gln
                485                 490                 495

Lys Glu Ala Lys Ala Asn Leu Val Ser Gly Val Ala Ile Phe Ile Asn
            500                 505                 510

Ile Lys Glu His Ile Arg Lys Gly Ser Ile Val Val Val Asp His Leu
        515                 520                 525

Ser Tyr Asn Thr Leu Met Ala Ile Phe Arg Glu Val Lys Glu Ile Ile
    530                 535                 540

Glu Thr Met
545
```

<210> 8324
<211> 547
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1726; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHB9; "

<220>
<221> source
<223> /note="Gene Name:
basic helix-loop-helix domain containing,
class B, 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q6PI77; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361820"

<400> 8324

```
Met Ala Gly Thr Lys Asn Lys Thr Arg Ala Gln Ala Lys Thr Glu Lys
1               5                   10                  15

Lys Ala Ala Ile Gln Ala Lys Ala Gly Ala Glu Arg Glu Ala Thr Gly
            20                  25                  30
```

```
Val Val Arg Pro Val Ala Lys Thr Arg Ala Lys Ala Lys Ala Lys Thr
        35                  40                  45

Gly Ser Lys Thr Asp Ala Val Ala Glu Met Lys Ala Val Ser Lys Asn
    50                  55                  60

Lys Val Val Ala Glu Thr Lys Glu Gly Ala Leu Ser Glu Pro Lys Thr
65                  70                  75                  80

Leu Gly Lys Ala Met Gly Asp Phe Thr Pro Lys Ala Gly Asn Glu Ser
                85                  90                  95

Thr Ser Ser Thr Cys Lys Asn Glu Ala Gly Thr Asp Ala Trp Phe Trp
            100                 105                 110

Ala Gly Glu Glu Ala Thr Ile Asn Ser Trp Phe Trp Asn Gly Glu Glu
        115                 120                 125

Ala Gly Asn Ser Phe Ser Thr Lys Asn Asp Lys Pro Glu Ile Gly Ala
    130                 135                 140

Gln Val Cys Ala Glu Glu Leu Glu Pro Ala Ala Gly Ala Asp Cys Lys
145                 150                 155                 160

Pro Arg Ser Gly Ala Glu Glu Glu Glu Glu Glu Asn Val Ile Gly Asn
                165                 170                 175

Trp Phe Trp Glu Gly Asp Asp Thr Ser Phe Asp Pro Asn Pro Lys Pro
            180                 185                 190

Val Ser Arg Ile Val Lys Pro Gln Pro Val Tyr Glu Ile Asn Glu Lys
        195                 200                 205

Asn Arg Pro Lys Asp Trp Ser Glu Val Thr Ile Trp Pro Asn Ala Pro
    210                 215                 220

Ala Val Thr Pro Ala Val Leu Gly Phe Arg Ser Gln Ala Pro Ser Glu
225                 230                 235                 240

Ala Ser Pro Pro Ser Tyr Ile Val Leu Ala Ser Ala Glu Glu Asn Ala
                245                 250                 255

Cys Ser Leu Pro Val Ala Thr Ala Cys Arg Pro Ser Arg Asn Thr Arg
```

260 265 270

Ser Cys Ser Gln Pro Ile Pro Glu Cys Arg Phe Asp Ser Asp Pro Cys
275 280 285

Ile Gln Thr Ile Asp Glu Ile Arg Arg Gln Ile Arg Ile Arg Glu Val
290 295 300

Asn Gly Ile Lys Pro Phe Ala Cys Pro Cys Lys Met Glu Cys Tyr Met
305 310 315 320

Asp Ser Glu Glu Phe Glu Lys Leu Val Ser Leu Leu Lys Ser Thr Thr
325 330 335

Asp Pro Leu Ile His Lys Ile Ala Arg Ile Ala Met Gly Val His Asn
340 345 350

Val His Pro Phe Ala Gln Glu Phe Ile Asn Glu Val Gly Val Val Thr
355 360 365

Leu Ile Glu Ser Leu Leu Ser Phe Pro Ser Pro Glu Met Arg Lys Lys
370 375 380

Thr Val Ile Thr Leu Asn Pro Pro Ser Gly Asp Glu Arg Gln Arg Lys
385 390 395 400

Ile Glu Leu His Val Lys His Met Cys Lys Glu Thr Met Ser Phe Pro
405 410 415

Leu Asn Ser Pro Gly Gln Gln Ser Gly Leu Lys Ile Leu Gly Gln Leu
420 425 430

Thr Thr Asp Phe Val His His Tyr Ile Val Ala Asn Tyr Phe Ser Glu
435 440 445

Leu Phe His Leu Leu Ser Ser Gly Asn Cys Lys Thr Arg Asn Leu Val
450 455 460

Leu Lys Leu Leu Leu Asn Met Ser Glu Asn Pro Thr Ala Ala Arg Asp
465 470 475 480

Met Ile Asn Met Lys Ala Leu Ala Ala Leu Lys Leu Ile Phe Asn Gln
485 490 495

```
Lys Glu Ala Lys Ala Asn Leu Val Ser Gly Val Ala Ile Phe Ile Asn
            500                 505                 510

Ile Lys Glu His Ile Arg Lys Gly Ser Ile Val Val Val Asp His Leu
        515                 520                 525

Ser Tyr Asn Thr Leu Met Ala Ile Phe Arg Glu Val Lys Glu Ile Ile
    530                 535                 540

Glu Thr Met
545


<210> 8325
<211> 547
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1726; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHB9; "

<220>
<221> source
<223> /note="Gene Name:
      basic helix-loop-helix domain containing,
      class B, 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6PI77; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391722"

<400> 8325
Met Ala Gly Thr Lys Asn Lys Thr Arg Ala Gln Ala Lys Thr Glu Lys
1               5                  10                  15

Lys Ala Ala Ile Gln Ala Lys Ala Gly Ala Glu Arg Glu Ala Thr Gly
            20                  25                  30

Val Val Arg Pro Val Ala Lys Thr Arg Ala Lys Ala Lys Ala Lys Thr
        35                  40                  45
```

```
Gly Ser Lys Thr Asp Ala Val Ala Glu Met Lys Ala Val Ser Lys Asn
    50                  55                  60

Lys Val Val Ala Glu Thr Lys Glu Gly Ala Leu Ser Glu Pro Lys Thr
65                  70                  75                  80

Leu Gly Lys Ala Met Gly Asp Phe Thr Pro Lys Ala Gly Asn Glu Ser
                85                  90                  95

Thr Ser Ser Thr Cys Lys Asn Glu Ala Gly Thr Asp Ala Trp Phe Trp
            100                 105                 110

Ala Gly Glu Glu Ala Thr Ile Asn Ser Trp Phe Trp Asn Gly Glu Glu
        115                 120                 125

Ala Gly Asn Ser Phe Ser Thr Lys Asn Asp Lys Pro Glu Ile Gly Ala
    130                 135                 140

Gln Val Cys Ala Glu Glu Leu Glu Pro Ala Ala Gly Ala Asp Cys Lys
145                 150                 155                 160

Pro Arg Ser Gly Ala Glu Glu Glu Glu Glu Glu Asn Val Ile Gly Asn
                165                 170                 175

Trp Phe Trp Glu Gly Asp Asp Thr Ser Phe Asp Pro Asn Pro Lys Pro
            180                 185                 190

Val Ser Arg Ile Val Lys Pro Gln Pro Val Tyr Glu Ile Asn Glu Lys
        195                 200                 205

Asn Arg Pro Lys Asp Trp Ser Glu Val Thr Ile Trp Pro Asn Ala Pro
    210                 215                 220

Ala Val Thr Pro Ala Val Leu Gly Phe Arg Ser Gln Ala Pro Ser Glu
225                 230                 235                 240

Ala Ser Pro Pro Ser Tyr Ile Val Leu Ala Ser Ala Glu Glu Asn Ala
                245                 250                 255

Cys Ser Leu Pro Val Ala Thr Ala Cys Arg Pro Ser Arg Asn Thr Arg
            260                 265                 270
```

```
Ser Cys Ser Gln Pro Ile Pro Glu Cys Arg Phe Asp Ser Asp Pro Cys
        275                 280                 285

Ile Gln Thr Ile Asp Glu Ile Arg Arg Gln Ile Arg Ile Arg Glu Val
    290                 295                 300

Asn Gly Ile Lys Pro Phe Ala Cys Pro Cys Lys Met Glu Cys Tyr Met
305                 310                 315                 320

Asp Ser Glu Glu Phe Glu Lys Leu Val Ser Leu Leu Lys Ser Thr Thr
                325                 330                 335

Asp Pro Leu Ile His Lys Ile Ala Arg Ile Ala Met Gly Val His Asn
            340                 345                 350

Val His Pro Phe Ala Gln Glu Phe Ile Asn Glu Val Gly Val Val Thr
        355                 360                 365

Leu Ile Glu Ser Leu Leu Ser Phe Pro Ser Pro Glu Met Arg Lys Lys
    370                 375                 380

Thr Val Ile Thr Leu Asn Pro Pro Ser Gly Asp Glu Arg Gln Arg Lys
385                 390                 395                 400

Ile Glu Leu His Val Lys His Met Cys Lys Glu Thr Met Ser Phe Pro
                405                 410                 415

Leu Asn Ser Pro Gly Gln Gln Ser Gly Leu Lys Ile Leu Gly Gln Leu
            420                 425                 430

Thr Thr Asp Phe Val His His Tyr Ile Val Ala Asn Tyr Phe Ser Glu
        435                 440                 445

Leu Phe His Leu Leu Ser Ser Gly Asn Cys Lys Thr Arg Asn Leu Val
    450                 455                 460

Leu Lys Leu Leu Leu Asn Met Ser Glu Asn Pro Thr Ala Ala Arg Asp
465                 470                 475                 480

Met Ile Asn Met Lys Ala Leu Ala Ala Leu Lys Leu Ile Phe Asn Gln
                485                 490                 495

Lys Glu Ala Lys Ala Asn Leu Val Ser Gly Val Ala Ile Phe Ile Asn
```

```
            500                 505                 510

Ile Lys Glu His Ile Arg Lys Gly Ser Ile Val Val Asp His Leu
        515                 520                 525

Ser Tyr Asn Thr Leu Met Ala Ile Phe Arg Glu Val Lys Glu Ile Ile
    530                 535                 540

Glu Thr Met
545


<210> 8326
<211> 547
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1726; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHB9; "

<220>
<221> source
<223> /note="Gene Name:
      basic helix-loop-helix domain containing,
      class B, 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6PI77; "

<220>
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<223> /note="ENSP ID: ENSP00000403226"

<400> 8326
Met Ala Gly Thr Lys Asn Lys Thr Arg Ala Gln Ala Lys Thr Glu Lys
1               5                   10                  15

Lys Ala Ala Ile Gln Ala Lys Ala Gly Ala Glu Arg Glu Ala Thr Gly
            20                  25                  30

Val Val Arg Pro Val Ala Lys Thr Arg Ala Lys Ala Lys Ala Lys Thr
        35                  40                  45

Gly Ser Lys Thr Asp Ala Val Ala Glu Met Lys Ala Val Ser Lys Asn
    50                  55                  60
```

```
Lys Val Val Ala Glu Thr Lys Glu Gly Ala Leu Ser Glu Pro Lys Thr
65                  70                  75                  80

Leu Gly Lys Ala Met Gly Asp Phe Thr Pro Lys Ala Gly Asn Glu Ser
                85                  90                  95

Thr Ser Ser Thr Cys Lys Asn Glu Ala Gly Thr Asp Ala Trp Phe Trp
            100                 105                 110

Ala Gly Glu Glu Ala Thr Ile Asn Ser Trp Phe Trp Asn Gly Glu Glu
        115                 120                 125

Ala Gly Asn Ser Phe Ser Thr Lys Asn Asp Lys Pro Glu Ile Gly Ala
    130                 135                 140

Gln Val Cys Ala Glu Glu Leu Glu Pro Ala Ala Gly Ala Asp Cys Lys
145                 150                 155                 160

Pro Arg Ser Gly Ala Glu Glu Glu Glu Glu Glu Asn Val Ile Gly Asn
                165                 170                 175

Trp Phe Trp Glu Gly Asp Asp Thr Ser Phe Asp Pro Asn Pro Lys Pro
            180                 185                 190

Val Ser Arg Ile Val Lys Pro Gln Pro Val Tyr Glu Ile Asn Glu Lys
        195                 200                 205

Asn Arg Pro Lys Asp Trp Ser Glu Val Thr Ile Trp Pro Asn Ala Pro
    210                 215                 220

Ala Val Thr Pro Ala Val Leu Gly Phe Arg Ser Gln Ala Pro Ser Glu
225                 230                 235                 240

Ala Ser Pro Pro Ser Tyr Ile Val Leu Ala Ser Ala Glu Glu Asn Ala
                245                 250                 255

Cys Ser Leu Pro Val Ala Thr Ala Cys Arg Pro Ser Arg Asn Thr Arg
            260                 265                 270

Ser Cys Ser Gln Pro Ile Pro Glu Cys Arg Phe Asp Ser Asp Pro Cys
        275                 280                 285
```

```
Ile Gln Thr Ile Asp Glu Ile Arg Arg Gln Ile Arg Ile Arg Glu Val
    290                 295                 300

Asn Gly Ile Lys Pro Phe Ala Cys Pro Cys Lys Met Glu Cys Tyr Met
305                 310                 315                 320

Asp Ser Glu Glu Phe Glu Lys Leu Val Ser Leu Leu Lys Ser Thr Thr
                325                 330                 335

Asp Pro Leu Ile His Lys Ile Ala Arg Ile Ala Met Gly Val His Asn
            340                 345                 350

Val His Pro Phe Ala Gln Glu Phe Ile Asn Glu Val Gly Val Val Thr
        355                 360                 365

Leu Ile Glu Ser Leu Leu Ser Phe Pro Ser Pro Glu Met Arg Lys Lys
    370                 375                 380

Thr Val Ile Thr Leu Asn Pro Pro Ser Gly Asp Glu Arg Gln Arg Lys
385                 390                 395                 400

Ile Glu Leu His Val Lys His Met Cys Lys Glu Thr Met Ser Phe Pro
                405                 410                 415

Leu Asn Ser Pro Gly Gln Gln Ser Gly Leu Lys Ile Leu Gly Gln Leu
            420                 425                 430

Thr Thr Asp Phe Val His His Tyr Ile Val Ala Asn Tyr Phe Ser Glu
        435                 440                 445

Leu Phe His Leu Leu Ser Ser Gly Asn Cys Lys Thr Arg Asn Leu Val
    450                 455                 460

Leu Lys Leu Leu Leu Asn Met Ser Glu Asn Pro Thr Ala Ala Arg Asp
465                 470                 475                 480

Met Ile Asn Met Lys Ala Leu Ala Ala Leu Lys Leu Ile Phe Asn Gln
                485                 490                 495

Lys Glu Ala Lys Ala Asn Leu Val Ser Gly Val Ala Ile Phe Ile Asn
            500                 505                 510
```

```
Ile Lys Glu His Ile Arg Lys Gly Ser Ile Val Val Val Asp His Leu
        515                 520                 525

Ser Tyr Asn Thr Leu Met Ala Ile Phe Arg Glu Val Lys Glu Ile Ile
    530                 535                 540

Glu Thr Met
545
```

<210> 8327
<211> 547
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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class B, 9; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000405893"

<400> 8327

```
Met Ala Gly Thr Lys Asn Lys Thr Arg Ala Gln Ala Lys Thr Glu Lys
1               5                  10                  15

Lys Ala Ala Ile Gln Ala Lys Ala Gly Ala Glu Arg Glu Ala Thr Gly
            20                  25                  30

Val Val Arg Pro Val Ala Lys Thr Arg Ala Lys Ala Lys Ala Lys Thr
        35                  40                  45

Gly Ser Lys Thr Asp Ala Val Ala Glu Met Lys Ala Val Ser Lys Asn
    50                  55                  60

Lys Val Val Ala Glu Thr Lys Glu Gly Ala Leu Ser Glu Pro Lys Thr
```

65 70 75 80

Leu Gly Lys Ala Met Gly Asp Phe Thr Pro Lys Ala Gly Asn Glu Ser
85 90 95

Thr Ser Ser Thr Cys Lys Asn Glu Ala Gly Thr Asp Ala Trp Phe Trp
100 105 110

Ala Gly Glu Glu Ala Thr Ile Asn Ser Trp Phe Trp Asn Gly Glu Glu
115 120 125

Ala Gly Asn Ser Phe Ser Thr Lys Asn Asp Lys Pro Glu Ile Gly Ala
130 135 140

Gln Val Cys Ala Glu Glu Leu Glu Pro Ala Ala Gly Ala Asp Cys Lys
145 150 155 160

Pro Arg Ser Gly Ala Glu Glu Glu Glu Glu Glu Asn Val Ile Gly Asn
165 170 175

Trp Phe Trp Glu Gly Asp Asp Thr Ser Phe Asp Pro Asn Pro Lys Pro
180 185 190

Val Ser Arg Ile Val Lys Pro Gln Pro Val Tyr Glu Ile Asn Glu Lys
195 200 205

Asn Arg Pro Lys Asp Trp Ser Glu Val Thr Ile Trp Pro Asn Ala Pro
210 215 220

Ala Val Thr Pro Ala Val Leu Gly Phe Arg Ser Gln Ala Pro Ser Glu
225 230 235 240

Ala Ser Pro Pro Ser Tyr Ile Val Leu Ala Ser Ala Glu Glu Asn Ala
245 250 255

Cys Ser Leu Pro Val Ala Thr Ala Cys Arg Pro Ser Arg Asn Thr Arg
260 265 270

Ser Cys Ser Gln Pro Ile Pro Glu Cys Arg Phe Asp Ser Asp Pro Cys
275 280 285

Ile Gln Thr Ile Asp Glu Ile Arg Arg Gln Ile Arg Ile Arg Glu Val
290 295 300

```
Asn Gly Ile Lys Pro Phe Ala Cys Pro Cys Lys Met Glu Cys Tyr Met
305                 310                 315                 320

Asp Ser Glu Glu Phe Glu Lys Leu Val Ser Leu Leu Lys Ser Thr Thr
                325                 330                 335

Asp Pro Leu Ile His Lys Ile Ala Arg Ile Ala Met Gly Val His Asn
            340                 345                 350

Val His Pro Phe Ala Gln Glu Phe Ile Asn Glu Val Gly Val Val Thr
        355                 360                 365

Leu Ile Glu Ser Leu Leu Ser Phe Pro Ser Pro Glu Met Arg Lys Lys
    370                 375                 380

Thr Val Ile Thr Leu Asn Pro Pro Ser Gly Asp Glu Arg Gln Arg Lys
385                 390                 395                 400

Ile Glu Leu His Val Lys His Met Cys Lys Glu Thr Met Ser Phe Pro
                405                 410                 415

Leu Asn Ser Pro Gly Gln Gln Ser Gly Leu Lys Ile Leu Gly Gln Leu
            420                 425                 430

Thr Thr Asp Phe Val His His Tyr Ile Val Ala Asn Tyr Phe Ser Glu
        435                 440                 445

Leu Phe His Leu Leu Ser Ser Gly Asn Cys Lys Thr Arg Asn Leu Val
    450                 455                 460

Leu Lys Leu Leu Leu Asn Met Ser Glu Asn Pro Thr Ala Ala Arg Asp
465                 470                 475                 480

Met Ile Asn Met Lys Ala Leu Ala Ala Leu Lys Leu Ile Phe Asn Gln
                485                 490                 495

Lys Glu Ala Lys Ala Asn Leu Val Ser Gly Val Ala Ile Phe Ile Asn
            500                 505                 510

Ile Lys Glu His Ile Arg Lys Gly Ser Ile Val Val Val Asp His Leu
        515                 520                 525
```

Ser Tyr Asn Thr Leu Met Ala Ile Phe Arg Glu Val Lys Glu Ile Ile
530 535 540

Glu Thr Met
545

<210> 8328
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1727; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHA15; "

<220>
<221> source
<223> /note="Gene Name:
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family, member a15; "

<220>
<221> source
<223> /note="Uniprot ID: Q7RTS1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000326391"

<400> 8328
Met Lys Thr Lys Asn Arg Pro Pro Arg Arg Arg Ala Pro Val Gln Asp
1 5 10 15

Thr Glu Ala Thr Pro Gly Glu Gly Thr Pro Asp Gly Ser Leu Pro Asn
20 25 30

Pro Gly Pro Glu Pro Ala Lys Gly Leu Arg Ser Arg Pro Ala Arg Ala
35 40 45

Ala Ala Arg Ala Pro Gly Glu Gly Arg Arg Arg Arg Pro Gly Pro Ser
50 55 60

Gly Pro Gly Gly Arg Arg Asp Ser Ser Ile Gln Arg Arg Leu Glu Ser
65 70 75 80

```
Asn Glu Arg Glu Arg Gln Arg Met His Lys Leu Asn Asn Ala Phe Gln
                85                  90                  95

Ala Leu Arg Glu Val Ile Pro His Val Arg Ala Asp Lys Lys Leu Ser
            100                 105                 110

Lys Ile Glu Thr Leu Thr Leu Ala Lys Asn Tyr Ile Lys Ser Leu Thr
        115                 120                 125

Ala Thr Ile Leu Thr Met Ser Ser Ser Arg Leu Pro Gly Leu Glu Gly
    130                 135                 140

Pro Gly Pro Lys Leu Tyr Gln His Tyr Gln Gln Gln Gln Gln Val Ala
145                 150                 155                 160

Gly Gly Ala Leu Gly Ala Thr Glu Ala Gln Pro Gln Gly His Leu Gln
                165                 170                 175

Arg Tyr Ser Thr Gln Ile His Ser Phe Arg Glu Gly Thr
            180                 185


<210> 8329
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1727; "

<220>
<221> source
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<220>
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      family, member a15; "

<220>
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<223> /note="Uniprot ID:  Q7RTS1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476312"

<400> 8329
Met Lys Thr Lys Asn Arg Pro Pro Arg Arg Arg Ala Pro Val Gln Asp
```

```
1               5                   10                  15

Thr Glu Ala Thr Pro Gly Glu Gly Thr Pro Asp Gly Ser Leu Pro Asn
            20                  25                  30

Pro Gly Pro Glu Pro Ala Lys Gly Leu Arg Ser Arg Pro Ala Arg Ala
        35                  40                  45

Ala Ala Arg Ala Pro Gly Glu Gly Arg Arg Arg Arg Pro Gly Pro Ser
    50                  55                  60

Gly Pro Gly Gly Arg Arg Asp Ser Ser Ile Gln Arg Arg Leu Glu Ser
65                  70                  75                  80

Asn Glu Arg Glu Arg Gln Arg Met His Lys Leu Asn Asn Ala Phe Gln
                85                  90                  95

Ala Leu Arg Glu Val Ile Pro His Val Arg Ala Asp Lys Lys Leu Ser
            100                 105                 110

Lys Ile Glu Thr Leu Thr Leu Ala Lys Asn Tyr Ile Lys Ser Leu Thr
        115                 120                 125

Ala Thr Ile Leu Thr Met Ser Ser Ser Arg Leu Pro Gly Leu Glu Gly
    130                 135                 140

Pro Gly Pro Lys Leu Tyr Gln His Tyr Gln Gln Gln Gln Gln Val Ala
145                 150                 155                 160

Gly Gly Ala Leu Gly Ala Thr Glu Ala Gln Pro Gln Gly His Leu Gln
                165                 170                 175

Arg Tyr Ser Thr Gln Ile His Ser Phe Arg Glu Gly Thr
            180                 185


<210> 8330
<211> 235
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1728; "

<220>
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<221> source
<223> /note="Gene Symbol: BHLHA9; "

<220>
<221> source
<223> /note="Gene Name:
basic helix-loop-helix
family, member a9; "

<220>
<221> source
<223> /note="Uniprot ID: Q7RTU4; "

<220>
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<223> /note="ENSP ID: ENSP00000375248"

<400> 8330

```
Met Leu Arg Gly Ala Pro Gly Leu Gly Leu Thr Ala Arg Lys Gly Ala
1               5                  10                  15

Glu Asp Ser Ala Glu Asp Leu Gly Gly Pro Cys Pro Glu Pro Gly Gly
            20                  25                  30

Asp Ser Gly Val Leu Gly Ala Asn Gly Ala Ser Cys Ser Arg Gly Glu
        35                  40                  45

Ala Glu Glu Pro Ala Gly Arg Arg Arg Ala Arg Pro Val Arg Ser Lys
    50                  55                  60

Ala Arg Arg Met Ala Ala Asn Val Arg Glu Arg Lys Arg Ile Leu Asp
65                  70                  75                  80

Tyr Asn Glu Ala Phe Asn Ala Leu Arg Arg Ala Leu Arg His Asp Leu
                85                  90                  95

Gly Gly Lys Arg Leu Ser Lys Ile Ala Thr Leu Arg Arg Ala Ile His
            100                 105                 110

Arg Ile Ala Ala Leu Ser Leu Val Leu Arg Ala Ser Pro Ala Pro Arg
        115                 120                 125

Gly Pro Cys Gly His Leu Glu Cys His Gly Pro Ala Ala Arg Gly Asp
    130                 135                 140

Thr Gly Asp Thr Gly Ala Ser Pro Pro Pro Pro Ala Gly Pro Ser Leu
145                 150                 155                 160
```

```
Ala Arg Pro Asp Ala Ala Arg Pro Ser Val Pro Ser Ala Pro Arg Cys
                165                 170                 175

Ala Ser Cys Pro Pro His Ala Pro Leu Ala Arg Pro Ser Ala Val Ala
            180                 185                 190

Glu Gly Pro Gly Leu Ala Gln Ala Ser Gly Gly Ser Trp Arg Arg Cys
        195                 200                 205

Pro Gly Ala Ser Ser Ala Gly Pro Pro Pro Trp Pro Arg Gly Tyr Leu
    210                 215                 220

Arg Ser Ala Pro Gly Met Gly His Pro Arg Ser
225                 230                 235


<210> 8331
<211> 381
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1729; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHE22; "

<220>
<221> source
<223> /note="Gene Name:
      basic helix-loop-helix
      family, member e22; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NFJ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318799"

<400> 8331
Met Glu Arg Gly Met His Leu Gly Ala Ala Ala Ala Gly Glu Asp Asp
1               5                   10                  15

Leu Phe Leu His Lys Ser Leu Ser Ala Ser Thr Ser Lys Arg Leu Glu
            20                  25                  30
```

```
Ala Ala Phe Arg Ser Thr Pro Pro Gly Met Asp Leu Ser Leu Ala Pro
        35                  40                  45

Pro Pro Arg Glu Arg Pro Ala Ser Ser Ser Ser Ser Pro Leu Gly Cys
    50                  55                  60

Phe Glu Pro Ala Asp Pro Glu Gly Ala Gly Leu Leu Leu Pro Pro Pro
65                  70                  75                  80

Gly Gly Gly Gly Gly Gly Ser Ala Gly Ser Gly Gly Gly Gly Gly Gly
                85                  90                  95

Gly Val Gly Val Pro Gly Leu Leu Val Gly Ser Ala Gly Val Gly Gly
            100                 105                 110

Asp Pro Ser Leu Ser Ser Leu Pro Ala Gly Ala Ala Leu Cys Leu Lys
        115                 120                 125

Tyr Gly Glu Ser Ala Ser Arg Gly Ser Val Ala Glu Ser Ser Gly Gly
    130                 135                 140

Glu Gln Ser Pro Asp Asp Asp Ser Asp Gly Arg Cys Glu Leu Val Leu
145                 150                 155                 160

Arg Ala Gly Val Ala Asp Pro Arg Ala Ser Pro Gly Ala Gly Gly Gly
                165                 170                 175

Gly Ala Lys Ala Ala Glu Gly Cys Ser Asn Ala His Leu His Gly Gly
            180                 185                 190

Ala Ser Val Pro Pro Gly Gly Leu Gly Gly Gly Gly Gly Gly Gly Ser
        195                 200                 205

Ser Ser Gly Ser Ser Gly Gly Gly Gly Gly Ser Gly Ser Gly Ser Gly
    210                 215                 220

Gly Ser Ser Ser Ser Ser Ser Ser Ser Ser Lys Lys Ser Lys Glu Gln
225                 230                 235                 240

Lys Ala Leu Arg Leu Asn Ile Asn Ala Arg Glu Arg Arg Arg Met His
                245                 250                 255

Asp Leu Asn Asp Ala Leu Asp Glu Leu Arg Ala Val Ile Pro Tyr Ala
```

```
            260                 265                 270

His Ser Pro Ser Val Arg Lys Leu Ser Lys Ile Ala Thr Leu Leu Leu
        275                 280                 285

Ala Lys Asn Tyr Ile Leu Met Gln Ala Gln Ala Leu Glu Glu Met Arg
    290                 295                 300

Arg Leu Val Ala Tyr Leu Asn Gln Gly Gln Ala Ile Ser Ala Ala Ser
305                 310                 315                 320

Leu Pro Ser Ser Ala Ala Ala Ala Ala Ala Ala Ala Ala Leu His Pro
                325                 330                 335

Ala Leu Gly Ala Tyr Glu Gln Ala Ala Gly Tyr Pro Phe Ser Ala Gly
            340                 345                 350

Leu Pro Pro Ala Ala Ser Cys Pro Glu Lys Cys Ala Leu Phe Asn Ser
        355                 360                 365

Val Ser Ser Ser Leu Cys Lys Gln Cys Thr Glu Lys Pro
    370                 375                 380


<210> 8332
<211> 225
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1730; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHE23; "

<220>
<221> source
<223> /note="Gene Name:
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      family, member e23; "

<220>
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<223> /note="Uniprot ID:  Q8NDY6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359371"
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<400> 8332
Met Ala Glu Leu Lys Ser Leu Ser Gly Asp Ala Tyr Leu Ala Leu Ser
1 5 10 15

His Gly Tyr Ala Ala Ala Ala Ala Gly Leu Ala Tyr Gly Ala Ala Arg
20 25 30

Glu Pro Glu Ala Ala Arg Gly Tyr Gly Thr Pro Gly Pro Gly Gly Asp
35 40 45

Leu Pro Ala Ala Pro Ala Pro Arg Ala Pro Ala Gln Ala Ala Glu Ser
50 55 60

Ser Gly Glu Gln Ser Gly Asp Glu Asp Asp Ala Phe Glu Gln Arg Arg
65 70 75 80

Arg Arg Arg Gly Pro Gly Ser Ala Ala Asp Gly Arg Arg Arg Pro Arg
85 90 95

Glu Gln Arg Ser Leu Arg Leu Ser Ile Asn Ala Arg Glu Arg Arg Arg
100 105 110

Met His Asp Leu Asn Asp Ala Leu Asp Gly Leu Arg Ala Val Ile Pro
115 120 125

Tyr Ala His Ser Pro Ser Val Arg Lys Leu Ser Lys Ile Ala Thr Leu
130 135 140

Leu Leu Ala Lys Asn Tyr Ile Leu Met Gln Ala Gln Ala Leu Asp Glu
145 150 155 160

Met Arg Arg Leu Val Ala Phe Leu Asn Gln Gly Gln Gly Leu Ala Ala
165 170 175

Pro Val Asn Ala Ala Pro Leu Thr Pro Phe Gly Gln Ala Thr Val Cys
180 185 190

Pro Phe Ser Ala Gly Ala Ala Leu Gly Pro Cys Pro Asp Lys Cys Ala
195 200 205

Ala Phe Ser Gly Thr Pro Ser Ala Leu Cys Lys His Cys His Glu Lys
210 215 220

Pro
225

<210> 8333
<211> 241
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1730; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHE23; "

<220>
<221> source
<223> /note="Gene Name:
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family, member e23; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480998"

<400> 8333
Met Ser Ile Arg Pro Pro Gly Glu Pro Pro Ser Pro Gly Gly Ala Ala
1 5 10 15

Met Ala Glu Leu Lys Ser Leu Ser Gly Asp Ala Tyr Leu Ala Leu Ser
20 25 30

His Gly Tyr Ala Ala Ala Ala Ala Gly Leu Ala Tyr Gly Ala Ala Arg
35 40 45

Glu Pro Glu Ala Ala Arg Gly Tyr Gly Thr Pro Gly Pro Gly Gly Asp
50 55 60

Leu Pro Ala Ala Pro Ala Pro Arg Ala Pro Ala Gln Ala Ala Glu Ser
65 70 75 80

Ser Gly Glu Gln Ser Gly Asp Glu Asp Asp Ala Phe Glu Gln Arg Arg
85 90 95

Arg Arg Arg Gly Pro Gly Ser Ala Ala Asp Gly Arg Arg Arg Pro Arg
100 105 110

```
Glu Gln Arg Ser Leu Arg Leu Ser Ile Asn Ala Arg Glu Arg Arg Arg
        115                 120                 125

Met His Asp Leu Asn Asp Ala Leu Asp Gly Leu Arg Ala Val Ile Pro
    130                 135                 140

Tyr Ala His Ser Pro Ser Val Arg Lys Leu Ser Lys Ile Ala Thr Leu
145                 150                 155                 160

Leu Leu Ala Lys Asn Tyr Ile Leu Met Gln Ala Gln Ala Leu Asp Glu
                165                 170                 175

Met Arg Arg Leu Val Ala Phe Leu Asn Gln Gly Gln Gly Leu Ala Ala
            180                 185                 190

Pro Val Asn Ala Ala Pro Leu Thr Pro Phe Gly Gln Ala Thr Val Cys
        195                 200                 205

Pro Phe Ser Ala Gly Ala Ala Leu Gly Pro Cys Pro Asp Lys Cys Ala
    210                 215                 220

Ala Phe Ser Gly Thr Pro Ser Ala Leu Cys Lys His Cys His Glu Lys
225                 230                 235                 240

Pro
```

<210> 8334
<211> 412
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1731; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHE40; "

<220>
<221> source
<223> /note="Gene Name:
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family, member e40; "

<220>
<221> source

<223> /note="Uniprot ID: O14503; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000256495"

<400> 8334
Met Glu Arg Ile Pro Ser Ala Gln Pro Pro Pro Ala Cys Leu Pro Lys
1   5   10   15

Ala Pro Gly Leu Glu His Gly Asp Leu Pro Gly Met Tyr Pro Ala His
            20   25   30

Met Tyr Gln Val Tyr Lys Ser Arg Arg Gly Ile Lys Arg Ser Glu Asp
        35   40   45

Ser Lys Glu Thr Tyr Lys Leu Pro His Arg Leu Ile Glu Lys Lys Arg
    50   55   60

Arg Asp Arg Ile Asn Glu Cys Ile Ala Gln Leu Lys Asp Leu Leu Pro
65   70   75   80

Glu His Leu Lys Leu Thr Thr Leu Gly His Leu Glu Lys Ala Val Val
                85   90   95

Leu Glu Leu Thr Leu Lys His Val Lys Ala Leu Thr Asn Leu Ile Asp
            100   105   110

Gln Gln Gln Gln Lys Ile Ile Ala Leu Gln Ser Gly Leu Gln Ala Gly
        115   120   125

Glu Leu Ser Gly Arg Asn Val Glu Thr Gly Gln Glu Met Phe Cys Ser
    130   135   140

Gly Phe Gln Thr Cys Ala Arg Glu Val Leu Gln Tyr Leu Ala Lys His
145   150   155   160

Glu Asn Thr Arg Asp Leu Lys Ser Ser Gln Leu Val Thr His Leu His
                165   170   175

Arg Val Val Ser Glu Leu Leu Gln Gly Gly Thr Ser Arg Lys Pro Ser
            180   185   190

Asp Pro Ala Pro Lys Val Met Asp Phe Lys Glu Lys Pro Ser Ser Pro
        195   200   205

```
Ala Lys Gly Ser Glu Gly Pro Gly Lys Asn Cys Val Pro Val Ile Gln
    210                 215                 220

Arg Thr Phe Ala His Ser Ser Gly Glu Gln Ser Gly Ser Asp Thr Asp
225                 230                 235                 240

Thr Asp Ser Gly Tyr Gly Gly Glu Ser Glu Lys Gly Asp Leu Arg Ser
                245                 250                 255

Glu Gln Pro Cys Phe Lys Ser Asp His Gly Arg Arg Phe Thr Met Gly
            260                 265                 270

Glu Arg Ile Gly Ala Ile Lys Gln Glu Ser Glu Glu Pro Pro Thr Lys
        275                 280                 285

Lys Asn Arg Met Gln Leu Ser Asp Asp Glu Gly His Phe Thr Ser Ser
    290                 295                 300

Asp Leu Ile Ser Ser Pro Phe Leu Gly Pro His Pro His Gln Pro Pro
305                 310                 315                 320

Phe Cys Leu Pro Phe Tyr Leu Ile Pro Pro Ser Ala Thr Ala Tyr Leu
                325                 330                 335

Pro Met Leu Glu Lys Cys Trp Tyr Pro Thr Ser Val Pro Val Leu Tyr
            340                 345                 350

Pro Gly Leu Asn Ala Ser Ala Ala Ala Leu Ser Ser Phe Met Asn Pro
        355                 360                 365

Asp Lys Ile Ser Ala Pro Leu Leu Met Pro Gln Arg Leu Pro Ser Pro
    370                 375                 380

Leu Pro Ala His Pro Ser Val Asp Ser Ser Val Leu Leu Gln Ala Leu
385                 390                 395                 400

Lys Pro Ile Pro Pro Leu Asn Leu Glu Thr Lys Asp
                405                 410
```

<210> 8335
<211> 482
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1732; "

<220>
<221> source
<223> /note="Gene Symbol: BHLHE41; "

<220>
<221> source
<223> /note="Gene Name:
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family, member e41; "

<220>
<221> source
<223> /note="Uniprot ID: Q9C0J9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000242728"

<400> 8335

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Met Asp Glu Gly Ile Pro His Leu Gln Glu Arg Gln Leu Leu Glu His
1               5                  10                  15


Arg Asp Phe Ile Gly Leu Asp Tyr Ser Ser Leu Tyr Met Cys Lys Pro
            20                  25                  30


Lys Arg Ser Met Lys Arg Asp Asp Thr Lys Asp Thr Tyr Lys Leu Pro
        35                  40                  45


His Arg Leu Ile Glu Lys Lys Arg Arg Asp Arg Ile Asn Glu Cys Ile
    50                  55                  60


Ala Gln Leu Lys Asp Leu Leu Pro Glu His Leu Lys Leu Thr Thr Leu
65                  70                  75                  80


Gly His Leu Glu Lys Ala Val Val Leu Glu Leu Thr Leu Lys His Leu
                85                  90                  95


Lys Ala Leu Thr Ala Leu Thr Glu Gln Gln His Gln Lys Ile Ile Ala
            100                 105                 110


Leu Gln Asn Gly Glu Arg Ser Leu Lys Ser Pro Ile Gln Ser Asp Leu
        115                 120                 125
```

```
Asp Ala Phe His Ser Gly Phe Gln Thr Cys Ala Lys Glu Val Leu Gln
    130                 135                 140

Tyr Leu Ser Arg Phe Glu Ser Trp Thr Pro Arg Glu Pro Arg Cys Val
145                 150                 155                 160

Gln Leu Ile Asn His Leu His Ala Val Ala Thr Gln Phe Leu Pro Thr
                165                 170                 175

Pro Gln Leu Leu Thr Gln Gln Val Pro Leu Ser Lys Gly Thr Gly Ala
            180                 185                 190

Pro Ser Ala Ala Gly Ser Ala Ala Ala Pro Cys Leu Glu Arg Ala Gly
        195                 200                 205

Gln Lys Leu Glu Pro Leu Ala Tyr Cys Val Pro Val Ile Gln Arg Thr
    210                 215                 220

Gln Pro Ser Ala Glu Leu Ala Ala Glu Asn Asp Thr Asp Thr Asp Ser
225                 230                 235                 240

Gly Tyr Gly Gly Glu Ala Glu Ala Arg Pro Asp Arg Glu Lys Gly Lys
                245                 250                 255

Gly Ala Gly Ala Ser Arg Val Thr Ile Lys Gln Glu Pro Pro Gly Glu
            260                 265                 270

Asp Ser Pro Ala Pro Lys Arg Met Lys Leu Asp Ser Arg Gly Gly Gly
        275                 280                 285

Ser Gly Gly Gly Pro Gly Gly Gly Ala Ala Ala Ala Ala Ala Ala Leu
    290                 295                 300

Leu Gly Pro Asp Pro Ala Ala Ala Ala Ala Leu Leu Arg Pro Asp Ala
305                 310                 315                 320

Ala Leu Leu Ser Ser Leu Val Ala Phe Gly Gly Gly Gly Gly Ala Pro
                325                 330                 335

Phe Pro Gln Pro Ala Ala Ala Ala Ala Pro Phe Cys Leu Pro Phe Cys
            340                 345                 350

Phe Leu Ser Pro Ser Ala Ala Ala Ala Tyr Val Gln Pro Phe Leu Asp
```

```
        355                 360                 365

Lys Ser Gly Leu Glu Lys Tyr Leu Tyr Pro Ala Ala Ala Ala Ala Pro
    370                 375                 380

Phe Pro Leu Leu Tyr Pro Gly Ile Pro Ala Pro Ala Ala Ala Ala Ala
385                 390                 395                 400

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Phe Pro Cys Leu Ser
                405                 410                 415

Ser Val Leu Ser Pro Pro Pro Glu Lys Ala Gly Ala Ala Ala Ala Thr
            420                 425                 430

Leu Leu Pro His Glu Val Ala Pro Leu Gly Ala Pro His Pro Gln His
        435                 440                 445

Pro His Gly Arg Thr His Leu Pro Phe Ala Gly Pro Arg Glu Pro Gly
    450                 455                 460

Asn Pro Glu Ser Ser Ala Gln Glu Asp Pro Ser Gln Pro Gly Lys Glu
465                 470                 475                 480

Ala Pro
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<210> 8336
<211> 419
<212> PRT
<213> Homo sapiens

<220>
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<220>
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basic leu zipper and W2 domains 1; "

<220>
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<223> /note="Uniprot ID: Q7L1Q6; "

<220>
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<223> /note="ENSP ID: ENSP00000386474"

<400> 8336
Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser Gly Gln Arg Phe
1   5   10   15

Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp Pro Thr Gln Phe
            20   25   30

Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly Thr Asp Leu Glu
        35   40   45

Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys Leu Asp Tyr Arg
    50   55   60

Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala Gly Gly Met Leu
65   70   75   80

Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg Thr Asp Val Cys
                85   90   95

Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln Ala Phe Ala Gln
            100   105   110

Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Gly Phe
        115   120   125

Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys Gly Phe Ser Glu
    130   135   140

Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly Val Leu Leu Ala Asn
145   150   155   160

Gly Thr Leu Asn Ala Ser Ile Leu Asn Ser Leu Tyr Asn Glu Asn Leu
                165   170   175

Val Lys Glu Gly Val Ser Ala Ala Phe Ala Val Lys Leu Phe Lys Ser
            180   185   190

Trp Ile Asn Glu Lys Asp Ile Asn Ala Val Ala Ala Ser Leu Arg Lys
        195   200   205

```
Val Ser Met Asp Asn Arg Leu Met Glu Leu Phe Pro Ala Asn Lys Gln
    210                 215                 220

Ser Val Glu His Phe Thr Lys Tyr Phe Thr Glu Ala Gly Leu Lys Glu
225                 230                 235                 240

Leu Ser Glu Tyr Val Arg Asn Gln Gln Thr Ile Gly Ala Arg Lys Glu
                245                 250                 255

Leu Gln Lys Glu Leu Gln Glu Gln Met Ser Arg Gly Asp Pro Phe Lys
            260                 265                 270

Asp Ile Ile Leu Tyr Val Lys Glu Glu Met Lys Lys Asn Asn Ile Pro
        275                 280                 285

Glu Pro Val Val Ile Gly Ile Val Trp Ser Ser Val Met Ser Thr Val
    290                 295                 300

Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Ile Lys His
305                 310                 315                 320

Leu Lys Gln Tyr Ser Pro Leu Leu Ala Ala Phe Thr Thr Gln Gly Gln
                325                 330                 335

Ser Glu Leu Thr Leu Leu Leu Lys Ile Gln Glu Tyr Cys Tyr Asp Asn
            340                 345                 350

Ile His Phe Met Lys Ala Phe Gln Lys Ile Val Val Leu Phe Tyr Lys
        355                 360                 365

Ala Glu Val Leu Ser Glu Glu Pro Ile Leu Lys Trp Tyr Lys Asp Ala
    370                 375                 380

His Val Ala Lys Gly Lys Ser Val Phe Leu Glu Gln Met Lys Lys Phe
385                 390                 395                 400

Val Glu Trp Leu Lys Asn Ala Glu Glu Glu Ser Glu Ser Glu Ala Glu
                405                 410                 415

Glu Gly Asp
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<210> 8337

<211> 423
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8337

Met	Val	Ser	Phe	Met	Asn	Asn	Gln	Lys	Gln	Gln	Lys	Pro	Thr	Leu	Ser
1				5					10					15	

Gly	Gln	Arg	Phe	Lys	Thr	Arg	Lys	Arg	Asp	Glu	Lys	Glu	Arg	Phe	Asp
			20					25					30		

Pro	Thr	Gln	Phe	Gln	Asp	Cys	Ile	Ile	Gln	Gly	Leu	Thr	Glu	Thr	Gly
		35					40					45			

Thr	Asp	Leu	Glu	Ala	Val	Ala	Lys	Phe	Leu	Asp	Ala	Ser	Gly	Ala	Lys
	50					55					60				

Leu	Asp	Tyr	Arg	Arg	Tyr	Ala	Glu	Thr	Leu	Phe	Asp	Ile	Leu	Val	Ala
65					70					75					80

Gly	Gly	Met	Leu	Ala	Pro	Gly	Gly	Thr	Leu	Ala	Asp	Asp	Met	Met	Arg
				85					90					95	

Thr	Asp	Val	Cys	Val	Phe	Ala	Ala	Gln	Glu	Asp	Leu	Glu	Thr	Met	Gln
			100					105					110		

Ala	Phe	Ala	Gln	Val	Phe	Asn	Lys	Leu	Ile	Arg	Arg	Tyr	Lys	Tyr	Leu
		115					120					125			

```
Glu Lys Gly Phe Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys
    130                 135                 140

Gly Phe Ser Glu Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly Val
145                 150                 155                 160

Leu Leu Ala Asn Gly Thr Leu Asn Ala Ser Ile Leu Asn Ser Leu Tyr
                165                 170                 175

Asn Glu Asn Leu Val Lys Glu Gly Val Ser Ala Ala Phe Ala Val Lys
            180                 185                 190

Leu Phe Lys Ser Trp Ile Asn Glu Lys Asp Ile Asn Ala Val Ala Ala
        195                 200                 205

Ser Leu Arg Lys Val Ser Met Asp Asn Arg Leu Met Glu Leu Phe Pro
    210                 215                 220

Ala Asn Lys Gln Ser Val Glu His Phe Thr Lys Tyr Phe Thr Glu Ala
225                 230                 235                 240

Gly Leu Lys Glu Leu Ser Glu Tyr Val Arg Asn Gln Gln Thr Ile Gly
                245                 250                 255

Ala Arg Lys Glu Leu Gln Lys Glu Leu Gln Glu Gln Met Ser Arg Gly
            260                 265                 270

Asp Pro Phe Lys Asp Ile Ile Leu Tyr Val Lys Glu Glu Met Lys Lys
        275                 280                 285

Asn Asn Ile Pro Glu Pro Val Val Ile Gly Ile Val Trp Ser Ser Val
    290                 295                 300

Met Ser Thr Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln
305                 310                 315                 320

Ala Ile Lys His Leu Lys Gln Tyr Ser Pro Leu Leu Ala Ala Phe Thr
                325                 330                 335

Thr Gln Gly Gln Ser Glu Leu Thr Leu Leu Leu Lys Ile Gln Glu Tyr
            340                 345                 350
```

```
Cys Tyr Asp Asn Ile His Phe Met Lys Ala Phe Gln Lys Ile Val Val
        355                 360                 365

Leu Phe Tyr Lys Ala Glu Val Leu Ser Glu Glu Pro Ile Leu Lys Trp
    370                 375                 380

Tyr Lys Asp Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Glu Gln
385                 390                 395                 400

Met Lys Lys Phe Val Glu Trp Leu Lys Asn Ala Glu Glu Glu Ser Glu
                405                 410                 415

Ser Glu Ala Glu Glu Gly Asp
            420


<210> 8338
<211> 294
<212> PRT
<213> Homo sapiens

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<223> /note="ENSP ID: ENSP00000387086"

<400> 8338
Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser Gly Gln Arg Phe
1               5                   10                  15

Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp Pro Thr Gln Phe
            20                  25                  30

Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly Thr Asp Leu Glu
        35                  40                  45

Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys Leu Asp Tyr Arg
    50                  55                  60
```

```
Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala Gly Gly Met Leu
65                  70                  75                  80

Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg Thr Asp Val Cys
                85                  90                  95

Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln Ala Phe Ala Gln
            100                 105                 110

Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Gly Phe
        115                 120                 125

Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys Gly Phe Ser Glu
    130                 135                 140

Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly Val Leu Leu Ala Asn
145                 150                 155                 160

Gly Thr Leu Asn Ala Ser Ile Leu Asn Ser Leu Tyr Asn Glu Asn Leu
                165                 170                 175

Val Lys Glu Gly Val Ser Ala Ala Phe Ala Val Lys Leu Phe Lys Ser
            180                 185                 190

Trp Ile Asn Glu Lys Asp Ile Asn Ala Val Ala Ala Ser Leu Arg Lys
        195                 200                 205

Val Ser Met Asp Asn Arg Leu Met Glu Leu Phe Pro Ala Asn Lys Gln
    210                 215                 220

Ser Val Glu His Phe Thr Lys Tyr Phe Thr Glu Ala Gly Leu Lys Glu
225                 230                 235                 240

Leu Ser Glu Tyr Val Arg Asn Gln Gln Thr Ile Gly Ala Arg Lys Glu
                245                 250                 255

Leu Gln Lys Glu Leu Gln Glu Gln Met Ser Arg Gly Asp Pro Phe Lys
            260                 265                 270

Asp Ile Ile Leu Tyr Val Lys Glu Glu Met Lys Lys Asn Asn Ile Pro
        275                 280                 285
```

Glu Pro Val Val Ile Gly
290

<210> 8339
<211> 216
<212> PRT
<213> Homo sapiens

<220>
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basic leu zipper and W2 domains 1; "

<220>
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<223> /note="ENSP ID: ENSP00000390766"

<400> 8339
Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser Gly Gln Arg Phe
1 5 10 15

Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp Pro Thr Gln Phe
20 25 30

Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly Thr Asp Leu Glu
35 40 45

Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys Leu Asp Tyr Arg
50 55 60

Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala Gly Gly Met Leu
65 70 75 80

Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg Thr Asp Val Cys
85 90 95

Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln Ala Phe Ala Gln
100 105 110

Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Gly Phe

```
        115                 120                 125

Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys Gly Phe Ser Glu
    130                 135                 140

Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly Val Leu Leu Ala Asn
145                 150                 155                 160

Gly Thr Leu Asn Ala Ser Ile Leu Asn Ser Leu Tyr Asn Glu Asn Leu
                165                 170                 175

Val Lys Glu Gly Val Ser Ala Ala Phe Ala Val Lys Leu Phe Lys Ser
            180                 185                 190

Trp Ile Asn Glu Lys Asp Ile Asn Ala Val Ala Ala Ser Leu Arg Lys
        195                 200                 205

Val Ser Met Asp Asn Arg Leu Met
    210                 215


<210> 8340
<211> 116
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000393587"

<400> 8340
Met Val Ser Phe Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser
1               5                   10                  15

Gly Gln Arg Phe Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp
            20                  25                  30
```

```
Pro Thr Gln Phe Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly
        35                  40                  45

Thr Asp Leu Glu Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys
    50                  55                  60

Leu Asp Tyr Arg Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala
65                  70                  75                  80

Gly Gly Met Leu Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg
                85                  90                  95

Thr Asp Val Cys Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln
            100                 105                 110

Ala Phe Ala Gln
        115


<210> 8341
<211> 451
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID:  Q7L1Q6; "

<220>
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<223> /note="ENSP ID: ENSP00000394316"

<400> 8341
Met Tyr Gly Ala Pro Gly Ala Pro Ala Gln Ser Ala Ser Val Thr Val
1               5                   10                  15

Val Arg Ser Leu Arg Arg Pro Pro Pro Gln Ala Thr Gly Val Ser Phe
```

```
            20                  25                  30

Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser Gly Gln Arg Phe
        35                  40                  45

Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp Pro Thr Gln Phe
    50                  55                  60

Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly Thr Asp Leu Glu
65                  70                  75                  80

Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys Leu Asp Tyr Arg
                85                  90                  95

Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala Gly Gly Met Leu
            100                 105                 110

Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg Thr Asp Val Cys
        115                 120                 125

Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln Ala Phe Ala Gln
    130                 135                 140

Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Gly Phe
145                 150                 155                 160

Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys Gly Phe Ser Glu
                165                 170                 175

Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly Val Leu Leu Ala Asn
            180                 185                 190

Gly Thr Leu Asn Ala Ser Ile Leu Asn Ser Leu Tyr Asn Glu Asn Leu
        195                 200                 205

Val Lys Glu Gly Val Ser Ala Ala Phe Ala Val Lys Leu Phe Lys Ser
    210                 215                 220

Trp Ile Asn Glu Lys Asp Ile Asn Ala Val Ala Ala Ser Leu Arg Lys
225                 230                 235                 240

Val Ser Met Asp Asn Arg Leu Met Glu Leu Phe Pro Ala Asn Lys Gln
                245                 250                 255
```

```
Ser Val Glu His Phe Thr Lys Tyr Phe Thr Glu Ala Gly Leu Lys Glu
            260                 265                 270

Leu Ser Glu Tyr Val Arg Asn Gln Gln Thr Ile Gly Ala Arg Lys Glu
        275                 280                 285

Leu Gln Lys Glu Leu Gln Glu Gln Met Ser Arg Gly Asp Pro Phe Lys
    290                 295                 300

Asp Ile Ile Leu Tyr Val Lys Glu Glu Met Lys Lys Asn Asn Ile Pro
305                 310                 315                 320

Glu Pro Val Val Ile Gly Ile Val Trp Ser Ser Val Met Ser Thr Val
                325                 330                 335

Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Ile Lys His
            340                 345                 350

Leu Lys Gln Tyr Ser Pro Leu Leu Ala Ala Phe Thr Thr Gln Gly Gln
        355                 360                 365

Ser Glu Leu Thr Leu Leu Leu Lys Ile Gln Glu Tyr Cys Tyr Asp Asn
    370                 375                 380

Ile His Phe Met Lys Ala Phe Gln Lys Ile Val Val Leu Phe Tyr Lys
385                 390                 395                 400

Ala Glu Val Leu Ser Glu Glu Pro Ile Leu Lys Trp Tyr Lys Asp Ala
                405                 410                 415

His Val Ala Lys Gly Lys Ser Val Phe Leu Glu Gln Met Lys Lys Phe
            420                 425                 430

Val Glu Trp Leu Lys Asn Ala Glu Glu Glu Ser Glu Ser Glu Ala Glu
        435                 440                 445

Glu Gly Asp
    450
```

<210> 8342
<211> 135
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8342
Xaa Gly Ala Arg Lys Glu Leu Gln Lys Glu Leu Gln Glu Gln Met Ser
1 5 10 15

Arg Gly Asp Pro Phe Lys Asp Ile Ile Leu Tyr Val Lys Glu Glu Met
20 25 30

Lys Lys Asn Asn Ile Pro Glu Pro Val Val Ile Gly Ile Val Trp Ser
35 40 45

Ser Val Met Ser Thr Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala
50 55 60

Glu Gln Ala Ile Lys His Leu Lys Gln Tyr Ser Pro Leu Leu Ala Ala
65 70 75 80

Phe Thr Thr Gln Ala Glu Val Leu Ser Glu Glu Pro Ile Leu Lys Trp
85 90 95

Tyr Lys Asp Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Glu Gln
100 105 110

Met Lys Lys Phe Val Glu Trp Leu Lys Asn Ala Glu Glu Glu Ser Glu
115 120 125

Ser Glu Ala Glu Glu Gly Asp
130 135

<210> 8343
<211> 161
<212> PRT
<213> Homo sapiens

<220>
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<400> 8343
Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser Gly Gln Arg Phe
1 5 10 15

Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp Pro Thr Gln Phe
20 25 30

Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly Thr Asp Leu Glu
35 40 45

Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys Leu Asp Tyr Arg
50 55 60

Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala Gly Gly Met Leu
65 70 75 80

Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg Thr Asp Val Cys
85 90 95

Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln Ala Phe Ala Gln
100 105 110

Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Gly Phe

```
        115                 120                 125

Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys Gly Phe Ser Glu
    130                 135                 140

Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly Val Leu Leu Ala Asn
145                 150                 155                 160

Gly
```

<210> 8344
<211> 154
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000412072"

<400> 8344

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Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu Ser Gly Gln Arg Phe
1               5                   10                  15

Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe Asp Pro Thr Gln Phe
            20                  25                  30

Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr Gly Thr Asp Leu Glu
        35                  40                  45

Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala Lys Leu Asp Tyr Arg
    50                  55                  60

Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val Ala Gly Gly Met Leu
65                  70                  75                  80
```

```
Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met Arg Thr Asp Val Cys
                85                  90                  95

Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met Gln Ala Phe Ala Gln
            100                 105                 110

Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Gly Phe
        115                 120                 125

Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu Lys Gly Phe Ser Glu
    130                 135                 140

Ser Glu Arg Asn Lys Leu Ala Met Leu Thr
145                 150


<210> 8345
<211> 419
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1734; "

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<220>
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<223> /note="Uniprot ID:  Q9Y6E2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000258761"

<400> 8345
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1               5                   10                  15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
            20                  25                  30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
```

```
        35                  40                  45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
    50                  55                  60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65                  70                  75                  80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
                85                  90                  95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
            100                 105                 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115                 120                 125

Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser
    130                 135                 140

Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly
145                 150                 155                 160

Asn Gly Thr Leu Pro Ala Thr Ile Leu Thr Ser Leu Phe Thr Asp Ser
                165                 170                 175

Leu Val Lys Glu Gly Ile Ala Ala Ser Phe Ala Val Lys Leu Phe Lys
            180                 185                 190

Ala Trp Met Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg
        195                 200                 205

Lys Ala Asn Leu Asp Lys Arg Leu Leu Glu Leu Phe Pro Val Asn Arg
    210                 215                 220

Gln Ser Val Asp His Phe Ala Lys Tyr Phe Thr Asp Ala Gly Leu Lys
225                 230                 235                 240

Glu Leu Ser Asp Phe Leu Arg Val Gln Gln Ser Leu Gly Thr Arg Lys
                245                 250                 255

Glu Leu Gln Lys Glu Leu Gln Glu Arg Leu Ser Gln Glu Cys Pro Ile
            260                 265                 270
```

```
Lys Glu Val Val Leu Tyr Val Lys Glu Glu Met Lys Arg Asn Asp Leu
        275                 280                 285

Pro Glu Thr Ala Val Ile Gly Leu Leu Trp Thr Cys Ile Met Asn Ala
    290                 295                 300

Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Leu Lys
305                 310                 315                 320

His Leu Lys Gln Tyr Ala Pro Leu Leu Ala Val Phe Ser Ser Gln Gly
                325                 330                 335

Gln Ser Glu Leu Ile Leu Leu Gln Lys Val Gln Glu Tyr Cys Tyr Asp
            340                 345                 350

Asn Ile His Phe Met Lys Ala Phe Gln Lys Ile Val Val Leu Phe Tyr
        355                 360                 365

Lys Ala Asp Val Leu Ser Glu Glu Ala Ile Leu Lys Trp Tyr Lys Glu
    370                 375                 380

Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Asp Gln Met Lys Lys
385                 390                 395                 400

Phe Val Glu Trp Leu Gln Asn Ala Glu Glu Glu Ser Glu Ser Glu Gly
                405                 410                 415

Glu Glu Asn
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<210> 8346
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<213> Homo sapiens

<220>
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<223> /note="Gene Name:
basic leu zipper and W2 domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384617"

<400> 8346

```
Met Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg Lys Ala
1               5                  10                  15

Asn Leu Asp Lys Arg Leu Leu Glu Leu Phe Pro Val Asn Arg Gln Ser
            20                  25                  30

Val Asp His Phe Ala Lys Tyr Phe Thr Asp Ala Gly Leu Lys Glu Leu
        35                  40                  45

Ser Asp Phe Leu Arg Val Gln Gln Ser Leu Gly Thr Arg Lys Glu Leu
    50                  55                  60

Gln Lys Glu Leu Gln Glu Arg Leu Ser Gln Glu Cys Pro Ile Lys Glu
65                  70                  75                  80

Val Val Leu Tyr Val Lys Glu Glu Met Lys Arg Asn Asp Leu Pro Glu
                85                  90                  95

Thr Ala Val Ile Gly Leu Leu Trp Thr Cys Ile Met Asn Ala Val Glu
            100                 105                 110

Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Leu Lys His Leu
        115                 120                 125

Lys Gln Tyr Ala Pro Leu Leu Ala Val Phe Ser Ser Gln Gly Gln Ser
    130                 135                 140

Glu Leu Ile Leu Leu Gln Lys Val Gln Glu Tyr Cys Tyr Asp Asn Ile
145                 150                 155                 160

His Phe Met Lys Ala Phe Gln Lys Ile Val Val Leu Phe Tyr Lys Ala
                165                 170                 175

Asp Val Leu Ser Glu Glu Ala Ile Leu Lys Trp Tyr Lys Glu Ala His
            180                 185                 190

Val Ala Lys Gly Lys Ser Val Phe Leu Asp Gln Met Lys Lys Phe Val
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195 200 205

Glu Trp Leu Gln Asn Ala Glu Glu Glu Ser Glu Ser Glu Gly Glu Glu
210 215 220

Asn
225

<210> 8347
<211> 343
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
basic leu zipper and W2 domains 2; "

<220>
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<400> 8347
Met Leu Ala Pro Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys
1 5 10 15

Met Thr Asn His Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile
20 25 30

Arg Asn Tyr Ala Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr
35 40 45

Leu Glu Lys Ala Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu
50 55 60

Lys Ala Phe Ser Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly
65 70 75 80

Ile Leu Leu Gly Asn Gly Thr Leu Pro Ala Thr Ile Leu Thr Ser Leu
85 90 95

```
Phe Thr Asp Ser Leu Val Lys Glu Gly Ile Ala Ala Ser Phe Ala Val
            100                 105                 110

Lys Leu Phe Lys Ala Trp Met Ala Glu Lys Asp Ala Asn Ser Val Thr
        115                 120                 125

Ser Ser Leu Arg Lys Ala Asn Leu Asp Lys Arg Leu Leu Glu Leu Phe
    130                 135                 140

Pro Val Asn Arg Gln Ser Val Asp His Phe Ala Lys Tyr Phe Thr Asp
145                 150                 155                 160

Ala Gly Leu Lys Glu Leu Ser Asp Phe Leu Arg Val Gln Gln Ser Leu
                165                 170                 175

Gly Thr Arg Lys Glu Leu Gln Lys Glu Leu Gln Glu Arg Leu Ser Gln
            180                 185                 190

Glu Cys Pro Ile Lys Glu Val Val Leu Tyr Val Lys Glu Glu Met Lys
        195                 200                 205

Arg Asn Asp Leu Pro Glu Thr Ala Val Ile Gly Leu Leu Trp Thr Cys
    210                 215                 220

Ile Met Asn Ala Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu
225                 230                 235                 240

Gln Ala Leu Lys His Leu Lys Gln Tyr Ala Pro Leu Leu Ala Val Phe
                245                 250                 255

Ser Ser Gln Gly Gln Ser Glu Leu Ile Leu Leu Gln Lys Val Gln Glu
            260                 265                 270

Tyr Cys Tyr Asp Asn Ile His Phe Met Lys Ala Phe Gln Lys Ile Val
        275                 280                 285

Val Leu Phe Tyr Lys Ala Asp Val Leu Ser Glu Glu Ala Ile Leu Lys
    290                 295                 300

Trp Tyr Lys Glu Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Asp
305                 310                 315                 320
```

Gln Met Lys Lys Phe Val Glu Trp Leu Gln Asn Ala Glu Glu Glu Ser
325 330 335

Glu Ser Glu Gly Glu Glu Asn
340

<210> 8348
<211> 170
<212> PRT
<213> Homo sapiens

<220>
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<400> 8348
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1 5 10 15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
20 25 30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
35 40 45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
50 55 60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65 70 75 80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
85 90 95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
100 105 110

```
Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115                 120                 125

Phe Glu Asp Glu Met Lys Lys Pro Phe Pro Lys Gln Ser Arg Gln Ser
    130                 135                 140

Trp Arg Cys Cys Arg Gly Phe Cys Trp Ala Met Ala Pro Cys Pro Pro
145                 150                 155                 160

Pro Ser Ser Pro Val Ser Ser Pro Thr Ala
                165                 170


<210> 8349
<211> 419
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8349
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1               5                   10                  15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
            20                  25                  30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
        35                  40                  45
```

```
Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
    50                  55                  60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65                  70                  75                  80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
                85                  90                  95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
            100                 105                 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115                 120                 125

Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser
    130                 135                 140

Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly
145                 150                 155                 160

Asn Gly Thr Leu Pro Ala Thr Ile Leu Thr Ser Leu Phe Thr Asp Ser
                165                 170                 175

Leu Val Lys Glu Gly Ile Ala Ala Ser Phe Ala Val Lys Leu Phe Lys
            180                 185                 190

Ala Trp Met Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg
        195                 200                 205

Lys Ala Asn Leu Asp Lys Arg Leu Leu Glu Leu Phe Pro Val Asn Arg
    210                 215                 220

Gln Ser Val Asp His Phe Ala Lys Tyr Phe Thr Asp Ala Gly Leu Lys
225                 230                 235                 240

Glu Leu Ser Asp Phe Leu Arg Val Gln Gln Ser Leu Gly Thr Arg Lys
                245                 250                 255

Glu Leu Gln Lys Glu Leu Gln Glu Arg Leu Ser Gln Glu Cys Pro Ile
            260                 265                 270

Lys Glu Val Val Leu Tyr Val Lys Glu Glu Met Lys Arg Asn Asp Leu
```

```
        275                 280                 285

Pro Glu Thr Ala Val Ile Gly Leu Leu Trp Thr Cys Ile Met Asn Ala
    290                 295                 300

Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Leu Lys
305                 310                 315                 320

His Leu Lys Gln Tyr Ala Pro Leu Leu Ala Val Phe Ser Ser Gln Gly
                325                 330                 335

Gln Ser Glu Leu Ile Leu Leu Gln Lys Val Gln Glu Tyr Cys Tyr Asp
            340                 345                 350

Asn Ile His Phe Met Lys Ala Phe Gln Lys Ile Val Val Leu Phe Tyr
        355                 360                 365

Lys Ala Asp Val Leu Ser Glu Glu Ala Ile Leu Lys Trp Tyr Lys Glu
    370                 375                 380

Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Asp Gln Met Lys Lys
385                 390                 395                 400

Phe Val Glu Trp Leu Gln Asn Ala Glu Glu Glu Ser Glu Ser Glu Gly
                405                 410                 415

Glu Glu Asn
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<210> 8350
<211> 408
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1734; "

<220>
<221> source
<223> /note="Gene Symbol: BZW2; "

<220>
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<223> /note="Gene Name:
basic leu zipper and W2 domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403481"

<400> 8350
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1   5   10   15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
            20   25   30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
        35   40   45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
    50   55   60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65   70   75   80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
                85   90   95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
            100   105   110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115   120   125

Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser
    130   135   140

Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly
145   150   155   160

Asn Gly Thr Leu Pro Ala Thr Ile Leu Thr Ser Leu Phe Thr Asp Ser
                165   170   175

Leu Val Lys Glu Gly Ile Ala Ala Ser Phe Ala Val Lys Leu Phe Lys
            180   185   190

Ala Trp Met Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg
        195   200   205

```
Lys Ala Asn Leu Asp Lys Arg Leu Leu Glu Leu Phe Pro Val Asn Arg
    210                 215                 220

Gln Ser Val Asp His Phe Ala Lys Tyr Phe Thr Asp Ala Gly Leu Lys
225                 230                 235                 240

Glu Leu Ser Asp Phe Leu Arg Val Gln Gln Ser Leu Gly Thr Arg Lys
                245                 250                 255

Glu Leu Gln Lys Glu Leu Gln Glu Arg Leu Ser Gln Glu Cys Pro Ile
            260                 265                 270

Lys Glu Val Val Leu Tyr Val Lys Glu Glu Met Lys Arg Asn Asp Leu
        275                 280                 285

Pro Glu Thr Ala Val Ile Gly Leu Leu Trp Thr Cys Ile Met Asn Ala
    290                 295                 300

Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Leu Lys
305                 310                 315                 320

His Leu Lys Gln Tyr Ala Pro Leu Leu Ala Val Phe Ser Ser Gln Gly
                325                 330                 335

Gln Ser Glu Leu Ile Leu Leu Gln Lys Val Gln Glu Tyr Cys Tyr Asp
            340                 345                 350

Asn Ile His Phe Met Lys Ala Phe Gln Lys Ile Val Val Leu Phe Tyr
        355                 360                 365

Lys Ala Asp Val Leu Ser Glu Glu Ala Ile Leu Lys Trp Tyr Lys Glu
    370                 375                 380

Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Asp Gln Met Lys Lys
385                 390                 395                 400

Phe Val Glu Trp Leu Gln Asn Ala
                405

<210> 8351
<211> 161
<212> PRT
<213> Homo sapiens
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<220>
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<223> /note="Payload ID: 1734; "

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<223> /note="Gene Symbol: BZW2; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper and W2 domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406395"

<400> 8351
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1 5 10 15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
20 25 30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
35 40 45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
50 55 60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65 70 75 80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
85 90 95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
100 105 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
115 120 125

Phe Glu Asp Glu Met Lys Lys Ala Leu Arg Pro His Leu Leu Ser Ser
130 135 140

Phe Ser Lys His Gly Trp Gln Lys Lys Met Pro Thr Leu Leu Pro Arg
145 150 155 160

Leu

<210> 8352
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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basic leu zipper and W2 domains 2; "

<220>
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<223> /note="ENSP ID: ENSP00000411715"

<400> 8352
Met Leu Ser Gly Ile Leu Leu Gly Asn Gly Thr Leu Pro Ala Thr Ile
1 5 10 15

Leu Thr Ser Leu Phe Thr Asp Ser Leu Val Lys Glu Gly Ile Ala Ala
20 25 30

Ser Phe Ala Val Lys Leu Phe Lys Ala Trp Met Ala Glu Lys Asp Ala
35 40 45

Asn Ser Val Thr Ser Ser Leu Arg Lys Ala Asn Leu Asp Lys Arg Leu
50 55 60

Leu Glu Leu Phe Pro Val Asn Arg Gln Ser Val Asp His Phe Ala Lys
65 70 75 80

Tyr Phe Thr Asp Ala Gly Leu Lys Glu Leu Ser Asp Phe Leu Arg Val
85 90 95

Gln Gln Ser Leu Gly Thr Arg Lys Glu Leu Gln Lys Glu Leu Gln Glu
100 105 110

Arg Leu Ser Gln Glu Cys Pro Ile Lys Glu Val Val Leu Tyr Val Lys

```
        115                 120                 125

Glu Glu Met Lys Ile Val Val Leu Phe Tyr Lys Ala Asp Val Leu Ser
    130                 135                 140

Glu Glu Ala Ile Leu Lys Trp Tyr Lys Glu Ala His Val Ala Lys Gly
145                 150                 155                 160

Lys Ser Val Phe Leu Asp Gln Met Lys Lys Phe Val Glu Trp Leu Gln
                165                 170                 175

Asn Ala Glu Glu Glu Ser Glu Ser Glu Gly Glu Glu Asn
            180                 185


<210> 8353
<211> 274
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1734; "

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<223> /note="Gene Symbol: BZW2; "

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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000412750"

<400> 8353
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1               5                   10                  15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
            20                  25                  30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
        35                  40                  45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
    50                  55                  60
```

```
Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65                  70                  75                  80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
                85                  90                  95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
            100                 105                 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115                 120                 125

Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser
    130                 135                 140

Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly
145                 150                 155                 160

Asn Gly Thr Leu Pro Ala Thr Ile Leu Thr Ser Leu Phe Thr Asp Ser
                165                 170                 175

Leu Val Lys Glu Gly Ile Ala Ala Ser Phe Ala Val Lys Leu Phe Lys
            180                 185                 190

Ala Trp Met Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg
        195                 200                 205

Lys Ala Asn Leu Asp Lys Arg Leu Leu Glu Leu Phe Pro Val Asn Arg
    210                 215                 220

Gln Ser Val Asp His Phe Ala Lys Tyr Phe Thr Asp Ala Gly Leu Lys
225                 230                 235                 240

Glu Leu Ser Asp Phe Leu Arg Val Gln Gln Ser Leu Gly Thr Arg Lys
                245                 250                 255

Glu Leu Gln Lys Glu Leu Gln Glu Arg Leu Ser Gln Glu Cys Pro Ile
            260                 265                 270

Lys Glu
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<210> 8354
<211> 208
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1734; "

<220>
<221> source
<223> /note="Gene Symbol: BZW2; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper and W2 domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415924"

<400> 8354
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1 5 10 15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
20 25 30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
35 40 45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
50 55 60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65 70 75 80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
85 90 95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
100 105 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
115 120 125

Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser
130 135 140

```
Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly
145                 150                 155                 160

Asn Gly Thr Leu Pro Ala Thr Ile Leu Thr Ser Leu Phe Thr Asp Ser
                165                 170                 175

Leu Val Lys Glu Gly Ile Ala Ala Ser Phe Ala Val Lys Leu Phe Lys
            180                 185                 190

Ala Trp Met Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg
        195                 200                 205


<210> 8355
<211> 162
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BZW2; "

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<223> /note="Gene Name:
      basic leu zipper and W2 domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416531"

<400> 8355
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1               5                   10                  15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
            20                  25                  30

Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
        35                  40                  45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
    50                  55                  60
```

```
Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65                  70                  75                  80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
                85                  90                  95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
            100                 105                 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115                 120                 125

Phe Glu Asp Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser
    130                 135                 140

Glu Thr Glu Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly
145                 150                 155                 160

Asn Gly
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<210> 8356
<211> 161
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1734; "

<220>
<221> source
<223> /note="Gene Symbol: BZW2; "

<220>
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<223> /note="Gene Name:
basic leu zipper and W2 domains 2; "

<220>
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<400> 8356

```
Met Asn Lys His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr
1               5                   10                  15

Arg Lys Arg Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp
            20                  25                  30
```

```
Thr Leu Val Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val
        35                  40                  45

Ala Lys Phe Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr
    50                  55                  60

Ala Asp Thr Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro
65                  70                  75                  80

Gly Gly Thr Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His
                85                  90                  95

Cys Val Phe Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala
            100                 105                 110

Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala
        115                 120                 125

Phe Glu Asp Glu Met Lys Lys Ala Leu Arg Pro His Leu Leu Ser Ser
    130                 135                 140

Phe Ser Lys His Gly Trp Gln Lys Lys Met Pro Thr Leu Leu Pro Arg
145                 150                 155                 160

Leu
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<210> 8357
<211> 400
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1735; "

<220>
<221> source
<223> /note="Gene Symbol: BLZF1; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper nuclear factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H2G9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000327541"

<400> 8357
Met Thr Thr Lys Asn Leu Glu Thr Lys Val Thr Val Thr Ser Ser Pro
1   5   10   15

Ile Arg Gly Ala Gly Asp Gly Met Glu Thr Glu Glu Pro Pro Lys Ser
            20   25   30

Val Glu Val Thr Ser Gly Val Gln Ser Arg Lys His His Ser Leu Gln
        35   40   45

Ser Pro Trp Lys Lys Ala Val Pro Ser Glu Ser Pro Gly Val Leu Gln
    50   55   60

Leu Gly Lys Met Leu Thr Glu Lys Ala Met Glu Val Lys Ala Val Arg
65   70   75   80

Ile Leu Val Pro Lys Ala Ala Ile Thr His Asp Ile Pro Asn Lys Asn
                85   90   95

Thr Lys Val Lys Ser Leu Gly His His Lys Gly Glu Phe Leu Gly Gln
            100   105   110

Ser Glu Gly Val Ile Glu Pro Asn Lys Glu Leu Ser Glu Val Lys Asn
        115   120   125

Val Leu Glu Lys Leu Lys Asn Ser Glu Arg Arg Leu Leu Gln Asp Lys
    130   135   140

Glu Gly Leu Ser Asn Gln Leu Arg Val Gln Thr Glu Val Asn Arg Glu
145   150   155   160

Leu Lys Lys Leu Leu Val Ala Ser Val Gly Asp Asp Leu Gln Tyr His
                165   170   175

Phe Glu Arg Leu Ala Arg Glu Lys Asn Gln Leu Ile Leu Glu Asn Glu
            180   185   190

```
Ala Leu Gly Arg Asn Thr Ala Gln Leu Ser Glu Gln Leu Glu Arg Met
        195                 200                 205

Ser Ile Gln Cys Asp Val Trp Arg Ser Lys Phe Leu Ala Ser Arg Val
    210                 215                 220

Met Ala Asp Glu Leu Thr Asn Ser Arg Ala Ala Leu Gln Arg Gln Asn
225                 230                 235                 240

Arg Asp Ala His Gly Ala Ile Gln Asp Leu Leu Ser Glu Arg Glu Gln
                245                 250                 255

Phe Arg Gln Glu Met Ile Ala Thr Gln Lys Leu Leu Glu Glu Leu Leu
            260                 265                 270

Val Ser Leu Gln Trp Gly Arg Glu Gln Thr Tyr Ser Pro Ser Val Gln
        275                 280                 285

Pro His Ser Thr Ala Glu Leu Ala Leu Thr Asn His Lys Leu Ala Lys
    290                 295                 300

Ala Val Asn Ser His Leu Leu Gly Asn Val Gly Ile Asn Asn Gln Lys
305                 310                 315                 320

Lys Ile Pro Ser Thr Val Glu Phe Cys Ser Thr Pro Ala Glu Lys Met
                325                 330                 335

Ala Glu Thr Val Leu Arg Ile Leu Asp Pro Val Thr Cys Lys Glu Ser
            340                 345                 350

Ser Pro Asp Asn Pro Phe Phe Glu Ser Ser Pro Thr Thr Leu Leu Ala
        355                 360                 365

Thr Lys Lys Asn Ile Gly Arg Phe His Pro Tyr Thr Arg Tyr Glu Asn
    370                 375                 380

Ile Thr Phe Asn Cys Cys Asn His Cys Arg Gly Glu Leu Ile Ala Leu
385                 390                 395                 400
```

<210> 8358
<211> 174
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1735; "

<220>
<221> source
<223> /note="Gene Symbol: BLZF1; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper nuclear factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H2G9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000356781"

<400> 8358

```
Met Thr Thr Lys Asn Leu Glu Thr Lys Val Thr Val Thr Ser Ser Pro
1               5                  10                  15

Ile Arg Gly Ala Gly Asp Gly Met Glu Thr Glu Glu Pro Pro Lys Ser
            20                  25                  30

Val Glu Val Thr Ser Gly Val Gln Ser Arg Lys His His Ser Leu Gln
        35                  40                  45

Ser Pro Trp Lys Lys Ala Val Pro Ser Glu Ser Pro Gly Val Leu Gln
    50                  55                  60

Leu Gly Lys Met Leu Thr Glu Lys Ala Met Glu Val Lys Ala Val Arg
65                  70                  75                  80

Ile Leu Val Pro Lys Ala Ala Ile Thr His Asp Ile Pro Asn Lys Asn
                85                  90                  95

Thr Lys Val Lys Ser Leu Gly His His Lys Gly Glu Phe Leu Gly Gln
            100                 105                 110

Ser Glu Gly Val Ile Glu Pro Asn Lys Glu Leu Ser Glu Val Lys Asn
        115                 120                 125

Val Leu Glu Lys Leu Lys Asn Ser Glu Arg Arg Leu Leu Gln Asp Lys
    130                 135                 140
```

```
Glu Gly Leu Ser Asn Gln Leu Arg Val Gln Thr Glu Val Arg Arg Ala
145                 150                 155                 160


Leu Ile Asp Lys Met Ser Thr Thr Leu Tyr Val Trp Thr Phe
                165                 170


<210> 8359
<211> 400
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1735; "

<220>
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<223> /note="Gene Symbol: BLZF1; "

<220>
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<223> /note="Gene Name:
      basic leu zipper nuclear  factor
      1; "

<220>
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<223> /note="Uniprot ID:  Q9H2G9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000356782"

<400> 8359
Met Thr Thr Lys Asn Leu Glu Thr Lys Val Thr Val Thr Ser Ser Pro
1               5                   10                  15


Ile Arg Gly Ala Gly Asp Gly Met Glu Thr Glu Glu Pro Pro Lys Ser
            20                  25                  30


Val Glu Val Thr Ser Gly Val Gln Ser Arg Lys His His Ser Leu Gln
        35                  40                  45


Ser Pro Trp Lys Lys Ala Val Pro Ser Glu Ser Pro Gly Val Leu Gln
    50                  55                  60


Leu Gly Lys Met Leu Thr Glu Lys Ala Met Glu Val Lys Ala Val Arg
65                  70                  75                  80
```

```
Ile Leu Val Pro Lys Ala Ala Ile Thr His Asp Ile Pro Asn Lys Asn
                85                  90                  95

Thr Lys Val Lys Ser Leu Gly His His Lys Gly Glu Phe Leu Gly Gln
            100                 105                 110

Ser Glu Gly Val Ile Glu Pro Asn Lys Glu Leu Ser Glu Val Lys Asn
        115                 120                 125

Val Leu Glu Lys Leu Lys Asn Ser Glu Arg Arg Leu Leu Gln Asp Lys
    130                 135                 140

Glu Gly Leu Ser Asn Gln Leu Arg Val Gln Thr Glu Val Asn Arg Glu
145                 150                 155                 160

Leu Lys Lys Leu Leu Val Ala Ser Val Gly Asp Asp Leu Gln Tyr His
                165                 170                 175

Phe Glu Arg Leu Ala Arg Glu Lys Asn Gln Leu Ile Leu Glu Asn Glu
            180                 185                 190

Ala Leu Gly Arg Asn Thr Ala Gln Leu Ser Glu Gln Leu Glu Arg Met
        195                 200                 205

Ser Ile Gln Cys Asp Val Trp Arg Ser Lys Phe Leu Ala Ser Arg Val
    210                 215                 220

Met Ala Asp Glu Leu Thr Asn Ser Arg Ala Ala Leu Gln Arg Gln Asn
225                 230                 235                 240

Arg Asp Ala His Gly Ala Ile Gln Asp Leu Leu Ser Glu Arg Glu Gln
                245                 250                 255

Phe Arg Gln Glu Met Ile Ala Thr Gln Lys Leu Leu Glu Glu Leu Leu
            260                 265                 270

Val Ser Leu Gln Trp Gly Arg Glu Gln Thr Tyr Ser Pro Ser Val Gln
        275                 280                 285

Pro His Ser Thr Ala Glu Leu Ala Leu Thr Asn His Lys Leu Ala Lys
    290                 295                 300
```

```
Ala Val Asn Ser His Leu Leu Gly Asn Val Gly Ile Asn Asn Gln Lys
305                 310                 315                 320

Lys Ile Pro Ser Thr Val Glu Phe Cys Ser Thr Pro Ala Glu Lys Met
                325                 330                 335

Ala Glu Thr Val Leu Arg Ile Leu Asp Pro Val Thr Cys Lys Glu Ser
            340                 345                 350

Ser Pro Asp Asn Pro Phe Phe Glu Ser Ser Pro Thr Thr Leu Leu Ala
        355                 360                 365

Thr Lys Lys Asn Ile Gly Arg Phe His Pro Tyr Thr Arg Tyr Glu Asn
    370                 375                 380

Ile Thr Phe Asn Cys Cys Asn His Cys Arg Gly Glu Leu Ile Ala Leu
385                 390                 395                 400

<210> 8360
<211> 250
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BLZF1; "

<220>
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<223> /note="Gene Name:
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      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404408"

<400> 8360
Met Thr Thr Lys Asn Leu Glu Thr Lys Val Thr Val Thr Ser Ser Pro
1               5                   10                  15

Ile Arg Gly Ala Gly Asp Gly Met Glu Thr Glu Glu Pro Pro Lys Ser
            20                  25                  30

Val Glu Val Thr Ser Gly Val Gln Ser Arg Lys His His Ser Leu Gln
```

```
        35                  40                  45

Ser Pro Trp Lys Lys Ala Val Pro Ser Glu Ser Pro Gly Val Leu Gln
    50                  55                  60

Leu Gly Lys Met Leu Thr Glu Lys Ala Met Glu Val Lys Ala Val Arg
65                  70                  75                  80

Ile Leu Val Pro Lys Ala Ala Ile Thr His Asp Ile Pro Asn Lys Asn
                85                  90                  95

Thr Lys Val Lys Ser Leu Gly His His Lys Gly Glu Phe Leu Gly Gln
            100                 105                 110

Ser Glu Gly Val Ile Glu Pro Asn Lys Glu Leu Ser Glu Val Lys Asn
        115                 120                 125

Val Leu Glu Lys Leu Lys Asn Ser Glu Arg Arg Leu Leu Gln Asp Lys
    130                 135                 140

Glu Gly Leu Ser Asn Gln Leu Arg Val Gln Thr Glu Val Asn Arg Glu
145                 150                 155                 160

Leu Lys Lys Leu Leu Val Ala Ser Val Gly Asp Asp Leu Gln Tyr His
                165                 170                 175

Phe Glu Arg Leu Ala Arg Glu Lys Asn Gln Leu Ile Leu Glu Asn Glu
            180                 185                 190

Ala Leu Gly Arg Asn Thr Ala Gln Leu Ser Glu Gln Leu Glu Arg Met
        195                 200                 205

Ser Ile Gln Cys Asp Val Trp Arg Ser Lys Phe Leu Ala Ser Arg Val
    210                 215                 220

Met Ala Asp Glu Leu Thr Asn Ser Arg Ala Ala Leu Gln Arg Gln Asn
225                 230                 235                 240

Arg Asp Ala His Gly Ala Ile Gln Asp Leu
                245                 250
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<210> 8361
<211> 127

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1735; "

<220>
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<223> /note="Gene Symbol: BLZF1; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper nuclear factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414668"

<400> 8361
Met Thr Thr Lys Asn Leu Glu Thr Lys Val Thr Val Thr Ser Ser Pro
1   5   10   15

Ile Arg Gly Ala Gly Asp Gly Met Glu Thr Glu Glu Pro Pro Lys Ser
            20   25   30

Val Glu Val Thr Ser Gly Val Gln Ser Arg Lys His His Ser Leu Gln
        35   40   45

Ser Pro Trp Lys Lys Ala Val Pro Ser Glu Ser Pro Gly Val Leu Gln
    50   55   60

Leu Gly Lys Met Leu Thr Glu Lys Ala Met Glu Val Lys Ala Val Arg
65   70   75   80

Ile Leu Val Pro Lys Ala Ala Ile Thr His Asp Ile Pro Asn Lys Asn
                85   90   95

Thr Lys Val Lys Ser Leu Gly His His Lys Gly Glu Phe Leu Gly Gln
            100   105   110

Ser Glu Gly Val Ile Glu Pro Asn Lys Glu Leu Ser Glu Val Lys
        115   120   125

<210> 8362
<211> 125
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1736; "

<220>
<221> source
<223> /note="Gene Symbol: BATF; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper transcription
factor, ATF-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q16520; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000286639"

<400> 8362

```
Met Pro His Ser Ser Asp Ser Ser Asp Ser Ser Phe Ser Arg Ser Pro
1               5                   10                  15


Pro Pro Gly Lys Gln Asp Ser Ser Asp Asp Val Arg Arg Val Gln Arg
            20                  25                  30


Arg Glu Lys Asn Arg Ile Ala Ala Gln Lys Ser Arg Gln Arg Gln Thr
        35                  40                  45


Gln Lys Ala Asp Thr Leu His Leu Glu Ser Glu Asp Leu Glu Lys Gln
    50                  55                  60


Asn Ala Ala Leu Arg Lys Glu Ile Lys Gln Leu Thr Glu Glu Leu Lys
65                  70                  75                  80


Tyr Phe Thr Ser Val Leu Asn Ser His Glu Pro Leu Cys Ser Val Leu
                85                  90                  95


Ala Ala Ser Thr Pro Ser Pro Pro Glu Val Val Tyr Ser Ala His Ala
            100                 105                 110


Phe His Gln Pro His Val Ser Ser Pro Arg Phe Gln Pro
        115                 120                 125
```

<210> 8363
<211> 73
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BATF; "

<220>
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<223> /note="Gene Name:
basic leu zipper transcription
factor, ATF-like; "

<220>
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<223> /note="ENSP ID: ENSP00000450486"

<400> 8363
Met Pro His Ser Ser Asp Ser Ser Asp Ser Ser Phe Ser Arg Ser Pro
1 5 10 15

Pro Pro Gly Lys Gln Asp Ser Ser Asp Asp Val Arg Arg Val Gln Arg
20 25 30

Arg Glu Lys Asn Arg Ile Ala Ala Gln Lys Ser Arg Gln Arg Gln Thr
35 40 45

Gln Lys Ser Ile Lys Lys Asp Ala Gln Val Pro Trp His Arg Ala Arg
50 55 60

Arg Ala Gly Asn Gly Tyr Phe Ser Lys
65 70

<210> 8364
<211> 274
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1737; "

<220>
<221> source
<223> /note="Gene Symbol: BATF2; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper transcription
factor, ATF-like 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N1L9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301887"

<400> 8364
Met His Leu Cys Gly Gly Asn Gly Leu Leu Thr Gln Thr Asp Pro Lys
1   5   10   15

Glu Gln Gln Arg Gln Leu Lys Lys Gln Lys Asn Arg Ala Ala Ala Gln
            20   25   30

Arg Ser Arg Gln Lys His Thr Asp Lys Ala Asp Ala Leu His Gln Gln
        35   40   45

His Glu Ser Leu Glu Lys Asp Asn Leu Ala Leu Arg Lys Glu Ile Gln
    50   55   60

Ser Leu Gln Ala Glu Leu Ala Trp Trp Ser Arg Thr Leu His Val His
65   70   75   80

Glu Arg Leu Cys Pro Met Asp Cys Ala Ser Cys Ser Ala Pro Gly Leu
                85   90   95

Leu Gly Cys Trp Asp Gln Ala Glu Gly Leu Leu Gly Pro Gly Pro Gln
            100   105   110

Gly Gln His Gly Cys Arg Glu Gln Leu Glu Leu Phe Gln Thr Pro Gly
        115   120   125

Ser Cys Tyr Pro Ala Gln Pro Leu Ser Pro Gly Pro Gln Pro His Asp
    130   135   140

Ser Pro Ser Leu Leu Gln Cys Pro Leu Pro Ser Leu Ser Leu Gly Pro
145   150   155   160

Ala Val Val Ala Glu Pro Pro Val Gln Leu Ser Pro Ser Pro Leu Leu
                165   170   175

```
Phe Ala Ser His Thr Gly Ser Ser Leu Gln Gly Ser Ser Ser Lys Leu
            180                 185                 190

Ser Ala Leu Gln Pro Ser Leu Thr Ala Gln Thr Ala Pro Pro Gln Pro
        195                 200                 205

Leu Glu Leu Glu His Pro Thr Arg Gly Lys Leu Gly Ser Ser Pro Asp
    210                 215                 220

Asn Pro Ser Ser Ala Leu Gly Leu Ala Arg Leu Gln Ser Arg Glu His
225                 230                 235                 240

Lys Pro Ala Leu Ser Ala Ala Thr Trp Gln Gly Leu Val Val Asp Pro
                245                 250                 255

Ser Pro His Pro Leu Leu Ala Phe Pro Leu Leu Ser Ser Ala Gln Val
            260                 265                 270

His Phe
```

<210> 8365
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1737; "

<220>
<221> source
<223> /note="Gene Symbol: BATF2; "

<220>
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<223> /note="Gene Name:
basic leu zipper transcription
factor, ATF-like 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N1L9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398911"

<400> 8365
Met Asp Cys Ala Ser Cys Ser Ala Pro Gly Leu Leu Gly Cys Trp Asp
1 5 10 15

Gln Ala Glu Gly Leu Leu Gly Pro Gly Pro Gln Gly Gln His Gly Cys
20 25 30

Arg Glu Gln Leu Glu Leu Phe Gln Thr Pro Gly Ser Cys Tyr Pro Ala
35 40 45

Gln Pro Leu Ser Pro Gly Pro Gln Pro His Asp Ser Pro Ser Leu Leu
50 55 60

Gln Cys Pro Leu Pro Ser Leu Ser Leu Gly Pro Ala Val Val Ala Glu
65 70 75 80

Pro Pro Val Gln Leu Ser Pro Ser Pro Leu Leu Phe Ala Ser His Thr
85 90 95

Gly Ser Ser Leu Gln Gly Ser Ser Ser Lys Leu Ser Ala Leu Gln Pro
100 105 110

Ser Leu Thr Ala Gln Thr Ala Pro Pro Gln Pro Leu Glu Leu Glu His
115 120 125

Pro Thr Arg Gly Lys Leu Gly Ser Ser Pro Asp Asn Pro Ser Ser Ala
130 135 140

Leu Gly Leu Ala Arg Leu Gln Ser Arg Glu His Lys Pro Ala Leu Ser
145 150 155 160

Ala Ala Thr Trp Gln Gly Leu Val Val Asp Pro Ser Pro His Pro Leu
165 170 175

Leu Ala Phe Pro Leu Leu Ser Ser Ala Gln Val His Phe
180 185

<210> 8366
<211> 250
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1737; "

<220>
<221> source
<223> /note="Gene Symbol: BATF2; "

<220>
<221> source
<223> /note="Gene Name:
basic leu zipper transcription
factor, ATF-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434915"

<400> 8366
Met Ala Pro Val Gly Lys Arg Ile Gly Gly Leu Gly Asp Thr Arg Val
1 5 10 15

Gly Gly Pro Cys Ile Ser Gln Gln His Glu Ser Leu Glu Lys Asp Asn
20 25 30

Leu Ala Leu Arg Lys Glu Ile Gln Ser Leu Gln Ala Glu Leu Ala Trp
35 40 45

Trp Ser Arg Thr Leu His Val His Glu Arg Leu Cys Pro Met Asp Cys
50 55 60

Ala Ser Cys Ser Ala Pro Gly Leu Leu Gly Cys Trp Asp Gln Ala Glu
65 70 75 80

Gly Leu Leu Gly Pro Gly Pro Gln Gly Gln His Gly Cys Arg Glu Gln
85 90 95

Leu Glu Leu Phe Gln Thr Pro Gly Ser Cys Tyr Pro Ala Gln Pro Leu
100 105 110

Ser Pro Gly Pro Gln Pro His Asp Ser Pro Ser Leu Leu Gln Cys Pro
115 120 125

Leu Pro Ser Leu Ser Leu Gly Pro Ala Val Val Ala Glu Pro Pro Val
130 135 140

Gln Leu Ser Pro Ser Pro Leu Leu Phe Ala Ser His Thr Gly Ser Ser
145 150 155 160

Leu Gln Gly Ser Ser Ser Lys Leu Ser Ala Leu Gln Pro Ser Leu Thr

```
                165                 170                 175

Ala Gln Thr Ala Pro Pro Gln Pro Leu Glu Leu Glu His Pro Thr Arg
            180                 185                 190

Gly Lys Leu Gly Ser Ser Pro Asp Asn Pro Ser Ser Ala Leu Gly Leu
        195                 200                 205

Ala Arg Leu Gln Ser Arg Glu His Lys Pro Ala Leu Ser Ala Ala Thr
    210                 215                 220

Trp Gln Gly Leu Val Val Asp Pro Ser Pro His Pro Leu Leu Ala Phe
225                 230                 235                 240

Pro Leu Leu Ser Ser Ala Gln Val His Phe
                245                 250


<210> 8367
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1737; "

<220>
<221> source
<223> /note="Gene Symbol: BATF2; "

<220>
<221> source
<223> /note="Gene Name:
      basic leu zipper transcription
      factor, ATF-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435640"

<400> 8367
Met His Leu Cys Gly Gly Asn Gly Leu Leu Thr Gln Thr Asp Pro Lys
1               5                   10                  15

Glu Gln Gln Arg Gln Leu Lys Lys Gln Lys Asn Arg Ala Ala Ala Gln
            20                  25                  30

Arg Ser Arg Gln Lys His Thr Asp Lys Ala Asp Ala Leu His Gln His
        35                  40                  45
```

```
Glu Ser Leu Glu Lys Asp Asn Leu Ala Leu Arg Lys Glu Ile Gln Ser
    50                  55                  60

Leu Gln Ala Glu Leu Ala Trp Trp Ser Arg Thr Leu His Val His Glu
65                  70                  75                  80

Arg Leu Cys Pro Met Asp Cys Ala Ser Cys Ser Ala Pro Gly Leu Leu
                85                  90                  95

Gly Cys Trp Asp Gln Ala Glu Gly Leu Leu Gly Pro Gly Pro Gln Gly
            100                 105                 110

Gln His Gly Cys Arg Glu Gln Leu Glu Leu Phe Gln Thr Pro Gly Ser
        115                 120                 125

Cys Tyr Pro Ala Gln Pro Leu Ser Pro Gly Pro Gln Pro His Asp Ser
    130                 135                 140

Pro Ser Leu Leu Gln Cys Pro Leu Pro Ser Leu
145                 150                 155


<210> 8368
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1738; "

<220>
<221> source
<223> /note="Gene Symbol: BATF3; "

<220>
<221> source
<223> /note="Gene Name:
      basic leu zipper transcription
      factor, ATF-like 3; "

<220>
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<223> /note="Uniprot ID:  Q9NR55; "

<220>
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<223> /note="ENSP ID: ENSP00000243440"
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<400> 8368
Met Ser Gln Gly Leu Pro Ala Ala Gly Ser Val Leu Gln Arg Ser Val
1   5   10   15

Ala Ala Pro Gly Asn Gln Pro Gln Pro Gln Pro Gln Gln Gln Ser Pro
            20   25   30

Glu Asp Asp Asp Arg Lys Val Arg Arg Arg Glu Lys Asn Arg Val Ala
        35   40   45

Ala Gln Arg Ser Arg Lys Lys Gln Thr Gln Lys Ala Asp Lys Leu His
    50   55   60

Glu Glu Tyr Glu Ser Leu Glu Gln Glu Asn Thr Met Leu Arg Arg Glu
65   70   75   80

Ile Gly Lys Leu Thr Glu Glu Leu Lys His Leu Thr Glu Ala Leu Lys
                85   90   95

Glu His Glu Lys Met Cys Pro Leu Leu Leu Cys Pro Met Asn Phe Val
            100   105   110

Pro Val Pro Pro Arg Pro Asp Pro Val Ala Gly Cys Leu Pro Arg
        115   120   125

<210> 8369
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1739; "

<220>
<221> source
<223> /note="Gene Symbol: BTF3; "

<220>
<221> source
<223> /note="Gene Name:
      basic transcription
      factor 3; "

<220>
<221> source
<223> /note="Uniprot ID: P20290; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000338516"

<400> 8369
Met Lys Glu Thr Ile Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala
1 5 10 15

Gln Val Arg Ile Gly Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val
20 25 30

Val His Arg Thr Ala Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu
35 40 45

Lys Lys Leu Gly Val Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met
50 55 60

Phe Thr Asn Gln Gly Thr Val Ile His Phe Asn Asn Pro Lys Val Gln
65 70 75 80

Ala Ser Leu Ala Ala Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr
85 90 95

Lys Gln Leu Thr Glu Met Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala
100 105 110

Asp Ser Leu Thr Ser Leu Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln
115 120 125

Ser Val Asp Gly Lys Ala Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp
130 135 140

Glu Val Pro Asp Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu
145 150 155 160

Ala Asn

<210> 8370
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1739; "

<220>
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<223> /note="Gene Symbol: BTF3; "

<220>
<221> source
<223> /note="Gene Name:
basic transcription
factor 3; "

<220>
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<223> /note="Uniprot ID: P20290; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369965"

<400> 8370
Met Arg Arg Thr Gly Ala Pro Ala Gln Ala Asp Ser Arg Gly Arg Gly
1   5   10   15

Arg Ala Arg Gly Gly Cys Pro Gly Gly Glu Ala Thr Leu Ser Gln Pro
            20   25   30

Pro Pro Arg Gly Gly Thr Arg Gly Gln Glu Pro Gln Met Lys Glu Thr
        35   40   45

Ile Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile
    50   55   60

Gly Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr
65   70   75   80

Ala Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu Lys Lys Leu Gly
                85   90   95

Val Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met Phe Thr Asn Gln
            100   105   110

Gly Thr Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ala
        115   120   125

Ala Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr Lys Gln Leu Thr
    130   135   140

Glu Met Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala Asp Ser Leu Thr
145   150   155   160

```
Ser Leu Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln Ser Val Asp Gly
                165                 170                 175

Lys Ala Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp Glu Val Pro Asp
            180                 185                 190

Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu Ala Asn
        195                 200                 205


<210> 8371
<211> 109
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BTF3; "

<220>
<221> source
<223> /note="Gene Name:
      basic transcription
      factor 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420978"

<400> 8371
Met Lys Glu Thr Ile Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala
1               5                   10                  15

Gln Val Arg Ile Gly Gly Lys Val Asn Met Phe Thr Asn Gln Gly Thr
            20                  25                  30

Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ala Ala Asn
        35                  40                  45

Thr Phe Thr Ile Thr Gly His Ala Glu Thr Lys Gln Leu Thr Glu Met
    50                  55                  60

Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala Asp Ser Leu Thr Ser Leu
65                  70                  75                  80
```

```
Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln Ser Val Asp Gly Lys Ala
                85                  90                  95


Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp Glu Val Pro
            100                 105


<210> 8372
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1739; "

<220>
<221> source
<223> /note="Gene Symbol: BTF3; "

<220>
<221> source
<223> /note="Gene Name:
      basic transcription
      factor 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425490"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8372
Xaa Ile Glu Glu Val Asn Met Phe Thr Asn Gln Gly Thr Val Ile His
1               5                   10                  15


Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ala Ala Asn Thr Phe Thr
            20                  25                  30


Ile Thr Gly His Ala Glu Thr Lys Gln Leu Thr Glu Met Leu Pro Ser
        35                  40                  45


Ile Leu Asn Gln Leu Gly Ala Asp Ser Leu Thr Ser Leu Arg Arg Leu
    50                  55                  60


Ala Glu Ala Leu Pro Lys Gln Tyr Leu Val Glu Asn Phe Asp Glu Ala
65                  70                  75                  80
```

```
Ser Lys Asn Glu Ala Asn
                85


<210> 8373
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1740; "

<220>
<221> source
<223> /note="Gene Symbol: BTF3L4; "

<220>
<221> source
<223> /note="Gene Name:
      basic transcription
      factor 3-like 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96K17; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360664"

<400> 8373
Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly
1               5                  10                  15


Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr Ala
            20                  25                  30


Thr Ala Asp Asp Lys Lys Leu Gln Ser Ser Leu Lys Lys Leu Ala Val
        35                  40                  45


Asn Asn Ile Ala Gly Ile Glu Glu Val Asn Met Ile Lys Asp Asp Gly
    50                  55                  60


Thr Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ser Ala
65                  70                  75                  80


Asn Thr Phe Ala Ile Thr Gly His Ala Glu Ala Lys Pro Ile Thr Glu
                85                  90                  95
```

```
Met Leu Pro Gly Ile Leu Ser Gln Leu Gly Ala Asp Ser Leu Thr Ser
            100                 105                 110

Leu Arg Lys Leu Ala Glu Gln Phe Pro Arg Gln Val Leu Asp Ser Lys
        115                 120                 125

Ala Pro Lys Pro Glu Asp Ile Asp Glu Glu Asp Asp Asp Val Pro Asp
    130                 135                 140

Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu Ala Asn
145                 150                 155
```

<210> 8374
<211> 145
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1740; "

<220>
<221> source
<223> /note="Gene Symbol: BTF3L4; "

<220>
<221> source
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basic transcription
factor 3-like 4; "

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<400> 8374

```
Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly
1               5                   10                  15

Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr Ala
            20                  25                  30

Thr Ala Asp Asp Lys Lys Leu Gln Ser Ser Leu Lys Lys Leu Ala Val
        35                  40                  45

Asn Asn Ile Ala Gly Ile Glu Glu Val Asn Met Ile Lys Asp Asp Gly
    50                  55                  60
```

```
Thr Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ser Ala
65                  70                  75                  80


Asn Thr Phe Ala Ile Thr Gly His Ala Glu Ala Lys Pro Ile Thr Glu
                85                  90                  95


Met Leu Pro Gly Ile Leu Ser Gln Leu Gly Ala Asp Ser Leu Thr Ser
            100                 105                 110


Leu Arg Lys Leu Ala Glu Gln Phe Pro Arg Gln Val Leu Asp Ser Lys
        115                 120                 125


Ala Pro Lys Pro Glu Asp Ile Asp Glu Glu Asp Asp Asp Val Pro Gly
    130                 135                 140


Lys
145


<210> 8375
<211> 54
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000434611"

<400> 8375
Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly
1               5                   10                  15


Gly Lys Val Phe Leu Thr Asn Ser Tyr Leu Phe Phe His Val Gly Glu
            20                  25                  30


Tyr Glu Tyr Gln Leu Ser Tyr Ser Leu Tyr Phe Leu Lys Pro Lys Glu
```

35 40 45

Glu Leu Val Val Ser Asn
50

<210> 8376
<211> 78
<212> PRT
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3-like 4; "

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<223> /note="Uniprot ID: Q96K17; "

<220>
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<400> 8376
Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly
1 5 10 15

Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr Ala
20 25 30

Thr Ala Asp Asp Lys Lys Leu Gln Ser Ser Leu Lys Lys Leu Ala Val
35 40 45

Asn Asn Ile Ala Gly Ile Glu Glu Ser Trp Thr Val Lys His Gln Asn
50 55 60

Gln Lys Thr Leu Met Arg Lys Met Met Met Phe Gln Ile Leu
65 70 75

<210> 8377

<211> 100
<212> PRT
<213> Homo sapiens

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factor
3-like 4; "

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<220>
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<223> /note="ENSP ID: ENSP00000436712"

<400> 8377

Met	Ile	Lys	Asp	Asp	Gly	Thr	Val	Ile	His	Phe	Asn	Asn	Pro	Lys	Val
1				5				10						15	

Gln	Ala	Ser	Leu	Ser	Ala	Asn	Thr	Phe	Ala	Ile	Thr	Gly	His	Ala	Glu
			20					25					30		

Ala	Lys	Pro	Ile	Thr	Glu	Met	Leu	Pro	Gly	Ile	Leu	Ser	Gln	Leu	Gly
		35					40					45			

Ala	Asp	Ser	Leu	Thr	Ser	Leu	Arg	Lys	Leu	Ala	Glu	Gln	Phe	Pro	Arg
	50					55					60				

Gln	Val	Leu	Asp	Ser	Lys	Ala	Pro	Lys	Pro	Glu	Asp	Ile	Asp	Glu	Glu
65					70					75					80

Asp	Asp	Asp	Val	Pro	Asp	Leu	Val	Glu	Asn	Phe	Asp	Glu	Ala	Ser	Lys
				85					90					95	

Asn	Glu	Ala	Asn
			100

<210> 8378

<211> 503
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<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1741; "

<220>
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<223> /note="Gene Symbol: BIVM; "

<220>
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<223> /note="Gene Name:
basic, immunoglobulin-like variable motif containing; "

<220>
<221> source
<223> /note="Uniprot ID: Q86UB2; "

<220>
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<223> /note="ENSP ID: ENSP00000257336"

<400> 8378

Met	Pro	Asn	Val	Ala	Glu	Thr	Glu	Arg	Ser	Asn	Asp	Ser	Gly	Asn	Gly
1				5				10					15		

Glu	His	Lys	Ser	Glu	Arg	Lys	Ser	Pro	Glu	Glu	Asn	Leu	Gln	Gly	Ala
			20					25					30		

Val	Lys	Ser	Phe	Cys	Thr	Ser	Ala	Ser	Gly	Ala	Pro	Leu	Gly	Pro	Lys
		35					40					45			

Gly	Asp	Gly	His	Tyr	Pro	Trp	Ser	Cys	Pro	Val	Thr	His	Thr	Arg	Glu
	50					55					60				

Lys	Ile	Tyr	Ala	Ile	Cys	Ser	Asp	Tyr	Ala	Phe	Leu	Asn	Gln	Ala	Thr
65				70					75					80	

Ser	Ile	Tyr	Lys	Thr	Pro	Asn	Pro	Ser	Arg	Ser	Pro	Cys	Leu	Pro	Asp
				85					90					95	

Ser	Thr	Ser	Leu	Ser	Ala	Gly	Asn	Asn	Ser	Ser	Arg	Tyr	Ile	Gly	Ile
			100					105					110		

Pro	Thr	Ser	Thr	Ser	Glu	Ile	Ile	Tyr	Asn	Glu	Glu	Asn	Ser	Leu	Glu
		115					120					125			

```
Asn Leu Ser Asn Ser Leu Gly Lys Leu Pro Leu Ala Trp Glu Ile Asp
    130                 135                 140

Lys Ser Glu Phe Asp Gly Val Thr Thr Asn Ser Lys His Lys Ser Gly
145                 150                 155                 160

Asn Ala Lys Lys Gln Val Ser Lys Arg Lys Thr Ser Asp Lys Lys Gly
                165                 170                 175

Arg Tyr Gln Lys Glu Cys Pro Gln His Ser Pro Leu Glu Asp Ile Lys
            180                 185                 190

Gln Arg Lys Val Leu Asp Leu Arg Arg Trp Tyr Cys Ile Ser Arg Pro
        195                 200                 205

Gln Tyr Lys Thr Ser Cys Gly Ile Ser Ser Leu Ile Ser Cys Trp Asn
    210                 215                 220

Phe Leu Tyr Ser Thr Met Gly Ala Gly Asn Leu Pro Pro Ile Thr Gln
225                 230                 235                 240

Glu Glu Ala Leu His Ile Leu Gly Phe Gln Pro Pro Phe Glu Asp Ile
                245                 250                 255

Arg Phe Gly Pro Phe Thr Gly Asn Thr Thr Leu Met Arg Trp Phe Arg
            260                 265                 270

Gln Ile Asn Asp His Phe His Val Lys Gly Cys Ser Tyr Val Leu Tyr
        275                 280                 285

Lys Pro His Gly Lys Asn Lys Thr Ala Gly Glu Thr Ala Ser Gly Ala
    290                 295                 300

Leu Ser Lys Leu Thr Arg Gly Leu Lys Asp Glu Ser Leu Ala Tyr Ile
305                 310                 315                 320

Tyr His Cys Gln Asn His Tyr Phe Cys Pro Ile Gly Phe Glu Ala Thr
                325                 330                 335

Pro Val Lys Ala Asn Lys Ala Phe Ser Arg Gly Pro Leu Ser Pro Gln
            340                 345                 350
```

```
Glu Val Glu Tyr Trp Ile Leu Ile Gly Glu Ser Ser Arg Lys His Pro
        355                 360                 365

Ala Ile His Cys Lys Lys Trp Ala Asp Ile Val Thr Asp Leu Asn Thr
    370                 375                 380

Gln Asn Pro Glu Tyr Leu Asp Ile Arg His Leu Glu Arg Gly Leu Gln
385                 390                 395                 400

Tyr Arg Lys Thr Lys Lys Val Gly Gly Asn Leu His Cys Ile Ile Ala
                405                 410                 415

Phe Gln Arg Leu Asn Trp Gln Arg Phe Gly Leu Trp Asn Phe Pro Phe
            420                 425                 430

Gly Thr Ile Arg Gln Glu Ser Gln Pro Pro Thr His Ala Gln Gly Ile
        435                 440                 445

Ala Lys Ser Glu Ser Glu Asp Asn Ile Ser Lys Lys Gln His Gly Arg
    450                 455                 460

Leu Gly Arg Ser Phe Ser Ala Ser Phe His Gln Asp Ser Ala Trp Lys
465                 470                 475                 480

Lys Met Ser Ser Ile His Glu Arg Arg Asn Ser Gly Tyr Gln Gly Tyr
                485                 490                 495

Ser Asp Tyr Asp Gly Asn Asp
            500


<210> 8379
<211> 281
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<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1741; "

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<223> /note="Gene Symbol: BIVM; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q86UB2; "

<220>
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<400> 8379
Met Gly Ala Gly Asn Leu Pro Pro Ile Thr Gln Glu Glu Ala Leu His
1   5   10   15

Ile Leu Gly Phe Gln Pro Pro Phe Glu Asp Ile Arg Phe Gly Pro Phe
            20   25   30

Thr Gly Asn Thr Thr Leu Met Arg Trp Phe Arg Gln Ile Asn Asp His
        35   40   45

Phe His Val Lys Gly Cys Ser Tyr Val Leu Tyr Lys Pro His Gly Lys
    50   55   60

Asn Lys Thr Ala Gly Glu Thr Ala Ser Gly Ala Leu Ser Lys Leu Thr
65   70   75   80

Arg Gly Leu Lys Asp Glu Ser Leu Ala Tyr Ile Tyr His Cys Gln Asn
                85   90   95

His Tyr Phe Cys Pro Ile Gly Phe Glu Ala Thr Pro Val Lys Ala Asn
            100   105   110

Lys Ala Phe Ser Arg Gly Pro Leu Ser Pro Gln Glu Val Glu Tyr Trp
        115   120   125

Ile Leu Ile Gly Glu Ser Ser Arg Lys His Pro Ala Ile His Cys Lys
    130   135   140

Lys Trp Ala Asp Ile Val Thr Asp Leu Asn Thr Gln Asn Pro Glu Tyr
145   150   155   160

Leu Asp Ile Arg His Leu Glu Arg Gly Leu Gln Tyr Arg Lys Thr Lys
                165   170   175

Lys Pro Thr Phe Phe Ser Ser Gln Val Gly Gly Asn Leu His Cys Ile
            180   185   190

```
Ile Ala Phe Gln Arg Leu Asn Trp Gln Arg Phe Gly Leu Trp Asn Phe
        195                 200                 205

Pro Phe Gly Thr Ile Arg Gln Glu Ser Gln Pro Pro Thr His Ala Gln
    210                 215                 220

Gly Ile Ala Lys Ser Glu Ser Glu Asp Asn Ile Ser Lys Lys Gln His
225                 230                 235                 240

Gly Arg Leu Gly Arg Ser Phe Ser Ala Ser Phe His Gln Asp Ser Ala
                245                 250                 255

Trp Lys Lys Met Ser Ser Ile His Glu Arg Arg Asn Ser Gly Tyr Gln
            260                 265                 270

Gly Tyr Ser Asp Tyr Asp Gly Asn Asp
        275                 280


<210> 8380
<211> 385
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1742; "

<220>
<221> source
<223> /note="Gene Symbol: BSG; "

<220>
<221> source
<223> /note="Gene Name:
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      blood group); "

<220>
<221> source
<223> /note="Uniprot ID:  P35613; "

<220>
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<223> /note="ENSP ID: ENSP00000333769"

<400> 8380
Met Ala Ala Ala Leu Phe Val Leu Leu Gly Phe Ala Leu Leu Gly Thr
1               5                   10                  15
```

```
His Gly Ala Ser Gly Ala Ala Gly Phe Val Gln Ala Pro Leu Ser Gln
            20                  25                  30

Gln Arg Trp Val Gly Gly Ser Val Glu Leu His Cys Glu Ala Val Gly
        35                  40                  45

Ser Pro Val Pro Glu Ile Gln Trp Trp Phe Glu Gly Gln Gly Pro Asn
    50                  55                  60

Asp Thr Cys Ser Gln Leu Trp Asp Gly Ala Arg Leu Asp Arg Val His
65                  70                  75                  80

Ile His Ala Thr Tyr His Gln His Ala Ala Ser Thr Ile Ser Ile Asp
                85                  90                  95

Thr Leu Val Glu Glu Asp Thr Gly Thr Tyr Glu Cys Arg Ala Ser Asn
            100                 105                 110

Asp Pro Asp Arg Asn His Leu Thr Arg Ala Pro Arg Val Lys Trp Val
        115                 120                 125

Arg Ala Gln Ala Val Val Leu Val Leu Glu Pro Gly Thr Val Phe Thr
    130                 135                 140

Thr Val Glu Asp Leu Gly Ser Lys Ile Leu Leu Thr Cys Ser Leu Asn
145                 150                 155                 160

Asp Ser Ala Thr Glu Val Thr Gly His Arg Trp Leu Lys Gly Gly Val
                165                 170                 175

Val Leu Lys Glu Asp Ala Leu Pro Gly Gln Lys Thr Glu Phe Lys Val
            180                 185                 190

Asp Ser Asp Asp Gln Trp Gly Glu Tyr Ser Cys Val Phe Leu Pro Glu
        195                 200                 205

Pro Met Gly Thr Ala Asn Ile Gln Leu His Gly Pro Pro Arg Val Lys
    210                 215                 220

Ala Val Lys Ser Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu
225                 230                 235                 240

Val Cys Lys Ser Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr
```

245 250 255

Lys Ile Thr Asp Ser Glu Asp Lys Ala Leu Met Asn Gly Ser Glu Ser
260 265 270

Arg Phe Phe Val Ser Ser Ser Gln Gly Arg Ser Glu Leu His Ile Glu
275 280 285

Asn Leu Asn Met Glu Ala Asp Pro Gly Gln Tyr Arg Cys Asn Gly Thr
290 295 300

Ser Ser Lys Gly Ser Asp Gln Ala Ile Ile Thr Leu Arg Val Arg Ser
305 310 315 320

His Leu Ala Ala Leu Trp Pro Phe Leu Gly Ile Val Ala Glu Val Leu
325 330 335

Val Leu Val Thr Ile Ile Phe Ile Tyr Glu Lys Arg Arg Lys Pro Glu
340 345 350

Asp Val Leu Asp Asp Asp Asp Ala Gly Ser Ala Pro Leu Lys Ser Ser
355 360 365

Gly Gln His Gln Asn Asp Lys Gly Lys Asn Val Arg Gln Arg Asn Ser
370 375 380

Ser
385

<210> 8381
<211> 269
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1742; "

<220>
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<223> /note="Gene Symbol: BSG; "

<220>
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<223> /note="Gene Name:
basigin (Ok
blood group); "

<220>
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<223> /note="Uniprot ID: P35613; "

<220>
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<223> /note="ENSP ID: ENSP00000343809"

<400> 8381
Met Ala Ala Ala Leu Phe Val Leu Leu Gly Phe Ala Leu Leu Gly Thr
1   5   10   15

His Gly Ala Ser Gly Ala Ala Gly Thr Val Phe Thr Thr Val Glu Asp
            20   25   30

Leu Gly Ser Lys Ile Leu Leu Thr Cys Ser Leu Asn Asp Ser Ala Thr
        35   40   45

Glu Val Thr Gly His Arg Trp Leu Lys Gly Gly Val Val Leu Lys Glu
    50   55   60

Asp Ala Leu Pro Gly Gln Lys Thr Glu Phe Lys Val Asp Ser Asp Asp
65   70   75   80

Gln Trp Gly Glu Tyr Ser Cys Val Phe Leu Pro Glu Pro Met Gly Thr
                85   90   95

Ala Asn Ile Gln Leu His Gly Pro Pro Arg Val Lys Ala Val Lys Ser
            100   105   110

Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu Val Cys Lys Ser
        115   120   125

Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys Ile Thr Asp
    130   135   140

Ser Glu Asp Lys Ala Leu Met Asn Gly Ser Glu Ser Arg Phe Phe Val
145   150   155   160

Ser Ser Ser Gln Gly Arg Ser Glu Leu His Ile Glu Asn Leu Asn Met
                165   170   175

Glu Ala Asp Pro Gly Gln Tyr Arg Cys Asn Gly Thr Ser Ser Lys Gly
            180   185   190

```
Ser Asp Gln Ala Ile Ile Thr Leu Arg Val Arg Ser His Leu Ala Ala
        195                 200                 205


Leu Trp Pro Phe Leu Gly Ile Val Ala Glu Val Leu Val Leu Val Thr
    210                 215                 220


Ile Ile Phe Ile Tyr Glu Lys Arg Arg Lys Pro Glu Asp Val Leu Asp
225                 230                 235                 240


Asp Asp Asp Ala Gly Ser Ala Pro Leu Lys Ser Ser Gly Gln His Gln
                245                 250                 255


Asn Asp Lys Gly Lys Asn Val Arg Gln Arg Asn Ser Ser
            260                 265


<210> 8382
<211> 205
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<400> 8382
Met Lys Gln Ser Asp Ala Ser Pro Gln Glu Arg Val Asp Ser Asp Asp
1               5                   10                  15


Gln Trp Gly Glu Tyr Ser Cys Val Phe Leu Pro Glu Pro Met Gly Thr
            20                  25                  30
```

```
Ala Asn Ile Gln Leu His Gly Pro Pro Arg Val Lys Ala Val Lys Ser
        35                  40                  45

Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu Val Cys Lys Ser
    50                  55                  60

Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys Ile Thr Asp
65                  70                  75                  80

Ser Glu Asp Lys Ala Leu Met Asn Gly Ser Glu Ser Arg Phe Phe Val
                85                  90                  95

Ser Ser Ser Gln Gly Arg Ser Glu Leu His Ile Glu Asn Leu Asn Met
            100                 105                 110

Glu Ala Asp Pro Gly Gln Tyr Arg Cys Asn Gly Thr Ser Ser Lys Gly
        115                 120                 125

Ser Asp Gln Ala Ile Ile Thr Leu Arg Val Arg Ser His Leu Ala Ala
    130                 135                 140

Leu Trp Pro Phe Leu Gly Ile Val Ala Glu Val Leu Val Leu Val Thr
145                 150                 155                 160

Ile Ile Phe Ile Tyr Glu Lys Arg Arg Lys Pro Glu Asp Val Leu Asp
                165                 170                 175

Asp Asp Asp Ala Gly Ser Ala Pro Leu Lys Ser Ser Gly Gln His Gln
            180                 185                 190

Asn Asp Lys Gly Lys Asn Val Arg Gln Arg Asn Ser Ser
        195                 200                 205


<210> 8383
<211> 160
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="Gene Symbol: BSG; "
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blood group); "

<220>
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<223> /note="ENSP ID: ENSP00000458665"

<400> 8383
Met Ala Ala Ala Leu Phe Val Leu Leu Gly Phe Ala Leu Leu Gly Thr
1 5 10 15

His Gly Ala Ser Gly Ala Glu Asp Leu Gly Ser Lys Ile Leu Leu Thr
20 25 30

Cys Ser Leu Asn Asp Ser Ala Thr Glu Val Thr Gly His Arg Trp Leu
35 40 45

Lys Gly Gly Val Val Leu Lys Glu Asp Ala Leu Pro Gly Gln Lys Thr
50 55 60

Glu Phe Lys Val Asp Ser Asp Asp Gln Trp Gly Glu Tyr Ser Cys Val
65 70 75 80

Phe Leu Pro Glu Pro Met Gly Thr Ala Asn Ile Gln Leu His Gly Pro
85 90 95

Pro Arg Val Lys Ala Val Lys Ser Ser Glu His Ile Asn Glu Gly Glu
100 105 110

Thr Ala Met Leu Val Cys Lys Ser Glu Ser Val Pro Pro Val Thr Asp
115 120 125

Trp Ala Trp Tyr Lys Ile Thr Asp Ser Glu Asp Lys Ala Leu Met Asn
130 135 140

Gly Ser Glu Ser Arg Phe Phe Val Ser Ser Ser Gln Gly Arg Ser Glu
145 150 155 160

<210> 8384
<211> 84
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<220>
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<223> /note="Gene Symbol: BSG; "

<220>
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<223> /note="Gene Name:
basigin (Ok
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473393"

<400> 8384
Met Gly Thr Ala Asn Ile Gln Leu His Gly Pro Pro Arg Val Lys Ala
1 5 10 15

Val Lys Ser Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu Val
20 25 30

Cys Lys Ser Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys
35 40 45

Ile Thr Asp Ser Glu Asp Lys Ala Leu Met Asn Gly Ser Glu Ser Arg
50 55 60

Phe Phe Val Ser Ser Ser Gln Gly Arg Ser Glu Leu His Ile Glu Asn
65 70 75 80

Leu Asn Met Glu

<210> 8385
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Name:
basigin (Ok
blood group); "

<220>
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<223> /note="ENSP ID: ENSP00000473528"

<400> 8385
Met Gly Thr Ala Asn Ile Gln Leu His Gly Pro Pro Arg Val Lys Ala
1 5 10 15

Val Lys Ser Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu Val
20 25 30

Cys Lys Ser Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys
35 40 45

Ile Thr Asp Ser
50

<210> 8386
<211> 176
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1742; "

<220>
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basigin (Ok
blood group); "

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<220>
<221> source
<223> /note="ENSP ID: ENSP00000473664"

<400> 8386
Met Gly Thr Ala Asn Ile Gln Leu His Gly Pro Pro Arg Val Lys Ala
1 5 10 15

```
Val Lys Ser Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu Val
            20                  25                  30

Cys Lys Ser Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys
        35                  40                  45

Ile Thr Asp Ser Glu Asp Lys Ala Leu Met Asn Gly Ser Glu Ser Arg
    50                  55                  60

Phe Phe Val Ser Ser Ser Gln Gly Arg Ser Glu Leu His Ile Glu Asn
65                  70                  75                  80

Leu Asn Met Glu Ala Asp Pro Gly Gln Tyr Arg Cys Asn Gly Thr Ser
                85                  90                  95

Ser Lys Gly Ser Asp Gln Ala Ile Ile Thr Leu Arg Val Arg Ser His
            100                 105                 110

Leu Ala Ala Leu Trp Pro Phe Leu Gly Ile Val Ala Glu Val Leu Val
        115                 120                 125

Leu Val Thr Ile Ile Phe Ile Tyr Glu Lys Arg Arg Lys Pro Glu Asp
    130                 135                 140

Val Leu Asp Asp Asp Asp Ala Gly Ser Ala Pro Leu Lys Ser Ser Gly
145                 150                 155                 160

Gln His Gln Asn Asp Lys Gly Lys Asn Val Arg Gln Arg Asn Ser Ser
                165                 170                 175


<210> 8387
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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blood group); "

<220>
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<223> /note="ENSP ID: ENSP00000478958"

<400> 8387
Met Ala Ala Ala Leu Phe Val Leu Leu Gly Phe Ala Leu Leu Gly Thr
1 5 10 15

His Gly Ala Ser Gly Ala Gly Pro Pro Arg Val Lys Ala Val Lys Ser
20 25 30

Ser Glu His Ile Asn Glu Gly Glu Thr Ala Met Leu Val Cys Lys Ser
35 40 45

Glu Ser Val Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys Ile Thr Asp
50 55 60

Ser Glu Asp Lys Ala Leu Met Asn Gly Ser Glu Ser Arg Phe Phe Val
65 70 75 80

Ser Ser Ser Gln Gly Arg Ser Glu Leu His Ile Glu Asn Leu Asn Met
85 90 95

Glu Ala Asp Pro Gly Gln Tyr Arg Cys Asn Gly Thr Ser Ser Lys Gly
100 105 110

Ser Asp Gln Ala Ile Ile Thr Leu Arg Val Arg Ser His Leu Ala Ala
115 120 125

Leu Trp Pro Phe Leu Gly Ile Val Ala Glu Val Leu Val Leu Val Thr
130 135 140

Ile Ile Phe Ile Tyr Glu Lys Arg Arg Lys Pro Glu Asp Val Leu Asp
145 150 155 160

Asp Asp Asp Ala Gly Ser Ala Pro Leu Lys Ser Ser Gly Gln His Gln
165 170 175

Asn Asp Lys Gly Lys Asn Val Arg Gln Arg Asn Ser Ser
180 185

<210> 8388
<211> 55

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
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blood group); "

<220>
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<223> /note="ENSP ID: ENSP00000484624"

<400> 8388
Met Ala Ala Ala Leu Phe Val Leu Leu Gly Phe Ala Leu Leu Gly Thr
1 5 10 15

His Gly Ala Ser Gly Ala Ala Gly Thr Val Phe Thr Thr Val Glu Asp
20 25 30

Leu Gly Ser Lys Ile Leu Leu Thr Cys Ser Leu Asn Asp Ser Ala Thr
35 40 45

Glu Gln Arg Ala Ala Pro Glu
50 55

<210> 8389
<211> 221
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1742; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
basigin (Ok
blood group); "

<220>
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<223> /note="ENSP ID: ENSP00000484849"

<400> 8389
Met Ala Ala Ala Leu Phe Val Leu Leu Gly Phe Ala Leu Leu Gly Thr
1   5   10   15

His Gly Ala Ser Gly Ala Val Phe Thr Thr Val Glu Asp Leu Gly Ser
            20   25   30

Lys Ile Leu Leu Thr Cys Ser Leu Asn Asp Ser Ala Thr Glu Val Thr
        35   40   45

Gly His Arg Trp Leu Lys Gly Gly Val Val Leu Lys Glu Asp Ala Leu
    50   55   60

Pro Gly Gln Lys Thr Glu Phe Lys Val Asp Ser Asp Asp Gln Trp Gly
65   70   75   80

Glu Tyr Ser Cys Val Phe Leu Pro Glu Pro Met Gly Thr Ala Asn Ile
                85   90   95

Gln Leu His Gly Pro Pro Arg Val Lys Ala Val Lys Ser Ser Glu His
            100   105   110

Ile Asn Glu Gly Glu Thr Ala Met Leu Val Cys Lys Ser Glu Ser Val
        115   120   125

Pro Pro Val Thr Asp Trp Ala Trp Tyr Lys Ile Thr Asp Ser Glu Asp
    130   135   140

Lys Ala Leu Met Asn Gly Ser Glu Ser Arg Phe Phe Val Ser Ser Ser
145   150   155   160

Gln Gly Arg Ser Glu Leu His Ile Glu Asn Leu Asn Met Glu Ala Asp
                165   170   175

Pro Gly Gln Tyr Arg Cys Asn Gly Thr Ser Ser Lys Gly Ser Asp Gln
            180   185   190

Ala Ile Ile Thr Leu Arg Val Arg Ser His Leu Ala Ala Leu Trp Pro
        195   200   205

```
Phe Leu Gly Ile Val Ala Glu Val Leu Val Leu Val Thr
    210                 215                 220


<210> 8390
<211> 994
<212> PRT
<213> Homo sapiens

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      basonuclin 1; "

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<223> /note="Uniprot ID:  Q01954; "

<220>
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<400> 8390
Met Arg Arg Arg Pro Pro Ser Arg Gly Gly Arg Gly Ala Ala Arg Ala
1               5                   10                  15


Arg Glu Thr Arg Arg Gln Pro Arg His Arg Ser Gly Arg Arg Met Ala
            20                  25                  30


Glu Ala Ile Ser Cys Thr Leu Asn Cys Ser Cys Gln Ser Phe Lys Pro
        35                  40                  45


Gly Lys Ile Asn His Arg Gln Cys Asp Gln Cys Lys His Gly Trp Val
    50                  55                  60


Ala His Ala Leu Ser Lys Leu Arg Ile Pro Pro Met Tyr Pro Thr Ser
65                  70                  75                  80


Gln Val Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu
                85                  90                  95


Met Leu Tyr Gly Thr Gln Ala Ile Pro Val Arg Leu Lys Ile Leu Leu
            100                 105                 110
```

```
Asp Arg Leu Phe Ser Val Leu Lys Gln Asp Glu Val Leu Gln Ile Leu
        115                 120                 125

His Ala Leu Asp Trp Thr Leu Gln Asp Tyr Ile Arg Gly Tyr Val Leu
    130                 135                 140

Gln Asp Ala Ser Gly Lys Val Leu Asp His Trp Ser Ile Met Thr Ser
145                 150                 155                 160

Glu Glu Glu Val Ala Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr
                165                 170                 175

Lys Ser Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Glu Gln Ser
            180                 185                 190

Ile Ile Ile Pro Pro Ser Thr Ala Asn Val Asp Ile Arg Ala Phe Ile
        195                 200                 205

Glu Ser Cys Ser His Arg Ser Ser Ser Leu Pro Thr Pro Val Asp Lys
    210                 215                 220

Gly Asn Pro Ser Ser Ile His Pro Phe Glu Asn Leu Ile Ser Asn Met
225                 230                 235                 240

Thr Phe Met Leu Pro Phe Gln Phe Phe Asn Pro Leu Pro Pro Ala Leu
                245                 250                 255

Ile Gly Ser Leu Pro Glu Gln Tyr Met Leu Glu Gln Gly His Asp Gln
            260                 265                 270

Ser Gln Asp Pro Lys Gln Glu Val His Gly Pro Phe Pro Asp Ser Ser
        275                 280                 285

Phe Leu Thr Ser Ser Ser Thr Pro Phe Gln Val Glu Lys Asp Gln Cys
    290                 295                 300

Leu Asn Cys Pro Asp Ala Ile Thr Lys Lys Glu Asp Ser Thr His Leu
305                 310                 315                 320

Ser Asp Ser Ser Ser Tyr Asn Ile Val Thr Lys Phe Glu Arg Thr Gln
                325                 330                 335
```

```
Leu Ser Pro Glu Ala Lys Val Lys Pro Glu Arg Asn Ser Leu Gly Thr
            340                 345                 350

Lys Lys Gly Arg Val Phe Cys Thr Ala Cys Glu Lys Thr Phe Tyr Asp
        355                 360                 365

Lys Gly Thr Leu Lys Ile His Tyr Asn Ala Val His Leu Lys Ile Lys
    370                 375                 380

His Lys Cys Thr Ile Glu Gly Cys Asn Met Val Phe Ser Ser Leu Arg
385                 390                 395                 400

Ser Arg Asn Arg His Ser Ala Asn Pro Asn Pro Arg Leu His Met Pro
                405                 410                 415

Met Asn Arg Asn Asn Arg Asp Lys Asp Leu Arg Asn Ser Leu Asn Leu
            420                 425                 430

Ala Ser Ser Glu Asn Tyr Lys Cys Pro Gly Phe Thr Val Thr Ser Pro
        435                 440                 445

Asp Cys Arg Pro Pro Pro Ser Tyr Pro Gly Ser Gly Glu Asp Ser Lys
    450                 455                 460

Gly Gln Pro Ala Phe Pro Asn Ile Gly Gln Asn Gly Val Leu Phe Pro
465                 470                 475                 480

Asn Leu Lys Thr Val Gln Pro Val Leu Pro Phe Tyr Arg Ser Pro Ala
                485                 490                 495

Thr Pro Ala Glu Val Ala Asn Thr Pro Gly Ile Leu Pro Ser Leu Pro
            500                 505                 510

Leu Leu Ser Ser Ser Ile Pro Glu Gln Leu Ile Ser Asn Glu Met Pro
        515                 520                 525

Phe Asp Ala Leu Pro Lys Lys Lys Ser Arg Lys Ser Ser Met Pro Ile
    530                 535                 540

Lys Ile Glu Lys Glu Ala Val Glu Ile Ala Asn Glu Lys Arg His Asn
545                 550                 555                 560
```

```
Leu Ser Ser Asp Glu Asp Met Pro Leu Gln Val Val Ser Glu Asp Glu
                565                 570                 575

Gln Glu Ala Cys Ser Pro Gln Ser His Arg Val Ser Glu Glu Gln His
            580                 585                 590

Val Gln Ser Gly Gly Leu Gly Lys Pro Phe Pro Glu Gly Glu Arg Pro
        595                 600                 605

Cys His Arg Glu Ser Val Ile Glu Ser Ser Gly Ala Ile Ser Gln Thr
    610                 615                 620

Pro Glu Gln Ala Thr His Asn Ser Glu Arg Glu Thr Glu Gln Thr Pro
625                 630                 635                 640

Ala Leu Ile Met Val Pro Arg Glu Val Glu Asp Gly Gly His Glu His
                645                 650                 655

Tyr Phe Thr Pro Gly Met Glu Pro Gln Val Pro Phe Ser Asp Tyr Met
            660                 665                 670

Glu Leu Gln Gln Arg Leu Leu Ala Gly Gly Leu Phe Ser Ala Leu Ser
        675                 680                 685

Asn Arg Gly Met Ala Phe Pro Cys Leu Glu Asp Ser Lys Glu Leu Glu
    690                 695                 700

His Val Gly Gln His Ala Leu Ala Arg Gln Ile Glu Glu Asn Arg Phe
705                 710                 715                 720

Gln Cys Asp Ile Cys Lys Lys Thr Phe Lys Asn Ala Cys Ser Val Lys
                725                 730                 735

Ile His His Lys Asn Met His Val Lys Glu Met His Thr Cys Thr Val
            740                 745                 750

Glu Gly Cys Asn Ala Thr Phe Pro Ser Arg Arg Ser Arg Asp Arg His
        755                 760                 765

Ser Ser Asn Leu Asn Leu His Gln Lys Ala Leu Ser Gln Glu Ala Leu
    770                 775                 780

Glu Ser Ser Glu Asp His Phe Arg Ala Ala Tyr Leu Leu Lys Asp Val
```

785 790 795 800

Ala Lys Glu Ala Tyr Gln Asp Val Ala Phe Thr Gln Gln Ala Ser Gln
805 810 815

Thr Ser Val Ile Phe Lys Gly Thr Ser Arg Met Gly Ser Leu Val Tyr
820 825 830

Pro Ile Thr Gln Val His Ser Ala Ser Leu Glu Ser Tyr Asn Ser Gly
835 840 845

Pro Leu Ser Glu Gly Thr Ile Leu Asp Leu Ser Thr Thr Ser Ser Met
850 855 860

Lys Ser Glu Ser Ser Ser His Ser Ser Trp Asp Ser Asp Gly Val Ser
865 870 875 880

Glu Glu Gly Thr Val Leu Met Glu Asp Ser Asp Gly Asn Cys Glu Gly
885 890 895

Ser Ser Leu Val Pro Gly Glu Asp Glu Tyr Pro Ile Cys Val Leu Met
900 905 910

Glu Lys Ala Asp Gln Ser Leu Ala Ser Leu Pro Ser Gly Leu Pro Ile
915 920 925

Thr Cys His Leu Cys Gln Lys Thr Tyr Ser Asn Lys Gly Thr Phe Arg
930 935 940

Ala His Tyr Lys Thr Val His Leu Arg Gln Leu His Lys Cys Lys Val
945 950 955 960

Pro Gly Cys Asn Thr Met Phe Ser Ser Val Arg Ser Arg Asn Arg His
965 970 975

Ser Gln Asn Pro Asn Leu His Lys Ser Leu Ala Ser Ser Pro Ser His
980 985 990

Leu Gln

<210> 8391
<211> 987

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
basonuclin 1; "

<220>
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<223> /note="ENSP ID: ENSP00000456727"

<400> 8391
Met Arg Cys Arg Asn Met Phe Phe Ser Phe Lys Ala Ser Leu Cys Gly
1 5 10 15

Cys Gly Ala Ala Thr Ala Pro Ser Leu Thr Ala Ile Ser Cys Thr Leu
20 25 30

Asn Cys Ser Cys Gln Ser Phe Lys Pro Gly Lys Ile Asn His Arg Gln
35 40 45

Cys Asp Gln Cys Lys His Gly Trp Val Ala His Ala Leu Ser Lys Leu
50 55 60

Arg Ile Pro Pro Met Tyr Pro Thr Ser Gln Val Glu Ile Val Gln Ser
65 70 75 80

Asn Val Val Phe Asp Ile Ser Ser Leu Met Leu Tyr Gly Thr Gln Ala
85 90 95

Ile Pro Val Arg Leu Lys Ile Leu Leu Asp Arg Leu Phe Ser Val Leu
100 105 110

Lys Gln Asp Glu Val Leu Gln Ile Leu His Ala Leu Asp Trp Thr Leu
115 120 125

Gln Asp Tyr Ile Arg Gly Tyr Val Leu Gln Asp Ala Ser Gly Lys Val
130 135 140

```
Leu Asp His Trp Ser Ile Met Thr Ser Glu Glu Glu Val Ala Thr Leu
145                 150                 155                 160

Gln Gln Phe Leu Arg Phe Gly Glu Thr Lys Ser Ile Val Glu Leu Met
                165                 170                 175

Ala Ile Gln Glu Lys Glu Glu Gln Ser Ile Ile Ile Pro Pro Ser Thr
            180                 185                 190

Ala Asn Val Asp Ile Arg Ala Phe Ile Glu Ser Cys Ser His Arg Ser
        195                 200                 205

Ser Ser Leu Pro Thr Pro Val Asp Lys Gly Asn Pro Ser Ser Ile His
    210                 215                 220

Pro Phe Glu Asn Leu Ile Ser Asn Met Thr Phe Met Leu Pro Phe Gln
225                 230                 235                 240

Phe Phe Asn Pro Leu Pro Pro Ala Leu Ile Gly Ser Leu Pro Glu Gln
                245                 250                 255

Tyr Met Leu Glu Gln Gly His Asp Gln Ser Gln Asp Pro Lys Gln Glu
            260                 265                 270

Val His Gly Pro Phe Pro Asp Ser Ser Phe Leu Thr Ser Ser Ser Thr
        275                 280                 285

Pro Phe Gln Val Glu Lys Asp Gln Cys Leu Asn Cys Pro Asp Ala Ile
    290                 295                 300

Thr Lys Lys Glu Asp Ser Thr His Leu Ser Asp Ser Ser Ser Tyr Asn
305                 310                 315                 320

Ile Val Thr Lys Phe Glu Arg Thr Gln Leu Ser Pro Glu Ala Lys Val
                325                 330                 335

Lys Pro Glu Arg Asn Ser Leu Gly Thr Lys Lys Gly Arg Val Phe Cys
            340                 345                 350

Thr Ala Cys Glu Lys Thr Phe Tyr Asp Lys Gly Thr Leu Lys Ile His
        355                 360                 365

Tyr Asn Ala Val His Leu Lys Ile Lys His Lys Cys Thr Ile Glu Gly
```

370 375 380

Cys Asn Met Val Phe Ser Ser Leu Arg Ser Arg Asn Arg His Ser Ala
385 390 395 400

Asn Pro Asn Pro Arg Leu His Met Pro Met Asn Arg Asn Asn Arg Asp
405 410 415

Lys Asp Leu Arg Asn Ser Leu Asn Leu Ala Ser Ser Glu Asn Tyr Lys
420 425 430

Cys Pro Gly Phe Thr Val Thr Ser Pro Asp Cys Arg Pro Pro Pro Ser
435 440 445

Tyr Pro Gly Ser Gly Glu Asp Ser Lys Gly Gln Pro Ala Phe Pro Asn
450 455 460

Ile Gly Gln Asn Gly Val Leu Phe Pro Asn Leu Lys Thr Val Gln Pro
465 470 475 480

Val Leu Pro Phe Tyr Arg Ser Pro Ala Thr Pro Ala Glu Val Ala Asn
485 490 495

Thr Pro Gly Ile Leu Pro Ser Leu Pro Leu Leu Ser Ser Ser Ile Pro
500 505 510

Glu Gln Leu Ile Ser Asn Glu Met Pro Phe Asp Ala Leu Pro Lys Lys
515 520 525

Lys Ser Arg Lys Ser Ser Met Pro Ile Lys Ile Glu Lys Glu Ala Val
530 535 540

Glu Ile Ala Asn Glu Lys Arg His Asn Leu Ser Ser Asp Glu Asp Met
545 550 555 560

Pro Leu Gln Val Val Ser Glu Asp Glu Gln Glu Ala Cys Ser Pro Gln
565 570 575

Ser His Arg Val Ser Glu Glu Gln His Val Gln Ser Gly Gly Leu Gly
580 585 590

Lys Pro Phe Pro Glu Gly Glu Arg Pro Cys His Arg Glu Ser Val Ile
595 600 605

```
Glu Ser Ser Gly Ala Ile Ser Gln Thr Pro Glu Gln Ala Thr His Asn
    610                 615                 620

Ser Glu Arg Glu Thr Glu Gln Thr Pro Ala Leu Ile Met Val Pro Arg
625                 630                 635                 640

Glu Val Glu Asp Gly Gly His Glu His Tyr Phe Thr Pro Gly Met Glu
                645                 650                 655

Pro Gln Val Pro Phe Ser Asp Tyr Met Glu Leu Gln Gln Arg Leu Leu
            660                 665                 670

Ala Gly Gly Leu Phe Ser Ala Leu Ser Asn Arg Gly Met Ala Phe Pro
        675                 680                 685

Cys Leu Glu Asp Ser Lys Glu Leu Glu His Val Gly Gln His Ala Leu
    690                 695                 700

Ala Arg Gln Ile Glu Glu Asn Arg Phe Gln Cys Asp Ile Cys Lys Lys
705                 710                 715                 720

Thr Phe Lys Asn Ala Cys Ser Val Lys Ile His His Lys Asn Met His
                725                 730                 735

Val Lys Glu Met His Thr Cys Thr Val Glu Gly Cys Asn Ala Thr Phe
            740                 745                 750

Pro Ser Arg Arg Ser Arg Asp Arg His Ser Ser Asn Leu Asn Leu His
        755                 760                 765

Gln Lys Ala Leu Ser Gln Glu Ala Leu Glu Ser Ser Glu Asp His Phe
    770                 775                 780

Arg Ala Ala Tyr Leu Leu Lys Asp Val Ala Lys Glu Ala Tyr Gln Asp
785                 790                 795                 800

Val Ala Phe Thr Gln Gln Ala Ser Gln Thr Ser Val Ile Phe Lys Gly
                805                 810                 815

Thr Ser Arg Met Gly Ser Leu Val Tyr Pro Ile Thr Gln Val His Ser
            820                 825                 830
```

```
Ala Ser Leu Glu Ser Tyr Asn Ser Gly Pro Leu Ser Glu Gly Thr Ile
        835                 840                 845

Leu Asp Leu Ser Thr Thr Ser Ser Met Lys Ser Glu Ser Ser Ser His
    850                 855                 860

Ser Ser Trp Asp Ser Asp Gly Val Ser Glu Glu Gly Thr Val Leu Met
865                 870                 875                 880

Glu Asp Ser Asp Gly Asn Cys Glu Gly Ser Ser Leu Val Pro Gly Glu
                885                 890                 895

Asp Glu Tyr Pro Ile Cys Val Leu Met Glu Lys Ala Asp Gln Ser Leu
            900                 905                 910

Ala Ser Leu Pro Ser Gly Leu Pro Ile Thr Cys His Leu Cys Gln Lys
        915                 920                 925

Thr Tyr Ser Asn Lys Gly Thr Phe Arg Ala His Tyr Lys Thr Val His
    930                 935                 940

Leu Arg Gln Leu His Lys Cys Lys Val Pro Gly Cys Asn Thr Met Phe
945                 950                 955                 960

Ser Ser Val Arg Ser Arg Asn Arg His Ser Gln Asn Pro Asn Leu His
                965                 970                 975

Lys Ser Leu Ala Ser Ser Pro Ser His Leu Gln
            980                 985


<210> 8392
<211> 993
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1743; "

<220>
<221> source
<223> /note="Gene Symbol: BNC1; "

<220>
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<223> /note="Gene Name:
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basonuclin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478817"

<400> 8392

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Met Arg Arg Arg Pro Glu Pro Gly Arg Thr Arg Gly Gly Arg Ala Arg
1               5                   10                  15

Glu Thr Arg Arg Gln Pro Arg His Arg Ser Gly Arg Arg Met Ala Glu
            20                  25                  30

Ala Ile Ser Cys Thr Leu Asn Cys Ser Cys Gln Ser Phe Lys Pro Gly
        35                  40                  45

Lys Ile Asn His Arg Gln Cys Asp Gln Cys Lys His Gly Trp Val Ala
    50                  55                  60

His Ala Leu Ser Lys Leu Arg Ile Pro Pro Met Tyr Pro Thr Ser Gln
65                  70                  75                  80

Val Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu Met
                85                  90                  95

Leu Tyr Gly Thr Gln Ala Ile Pro Val Arg Leu Lys Ile Leu Leu Asp
            100                 105                 110

Arg Leu Phe Ser Val Leu Lys Gln Asp Glu Val Leu Gln Ile Leu His
        115                 120                 125

Ala Leu Asp Trp Thr Leu Gln Asp Tyr Ile Arg Gly Tyr Val Leu Gln
    130                 135                 140

Asp Ala Ser Gly Lys Val Leu Asp His Trp Ser Ile Met Thr Ser Glu
145                 150                 155                 160

Glu Glu Val Ala Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr Lys
                165                 170                 175

Ser Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Glu Gln Ser Ile
            180                 185                 190

Ile Ile Pro Pro Ser Thr Ala Asn Val Asp Ile Arg Ala Phe Ile Glu
        195                 200                 205
```

```
Ser Cys Ser His Arg Ser Ser Ser Leu Pro Thr Pro Val Asp Lys Gly
    210                 215                 220

Asn Pro Ser Ser Ile His Pro Phe Glu Asn Leu Ile Ser Asn Met Thr
225                 230                 235                 240

Phe Met Leu Pro Phe Gln Phe Phe Asn Pro Leu Pro Pro Ala Leu Ile
                245                 250                 255

Gly Ser Leu Pro Glu Gln Tyr Met Leu Glu Gln Gly His Asp Gln Ser
            260                 265                 270

Gln Asp Pro Lys Gln Glu Val His Gly Pro Phe Pro Asp Ser Ser Phe
        275                 280                 285

Leu Thr Ser Ser Ser Thr Pro Phe Gln Val Glu Lys Asp Gln Cys Leu
    290                 295                 300

Asn Cys Pro Asp Ala Ile Thr Lys Lys Glu Asp Ser Thr His Leu Ser
305                 310                 315                 320

Asp Ser Ser Ser Tyr Asn Ile Val Thr Lys Phe Glu Arg Thr Gln Leu
                325                 330                 335

Ser Pro Glu Ala Lys Val Lys Pro Glu Arg Asn Ser Leu Gly Thr Lys
            340                 345                 350

Lys Gly Arg Val Phe Cys Thr Ala Cys Glu Lys Thr Phe Tyr Asp Lys
        355                 360                 365

Gly Thr Leu Lys Ile His Tyr Asn Ala Val His Leu Lys Ile Lys His
    370                 375                 380

Lys Cys Thr Ile Glu Gly Cys Asn Met Val Phe Ser Ser Leu Arg Ser
385                 390                 395                 400

Arg Asn Arg His Ser Ala Asn Pro Asn Pro Arg Leu His Met Pro Met
                405                 410                 415

Asn Arg Asn Asn Arg Asp Lys Asp Leu Arg Asn Ser Leu Asn Leu Ala
            420                 425                 430
```

```
Ser Ser Glu Asn Tyr Lys Cys Pro Gly Phe Thr Val Thr Ser Pro Asp
        435                 440                 445

Cys Arg Pro Pro Pro Ser Tyr Pro Gly Ser Gly Glu Asp Ser Lys Gly
    450                 455                 460

Gln Pro Ala Phe Pro Asn Ile Gly Gln Asn Gly Val Leu Phe Pro Asn
465                 470                 475                 480

Leu Lys Thr Val Gln Pro Val Leu Pro Phe Tyr Arg Ser Pro Ala Thr
                485                 490                 495

Pro Ala Glu Val Ala Asn Thr Pro Gly Ile Leu Pro Ser Leu Pro Leu
            500                 505                 510

Leu Ser Ser Ser Ile Pro Glu Gln Leu Ile Ser Asn Glu Met Pro Phe
        515                 520                 525

Asp Ala Leu Pro Lys Lys Lys Ser Arg Lys Ser Ser Met Pro Ile Lys
    530                 535                 540

Ile Glu Lys Glu Ala Val Glu Ile Ala Asn Glu Lys Arg His Asn Leu
545                 550                 555                 560

Ser Ser Asp Glu Asp Met Pro Leu Gln Val Val Ser Glu Asp Glu Gln
                565                 570                 575

Glu Ala Cys Ser Pro Gln Ser His Arg Val Ser Glu Glu Gln His Val
            580                 585                 590

Gln Ser Gly Gly Leu Gly Lys Pro Phe Pro Glu Gly Glu Arg Pro Cys
        595                 600                 605

His Arg Glu Ser Val Ile Glu Ser Ser Gly Ala Ile Ser Gln Thr Pro
    610                 615                 620

Glu Gln Ala Thr His Asn Ser Glu Arg Glu Thr Glu Gln Thr Pro Ala
625                 630                 635                 640

Leu Ile Met Val Pro Arg Glu Val Glu Asp Gly Gly His Glu His Tyr
                645                 650                 655
```

```
Phe Thr Pro Gly Met Glu Pro Gln Val Pro Phe Ser Asp Tyr Met Glu
            660                 665                 670

Leu Gln Gln Arg Leu Leu Ala Gly Gly Leu Phe Ser Ala Leu Ser Asn
        675                 680                 685

Arg Gly Met Ala Phe Pro Cys Leu Glu Asp Ser Lys Glu Leu Glu His
    690                 695                 700

Val Gly Gln His Ala Leu Ala Arg Gln Ile Glu Glu Asn Arg Phe Gln
705                 710                 715                 720

Cys Asp Ile Cys Lys Lys Thr Phe Lys Asn Ala Cys Ser Val Lys Ile
                725                 730                 735

His His Lys Asn Met His Val Lys Glu Met His Thr Cys Thr Val Glu
            740                 745                 750

Gly Cys Asn Ala Thr Phe Pro Ser Arg Arg Ser Arg Asp Arg His Ser
        755                 760                 765

Ser Asn Leu Asn Leu His Gln Lys Ala Leu Ser Gln Glu Ala Leu Glu
    770                 775                 780

Ser Ser Glu Asp His Phe Arg Ala Ala Tyr Leu Leu Lys Asp Val Ala
785                 790                 795                 800

Lys Glu Ala Tyr Gln Asp Val Ala Phe Thr Gln Gln Ala Ser Gln Thr
                805                 810                 815

Ser Val Ile Phe Lys Gly Thr Ser Arg Met Gly Ser Leu Val Tyr Pro
            820                 825                 830

Ile Thr Gln Val His Ser Ala Ser Leu Glu Ser Tyr Asn Ser Gly Pro
        835                 840                 845

Leu Ser Glu Gly Thr Ile Leu Asp Leu Ser Thr Thr Ser Ser Met Lys
    850                 855                 860

Ser Glu Ser Ser Ser His Ser Ser Trp Asp Ser Asp Gly Val Ser Glu
865                 870                 875                 880

Glu Gly Thr Val Leu Met Glu Asp Ser Asp Gly Asn Cys Glu Gly Ser
```

885 890 895

Ser Leu Val Pro Gly Glu Asp Glu Tyr Pro Ile Cys Val Leu Met Glu
900 905 910

Lys Ala Asp Gln Ser Leu Ala Ser Leu Pro Ser Gly Leu Pro Ile Thr
915 920 925

Cys His Leu Cys Gln Lys Thr Tyr Ser Asn Lys Gly Thr Phe Arg Ala
930 935 940

His Tyr Lys Thr Val His Leu Arg Gln Leu His Lys Cys Lys Val Pro
945 950 955 960

Gly Cys Asn Thr Met Phe Ser Ser Val Arg Ser Arg Asn Arg His Ser
965 970 975

Gln Asn Pro Asn Leu His Lys Ser Leu Ala Ser Ser Pro Ser His Leu
980 985 990

Gln

<210> 8393
<211> 294
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370041"

<400> 8393
Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly
1 5 10 15

```
Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln
            20                  25                  30

Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys Phe Gln Pro
        35                  40                  45

Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His Gly Trp Val
    50                  55                  60

Ala His Ala Leu Asp Lys Leu Ser Thr Gln His Leu Tyr His Pro Thr
65                  70                  75                  80

Gln Val Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu
                85                  90                  95

Met Leu Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu
            100                 105                 110

Asp Arg Leu Phe Ser Val Leu Lys Gln Glu Glu Val Leu His Ile Leu
        115                 120                 125

His Gly Leu Gly Trp Thr Leu Arg Asp Tyr Val Arg Gly Tyr Ile Leu
    130                 135                 140

Gln Asp Ala Ala Gly Lys Val Leu Asp Arg Trp Ala Ile Met Ser Arg
145                 150                 155                 160

Glu Glu Glu Ile Ile Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr
                165                 170                 175

Lys Ser Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Gly Gln Ala
            180                 185                 190

Val Ala Val Pro Ser Ser Lys Thr Asp Ser Asp Ile Arg Thr Phe Ile
        195                 200                 205

Glu Ser Asn Asn Arg Thr Arg Ser Pro Ser Leu Leu Ala His Leu Glu
    210                 215                 220

Asn Ser Asn Pro Ser Ser Ile His His Phe Glu Asn Ile Pro Asn Ser
225                 230                 235                 240
```

```
Leu Ala Phe Leu Leu Pro Phe Gln Tyr Ile Asn Pro Val Ser Ala Pro
                245                 250                 255

Leu Leu Gly Leu Pro Pro Asn Gly Leu Leu Leu Glu Gln Pro Gly Leu
            260                 265                 270

Arg Leu Arg Glu Pro Ser Leu Ser Thr Gln Asn Glu Tyr Asn Glu Ser
        275                 280                 285

Ser Glu Ser Glu Val Ser
    290
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<210> 8394
<211> 1032
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000370042"

<400> 8394

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Met Ala His Leu Gly Pro Thr Pro Pro Pro His Ser Leu Asn Tyr Lys
1               5                   10                  15

Ser Glu Asp Arg Leu Ser Glu Gln Asp Trp Pro Ala Tyr Phe Lys Val
            20                  25                  30

Pro Cys Cys Gly Val Asp Thr Ser Gln Ile Glu Ala Ile Arg Cys Thr
        35                  40                  45

Leu Val Asn Cys Thr Cys Glu Cys Phe Gln Pro Gly Lys Ile Asn Leu
    50                  55                  60

Arg Thr Cys Asp Gln Cys Lys His Gly Trp Val Ala His Ala Leu Asp
65                  70                  75                  80
```

```
Lys Leu Ser Thr Gln His Leu Tyr His Pro Thr Gln Val Glu Ile Val
                85                  90                  95

Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu Met Leu Tyr Gly Thr
            100                 105                 110

Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu Asp Arg Leu Phe Ser
        115                 120                 125

Val Leu Lys Gln Glu Glu Val Leu His Ile Leu His Gly Leu Gly Trp
    130                 135                 140

Thr Leu Arg Asp Tyr Val Arg Gly Tyr Ile Leu Gln Asp Ala Ala Gly
145                 150                 155                 160

Lys Val Leu Asp Arg Trp Ala Ile Met Ser Arg Glu Glu Glu Ile Ile
                165                 170                 175

Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr Lys Ser Ile Val Glu
            180                 185                 190

Leu Met Ala Ile Gln Glu Lys Glu Gly Gln Ala Val Ala Val Pro Ser
        195                 200                 205

Ser Lys Thr Asp Ser Asp Ile Arg Thr Phe Ile Glu Ser Asn Asn Arg
    210                 215                 220

Thr Arg Ser Pro Ser Leu Leu Ala His Leu Glu Asn Ser Asn Pro Ser
225                 230                 235                 240

Ser Ile His His Phe Glu Asn Ile Pro Asn Ser Leu Ala Phe Leu Leu
                245                 250                 255

Pro Phe Gln Tyr Ile Asn Pro Val Ser Ala Pro Leu Leu Gly Leu Pro
            260                 265                 270

Pro Asn Gly Leu Leu Leu Glu Gln Pro Gly Leu Arg Leu Arg Glu Pro
        275                 280                 285

Ser Leu Ser Thr Gln Asn Glu Tyr Asn Glu Ser Ser Glu Ser Glu Val
    290                 295                 300
```

```
Ser Pro Thr Pro Tyr Lys Asn Asp Gln Thr Pro Asn Arg Asn Ala Leu
305                 310                 315                 320

Thr Ser Ile Thr Asn Val Glu Pro Lys Thr Glu Pro Ala Cys Val Ser
                325                 330                 335

Pro Ile Gln Asn Ser Ala Pro Val Ser Asp Leu Thr Lys Thr Glu His
            340                 345                 350

Pro Lys Ser Ser Phe Arg Ile His Arg Met Arg Arg Met Gly Ser Ala
        355                 360                 365

Ser Arg Lys Gly Arg Val Phe Cys Asn Ala Cys Gly Lys Thr Phe Tyr
    370                 375                 380

Asp Lys Gly Thr Leu Lys Ile His Tyr Asn Ala Val His Leu Lys Ile
385                 390                 395                 400

Lys His Arg Cys Thr Ile Glu Gly Cys Asn Met Val Phe Ser Ser Leu
                405                 410                 415

Arg Ser Arg Asn Arg His Ser Ala Asn Pro Asn Pro Arg Leu His Met
            420                 425                 430

Pro Met Leu Arg Asn Asn Arg Asp Lys Asp Leu Ile Arg Ala Thr Ser
        435                 440                 445

Gly Ala Ala Thr Pro Val Ile Ala Ser Thr Lys Ser Asn Leu Ala Leu
    450                 455                 460

Thr Ser Pro Gly Arg Pro Pro Met Gly Phe Thr Thr Pro Pro Leu Asp
465                 470                 475                 480

Pro Val Leu Gln Asn Pro Leu Pro Ser Gln Leu Val Phe Ser Gly Leu
                485                 490                 495

Lys Thr Val Gln Pro Val Pro Pro Phe Tyr Arg Ser Leu Leu Thr Pro
            500                 505                 510

Gly Glu Met Val Ser Pro Pro Thr Ser Leu Pro Thr Ser Pro Ile Ile
        515                 520                 525
```

```
Pro Thr Ser Gly Thr Ile Glu Gln His Pro Pro Pro Pro Ser Glu Pro
    530                 535                 540

Val Val Pro Ala Val Met Met Ala Thr His Glu Pro Ser Ala Asp Leu
545                 550                 555                 560

Ala Pro Lys Lys Lys Pro Arg Lys Ser Ser Met Pro Val Lys Ile Glu
                565                 570                 575

Lys Glu Ile Ile Asp Thr Ala Asp Glu Phe Asp Asp Glu Asp Asp Asp
            580                 585                 590

Pro Asn Asp Gly Gly Ala Val Val Asn Asp Met Ser His Asp Asn His
        595                 600                 605

Cys His Ser Gln Glu Glu Met Ser Pro Gly Met Ser Val Lys Asp Phe
    610                 615                 620

Ser Lys His Asn Arg Thr Arg Cys Ile Ser Arg Thr Glu Ile Arg Arg
625                 630                 635                 640

Ala Asp Ser Met Thr Ser Glu Asp Gln Glu Pro Glu Arg Asp Tyr Glu
                645                 650                 655

Asn Glu Ser Glu Ser Ser Glu Pro Lys Leu Gly Glu Glu Ser Met Glu
            660                 665                 670

Gly Asp Glu His Ile His Ser Glu Val Ser Glu Lys Val Leu Met Asn
        675                 680                 685

Ser Glu Arg Pro Asp Glu Asn His Ser Glu Pro Ser His Gln Asp Val
    690                 695                 700

Ile Lys Val Lys Glu Glu Phe Thr Asp Pro Thr Tyr Asp Met Phe Tyr
705                 710                 715                 720

Met Ser Gln Tyr Gly Leu Tyr Asn Gly Gly Gly Ala Ser Met Ala Ala
                725                 730                 735

Leu His Glu Ser Phe Thr Ser Ser Leu Asn Tyr Gly Ser Pro Gln Lys
            740                 745                 750

Phe Ser Pro Glu Gly Asp Leu Cys Ser Ser Pro Asp Pro Lys Ile Cys
```

```
        755                 760                 765

Tyr Val Cys Lys Lys Ser Phe Lys Ser Ser Tyr Ser Val Lys Leu His
    770                 775                 780

Tyr Arg Asn Val His Leu Lys Glu Met His Val Cys Thr Val Ala Gly
785                 790                 795                 800

Cys Asn Ala Ala Phe Pro Ser Arg Arg Ser Arg Asp Arg His Ser Ala
                805                 810                 815

Asn Ile Asn Leu His Arg Lys Leu Leu Thr Lys Glu Leu Asp Asp Met
            820                 825                 830

Gly Leu Asp Ser Ser Gln Pro Ser Leu Ser Lys Asp Leu Arg Asp Glu
        835                 840                 845

Phe Leu Val Lys Ile Tyr Gly Ala Gln His Pro Met Gly Leu Asp Val
    850                 855                 860

Arg Glu Asp Ala Ser Ser Pro Ala Gly Thr Glu Asp Ser His Leu Asn
865                 870                 875                 880

Gly Tyr Gly Arg Gly Met Ala Glu Asp Tyr Met Val Leu Asp Leu Ser
                885                 890                 895

Thr Thr Ser Ser Leu Gln Ser Ser Ser Ser Ile His Ser Ser Arg Glu
            900                 905                 910

Ser Asp Ala Gly Ser Asp Glu Gly Ile Leu Leu Asp Asp Ile Asp Gly
        915                 920                 925

Ala Ser Asp Ser Gly Glu Ser Ala His Lys Ala Glu Ala Pro Ala Leu
    930                 935                 940

Pro Gly Ser Leu Gly Ala Glu Val Ser Gly Ser Leu Met Phe Ser Ser
945                 950                 955                 960

Leu Ser Gly Ser Asn Gly Gly Ile Met Cys Asn Ile Cys His Lys Met
                965                 970                 975

Tyr Ser Asn Lys Gly Thr Leu Arg Val His Tyr Lys Thr Val His Leu
            980                 985                 990
```

Arg Glu Met His Lys Cys Lys Val Pro Gly Cys Asn Met Met Phe
Ser
        995   1000   1005

Ser Val Arg Ser Arg Asn Arg His Ser Gln Asn Pro Asn Leu His
    1010   1015   1020

Lys Asn Ile Pro Phe Thr Ser Val Asp
    1025   1030

<210> 8395
<211> 1099
<212> PRT
<213> Homo sapiens

<220>
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Met Ala His Leu Gly Pro Thr Pro Pro Pro His Ser Leu Asn Tyr Lys
1   5   10   15

Ser Glu Asp Arg Leu Ser Glu Gln Asp Trp Pro Ala Tyr Phe Lys Val
            20   25   30

Pro Cys Cys Gly Val Asp Thr Ser Gln Ile Glu Ser Glu Glu Ala Glu
        35   40   45

Val Asp Val Arg Glu Arg Glu Thr Gln Arg Asp Arg Glu Pro Lys Arg
    50   55   60

```
Ala Arg Asp Leu Thr Leu Arg Asp Ser Cys Thr Asp Asn Ser Met Gln
65                  70                  75                  80

Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly Thr Trp
                85                  90                  95

Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln Ala Ile
            100                 105                 110

Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys Phe Gln Pro Gly Lys
        115                 120                 125

Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His Gly Trp Val Ala His
    130                 135                 140

Ala Leu Asp Lys Leu Ser Thr Gln His Leu Tyr His Pro Thr Gln Val
145                 150                 155                 160

Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu Met Leu
                165                 170                 175

Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu Asp Arg
            180                 185                 190

Leu Phe Ser Val Leu Lys Gln Glu Glu Val Leu His Ile Leu His Gly
        195                 200                 205

Leu Gly Trp Thr Leu Arg Asp Tyr Val Arg Gly Tyr Ile Leu Gln Asp
    210                 215                 220

Ala Ala Gly Lys Val Leu Asp Arg Trp Ala Ile Met Ser Arg Glu Glu
225                 230                 235                 240

Glu Ile Ile Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr Lys Ser
                245                 250                 255

Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Gly Gln Ala Val Ala
            260                 265                 270

Val Pro Ser Ser Lys Thr Asp Ser Asp Ile Arg Thr Phe Ile Glu Ser
        275                 280                 285
```

```
Asn Asn Arg Thr Arg Ser Pro Ser Leu Leu Ala His Leu Glu Asn Ser
    290                 295                 300

Asn Pro Ser Ser Ile His His Phe Glu Asn Ile Pro Asn Ser Leu Ala
305                 310                 315                 320

Phe Leu Leu Pro Phe Gln Tyr Ile Asn Pro Val Ser Ala Pro Leu Leu
                325                 330                 335

Gly Leu Pro Pro Asn Gly Leu Leu Leu Glu Gln Pro Gly Leu Arg Leu
            340                 345                 350

Arg Glu Pro Ser Leu Ser Thr Gln Asn Glu Tyr Asn Glu Ser Ser Glu
        355                 360                 365

Ser Glu Val Ser Pro Thr Pro Tyr Lys Asn Asp Gln Thr Pro Asn Arg
    370                 375                 380

Asn Ala Leu Thr Ser Ile Thr Asn Val Glu Pro Lys Thr Glu Pro Ala
385                 390                 395                 400

Cys Val Ser Pro Ile Gln Asn Ser Ala Pro Val Ser Asp Leu Thr Lys
                405                 410                 415

Thr Glu His Pro Lys Ser Ser Phe Arg Ile His Arg Met Arg Arg Met
            420                 425                 430

Gly Ser Ala Ser Arg Lys Gly Arg Val Phe Cys Asn Ala Cys Gly Lys
        435                 440                 445

Thr Phe Tyr Asp Lys Gly Thr Leu Lys Ile His Tyr Asn Ala Val His
    450                 455                 460

Leu Lys Ile Lys His Arg Cys Thr Ile Glu Gly Cys Asn Met Val Phe
465                 470                 475                 480

Ser Ser Leu Arg Ser Arg Asn Arg His Ser Ala Asn Pro Asn Pro Arg
                485                 490                 495

Leu His Met Pro Met Leu Arg Asn Asn Arg Asp Lys Asp Leu Ile Arg
            500                 505                 510

Ala Thr Ser Gly Ala Ala Thr Pro Val Ile Ala Ser Thr Lys Ser Asn
```

```
        515                 520                 525

Leu Ala Leu Thr Ser Pro Gly Arg Pro Pro Met Gly Phe Thr Thr Pro
    530                 535                 540

Pro Leu Asp Pro Val Leu Gln Asn Pro Leu Pro Ser Gln Leu Val Phe
545                 550                 555                 560

Ser Gly Leu Lys Thr Val Gln Pro Val Pro Pro Phe Tyr Arg Ser Leu
                565                 570                 575

Leu Thr Pro Gly Glu Met Val Ser Pro Pro Thr Ser Leu Pro Thr Ser
            580                 585                 590

Pro Ile Ile Pro Thr Ser Gly Thr Ile Glu Gln His Pro Pro Pro Pro
        595                 600                 605

Ser Glu Pro Val Val Pro Ala Val Met Met Ala Thr His Glu Pro Ser
    610                 615                 620

Ala Asp Leu Ala Pro Lys Lys Lys Pro Arg Lys Ser Ser Met Pro Val
625                 630                 635                 640

Lys Ile Glu Lys Glu Ile Ile Asp Thr Ala Asp Glu Phe Asp Asp Glu
                645                 650                 655

Asp Asp Asp Pro Asn Asp Gly Gly Ala Val Val Asn Asp Met Ser His
            660                 665                 670

Asp Asn His Cys His Ser Gln Glu Glu Met Ser Pro Gly Met Ser Val
        675                 680                 685

Lys Asp Phe Ser Lys His Asn Arg Thr Arg Cys Ile Ser Arg Thr Glu
    690                 695                 700

Ile Arg Arg Ala Asp Ser Met Thr Ser Glu Asp Gln Glu Pro Glu Arg
705                 710                 715                 720

Asp Tyr Glu Asn Glu Ser Glu Ser Ser Glu Pro Lys Leu Gly Glu Glu
                725                 730                 735

Ser Met Glu Gly Asp Glu His Ile His Ser Glu Val Ser Glu Lys Val
            740                 745                 750
```

```
Leu Met Asn Ser Glu Arg Pro Asp Glu Asn His Ser Glu Pro Ser His
        755                 760                 765

Gln Asp Val Ile Lys Val Lys Glu Glu Phe Thr Asp Pro Thr Tyr Asp
    770                 775                 780

Met Phe Tyr Met Ser Gln Tyr Gly Leu Tyr Asn Gly Gly Gly Ala Ser
785                 790                 795                 800

Met Ala Ala Leu His Glu Ser Phe Thr Ser Ser Leu Asn Tyr Gly Ser
                805                 810                 815

Pro Gln Lys Phe Ser Pro Glu Gly Asp Leu Cys Ser Ser Pro Asp Pro
            820                 825                 830

Lys Ile Cys Tyr Val Cys Lys Lys Ser Phe Lys Ser Ser Tyr Ser Val
        835                 840                 845

Lys Leu His Tyr Arg Asn Val His Leu Lys Glu Met His Val Cys Thr
    850                 855                 860

Val Ala Gly Cys Asn Ala Ala Phe Pro Ser Arg Arg Ser Arg Asp Arg
865                 870                 875                 880

His Ser Ala Asn Ile Asn Leu His Arg Lys Leu Leu Thr Lys Glu Leu
                885                 890                 895

Asp Asp Met Gly Leu Asp Ser Ser Gln Pro Ser Leu Ser Lys Asp Leu
            900                 905                 910

Arg Asp Glu Phe Leu Val Lys Ile Tyr Gly Ala Gln His Pro Met Gly
        915                 920                 925

Leu Asp Val Arg Glu Asp Ala Ser Ser Pro Ala Gly Thr Glu Asp Ser
    930                 935                 940

His Leu Asn Gly Tyr Gly Arg Gly Met Ala Glu Asp Tyr Met Val Leu
945                 950                 955                 960

Asp Leu Ser Thr Thr Ser Ser Leu Gln Ser Ser Ser Ser Ile His Ser
                965                 970                 975
```

```
Ser Arg Glu Ser Asp Ala Gly Ser Asp Glu Gly Ile Leu Leu Asp Asp
            980                 985                 990


Ile Asp Gly Ala Ser Asp Ser Gly  Glu Ser Ala His Lys  Ala Glu
Ala
        995                 1000                1005


Pro Ala  Leu Pro Gly Ser Leu  Gly Ala Glu Val Ser  Gly Ser Leu
    1010                1015                1020


Met Phe  Ser Ser Leu Ser Gly  Ser Asn Gly Gly Ile  Met Cys Asn
    1025                1030                1035


Ile Cys  His Lys Met Tyr Ser  Asn Lys Gly Thr Leu  Arg Val His
    1040                1045                1050


Tyr Lys  Thr Val His Leu Arg  Glu Met His Lys Cys  Lys Val Pro
    1055                1060                1065


Gly Cys  Asn Met Met Phe Ser  Ser Val Arg Ser Arg  Asn Arg His
    1070                1075                1080


Ser Gln  Asn Pro Asn Leu His  Lys Asn Ile Pro Phe  Thr Ser Val
    1085                1090                1095


Asp
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<210> 8396
<211> 327
<212> PRT
<213> Homo sapiens

<220>
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basonuclin 2; "

<220>

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<400> 8396
Pro Ser Glu Pro Val Val Pro Ala Val Met Met Ala Thr His Glu Pro
1   5   10   15

Ser Ala Asp Leu Ala Pro Lys Lys Lys Pro Arg Lys Ser Ser Met Pro
            20   25   30

Val Lys Ile Glu Lys Glu Ile Ile Asp Thr Ala Asp Glu Phe Asp Asp
        35   40   45

Glu Asp Asp Asp Pro Asn Asp Gly Gly Ala Val Val Asn Asp Met Ser
    50   55   60

His Asp Asn His Cys His Ser Gln Glu Glu Met Ser Pro Gly Met Ser
65   70   75   80

Val Lys Asp Phe Ser Lys His Asn Arg Thr Arg Cys Ile Ser Arg Thr
                85   90   95

Glu Ile Arg Arg Ala Asp Ser Met Thr Ser Glu Asp Gln Glu Pro Glu
            100   105   110

Arg Asp Tyr Glu Asn Glu Ser Glu Ser Ser Glu Pro Lys Leu Gly Glu
        115   120   125

Glu Ser Met Glu Gly Asp Glu His Ile His Ser Glu Val Ser Glu Lys
    130   135   140

Val Leu Met Asn Ser Glu Arg Pro Asp Glu Asn His Ser Glu Pro Ser
145   150   155   160

His Gln Asp Val Ile Lys Val Lys Glu Glu Phe Thr Asp Pro Thr Tyr
                165   170   175

Asp Met Phe Tyr Met Ser Gln Tyr Gly Leu Tyr Asn Gly Gly Gly Ala
            180   185   190

Ser Met Ala Ala Leu His Glu Ser Phe Thr Ser Ser Leu Asn Tyr Gly
        195   200   205

Ser Pro Gln Lys Phe Ser Pro Glu Gly Asp Leu Cys Ser Ser Pro Asp

```
    210                 215                 220

Pro Lys Ile Cys Tyr Val Cys Lys Lys Ser Phe Lys Ser Ser Tyr Ser
225                 230                 235                 240

Val Lys Leu His Tyr Arg Asn Val His Leu Lys Glu Met His Val Cys
                245                 250                 255

Thr Val Ala Gly Cys Asn Ala Ala Phe Pro Ser Arg Arg Ser Arg Asp
            260                 265                 270

Arg Asn Arg Asn Leu Arg Met Glu Arg Thr Ile Gly Pro Gly His Arg
        275                 280                 285

Asp Ser Leu His Leu Arg Arg Gly Asn Ser Asn Arg Pro Gly Thr Cys
    290                 295                 300

Cys Leu His Thr Gly Asp Ser Leu Glu Glu Ser Val Ile Val Arg Ile
305                 310                 315                 320

Ser Cys Lys Arg Leu Glu Ser
                325


<210> 8397
<211> 860
<212> PRT
<213> Homo sapiens

<220>
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      basonuclin 2; "

<220>
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<400> 8397
Ser Glu Glu Ala Glu Val Asp Val Arg Glu Arg Glu Thr Gln Arg Asp
1               5                   10                  15
```

```
Arg Glu Pro Lys Arg Ala Arg Asp Leu Thr Leu Arg Asp Ser Cys Thr
            20                  25                  30

Asp Asn Ser Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly
        35                  40                  45

Phe Met Gly Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met
    50                  55                  60

Ser Gln Gln Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys
65                  70                  75                  80

Phe Gln Pro Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His
                85                  90                  95

Gly Trp Val Ala His Ala Leu Asp Lys Leu Ser Thr Gln His Leu Tyr
            100                 105                 110

His Pro Thr Gln Val Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile
        115                 120                 125

Ser Ser Leu Met Leu Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys
    130                 135                 140

Ile Leu Leu Asp Arg Leu Phe Ser Val Leu Lys Gln Glu Glu Val Leu
145                 150                 155                 160

His Ile Leu His Gly Leu Gly Trp Thr Leu Arg Asp Tyr Val Arg Gly
                165                 170                 175

Tyr Ile Leu Gln Asp Ala Ala Gly Lys Val Leu Asp Arg Trp Ala Ile
            180                 185                 190

Met Ser Arg Glu Glu Glu Ile Ile Thr Leu Gln Gln Phe Leu Arg Phe
        195                 200                 205

Gly Glu Thr Lys Ser Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu
    210                 215                 220

Gly Gln Ala Val Ala Val Pro Ser Ser Lys Thr Asp Ser Asp Ile Arg
225                 230                 235                 240
```

```
Thr Phe Ile Glu Ser Asn Asn Arg Thr Arg Ser Pro Ser Leu Leu Ala
                245                 250                 255

His Leu Glu Asn Ser Asn Pro Ser Ser Ile His His Phe Glu Asn Ile
            260                 265                 270

Pro Asn Ser Leu Ala Phe Leu Leu Pro Phe Gln Tyr Ile Asn Pro Val
        275                 280                 285

Ser Ala Pro Leu Leu Gly Leu Pro Pro Asn Gly Leu Leu Leu Glu Gln
    290                 295                 300

Pro Gly Leu Arg Leu Arg Glu Pro Ser Leu Ser Thr Gln Asn Glu Tyr
305                 310                 315                 320

Asn Glu Ser Ser Glu Ser Glu Val Ser Pro Thr Pro Tyr Lys Asn Asp
                325                 330                 335

Gln Thr Pro Asn Arg Asn Ala Leu Thr Ser Ile Thr Asn Val Glu Pro
            340                 345                 350

Lys Thr Glu Pro Ala Cys Val Ser Pro Ile Gln Asn Ser Ala Pro Val
        355                 360                 365

Ser Asp Leu Thr Lys Thr Glu His Pro Lys Ser Ser Phe Arg Ile His
    370                 375                 380

Arg Met Arg Arg Met Gly Ser Ala Ser Arg Lys Gly Arg Val Phe Cys
385                 390                 395                 400

Asn Ala Cys Gly Lys Thr Phe Tyr Asp Lys Gly Thr Leu Lys Ile His
                405                 410                 415

Tyr Asn Ala Val His Leu Lys Ile Lys His Arg Cys Thr Ile Glu Gly
            420                 425                 430

Cys Asn Met Val Phe Ser Ser Leu Arg Ser Arg Asn Arg His Ser Ala
        435                 440                 445

Asn Pro Asn Pro Arg Leu His Met Pro Met Leu Arg Asn Asn Arg Asp
    450                 455                 460

Lys Asp Leu Ile Arg Ala Thr Ser Gly Ala Ala Thr Pro Val Ile Ala
```

```
465                 470                 475                 480

Ser Thr Lys Ser Asn Leu Ala Leu Thr Ser Pro Gly Arg Pro Pro Met
                485                 490                 495

Gly Phe Thr Thr Pro Pro Leu Asp Pro Val Leu Gln Asn Pro Leu Pro
            500                 505                 510

Ser Gln Leu Val Phe Ser Gly Leu Lys Thr Val Gln Pro Val Pro Pro
        515                 520                 525

Phe Tyr Arg Ser Leu Leu Thr Pro Gly Glu Met Val Ser Pro Pro Thr
    530                 535                 540

Ser Leu Pro Thr Ser Pro Ile Ile Pro Thr Ser Gly Thr Ile Glu Gln
545                 550                 555                 560

His Pro Pro Pro Pro Ser Glu Pro Val Val Pro Ala Val Met Met Ala
                565                 570                 575

Thr His Glu Pro Ser Ala Asp Leu Ala Pro Lys Lys Lys Pro Arg Lys
            580                 585                 590

Ser Ser Met Pro Val Lys Ile Glu Lys Glu Ile Ile Asp Thr Ala Asp
        595                 600                 605

Glu Phe Asp Asp Glu Asp Asp Asp Pro Asn Asp Gly Gly Ala Val Val
    610                 615                 620

Asn Asp Met Ser His Asp Asn His Cys His Ser Gln Glu Glu Met Ser
625                 630                 635                 640

Pro Gly Met Ser Val Lys Asp Phe Ser Lys His Asn Arg Thr Arg Cys
                645                 650                 655

Ile Ser Arg Thr Glu Ile Arg Arg Ala Asp Ser Met Thr Ser Glu Asp
            660                 665                 670

Gln Glu Pro Glu Arg Asp Tyr Glu Asn Glu Ser Glu Ser Ser Glu Pro
        675                 680                 685

Lys Leu Gly Glu Glu Ser Met Glu Gly Asp Glu His Ile His Ser Glu
    690                 695                 700
```

```
Val Ser Glu Lys Val Leu Met Asn Ser Glu Arg Pro Asp Glu Asn His
705                 710                 715                 720

Ser Glu Pro Ser His Gln Asp Val Ile Lys Val Lys Glu Glu Phe Thr
                725                 730                 735

Asp Pro Thr Tyr Asp Met Phe Tyr Met Ser Gln Tyr Gly Leu Tyr Asn
            740                 745                 750

Gly Gly Gly Ala Ser Met Ala Ala Leu His Glu Ser Phe Thr Ser Ser
        755                 760                 765

Leu Asn Tyr Gly Ser Pro Gln Lys Phe Ser Pro Glu Gly Asp Leu Cys
    770                 775                 780

Ser Ser Pro Asp Pro Lys Ile Cys Tyr Val Cys Lys Lys Ser Phe Lys
785                 790                 795                 800

Ser Ser Tyr Ser Val Lys Leu His Tyr Arg Asn Val His Leu Lys Glu
                805                 810                 815

Met His Val Cys Thr Val Ala Gly Cys Asn Ala Ala Phe Pro Ser Arg
            820                 825                 830

Arg Ser Arg Asp Arg Asn Arg Asn Leu Arg Met Glu Arg Thr Ile Gly
        835                 840                 845

Pro Gly His Arg Asp Ser Leu His Leu Leu Pro Thr
    850                 855                 860


<210> 8398
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<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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<400> 8398

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Met Ala His Leu Gly Pro Thr Pro Pro His Ser Leu Asn Tyr Lys
1               5                  10                  15

Ser Glu Asp Arg Leu Ser Glu Gln Asp Trp Pro Ala Tyr Phe Lys Val
            20                  25                  30

Pro Cys Cys Gly Val Asp Thr Ser Gln Ile Glu Ser Glu Glu Ala Glu
        35                  40                  45

Val Asp Val Arg Glu Arg Glu Thr Gln Arg Asp Arg Glu Pro Lys Arg
    50                  55                  60

Ala Arg Asp Leu Thr Leu Arg Asp Ser Cys Thr Asp Asn Ser Met Gln
65                  70                  75                  80

Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly Thr Trp
                85                  90                  95

Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln Ala Ile
            100                 105                 110

Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys Phe Gln Pro Gly Lys
        115                 120                 125

Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His Gly Trp Val Ala His
    130                 135                 140

Ala Leu Asp Lys Leu Ser Thr Gln His Leu Tyr His Pro Thr Gln Val
145                 150                 155                 160

Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu Met Leu
                165                 170                 175

Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu Asp Arg
```

```
            180                 185                 190

Leu Phe Ser Val Leu Lys Gln Glu Glu Val Leu His Ile Leu His Gly
        195                 200                 205

Leu Gly Trp Thr Leu Arg Asp Tyr Val Arg Gly Tyr Ile Leu Gln Asp
    210                 215                 220

Ala Ala Gly Lys Val Leu Asp Arg Trp Ala Ile Met Ser Arg Glu Glu
225                 230                 235                 240

Glu Ile Ile Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr Lys Ser
                245                 250                 255

Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Gly Gln Ala Val Ala
            260                 265                 270

Val Pro Ser Ser Lys Thr Asp Ser Asp Ile Arg Thr Phe Ile Glu Ser
        275                 280                 285

Asn Asn Arg Thr Arg Ser Pro Ser Leu Leu Ala His Leu Glu Asn Ser
    290                 295                 300

Asn Pro Ser Ser Ile His His Phe Glu Asn Ile Pro Asn Ser Leu Ala
305                 310                 315                 320

Phe Leu Leu Pro Phe Gln Tyr Ile Asn Pro Val Ser Ala Pro Leu Leu
                325                 330                 335

Gly Leu Pro Pro Asn Gly Leu Leu Leu Glu Gln Pro Gly Leu Arg Leu
            340                 345                 350

Arg Glu Pro Ser Leu Ser Thr Gln Asn Glu Tyr Asn Glu Ser Ser Glu
        355                 360                 365

Ser Glu Val Ser Pro Thr Pro Tyr Lys Asn Asp Gln Thr Pro Asn Arg
    370                 375                 380

Asn Ala Leu Thr Ser Ile Thr Asn Val Glu Pro Lys Thr Glu Pro Ala
385                 390                 395                 400

Cys Val Ser Pro Ile Gln Asn Ser Ala Pro Val Ser Asp Leu Thr Lys
                405                 410                 415
```

```
Thr Glu His Pro Lys Ser Ser Phe Arg Ile His Arg Met Arg Arg Met
            420                 425                 430

Gly Ser Ala Ser Arg Lys Gly Arg Val Phe Cys Asn Ala Cys Gly Lys
        435                 440                 445

Thr Phe Tyr Asp Lys Gly Thr Leu Lys Ile His Tyr Asn Ala Val His
    450                 455                 460

Leu Lys Ile Lys His Arg Cys Thr Ile Glu Gly Cys Asn Met Val Phe
465                 470                 475                 480

Ser Ser Leu Arg Ser Arg Asn Arg His Ser Ala Asn Pro Asn Pro Arg
                485                 490                 495

Leu His Met Pro Met Leu Arg Asn Asn Arg Asp Lys Asp Leu Ile Arg
            500                 505                 510

Ala Thr Ser Gly Ala Ala Thr Pro Val Ile Ala Ser Thr Lys Ser Asn
        515                 520                 525

Leu Ala Leu Thr Ser Pro Gly Arg Pro Pro Met Gly Phe Thr Thr Pro
    530                 535                 540

Pro Leu Asp Pro Val Leu Gln Asn Pro Leu Pro Ser Gln Leu Val Phe
545                 550                 555                 560

Ser Gly Leu Lys Thr Val Gln Pro Val Pro Pro Phe Tyr Arg Ser Leu
                565                 570                 575

Leu Thr Pro Gly Glu Met Val Ser Pro Pro Thr Ser Leu Pro Thr Ser
            580                 585                 590

Pro Ile Ile Pro Thr Ser Gly Thr Ile Glu Gln His Pro Pro Pro Pro
        595                 600                 605

Ser Glu Pro Val Val Pro Ala Val Met Met Ala Thr His Glu Pro Ser
    610                 615                 620

Ala Asp Leu Ala Pro Lys Lys Lys Pro Arg Lys Ser Ser Met Pro Val
625                 630                 635                 640
```

```
Lys Ile Glu Lys Glu Ile Ile Asp Thr Ala Asp Glu Phe Asp Asp Glu
                645                 650                 655

Asp Asp Asp Pro Asn Asp Gly Gly Ala Val Val Asn Asp Met Ser His
            660                 665                 670

Asp Asn His Cys His Ser Gln Glu Glu Met Ser Pro Gly Met Ser Val
        675                 680                 685

Lys Asp Phe Ser Lys His Asn Arg Thr Arg Cys Ile Ser Arg Thr Glu
    690                 695                 700

Ile Arg Arg Ala Asp Ser Met Thr Ser Glu Asp Gln Glu Pro Glu Arg
705                 710                 715                 720

Asp Tyr Glu Asn Glu Ser Glu Ser Ser Glu Pro Lys Leu Gly Glu Glu
                725                 730                 735

Ser Met Glu Gly Asp Glu His Ile His Ser Glu Val Ser Glu Lys Val
            740                 745                 750

Leu Met Asn Ser Glu Arg Pro Asp Glu Asn His Ser Glu Pro Ser His
        755                 760                 765

Gln Asp Val Ile Lys Val Lys Glu Glu Phe Thr Asp Pro Thr Tyr Asp
    770                 775                 780

Met Phe Tyr Met Ser Gln Tyr Gly Leu Tyr Asn Gly Gly Gly Ala Ser
785                 790                 795                 800

Met Ala Ala Leu His Glu Ser Phe Thr Ser Ser Leu Asn Tyr Gly Ser
                805                 810                 815

Pro Gln Lys Phe Ser Pro Glu Gly Asp Leu Cys Ser Ser Pro Asp Pro
            820                 825                 830

Lys Ile Cys Tyr Val Cys Lys Lys Ser Phe Lys Ser Ser Tyr Ser Val
        835                 840                 845

Lys Leu His Tyr Arg Asn Val His Leu Lys Glu Met His Val Cys Thr
    850                 855                 860
```

```
Val Ala Gly Cys Asn Ala Ala Phe Pro Ser Arg Arg Ser Arg Asp Arg
865                 870                 875                 880

Tyr Trp Glu Lys Ser Asn Glu Gln Asn Gly Leu Leu Val Ser Trp Gly
                885                 890                 895

Glu Thr Leu Ser Ser Leu Lys
            900


<210> 8399
<211> 729
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
      basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444640"

<400> 8399
Met Leu Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu
1               5                   10                  15

Asp Arg Leu Phe Ser Val Leu Lys Gln Glu Glu Val Leu His Ile Leu
            20                  25                  30

His Gly Leu Gly Trp Thr Leu Arg Asp Tyr Val Arg Gly Tyr Ile Leu
        35                  40                  45

Gln Asp Ala Ala Gly Lys Val Leu Asp Arg Trp Ala Ile Met Ser Arg
    50                  55                  60

Glu Glu Glu Ile Ile Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr
65                  70                  75                  80

Lys Ser Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Gly Gln Ala
                85                  90                  95
```

```
Val Ala Val Pro Ser Ser Lys Thr Asp Ser Asp Ile Arg Thr Phe Ile
            100                 105                 110

Glu Ser Asn Asn Arg Thr Arg Ser Pro Ser Leu Leu Ala His Leu Glu
        115                 120                 125

Asn Ser Asn Pro Ser Ser Ile His His Phe Glu Asn Ile Pro Asn Ser
    130                 135                 140

Leu Ala Phe Leu Leu Pro Phe Gln Tyr Ile Asn Pro Val Ser Ala Pro
145                 150                 155                 160

Leu Leu Gly Leu Pro Pro Asn Gly Leu Leu Leu Glu Gln Pro Gly Leu
                165                 170                 175

Arg Leu Arg Glu Pro Ser Leu Ser Thr Gln Asn Glu Tyr Asn Glu Ser
            180                 185                 190

Ser Glu Ser Glu Val Ser Pro Thr Pro Tyr Lys Asn Asp Gln Thr Pro
        195                 200                 205

Asn Arg Asn Ala Leu Thr Ser Ile Thr Asn Val Glu Pro Lys Thr Glu
    210                 215                 220

Pro Ala Cys Val Ser Pro Ile Gln Asn Ser Ala Pro Val Ser Asp Leu
225                 230                 235                 240

Thr Lys Thr Glu His Pro Lys Ser Ser Phe Arg Ile His Arg Met Arg
                245                 250                 255

Arg Met Gly Ser Ala Ser Arg Lys Gly Arg Val Phe Cys Asn Ala Cys
            260                 265                 270

Gly Lys Thr Phe Tyr Asp Lys Gly Thr Leu Lys Ile His Tyr Asn Ala
        275                 280                 285

Val His Leu Lys Ile Lys His Arg Cys Thr Ile Glu Gly Cys Asn Met
    290                 295                 300

Val Phe Ser Ser Leu Arg Ser Arg Asn Arg His Ser Ala Asn Pro Asn
305                 310                 315                 320
```

Pro Arg Leu His Met Pro Met Leu Arg Asn Asn Arg Asp Lys Asp Leu
325 330 335

Ile Arg Ala Thr Ser Gly Ala Ala Thr Pro Val Ile Ala Ser Thr Lys
340 345 350

Ser Asn Leu Ala Leu Thr Ser Pro Gly Arg Pro Pro Met Gly Phe Thr
355 360 365

Thr Pro Pro Leu Asp Pro Val Leu Gln Asn Pro Leu Pro Ser Gln Leu
370 375 380

Val Phe Ser Gly Leu Lys Thr Val Gln Pro Val Pro Pro Phe Tyr Arg
385 390 395 400

Ser Leu Leu Thr Pro Gly Glu Met Val Ser Pro Pro Thr Ser Leu Pro
405 410 415

Thr Ser Pro Ile Ile Pro Thr Ser Gly Thr Ile Glu Gln His Pro Pro
420 425 430

Pro Pro Ser Glu Pro Val Val Pro Ala Val Met Met Ala Thr His Glu
435 440 445

Pro Ser Ala Asp Leu Ala Pro Lys Lys Lys Pro Arg Lys Ser Ser Met
450 455 460

Pro Val Lys Ile Glu Lys Glu Ile Ile Asp Thr Ala Asp Glu Phe Asp
465 470 475 480

Asp Glu Asp Asp Asp Pro Asn Asp Gly Gly Ala Val Val Asn Asp Met
485 490 495

Ser His Asp Asn His Cys His Ser Gln Glu Glu Met Ser Pro Gly Met
500 505 510

Ser Val Lys Asp Phe Ser Lys His Asn Arg Thr Arg Cys Ile Ser Arg
515 520 525

Thr Glu Ile Arg Arg Ala Asp Ser Met Thr Ser Glu Asp Gln Glu Pro
530 535 540

```
Glu Arg Asp Tyr Glu Asn Glu Ser Glu Ser Ser Glu Pro Lys Leu Gly
545                 550                 555                 560

Glu Glu Ser Met Glu Gly Asp Glu His Ile His Ser Glu Val Ser Glu
                565                 570                 575

Lys Val Leu Met Asn Ser Glu Arg Pro Asp Glu Asn His Ser Glu Pro
            580                 585                 590

Ser His Gln Asp Val Ile Lys Val Lys Glu Glu Phe Thr Asp Pro Thr
        595                 600                 605

Tyr Asp Met Phe Tyr Met Ser Gln Tyr Gly Leu Tyr Asn Gly Gly Gly
    610                 615                 620

Ala Ser Met Ala Ala Leu His Glu Ser Phe Thr Ser Ser Leu Asn Tyr
625                 630                 635                 640

Gly Ser Pro Gln Lys Phe Ser Pro Glu Gly Asp Leu Cys Ser Ser Pro
                645                 650                 655

Asp Pro Lys Ile Cys Tyr Val Cys Lys Lys Ser Phe Lys Ser Ser Tyr
            660                 665                 670

Ser Val Lys Leu His Tyr Arg Asn Val His Leu Lys Glu Met His Val
        675                 680                 685

Cys Thr Val Ala Gly Cys Asn Ala Ala Phe Pro Ser Arg Arg Ser Arg
    690                 695                 700

Asp Arg Asn Arg Asn Leu Arg Met Glu Arg Thr Ile Gly Pro Gly His
705                 710                 715                 720

Arg Asp Ser Leu His Leu Leu Pro Thr
                725

<210> 8400
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "
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<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473935"

<400> 8400
Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly
1 5 10 15

Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln
20 25 30

Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys Phe Gln Pro
35 40 45

Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His Gly Trp Val
50 55 60

Ala His Ala Leu Asp Lys Leu Ser Thr Gln His Leu Tyr His Pro Thr
65 70 75 80

Gln Val Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu
85 90 95

Met Leu Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu
100 105 110

Asp Arg Leu Phe Ser Val Leu Lys Gln
115 120

<210> 8401
<211> 245
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source

<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474045"

<400> 8401

```
Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly
1               5                  10                  15

Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln
            20                  25                  30

Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys Phe Gln Pro
        35                  40                  45

Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His Gly Trp Val
    50                  55                  60

Ala His Ala Leu Asp Lys Leu Ser Thr Gln His Leu Tyr His Pro Thr
65                  70                  75                  80

Gln Val Glu Ile Val Gln Ser Asn Val Val Phe Asp Ile Ser Ser Leu
                85                  90                  95

Met Leu Tyr Gly Thr Gln Ala Val Pro Val Arg Leu Lys Ile Leu Leu
            100                 105                 110

Asp Arg Leu Phe Ser Val Leu Lys Gln Glu Glu Val Leu His Ile Leu
        115                 120                 125

His Gly Leu Gly Trp Thr Leu Arg Asp Tyr Val Arg Gly Tyr Ile Leu
    130                 135                 140

Gln Asp Ala Ala Gly Lys Val Leu Asp Arg Trp Ala Ile Met Ser Arg
145                 150                 155                 160

Glu Glu Glu Ile Ile Thr Leu Gln Gln Phe Leu Arg Phe Gly Glu Thr
                165                 170                 175

Lys Ser Ile Val Glu Leu Met Ala Ile Gln Glu Lys Glu Gly Gln Ala
```

```
            180                 185                 190

Val Ala Val Pro Ser Ser Lys Thr Asp Ser Asp Ile Arg Thr Phe Ile
        195                 200                 205

Glu Ser Asn Asn Arg Thr Arg Ser Pro Ser Leu Leu Ala His Leu Glu
    210                 215                 220

Asn Ser Asn Pro Ser Ser Ile His His Phe Glu Asn Ile Pro Asn Ser
225                 230                 235                 240

Leu Ala Phe Leu Leu
                245


<210> 8402
<211> 109
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
      basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474468"

<400> 8402
Ser Glu Glu Ala Glu Val Asp Val Arg Glu Arg Glu Thr Gln Arg Asp
1               5                   10                  15

Arg Glu Pro Lys Arg Ala Arg Asp Leu Thr Leu Arg Asp Ser Cys Thr
            20                  25                  30

Asp Asn Ser Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly
        35                  40                  45

Phe Met Gly Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met
    50                  55                  60
```

```
Ser Gln Gln Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys
65                  70                  75                  80


Phe Gln Pro Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His
                85                  90                  95


Gly Trp Val Ala His Glu Thr Leu Lys Ser Cys Leu Gln
            100                 105


<210> 8403
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
      basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474647"

<400> 8403
Met Ser Glu Glu Ala Glu Val Asp Val Arg Glu Arg Glu Thr Gln Arg
1               5                   10                  15


Asp Arg Glu Pro Lys Arg Ala Arg Asp Leu Thr Leu Arg Asp Ser Cys
            20                  25                  30


Thr Asp Asn Ser Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro
        35                  40                  45


Gly Phe Met Gly Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg
    50                  55                  60


Met Ser Gln Gln Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu
65                  70                  75                  80


Cys Phe Gln Pro Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys
```

```
                85                  90                  95

His Gly Trp Val Ala His Ala Leu Asp Lys Leu Ser Thr Gln His Leu
            100                 105                 110

Tyr His Pro Thr Gln Val Glu Ile Val Gln Ser Asn Val Val Phe Asp
        115                 120                 125

Ile Ser Ser Leu Met Leu Tyr Gly Thr Gln Ala Val Pro Val Arg Leu
    130                 135                 140

Lys Ile Leu Leu Asp Arg Leu Phe Ser Val Leu Lys Gln Glu Glu Val
145                 150                 155                 160

Leu His Ile Leu
```

<210> 8404
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474832"

<400> 8404

```
Met Ala Ile Arg Cys Thr Leu Val Asn Cys Thr Cys Glu Cys Phe Gln
1               5                   10                  15

Pro Gly Lys Ile Asn Leu Arg Thr Cys Asp Gln Cys Lys His Gly Trp
            20                  25                  30

Val Ala His Glu Thr Leu Lys Ser Cys Leu Gln
        35                  40
```

<210> 8405
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477717"

<400> 8405
Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly
1 5 10 15

Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln
20 25 30

Ala Ile Arg Cys Thr Leu Val Asn
35 40

<210> 8406
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1744; "

<220>
<221> source
<223> /note="Gene Symbol: BNC2; "

<220>
<221> source
<223> /note="Gene Name:
basonuclin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482793"

<400> 8406
Met Gln Phe Gly Thr Arg Thr Thr Thr Ala Glu Pro Gly Phe Met Gly
1   5   10   15

Thr Trp Gln Asn Ala Asp Thr Asn Leu Leu Phe Arg Met Ser Gln Gln
            20   25   30

Ala Ile Arg Cys Thr Leu Val Asn
        35   40

<210> 8407
<211> 3926
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1745; "

<220>
<221> source
<223> /note="Gene Symbol: BSN; "

<220>
<221> source
<223> /note="Gene Name:
      bassoon presynaptic cytomatrix prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPA5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296452"

<400> 8407
Met Gly Asn Glu Val Ser Leu Glu Gly Gly Ala Gly Asp Gly Pro Leu
1   5   10   15

Pro Pro Gly Gly Ala Gly Pro Gly Pro Gly Pro Gly Pro Gly Pro Gly
            20   25   30

Ala Gly Lys Pro Pro Ser Ala Pro Ala Gly Gly Gly Gln Leu Pro Ala
        35   40   45

Ala Gly Ala Ala Arg Ser Thr Ala Val Pro Pro Val Pro Gly Pro Gly
    50   55   60

```
Pro Gly Pro Gly Pro Gly Pro Gly Pro Gly Ser Thr Ser Arg Arg Leu
65                  70                  75                  80

Asp Pro Lys Glu Pro Leu Gly Asn Gln Arg Ala Ala Ser Pro Thr Pro
                85                  90                  95

Lys Gln Ala Ser Ala Thr Thr Pro Gly His Glu Ser Pro Arg Glu Thr
            100                 105                 110

Arg Ala Gln Gly Pro Ala Gly Gln Glu Ala Asp Gly Pro Arg Arg Thr
        115                 120                 125

Leu Gln Val Asp Ser Arg Thr Gln Arg Ser Gly Arg Ser Pro Ser Val
    130                 135                 140

Ser Pro Asp Arg Gly Ser Thr Pro Thr Ser Pro Tyr Ser Val Pro Gln
145                 150                 155                 160

Ile Ala Pro Leu Pro Ser Ser Thr Leu Cys Pro Ile Cys Lys Thr Ser
                165                 170                 175

Asp Leu Thr Ser Thr Pro Ser Gln Pro Asn Phe Asn Thr Cys Thr Gln
            180                 185                 190

Cys His Asn Lys Val Cys Asn Gln Cys Gly Phe Asn Pro Asn Pro His
        195                 200                 205

Leu Thr Gln Val Lys Glu Trp Leu Cys Leu Asn Cys Gln Met Gln Arg
    210                 215                 220

Ala Leu Gly Met Asp Met Thr Thr Ala Pro Arg Ser Lys Ser Gln Gln
225                 230                 235                 240

Gln Leu His Ser Pro Ala Leu Ser Pro Ala His Ser Pro Ala Lys Gln
                245                 250                 255

Pro Leu Gly Lys Pro Asp Gln Glu Arg Ser Arg Gly Pro Gly Gly Pro
            260                 265                 270

Gln Pro Gly Ser Arg Gln Ala Glu Thr Ala Arg Ala Thr Ser Val Pro
        275                 280                 285

Gly Pro Ala Gln Ala Ala Ala Pro Pro Glu Val Gly Arg Val Ser Pro
```

```
    290                 295                 300

Gln Pro Pro Gln Pro Thr Lys Pro Ser Thr Ala Glu Pro Arg Pro Pro
305                 310                 315                 320

Ala Gly Glu Ala Pro Ala Lys Ser Ala Thr Ala Val Pro Ala Gly Leu
                325                 330                 335

Gly Ala Thr Glu Gln Thr Gln Glu Gly Leu Thr Gly Lys Leu Phe Gly
            340                 345                 350

Leu Gly Ala Ser Leu Leu Thr Gln Ala Ser Thr Leu Met Ser Val Gln
        355                 360                 365

Pro Glu Ala Asp Thr Gln Gly Gln Pro Ala Pro Ser Lys Gly Thr Pro
    370                 375                 380

Lys Ile Val Phe Asn Asp Ala Ser Lys Glu Ala Gly Pro Lys Pro Leu
385                 390                 395                 400

Gly Ser Gly Pro Gly Pro Gly Pro Ala Pro Gly Ala Lys Thr Glu Pro
                405                 410                 415

Gly Ala Arg Met Gly Pro Gly Ser Gly Pro Gly Ala Leu Pro Lys Thr
            420                 425                 430

Gly Gly Thr Thr Ser Pro Lys His Gly Arg Ala Glu His Gln Ala Ala
        435                 440                 445

Ser Lys Ala Ala Ala Lys Pro Lys Thr Met Pro Lys Glu Arg Ala Ile
    450                 455                 460

Cys Pro Leu Cys Gln Ala Glu Leu Asn Val Gly Ser Lys Ser Pro Ala
465                 470                 475                 480

Asn Tyr Asn Thr Cys Thr Thr Cys Arg Leu Gln Val Cys Asn Leu Cys
                485                 490                 495

Gly Phe Asn Pro Thr Pro His Leu Val Glu Lys Thr Glu Trp Leu Cys
            500                 505                 510

Leu Asn Cys Gln Thr Lys Arg Leu Leu Glu Gly Ser Leu Gly Glu Pro
        515                 520                 525
```

```
Thr Pro Leu Pro Pro Pro Thr Ser Gln Gln Pro Pro Val Gly Ala Pro
    530                 535                 540

His Arg Ala Ser Gly Thr Ser Pro Leu Lys Gln Lys Gly Pro Gln Gly
545                 550                 555                 560

Leu Gly Gln Pro Ser Gly Pro Leu Pro Ala Lys Ala Ser Pro Leu Ser
                565                 570                 575

Thr Lys Ala Ser Pro Leu Pro Ser Lys Ala Ser Pro Gln Ala Lys Pro
            580                 585                 590

Leu Arg Ala Ser Glu Pro Ser Lys Thr Pro Ser Ser Val Gln Glu Lys
        595                 600                 605

Lys Thr Arg Val Pro Thr Lys Ala Glu Pro Met Pro Lys Pro Pro Pro
    610                 615                 620

Glu Thr Thr Pro Thr Pro Ala Thr Pro Lys Val Lys Ser Gly Val Arg
625                 630                 635                 640

Arg Ala Glu Pro Ala Thr Pro Val Val Lys Ala Val Pro Glu Ala Pro
                645                 650                 655

Lys Gly Gly Glu Ala Glu Asp Leu Val Gly Lys Pro Tyr Ser Gln Asp
            660                 665                 670

Ala Ser Arg Ser Pro Gln Ser Leu Ser Asp Thr Gly Tyr Ser Ser Asp
        675                 680                 685

Gly Ile Ser Ser Ser Gln Ser Glu Ile Thr Gly Val Val Gln Gln Glu
    690                 695                 700

Val Glu Gln Leu Asp Ser Ala Gly Val Thr Gly Pro His Pro Pro Ser
705                 710                 715                 720

Pro Ser Glu Ile His Lys Val Gly Ser Ser Met Arg Pro Leu Leu Gln
                725                 730                 735

Ala Gln Gly Leu Ala Pro Ser Glu Arg Ser Lys Pro Leu Ser Ser Gly
            740                 745                 750
```

Thr Gly Glu Glu Gln Lys Gln Arg Pro His Ser Leu Ser Ile Thr Pro
755 760 765

Glu Ala Phe Asp Ser Asp Glu Glu Leu Glu Asp Ile Leu Glu Glu Asp
770 775 780

Glu Asp Ser Ala Glu Trp Arg Arg Arg Arg Glu Gln Gln Asp Thr Ala
785 790 795 800

Glu Ser Ser Asp Asp Phe Gly Ser Gln Leu Arg His Asp Tyr Val Glu
805 810 815

Asp Ser Ser Glu Gly Gly Leu Ser Pro Leu Pro Pro Gln Pro Pro Ala
820 825 830

Arg Ala Ala Glu Leu Thr Asp Glu Asp Phe Met Arg Arg Gln Ile Leu
835 840 845

Glu Met Ser Ala Glu Glu Asp Asn Leu Glu Glu Asp Asp Thr Ala Thr
850 855 860

Ser Gly Arg Gly Leu Ala Lys His Gly Thr Gln Lys Gly Gly Pro Arg
865 870 875 880

Pro Arg Pro Glu Pro Ser Gln Glu Pro Ala Ala Leu Pro Lys Arg Arg
885 890 895

Leu Pro His Asn Ala Thr Thr Gly Tyr Glu Glu Leu Leu Pro Glu Gly
900 905 910

Gly Ser Ala Glu Ala Thr Asp Gly Ser Gly Thr Leu Gln Gly Gly Leu
915 920 925

Arg Arg Phe Lys Thr Ile Glu Leu Asn Ser Thr Gly Ser Tyr Gly His
930 935 940

Glu Leu Asp Leu Gly Gln Gly Pro Asp Pro Ser Leu Asp Arg Glu Pro
945 950 955 960

Glu Leu Glu Met Glu Ser Leu Thr Gly Ser Pro Glu Asp Arg Ser Arg
965 970 975

```
Gly Glu His Ser Ser Thr Leu Pro Ala Ser Thr Pro Ser Tyr Thr Ser
            980                 985                 990

Gly Thr Ser Pro Thr Ser Leu Ser  Ser Leu Glu Glu Asp  Ser Asp
Ser
        995                1000                1005

Ser Pro  Ser Arg Arg Gln Arg  Leu Glu Glu Ala Lys  Gln Gln Arg
    1010                1015                1020

Lys Ala  Arg His Arg Ser His  Gly Pro Leu Leu Pro  Thr Ile Glu
    1025                1030                1035

Asp Ser  Ser Glu Glu Glu Glu  Leu Arg Glu Glu Glu  Glu Leu Leu
    1040                1045                1050

Arg Glu  Gln Glu Lys Met Arg  Glu Val Glu Gln Gln  Arg Ile Arg
    1055                1060                1065

Ser Thr  Ala Arg Lys Thr Arg  Arg Asp Lys Glu Glu  Leu Arg Ala
    1070                1075                1080

Gln Arg  Arg Arg Glu Arg Ser  Lys Thr Pro Pro Ser  Asn Leu Ser
    1085                1090                1095

Pro Ile  Glu Asp Ala Ser Pro  Thr Glu Glu Leu Arg  Gln Ala Ala
    1100                1105                1110

Glu Met  Glu Glu Leu His Arg  Ser Ser Cys Ser Glu  Tyr Ser Pro
    1115                1120                1125

Ser Pro  Ser Leu Asp Ser Glu  Ala Glu Ala Leu Asp  Gly Gly Pro
    1130                1135                1140

Ser Arg  Leu Tyr Lys Ser Gly  Ser Glu Tyr Asn Leu  Pro Thr Phe
    1145                1150                1155

Met Ser  Leu Tyr Ser Pro Thr  Glu Thr Pro Ser Gly  Ser Ser Thr
    1160                1165                1170

Thr Pro  Ser Ser Gly Arg Pro  Leu Lys Ser Ala Glu  Glu Ala Tyr
    1175                1180                1185
```

```
Glu Glu  Met Met Arg Lys Ala  Glu Leu Leu Gln Arg  Gln Gln Gly
    1190                 1195                 1200

Gln Ala  Ala Gly Ala Arg Gly  Pro His Gly Gly Pro  Ser Gln Pro
    1205                 1210                 1215

Thr Gly  Pro Arg Gly Leu Gly  Ser Phe Glu Tyr Gln  Asp Thr Thr
    1220                 1225                 1230

Asp Arg  Glu Tyr Gly Gln Ala  Ala Gln Pro Ala Ala  Glu Gly Thr
    1235                 1240                 1245

Pro Ala  Ser Leu Gly Ala Ala  Val Tyr Glu Glu Ile  Leu Gln Thr
    1250                 1255                 1260

Ser Gln  Ser Ile Val Arg Met  Arg Gln Ala Ser Ser  Arg Asp Leu
    1265                 1270                 1275

Ala Phe  Ala Glu Asp Lys Lys  Lys Glu Lys Gln Phe  Leu Asn Ala
    1280                 1285                 1290

Glu Ser  Ala Tyr Met Asp Pro  Met Lys Gln Asn Gly  Gly Pro Leu
    1295                 1300                 1305

Thr Pro  Gly Thr Ser Pro Thr  Gln Leu Ala Ala Pro  Val Ser Phe
    1310                 1315                 1320

Ser Thr  Pro Thr Ser Ser Asp  Ser Ser Gly Gly Arg  Val Ile Pro
    1325                 1330                 1335

Asp Val  Arg Val Thr Gln His  Phe Ala Lys Glu Thr  Gln Asp Pro
    1340                 1345                 1350

Leu Lys  Leu His Ser Ser Pro  Ala Ser Pro Ser Ser  Ala Ser Lys
    1355                 1360                 1365

Glu Ile  Gly Met Pro Phe Ser  Gln Gly Pro Gly Thr  Pro Ala Thr
    1370                 1375                 1380

Thr Ala  Val Ala Pro Cys Pro  Ala Gly Leu Pro Arg  Gly Tyr Met
    1385                 1390                 1395

Thr Pro  Ala Ser Pro Ala Gly  Ser Glu Arg Ser Pro  Ser Pro Ser
```

1400 1405 1410

Ser Thr Ala His Ser Tyr Gly His Ser Pro Thr Thr Ala Asn Tyr
1415 1420 1425

Gly Ser Gln Thr Glu Asp Leu Pro Gln Ala Pro Ser Gly Leu Ala
1430 1435 1440

Ala Ala Gly Arg Ala Ala Arg Glu Lys Pro Leu Ser Ala Ser Asp
1445 1450 1455

Gly Glu Gly Gly Thr Pro Gln Pro Ser Arg Ala Tyr Ser Tyr Phe
1460 1465 1470

Ala Ser Ser Ser Pro Pro Leu Ser Pro Ser Ser Pro Ser Glu Ser
1475 1480 1485

Pro Thr Phe Ser Pro Gly Lys Met Gly Pro Arg Ala Thr Ala Glu
1490 1495 1500

Phe Ser Thr Gln Thr Pro Ser Pro Ala Pro Ala Ser Asp Met Pro
1505 1510 1515

Arg Ser Pro Gly Ala Pro Thr Pro Ser Pro Met Val Ala Gln Gly
1520 1525 1530

Thr Gln Thr Pro His Arg Pro Ser Thr Pro Arg Leu Val Trp Gln
1535 1540 1545

Glu Ser Ser Gln Glu Ala Pro Phe Met Val Ile Thr Leu Ala Ser
1550 1555 1560

Asp Ala Ser Ser Gln Thr Arg Met Val His Ala Ser Ala Ser Thr
1565 1570 1575

Ser Pro Leu Cys Ser Pro Thr Glu Thr Gln Pro Thr Thr His Gly
1580 1585 1590

Tyr Ser Gln Thr Thr Pro Pro Ser Val Ser Gln Leu Pro Pro Glu
1595 1600 1605

Pro Pro Gly Pro Pro Gly Phe Pro Arg Val Pro Ser Ala Gly Ala
1610 1615 1620

```
Asp Gly  Pro Leu Ala Leu Tyr  Gly Trp Gly Ala Leu  Pro Ala Glu
    1625                1630                1635

Asn Ile  Ser Leu Cys Arg Ile  Ser Ser Val Pro Gly  Thr Ser Arg
    1640                1645                1650

Val Glu  Pro Gly Pro Arg Thr  Pro Gly Thr Ala Val  Val Asp Leu
    1655                1660                1665

Arg Thr  Ala Val Lys Pro Thr  Pro Ile Ile Leu Thr  Asp Gln Gly
    1670                1675                1680

Met Asp  Leu Thr Ser Leu Ala  Val Glu Ala Arg Lys  Tyr Gly Leu
    1685                1690                1695

Ala Leu  Asp Pro Ile Pro Gly  Arg Gln Ser Thr Ala  Val Gln Pro
    1700                1705                1710

Leu Val  Ile Asn Leu Asn Ala  Gln Glu His Thr Phe  Leu Ala Thr
    1715                1720                1725

Ala Thr  Thr Val Ser Ile Thr  Met Ala Ser Ser Val  Phe Met Ala
    1730                1735                1740

Gln Gln  Lys Gln Pro Val Val  Tyr Gly Asp Pro Tyr  Gln Ser Arg
    1745                1750                1755

Leu Asp  Phe Gly Gln Gly Gly  Gly Ser Pro Val Cys  Leu Ala Gln
    1760                1765                1770

Val Lys  Gln Val Glu Gln Ala  Val Gln Thr Ala Pro  Tyr Arg Ser
    1775                1780                1785

Gly Pro  Arg Gly Arg Pro Arg  Glu Ala Lys Phe Ala  Arg Tyr Asn
    1790                1795                1800

Leu Pro  Asn Gln Val Ala Pro  Leu Ala Arg Arg Asp  Val Leu Ile
    1805                1810                1815

Thr Gln  Met Gly Thr Ala Gln  Ser Ile Gly Leu Lys  Pro Gly Pro
    1820                1825                1830
```

Val Pro Glu Pro Gly Ala Glu Pro His Arg Ala Thr Pro Ala Glu
1835 1840 1845

Leu Arg Ser His Ala Leu Pro Gly Ala Arg Lys Pro His Thr Val
1850 1855 1860

Val Val Gln Met Gly Glu Gly Thr Ala Gly Thr Val Thr Thr Leu
1865 1870 1875

Leu Pro Glu Glu Pro Ala Gly Ala Leu Asp Leu Thr Gly Met Arg
1880 1885 1890

Pro Glu Ser Gln Leu Ala Cys Cys Asp Met Val Tyr Lys Leu Pro
1895 1900 1905

Phe Gly Ser Ser Cys Thr Gly Thr Phe His Pro Ala Pro Ser Val
1910 1915 1920

Pro Glu Lys Ser Met Ala Asp Ala Ala Pro Pro Gly Gln Ser Ser
1925 1930 1935

Ser Pro Phe Tyr Gly Pro Arg Asp Pro Glu Pro Pro Glu Pro Pro
1940 1945 1950

Thr Tyr Arg Ala Gln Gly Val Val Gly Pro Gly Pro His Glu Glu
1955 1960 1965

Gln Arg Pro Tyr Pro Gln Gly Leu Pro Gly Arg Leu Tyr Ser Ser
1970 1975 1980

Met Ser Asp Thr Asn Leu Ala Glu Ala Gly Leu Asn Tyr His Ala
1985 1990 1995

Gln Arg Ile Gly Gln Leu Phe Gln Gly Pro Gly Arg Asp Ser Ala
2000 2005 2010

Met Asp Leu Ser Ser Leu Lys His Ser Tyr Ser Leu Gly Phe Ala
2015 2020 2025

Asp Gly Arg Tyr Leu Gly Gln Gly Leu Gln Tyr Gly Ser Val Thr
2030 2035 2040

Asp Leu Arg His Pro Thr Asp Leu Leu Ala His Pro Leu Pro Met
2045 2050 2055

Arg Arg Tyr Ser Ser Val Ser Asn Ile Tyr Ser Asp His Arg Tyr
2060 2065 2070

Gly Pro Arg Gly Asp Ala Val Gly Phe Gln Glu Ala Ser Leu Ala
2075 2080 2085

Gln Tyr Ser Ala Thr Thr Ala Arg Glu Ile Ser Arg Met Cys Ala
2090 2095 2100

Ala Leu Asn Ser Met Asp Gln Tyr Gly Gly Arg His Gly Ser Gly
2105 2110 2115

Gly Gly Gly Pro Asp Leu Val Gln Tyr Gln Pro Gln His Gly Pro
2120 2125 2130

Gly Leu Ser Ala Pro Gln Ser Leu Val Pro Leu Arg Pro Gly Leu
2135 2140 2145

Leu Gly Asn Pro Thr Phe Pro Glu Gly His Pro Ser Pro Gly Asn
2150 2155 2160

Leu Ala Gln Tyr Gly Pro Ala Ala Gly Gln Gly Thr Ala Val Arg
2165 2170 2175

Gln Leu Leu Pro Ser Thr Ala Thr Val Arg Ala Ala Asp Gly Met
2180 2185 2190

Ile Tyr Ser Thr Ile Asn Thr Pro Ile Ala Ala Thr Leu Pro Ile
2195 2200 2205

Thr Thr Gln Pro Ala Ser Val Leu Arg Pro Met Val Arg Gly Gly
2210 2215 2220

Met Tyr Arg Pro Tyr Ala Ser Gly Gly Ile Thr Ala Val Pro Leu
2225 2230 2235

Thr Ser Leu Thr Arg Val Pro Met Ile Ala Pro Arg Val Pro Leu
2240 2245 2250

Gly Pro Thr Gly Leu Tyr Arg Tyr Pro Ala Pro Ser Arg Phe Pro

2255 2260 2265

Ile Ala Ser Ser Val Pro Pro Ala Glu Gly Pro Val Tyr Leu Gly
2270 2275 2280

Lys Pro Ala Ala Ala Lys Ala Pro Gly Ala Gly Gly Pro Ser Arg
2285 2290 2295

Pro Glu Met Pro Val Gly Ala Ala Arg Glu Glu Pro Leu Pro Thr
2300 2305 2310

Thr Thr Pro Ala Ala Ile Lys Glu Ala Ala Gly Ala Pro Ala Pro
2315 2320 2325

Ala Pro Leu Ala Gly Gln Lys Pro Pro Ala Asp Ala Ala Pro Gly
2330 2335 2340

Gly Gly Ser Gly Ala Leu Ser Arg Pro Gly Phe Glu Lys Glu Glu
2345 2350 2355

Ala Ser Gln Glu Glu Arg Gln Arg Lys Gln Gln Glu Gln Leu Leu
2360 2365 2370

Gln Leu Glu Arg Glu Arg Val Glu Leu Glu Lys Leu Arg Gln Leu
2375 2380 2385

Arg Leu Gln Glu Glu Leu Glu Arg Glu Arg Val Glu Leu Gln Arg
2390 2395 2400

His Arg Glu Glu Glu Gln Leu Leu Val Gln Arg Glu Leu Gln Glu
2405 2410 2415

Leu Gln Thr Ile Lys His His Val Leu Gln Gln Gln Gln Glu Glu
2420 2425 2430

Arg Gln Ala Gln Phe Ala Leu Gln Arg Glu Gln Leu Ala Gln Gln
2435 2440 2445

Arg Leu Gln Leu Glu Gln Ile Gln Gln Leu Gln Gln Gln Leu Gln
2450 2455 2460

Gln Gln Leu Glu Glu Gln Lys Gln Arg Gln Lys Ala Pro Phe Pro
2465 2470 2475

```
Ala Ala  Cys Glu Ala Pro Gly  Arg Gly Pro Pro Leu  Ala Ala Ala
    2480                2485                2490

Glu Leu  Ala Gln Asn Gly Gln  Tyr Trp Pro Pro Leu  Thr His Ala
    2495                2500                2505

Ala Phe  Ile Ala Met Ala Gly  Pro Glu Gly Leu Gly  Gln Pro Arg
    2510                2515                2520

Glu Pro  Val Leu His Arg Gly  Leu Pro Ser Ser Ala  Ser Asp Met
    2525                2530                2535

Ser Leu  Gln Thr Glu Glu Gln  Trp Glu Ala Ser Arg  Ser Gly Ile
    2540                2545                2550

Lys Lys  Arg His Ser Met Pro  Arg Leu Arg Asp Ala  Cys Glu Leu
    2555                2560                2565

Glu Ser  Gly Thr Glu Pro Cys  Val Val Arg Arg Ile  Ala Asp Ser
    2570                2575                2580

Ser Val  Gln Thr Asp Asp Glu  Asp Gly Glu Ser Arg  Tyr Leu Leu
    2585                2590                2595

Ser Arg  Arg Arg Arg Ala Arg  Arg Ser Ala Asp Cys  Ser Val Gln
    2600                2605                2610

Thr Asp  Asp Glu Asp Ser Ala  Glu Trp Glu Gln Pro  Val Arg Arg
    2615                2620                2625

Arg Arg  Ser Arg Leu Pro Arg  His Ser Asp Ser Gly  Ser Asp Ser
    2630                2635                2640

Lys His  Asp Ala Thr Ala Ser  Ser Ser Ser Ala Ala  Ala Thr Val
    2645                2650                2655

Arg Ala  Met Ser Ser Val Gly  Ile Gln Thr Ile Ser  Asp Cys Ser
    2660                2665                2670

Val Gln  Thr Glu Pro Asp Gln  Leu Pro Arg Val Ser  Pro Ala Ile
    2675                2680                2685
```

```
His Ile  Thr Ala Ala Thr Asp  Pro Lys Val Glu Ile  Val Arg Tyr
    2690                2695                2700

Ile Ser  Ala Pro Glu Lys Thr  Gly Arg Gly Glu Ser  Leu Ala Cys
    2705                2710                2715

Gln Thr  Glu Pro Asp Gly Gln  Ala Gln Gly Val Ala  Gly Pro Gln
    2720                2725                2730

Leu Val  Gly Pro Thr Ala Ile  Ser Pro Tyr Leu Pro  Gly Ile Gln
    2735                2740                2745

Ile Val  Thr Pro Gly Pro Leu  Gly Arg Phe Glu Lys  Lys Lys Pro
    2750                2755                2760

Asp Pro  Leu Glu Ile Gly Tyr  Gln Ala His Leu Pro  Pro Glu Ser
    2765                2770                2775

Leu Ser  Gln Leu Val Ser Arg  Gln Pro Pro Lys Ser  Pro Gln Val
    2780                2785                2790

Leu Tyr  Ser Pro Val Ser Pro  Leu Ser Pro His Arg  Leu Leu Asp
    2795                2800                2805

Thr Ser  Phe Ala Ser Ser Glu  Arg Leu Asn Lys Ala  His Val Ser
    2810                2815                2820

Pro Gln  Lys His Phe Thr Ala  Asp Ser Ala Leu Arg  Gln Gln Thr
    2825                2830                2835

Leu Pro  Arg Pro Met Lys Thr  Leu Gln Arg Ser Leu  Ser Asp Pro
    2840                2845                2850

Lys Pro  Leu Ser Pro Thr Ala  Glu Glu Ser Ala Lys  Glu Arg Phe
    2855                2860                2865

Ser Leu  Tyr Gln His Gln Gly  Gly Leu Gly Ser Gln  Val Ser Ala
    2870                2875                2880

Leu Pro  Pro Asn Ser Leu Val  Arg Lys Val Lys Arg  Thr Leu Pro
    2885                2890                2895
```

```
Ser Pro  Pro Pro Glu Glu Ala  His Leu Pro Leu Ala  Gly Gln Ala
    2900                2905                2910

Ser Pro  Gln Leu Tyr Ala Ala  Ser Leu Leu Gln Arg  Gly Leu Thr
    2915                2920                2925

Gly Pro  Thr Thr Val Pro Ala  Thr Lys Ala Ser Leu  Leu Arg Glu
    2930                2935                2940

Leu Asp  Arg Asp Leu Arg Leu  Val Glu His Glu Ser  Thr Lys Leu
    2945                2950                2955

Arg Lys  Lys Gln Ala Glu Leu  Asp Glu Glu Glu Lys  Glu Ile Asp
    2960                2965                2970

Ala Lys  Leu Lys Tyr Leu Glu  Leu Gly Ile Thr Gln  Arg Lys Glu
    2975                2980                2985

Ser Leu  Ala Lys Asp Arg Gly  Gly Arg Asp Tyr Pro  Pro Leu Arg
    2990                2995                3000

Gly Leu  Gly Glu His Arg Asp  Tyr Leu Ser Asp Ser  Glu Leu Asn
    3005                3010                3015

Gln Leu  Arg Leu Gln Gly Cys  Thr Thr Pro Ala Gly  Gln Phe Val
    3020                3025                3030

Asp Phe  Pro Ala Thr Ala Ala  Ala Pro Ala Thr Pro  Ser Gly Pro
    3035                3040                3045

Thr Ala  Phe Gln Gln Pro Arg  Phe Gln Pro Pro Ala  Pro Gln Tyr
    3050                3055                3060

Ser Ala  Gly Ser Gly Gly Pro  Thr Gln Asn Gly Phe  Pro Ala His
    3065                3070                3075

Gln Ala  Pro Thr Tyr Pro Gly  Pro Ser Thr Tyr Pro  Ala Pro Ala
    3080                3085                3090

Phe Pro  Pro Gly Ala Ser Tyr  Pro Ala Glu Pro Gly  Leu Pro Asn
    3095                3100                3105

Gln Gln  Ala Phe Arg Pro Thr  Gly His Tyr Ala Gly  Gln Thr Pro
```

3110 3115 3120

Met Pro Thr Thr Gln Ser Thr Leu Phe Pro Val Pro Ala Asp Ser
3125 3130 3135

Arg Ala Pro Leu Gln Lys Pro Arg Gln Thr Ser Leu Ala Asp Leu
3140 3145 3150

Glu Gln Lys Val Pro Thr Asn Tyr Glu Val Ile Ala Ser Pro Val
3155 3160 3165

Val Pro Met Ser Ser Ala Pro Ser Glu Thr Ser Tyr Ser Gly Pro
3170 3175 3180

Ala Val Ser Ser Gly Tyr Glu Gln Gly Lys Val Pro Glu Val Pro
3185 3190 3195

Arg Ala Gly Asp Arg Gly Ser Val Ser Gln Ser Pro Ala Pro Thr
3200 3205 3210

Tyr Pro Ser Asp Ser His Tyr Thr Ser Leu Glu Gln Asn Val Pro
3215 3220 3225

Arg Asn Tyr Val Met Ile Asp Asp Ile Ser Glu Leu Thr Lys Asp
3230 3235 3240

Ser Thr Ser Thr Ala Pro Asp Ser Gln Arg Leu Glu Pro Leu Gly
3245 3250 3255

Pro Gly Ser Ser Gly Arg Pro Gly Lys Glu Pro Gly Glu Pro Gly
3260 3265 3270

Val Leu Asp Gly Pro Thr Leu Pro Cys Cys Tyr Ala Arg Gly Glu
3275 3280 3285

Glu Glu Ser Glu Glu Asp Ser Tyr Asp Pro Arg Gly Lys Gly Gly
3290 3295 3300

His Leu Arg Ser Met Glu Ser Asn Gly Arg Pro Ala Ser Thr His
3305 3310 3315

Tyr Tyr Gly Asp Ser Asp Tyr Arg His Gly Ala Arg Val Glu Lys
3320 3325 3330

```
Tyr Gly  Pro Gly Pro Met Gly  Pro Lys His Pro Ser  Lys Ser Leu
    3335                3340                3345

Ala Pro  Ala Ala Ile Ser Ser  Lys Arg Ser Lys His  Arg Lys Gln
    3350                3355                3360

Gly Met  Glu Gln Lys Ile Ser  Lys Phe Ser Pro Ile  Glu Glu Ala
    3365                3370                3375

Lys Asp  Val Glu Ser Asp Leu  Ala Ser Tyr Pro Pro  Pro Ala Val
    3380                3385                3390

Ser Ser  Ser Leu Val Ser Arg  Gly Arg Lys Phe Gln  Asp Glu Ile
    3395                3400                3405

Thr Tyr  Gly Leu Lys Lys Asn  Val Tyr Glu Gln Gln  Lys Tyr Tyr
    3410                3415                3420

Gly Met  Ser Ser Arg Asp Ala  Val Glu Asp Asp Arg  Ile Tyr Gly
    3425                3430                3435

Gly Ser  Ser Arg Ser Arg Ala  Pro Ser Ala Tyr Ser  Gly Glu Lys
    3440                3445                3450

Leu Ser  Ser His Asp Phe Ser  Gly Trp Gly Lys Gly  Tyr Glu Arg
    3455                3460                3465

Glu Arg  Glu Ala Val Glu Arg  Leu Gln Lys Ala Gly  Pro Lys Pro
    3470                3475                3480

Ser Ser  Leu Ser Met Ala His  Ser Arg Val Arg Pro  Pro Met Arg
    3485                3490                3495

Ser Gln  Ala Ser Glu Glu Glu  Ser Pro Val Ser Pro  Leu Gly Arg
    3500                3505                3510

Pro Arg  Pro Ala Gly Gly Pro  Leu Pro Pro Gly Gly  Asp Thr Cys
    3515                3520                3525

Pro Gln  Phe Cys Ser Ser His  Ser Met Pro Asp Val  Gln Glu His
    3530                3535                3540
```

Val Lys Asp Gly Pro Arg Ala His Ala Tyr Lys Arg Glu Glu Gly
3545 3550 3555

Tyr Ile Leu Asp Asp Ser His Cys Val Val Ser Asp Ser Glu Ala
3560 3565 3570

Tyr His Leu Gly Gln Glu Glu Thr Asp Trp Phe Asp Lys Pro Arg
3575 3580 3585

Asp Ala Arg Ser Asp Arg Phe Arg His His Gly Gly His Ala Val
3590 3595 3600

Ser Ser Ser Ser Gln Lys Arg Gly Pro Ala Arg His Ser Tyr His
3605 3610 3615

Asp Tyr Asp Glu Pro Pro Glu Glu Gly Leu Trp Pro His Asp Glu
3620 3625 3630

Gly Gly Pro Gly Arg His Ala Ser Ala Lys Glu His Arg His Gly
3635 3640 3645

Asp His Gly Arg His Ser Gly Arg His Thr Gly Glu Glu Pro Gly
3650 3655 3660

Arg Arg Ala Ala Lys Pro His Ala Arg Asp Leu Gly Arg His Glu
3665 3670 3675

Ala Arg Pro His Ser Gln Pro Ser Ser Ala Pro Ala Met Pro Lys
3680 3685 3690

Lys Gly Gln Pro Gly Tyr Pro Ser Ser Ala Glu Tyr Ser Gln Pro
3695 3700 3705

Ser Arg Ala Ser Ser Ala Tyr His His Ala Ser Asp Ser Lys Lys
3710 3715 3720

Gly Ser Arg Gln Ala His Ser Gly Pro Ala Ala Leu Gln Ser Lys
3725 3730 3735

Ala Glu Pro Gln Ala Gln Pro Gln Leu Gln Gly Arg Gln Ala Ala
3740 3745 3750

```
Pro Gly  Pro Gln Gln Ser Gln  Ser Pro Ser Ser Arg  Gln Ile Pro
    3755                3760                3765

Ser Gly  Ala Ala Ser Arg Gln  Pro Gln Thr Gln Gln  Gln Gln Gln
    3770                3775                3780

Gly Leu  Gly Leu Gln Pro Pro  Gln Gln Ala Leu Thr  Gln Ala Arg
    3785                3790                3795

Leu Gln  Gln Gln Ser Gln Pro  Thr Thr Arg Gly Ser  Ala Pro Ala
    3800                3805                3810

Ala Ser  Gln Pro Ala Gly Lys  Pro Gln Pro Gly Pro  Ser Thr Ala
    3815                3820                3825

Thr Gly  Pro Gln Pro Ala Gly  Pro Pro Arg Ala Glu  Gln Thr Asn
    3830                3835                3840

Gly Ser  Lys Gly Thr Ala Lys  Ala Pro Gln Gln Gly  Arg Ala Pro
    3845                3850                3855

Gln Ala  Gln Pro Ala Pro Gly  Pro Gly Pro Ala Gly  Val Lys Ala
    3860                3865                3870

Gly Ala  Arg Pro Gly Gly Thr  Pro Gly Ala Pro Ala  Gly Gln Pro
    3875                3880                3885

Gly Ala  Asp Gly Glu Ser Val  Phe Ser Lys Ile Leu  Pro Gly Gly
    3890                3895                3900

Ala Ala  Glu Gln Ala Gly Lys  Leu Thr Glu Ala Val  Ser Ala Phe
    3905                3910                3915

Gly Lys  Lys Phe Ser Ser Phe  Trp
    3920                3925


<210> 8408
<211> 402
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1746; "
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<220>
<221> source
<223> /note="Gene Symbol: BSPRY; "

<220>
<221> source
<223> /note="Gene Name:
B-box and SPRY domain containing; "

<220>
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<223> /note="Uniprot ID: Q5W0U4; "

<220>
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<223> /note="ENSP ID: ENSP00000363298"

<400> 8408
Met Ser Ala Glu Gly Ala Glu Pro Gly Pro Gly Ser Gly Ser Gly Pro
1 5 10 15

Gly Pro Gly Pro Leu Cys Pro Glu His Gly Gln Ala Leu Ser Trp Phe
20 25 30

Cys Gly Ser Glu Arg Arg Pro Val Cys Ala Ala Cys Ala Gly Leu Gly
35 40 45

Gly Arg Cys Arg Gly His Arg Ile Arg Arg Ala Glu Glu Arg Ala Glu
50 55 60

Glu Leu Arg Asn Lys Ile Val Asp Gln Cys Glu Arg Leu Gln Leu Gln
65 70 75 80

Ser Ala Ala Ile Thr Lys Tyr Val Ala Asp Val Leu Pro Gly Lys Asn
85 90 95

Gln Arg Ala Val Ser Met Ala Ser Ala Ala Arg Glu Leu Val Ile Gln
100 105 110

Arg Leu Ser Leu Val Arg Ser Leu Cys Glu Ser Glu Glu Gln Arg Leu
115 120 125

Leu Glu Gln Val His Gly Glu Glu Glu Arg Ala His Gln Ser Ile Leu
130 135 140

Thr Gln Arg Val His Trp Ala Glu Ala Leu Gln Lys Leu Asp Thr Ile
145 150 155 160

```
Arg Thr Gly Leu Val Gly Met Leu Thr His Leu Asp Asp Leu Gln Leu
                165                 170                 175

Ile Gln Lys Glu Gln Glu Ile Phe Glu Arg Thr Glu Glu Ala Glu Gly
            180                 185                 190

Ile Leu Asp Pro Gln Glu Ser Glu Met Leu Asn Phe Asn Glu Lys Cys
        195                 200                 205

Thr Arg Ser Pro Leu Leu Thr Gln Leu Trp Ala Thr Ala Val Leu Gly
    210                 215                 220

Ser Leu Ser Gly Thr Glu Asp Ile Arg Ile Asp Glu Arg Thr Val Ser
225                 230                 235                 240

Pro Phe Leu Gln Leu Ser Asp Asp Arg Lys Thr Leu Thr Phe Ser Thr
                245                 250                 255

Lys Lys Ser Lys Ala Cys Ala Asp Gly Pro Glu Arg Phe Asp His Trp
            260                 265                 270

Pro Asn Ala Leu Ala Ala Thr Ser Phe Gln Asn Gly Leu His Ala Trp
        275                 280                 285

Met Val Asn Val Gln Asn Ser Cys Ala Tyr Lys Val Gly Val Ala Ser
    290                 295                 300

Gly His Leu Pro Arg Lys Gly Ser Gly Ser Asp Cys Arg Leu Gly His
305                 310                 315                 320

Asn Ala Phe Ser Trp Val Phe Ser Arg Tyr Asp Gln Glu Phe Arg Phe
                325                 330                 335

Ser His Asn Gly Gln His Glu Pro Leu Gly Leu Leu Arg Gly Pro Ala
            340                 345                 350

Gln Leu Gly Val Val Leu Asp Leu Gln Val Gln Glu Leu Leu Phe Tyr
        355                 360                 365

Glu Pro Ala Ser Gly Thr Val Leu Cys Ala His His Val Ser Phe Pro
    370                 375                 380
```

Gly Pro Leu Phe Pro Val Phe Ala Val Ala Asp Gln Thr Ile Ser Ile
385 390 395 400

Val Arg

<210> 8409
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1747; "

<220>
<221> source
<223> /note="Gene Symbol: BBIP1; "

<220>
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<223> /note="Gene Name:
BBSome
interacting prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: A8MTZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431936"

<400> 8409
Met Ala Glu Val Lys Ser Met Phe Arg Glu Val Leu Pro Lys Gln Gly
1 5 10 15

Pro Leu Phe Val Glu Asp Ile Met Thr Met Val Leu Cys Lys Pro Lys
20 25 30

Leu Leu Pro Leu Lys Ser Leu Thr Leu Glu Lys Leu Glu Lys Met His
35 40 45

Gln Ala Ala Gln Asn Thr Ile Arg Gln Gln Glu Met Ala Glu Lys Asp
50 55 60

Gln Arg Gln Ile Thr His
65 70

<210> 8410

<211> 67
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1747; "

<220>
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<223> /note="Gene Symbol: BBIP1; "

<220>
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<223> /note="Gene Name:
BBSome
interacting prt 1; "

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<220>
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<223> /note="ENSP ID: ENSP00000432274"

<400> 8410
Met Leu Lys Ala Ala Ala Lys Arg Pro Glu Leu Ser Gly Pro Leu Phe
1   5   10   15

Val Glu Asp Ile Met Thr Met Val Leu Cys Lys Pro Lys Leu Leu Pro
            20   25   30

Leu Lys Ser Leu Thr Leu Glu Lys Leu Glu Lys Met His Gln Ala Ala
        35   40   45

Gln Asn Thr Ile Arg Gln Gln Glu Met Ala Glu Lys Asp Gln Arg Gln
    50   55   60

Ile Thr His
65

<210> 8411
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1747; "

<220>

<221> source
<223> /note="Gene Symbol: BBIP1; "

<220>
<221> source
<223> /note="Gene Name:
BBSome
interacting prt 1; "

<220>
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<223> /note="Uniprot ID: A8MTZ0; "

<220>
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<223> /note="ENSP ID: ENSP00000432849"

<400> 8411
Met Ala Glu Val Lys Ser Met Phe Arg Glu Val Leu Pro Lys Gln Gly
1   5   10   15

Pro Leu Phe Val Glu Asp Ile Met Thr Met Val Leu Cys Lys Pro Lys
            20   25   30

Leu Leu Pro Leu Lys Ser Leu Thr Leu Glu Lys Leu Glu Lys Met His
        35   40   45

Gln Ala Ala Gln Asn Thr Ile Arg Gln Gln Glu Met Ala Glu Lys Asp
    50   55   60

Gln Arg Gln Ile Thr His
65   70

<210> 8412
<211> 103
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1747; "

<220>
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<223> /note="Gene Symbol: BBIP1; "

<220>
<221> source
<223> /note="Gene Name:
BBSome
interacting prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: A8MTZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433157"

<400> 8412
Met Leu Lys Ala Ala Ala Lys Arg Pro Glu Leu Ser Gly Leu Leu Lys
1   5   10   15

Phe Asn Asn Tyr Gly Ile Leu Ser Glu Ser Pro Leu Thr Ser Gln Arg
            20   25   30

Thr Thr Trp Leu Leu Tyr Gln Ser Pro Ser Phe Ile Pro Gly Phe Ala
        35   40   45

Tyr Pro Ser Arg Cys Leu Lys Thr Ile Gly Gly Val Tyr Lys Gln Ala
    50   55   60

Arg Lys Lys His Tyr Ile Gln Gln Leu Arg Tyr Gly Arg Ser Glu Val
65   70   75   80

Asn Val Pro Gly Ser Ser Ser Lys Ala Arg Ala Thr Val Cys Gly Arg
                85   90   95

Tyr Asn Asp Asn Gly Ala Val
            100

<210> 8413
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1747; "

<220>
<221> source
<223> /note="Gene Symbol: BBIP1; "

<220>
<221> source
<223> /note="Gene Name:
      BBSome
      interacting prt 1; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000435795"

<400> 8413
Met Leu Lys Ala Ala Ala Lys Arg Pro Glu Leu Ser Gly Lys Asn Thr
1   5   10   15

Ile Ser Asn Asn Ser Asp Met Ala Glu Val Lys Ser Met Phe Arg Glu
            20   25   30

Val Leu Pro Lys Gln Glu Lys Gly Ser Gln Cys Val Ala
        35   40   45

<210> 8414
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1747; "

<220>
<221> source
<223> /note="Gene Symbol: BBIP1; "

<220>
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<223> /note="Gene Name:
      BBSome
      interacting prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: A8MTZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436622"

<400> 8414
Met Leu Lys Ala Ala Ala Lys Arg Pro Glu Leu Ser Gly Lys Asn Thr
1   5   10   15

Ile Ser Asn Asn Ser Asp Met Ala Glu Val Lys Ser Met Phe Arg Glu
            20   25   30

Val Leu Pro Lys Gln Gly Pro Leu Phe Val Glu Asp Ile Met Thr Met
        35   40   45

Val Leu Cys Lys Pro Lys Leu Leu Pro Leu Lys Ser Leu Thr Leu Glu

```
    50                  55                  60

Lys Leu Glu Lys Met His Gln Ala Ala Gln Asn Thr Ile Arg Gln Gln
65                  70                  75                  80

Glu Met Ala Glu Lys Asp Gln Arg Gln Ile Thr His
                85                  90

<210> 8415
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1747; "

<220>
<221> source
<223> /note="Gene Symbol: BBIP1; "

<220>
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<223> /note="Gene Name:
      BBSome
      interacting prt 1; "

<220>
<221> source
<223> /note="Uniprot ID:  A8MTZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474675"

<400> 8415
Met Leu Lys Ala Ala Ala Lys Arg Pro Glu Leu Ser Gly Lys Asn Thr
1               5                   10                  15

Ile Ser Asn Asn Ser Asp Met Ala Glu Val Lys Ser Met Phe Arg Glu
            20                  25                  30

Val Leu Pro Lys Gln Gly Pro Leu Phe Val Glu Asp Ile Met Thr Met
        35                  40                  45

Val Leu Cys Lys Pro Lys Leu Leu Pro Leu Lys Ser Leu Thr Leu Glu
    50                  55                  60

Lys Leu Glu Lys Met His Gln Ala Ala Gln Asn Thr Ile Arg Gln Gln
65                  70                  75                  80
```

Glu Met Ala Glu Lys Asp Gln Arg Gln Ile Thr His
85 90

<210> 8416
<211> 419
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y276; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000352219"

<400> 8416
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1 5 10 15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
20 25 30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
35 40 45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
50 55 60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65 70 75 80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
85 90 95

```
Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240

Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
                245                 250                 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
            260                 265                 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
        275                 280                 285

Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
    290                 295                 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305                 310                 315                 320
```

```
Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
                325                 330                 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
            340                 345                 350

Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
        355                 360                 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
    370                 375                 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385                 390                 395                 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
                405                 410                 415

Leu Arg Arg


<210> 8417
<211> 419
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
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<223> /note="Gene Name:
      BC1 (ubiquinol-cytochrome
      c reductase) synthesis-like; "

<220>
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<223> /note="Uniprot ID:  Q9Y276; "

<220>
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<223> /note="ENSP ID: ENSP00000375957"

<400> 8417
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
```

```
1               5                   10                  15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240
```

Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
245 250 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
260 265 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
275 280 285

Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
290 295 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305 310 315 320

Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
325 330 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
340 345 350

Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
355 360 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
370 375 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385 390 395 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
405 410 415

Leu Arg Arg

<210> 8418
<211> 419
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
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<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y276; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000375958"

<400> 8418

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Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1               5                  10                  15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140
```

```
Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240

Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
                245                 250                 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
            260                 265                 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
        275                 280                 285

Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
    290                 295                 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305                 310                 315                 320

Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
                325                 330                 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
            340                 345                 350

Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
        355                 360                 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
```

```
    370                 375                 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385                 390                 395                 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
                405                 410                 415

Leu Arg Arg
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<210> 8419
<211> 419
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y276; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000375959"

<400> 8419

```
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1               5                   10                  15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60
```

```
Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240

Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
                245                 250                 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
            260                 265                 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
        275                 280                 285
```

```
Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
    290                 295                 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305                 310                 315                 320

Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
                325                 330                 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
            340                 345                 350

Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
        355                 360                 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
    370                 375                 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385                 390                 395                 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
                405                 410                 415

Leu Arg Arg
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<210> 8420
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000389402"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8420
Xaa Ile Pro Tyr Arg Arg Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys
1 5 10 15

Gly Lys Ser Ser Phe Ile Thr Ala Leu Ala Gly Glu Leu Glu His Ser
20 25 30

Ile Cys Leu Leu Ser Leu Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu
35 40 45

Asn His Leu Leu Ser Val Ala Pro Gln Gln Ser Leu Val Leu Leu Glu
50 55 60

Asp Val Asp Ala Ala Phe Leu Ser Arg Asp Leu Ala Val Glu Asn Pro
65 70 75 80

Val Lys Tyr Gln Gly Leu Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn
85 90 95

Ala Leu Asp Gly Val Ala Ser Thr Glu Ala Arg Ile Val Phe Met Thr
100 105 110

Thr Asn His Val Asp Arg His Leu Pro
115 120

<210> 8421
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source

<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391007"

<400> 8421
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1 5 10 15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
20 25 30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
35 40 45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
50 55 60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His
65 70 75

<210> 8422
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395440"

<400> 8422
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1 5 10 15

```
Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln
        195                 200                 205


<210> 8423
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "
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<220>
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<223> /note="Gene Symbol: BCS1L; "

<220>
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<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397293"

<400> 8423
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1 5 10 15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
20 25 30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
35 40 45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
50 55 60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65 70 75 80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
85 90 95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly
100 105 110

<210> 8424
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
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<223> /note="Gene Symbol: BCS1L; "

<220>

<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398957"

<400> 8424

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Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1               5                  10                  15

Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190
```

```
Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln
        195                 200                 205


<210> 8425
<211> 419
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
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<223> /note="Gene Symbol: BCS1L; "

<220>
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<223> /note="Gene Name:
      BC1 (ubiquinol-cytochrome
      c reductase) synthesis-like; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9Y276; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404999"

<400> 8425
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1               5                  10                  15


Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30


Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45


Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60


Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80


Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95
```

```
Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240

Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
                245                 250                 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
            260                 265                 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
        275                 280                 285

Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
    290                 295                 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305                 310                 315                 320

Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
```

```
                325                 330                 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
            340                 345                 350

Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
        355                 360                 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
    370                 375                 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385                 390                 395                 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
                405                 410                 415

Leu Arg Arg
```

<210> 8426
<211> 419
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y276; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406494"

<400> 8426

```
Met Pro Leu Ser Asp Phe Ile Leu Ala Leu Lys Asp Asn Pro Tyr Phe
1               5                   10                  15
```

```
Gly Ala Gly Phe Gly Leu Val Gly Val Gly Thr Ala Leu Ala Leu Ala
            20                  25                  30

Arg Lys Gly Val Gln Leu Gly Leu Val Ala Phe Arg Arg His Tyr Met
        35                  40                  45

Ile Thr Leu Glu Val Pro Ala Arg Asp Arg Ser Tyr Ala Trp Leu Leu
    50                  55                  60

Ser Trp Leu Thr Arg His Ser Thr Arg Thr Gln His Leu Ser Val Glu
65                  70                  75                  80

Thr Ser Tyr Leu Gln His Glu Ser Gly Arg Ile Ser Thr Lys Phe Glu
                85                  90                  95

Phe Val Pro Ser Pro Gly Asn His Phe Ile Trp Tyr Arg Gly Lys Trp
            100                 105                 110

Ile Arg Val Glu Arg Ser Arg Glu Met Gln Met Ile Asp Leu Gln Thr
        115                 120                 125

Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240
```

```
Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
                245                 250                 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
            260                 265                 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
        275                 280                 285

Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
    290                 295                 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305                 310                 315                 320

Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
                325                 330                 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
            340                 345                 350

Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
        355                 360                 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
    370                 375                 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385                 390                 395                 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
                405                 410                 415

Leu Arg Arg
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<210> 8427
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412729"

<400> 8427

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Met Gln Met Ile Asp Leu Gln Thr Gly Thr Pro Trp Glu Ser Val Thr
1               5                  10                  15

Phe Thr Ala Leu Gly Thr Asp Arg Lys Val Phe Phe Asn Ile Leu Glu
            20                  25                  30

Glu Ala Arg Glu Leu Ala Leu Gln Gln Glu Glu Gly Lys Thr Val Met
        35                  40                  45

Tyr Thr Ala Val Gly Ser Glu Trp Arg Pro Phe Gly Tyr Pro Arg Arg
    50                  55                  60

Arg Arg Pro Leu Asn Ser Val Val Leu Gln Gln Gly Leu Ala Asp Arg
65                  70                  75                  80

Ile Val Arg Asp Val Gln Glu Phe Ile Asp Asn Pro Lys Trp Tyr Thr
                85                  90                  95

Asp Arg Gly Ile Pro Tyr Arg Arg Gly Tyr Leu Leu Tyr Gly Pro Pro
            100                 105                 110

Gly Cys Gly Lys Ser Ser Phe Ile Thr Ala Leu Ala Gly Glu Leu Glu
        115                 120                 125

His Ser Ile Cys Leu Leu Ser Leu Thr Asp Ser Ser Leu Ser Asp Asp
    130                 135                 140

Arg Leu Asn His Leu Leu
145                 150
```

<210> 8428

<211> 419
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y276; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413908"

<400> 8428

Met	Pro	Leu	Ser	Asp	Phe	Ile	Leu	Ala	Leu	Lys	Asp	Asn	Pro	Tyr	Phe
1				5				10					15		
Gly	Ala	Gly	Phe	Gly	Leu	Val	Gly	Val	Gly	Thr	Ala	Leu	Ala	Leu	Ala
			20					25					30		
Arg	Lys	Gly	Val	Gln	Leu	Gly	Leu	Val	Ala	Phe	Arg	Arg	His	Tyr	Met
		35					40					45			
Ile	Thr	Leu	Glu	Val	Pro	Ala	Arg	Asp	Arg	Ser	Tyr	Ala	Trp	Leu	Leu
	50					55					60				
Ser	Trp	Leu	Thr	Arg	His	Ser	Thr	Arg	Thr	Gln	His	Leu	Ser	Val	Glu
65					70					75					80
Thr	Ser	Tyr	Leu	Gln	His	Glu	Ser	Gly	Arg	Ile	Ser	Thr	Lys	Phe	Glu
				85					90					95	
Phe	Val	Pro	Ser	Pro	Gly	Asn	His	Phe	Ile	Trp	Tyr	Arg	Gly	Lys	Trp
			100					105					110		
Ile	Arg	Val	Glu	Arg	Ser	Arg	Glu	Met	Gln	Met	Ile	Asp	Leu	Gln	Thr
		115					120					125			

```
Gly Thr Pro Trp Glu Ser Val Thr Phe Thr Ala Leu Gly Thr Asp Arg
    130                 135                 140

Lys Val Phe Phe Asn Ile Leu Glu Glu Ala Arg Glu Leu Ala Leu Gln
145                 150                 155                 160

Gln Glu Glu Gly Lys Thr Val Met Tyr Thr Ala Val Gly Ser Glu Trp
                165                 170                 175

Arg Pro Phe Gly Tyr Pro Arg Arg Arg Arg Pro Leu Asn Ser Val Val
            180                 185                 190

Leu Gln Gln Gly Leu Ala Asp Arg Ile Val Arg Asp Val Gln Glu Phe
        195                 200                 205

Ile Asp Asn Pro Lys Trp Tyr Thr Asp Arg Gly Ile Pro Tyr Arg Arg
    210                 215                 220

Gly Tyr Leu Leu Tyr Gly Pro Pro Gly Cys Gly Lys Ser Ser Phe Ile
225                 230                 235                 240

Thr Ala Leu Ala Gly Glu Leu Glu His Ser Ile Cys Leu Leu Ser Leu
                245                 250                 255

Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu Asn His Leu Leu Ser Val
            260                 265                 270

Ala Pro Gln Gln Ser Leu Val Leu Leu Glu Asp Val Asp Ala Ala Phe
        275                 280                 285

Leu Ser Arg Asp Leu Ala Val Glu Asn Pro Val Lys Tyr Gln Gly Leu
    290                 295                 300

Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn Ala Leu Asp Gly Val Ala
305                 310                 315                 320

Ser Thr Glu Ala Arg Ile Val Phe Met Thr Thr Asn His Val Asp Arg
                325                 330                 335

Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg Val Asp Leu Lys Glu Tyr
            340                 345                 350
```

```
Val Gly Tyr Cys Ser His Trp Gln Leu Thr Gln Met Phe Gln Arg Phe
        355                 360                 365

Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu Asn Phe Ala Glu His Val
    370                 375                 380

Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala Gln Val Gln Gly Tyr Phe
385                 390                 395                 400

Met Leu Tyr Lys Asn Asp Pro Val Gly Ala Ile His Asn Ala Glu Ser
                405                 410                 415

Leu Arg Arg
```

<210> 8429
<211> 201
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1748; "

<220>
<221> source
<223> /note="Gene Symbol: BCS1L; "

<220>
<221> source
<223> /note="Gene Name:
BC1 (ubiquinol-cytochrome
c reductase) synthesis-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416169"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8429

```
Xaa Glu Ala Phe Leu Thr Asp Val Ala Thr Cys Phe Met Gly Pro Leu
1               5                   10                  15

Val Ala Glu Arg Ala Val Leu Ser Leu Ala Gly Glu Leu Glu His Ser
            20                  25                  30
```

```
Ile Cys Leu Leu Ser Leu Thr Asp Ser Ser Leu Ser Asp Asp Arg Leu
        35                  40                  45

Asn His Leu Leu Ser Val Ala Pro Gln Gln Ser Leu Val Leu Leu Glu
    50                  55                  60

Asp Val Asp Ala Ala Phe Leu Ser Arg Asp Leu Ala Val Glu Asn Pro
65                  70                  75                  80

Val Lys Tyr Gln Gly Leu Gly Arg Leu Thr Phe Ser Gly Leu Leu Asn
                85                  90                  95

Ala Leu Asp Gly Val Ala Ser Thr Glu Ala Arg Ile Val Phe Met Thr
            100                 105                 110

Thr Asn His Val Asp Arg Leu Asp Pro Ala Leu Ile Arg Pro Gly Arg
        115                 120                 125

Val Asp Leu Lys Glu Tyr Val Gly Tyr Cys Ser His Trp Gln Leu Thr
    130                 135                 140

Gln Met Phe Gln Arg Phe Tyr Pro Gly Gln Ala Pro Ser Leu Ala Glu
145                 150                 155                 160

Asn Phe Ala Glu His Val Leu Arg Ala Thr Asn Gln Ile Ser Pro Ala
                165                 170                 175

Gln Val Gln Gly Tyr Phe Met Leu Tyr Lys Asn Asp Pro Val Gly Ala
            180                 185                 190

Ile His Asn Ala Glu Ser Leu Arg Arg
        195                 200


<210> 8430
<211> 292
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1749; "

<220>
<221> source
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<223> /note="Gene Symbol: BCDIN3D; "

<220>
<221> source
<223> /note="Gene Name:
BCDIN3 domain containing; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z5W3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335201"

<400> 8430
Met Ala Val Pro Thr Glu Leu Asp Gly Gly Ser Val Lys Glu Thr Ala
1   5   10   15

Ala Glu Glu Glu Ser Arg Val Leu Ala Pro Gly Ala Ala Pro Phe Gly
            20   25   30

Asn Phe Pro His Tyr Ser Arg Phe His Pro Pro Glu Gln Arg Leu Arg
        35   40   45

Leu Leu Pro Pro Glu Leu Leu Arg Gln Leu Phe Pro Glu Ser Pro Glu
    50   55   60

Asn Gly Pro Ile Leu Gly Leu Asp Val Gly Cys Asn Ser Gly Asp Leu
65   70   75   80

Ser Val Ala Leu Tyr Lys His Phe Leu Ser Leu Pro Asp Gly Glu Thr
                85   90   95

Cys Ser Asp Ala Ser Arg Glu Phe Arg Leu Leu Cys Cys Asp Ile Asp
            100   105   110

Pro Val Leu Val Lys Arg Ala Glu Lys Glu Cys Pro Phe Pro Asp Ala
        115   120   125

Leu Thr Phe Ile Thr Leu Asp Phe Met Asn Gln Arg Thr Arg Lys Val
    130   135   140

Leu Leu Ser Ser Phe Leu Ser Gln Phe Gly Arg Ser Val Phe Asp Ile
145   150   155   160

Gly Phe Cys Met Ser Ile Thr Met Trp Ile His Leu Asn His Gly Asp

```
                165                 170                 175

His Gly Leu Trp Glu Phe Leu Ala His Leu Ser Ser Leu Cys His Tyr
            180                 185                 190

Leu Leu Val Glu Pro Gln Pro Trp Lys Cys Tyr Arg Ala Ala Ala Arg
        195                 200                 205

Arg Leu Arg Lys Leu Gly Leu His Asp Phe Asp His Phe His Ser Leu
    210                 215                 220

Ala Ile Arg Gly Asp Met Pro Asn Gln Ile Val Gln Ile Leu Thr Gln
225                 230                 235                 240

Asp His Gly Met Glu Leu Ile Cys Cys Phe Gly Asn Thr Ser Trp Asp
                245                 250                 255

Arg Ser Leu Leu Leu Phe Arg Ala Lys Gln Thr Ile Glu Thr His Pro
            260                 265                 270

Ile Pro Glu Ser Leu Ile Glu Lys Gly Lys Glu Lys Asn Arg Leu Ser
        275                 280                 285

Phe Gln Lys Gln
    290


<210> 8431
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1750; "

<220>
<221> source
<223> /note="Gene Symbol: BLACE; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell acute lymphoblastic leukemia expressed; "

<220>
<221> source
<223> /note="Uniprot ID:  A4D250; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000367360"

<400> 8431
Met Met Lys Asp Ile Ile Pro Ala Ser Ser Trp Ala Ser Glu Glu Ser
1   5   10   15

Thr Asp Leu Gln Asn Gly Ser Phe Pro Leu Ser Val Ala Pro Arg Ser
            20   25   30

Glu Phe Pro Arg Arg Arg Ala Leu Glu Asp Trp Leu Leu Ser Val Phe
        35   40   45

Leu Ala Asp Gln Ala Glu Ser Glu Gly Gln Leu Val Leu Glu Arg Val
    50   55   60

Arg Asp Thr Pro Pro Pro Val Thr Ser Pro Arg Gly Asp Gly Ile Cys
65   70   75   80

Val Ser Arg Gly Lys Ala Pro Ser Ser Pro Gly Gly Ser Thr His Ala
                85   90   95

Trp Leu Tyr Leu Thr Arg His Phe Pro Trp Ser Pro Phe Pro His Gly
            100   105   110

Gly Trp Thr Asp Thr Ser Glu Pro Cys Val Leu Glu Thr Leu Gly Gly
        115   120   125

Ser Ser Leu Ala Ala Leu Arg Gly Asn Ser Leu Trp Val Gln Ser Ser
    130   135   140

Gly Ala Cys Ala Phe Cys Val Tyr Glu Ser Leu Ile Glu Gln Ser Leu
145   150   155   160

Pro Asn Glu Arg Phe Glu Glu Leu Leu Leu Gly Pro Ser Pro Gly Glu
                165   170   175

Val Met Lys

<210> 8432
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1750; "

<220>
<221> source
<223> /note="Gene Symbol: BLACE; "

<220>
<221> source
<223> /note="Gene Name:
B-cell acute lymphoblastic leukemia expressed; "

<220>
<221> source
<223> /note="Uniprot ID: A4D250; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484754"

<400> 8432
Met Met Lys Asp Ile Ile Pro Ala Ser Ser Trp Ala Ser Glu Glu Ser
1   5   10   15

Thr Asp Leu Gln Asn Gly Ser Phe Pro Leu Ser Val Ala Pro Arg Ser
            20   25   30

Glu Phe Pro Arg Arg Arg Ala Leu Glu Asp Trp Leu Leu Ser Val Phe
        35   40   45

Leu Ala Asp Gln Ala Glu Ser Glu Gly Gln Leu Val Leu Glu Arg Val
    50   55   60

Arg Asp Thr Pro Pro Pro Val Thr Ser Pro Arg Gly Asp Gly Ile Cys
65   70   75   80

Val Ser Arg Gly Lys Ala Pro Ser Ser Pro Gly Gly Ser Thr His Ala
                85   90   95

Trp Leu Tyr Leu Thr Arg His Phe Pro Trp Ser Pro Phe Pro His Gly
            100   105   110

Gly Trp Thr Asp Thr Ser Glu Pro Cys Val Leu Glu Thr Leu Gly Gly
        115   120   125

Ser Ser Leu Ala Ala Leu Arg Gly Asn Ser Leu Trp Val Gln Ser Ser
    130   135   140

```
Gly Ala Cys Ala Phe Cys Val Tyr Glu Ser Leu Ile Glu Gln Ser Leu
145                 150                 155                 160

Pro Asn Glu Arg Phe Glu Glu Leu Leu Leu Gly Pro Ser Pro Gly Glu
                165                 170                 175

Val Met Lys
```

<210> 8433
<211> 233
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1751; "

<220>
<221> source
<223> /note="Gene Symbol: BCL10; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 10; "

<220>
<221> source
<223> /note="Uniprot ID: O95999; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359612"

<400> 8433

```
Met Glu Pro Thr Ala Pro Ser Leu Thr Glu Glu Asp Leu Thr Glu Val
1               5                   10                  15

Lys Lys Asp Ala Leu Glu Asn Leu Arg Val Tyr Leu Cys Glu Lys Ile
            20                  25                  30

Ile Ala Glu Arg His Phe Asp His Leu Arg Ala Lys Lys Ile Leu Ser
        35                  40                  45

Arg Glu Asp Thr Glu Glu Ile Ser Cys Arg Thr Ser Ser Arg Lys Arg
    50                  55                  60
```

```
Ala Gly Lys Leu Leu Asp Tyr Leu Gln Glu Asn Pro Lys Gly Leu Asp
65                  70                  75                  80

Thr Leu Val Glu Ser Ile Arg Arg Glu Lys Thr Gln Asn Phe Leu Ile
                85                  90                  95

Gln Lys Ile Thr Asp Glu Val Leu Lys Leu Arg Asn Ile Lys Leu Glu
            100                 105                 110

His Leu Lys Gly Leu Lys Cys Ser Ser Cys Glu Pro Phe Pro Asp Gly
        115                 120                 125

Ala Thr Asn Asn Leu Ser Arg Ser Asn Ser Asp Glu Ser Asn Phe Ser
    130                 135                 140

Glu Lys Leu Arg Ala Ser Thr Val Met Tyr His Pro Glu Gly Glu Ser
145                 150                 155                 160

Ser Thr Thr Pro Phe Phe Ser Thr Asn Ser Ser Leu Asn Leu Pro Val
                165                 170                 175

Leu Glu Val Gly Arg Thr Glu Asn Thr Ile Phe Ser Ser Thr Thr Leu
            180                 185                 190

Pro Arg Pro Gly Asp Pro Gly Ala Pro Pro Leu Pro Pro Asp Leu Gln
        195                 200                 205

Leu Glu Glu Glu Gly Thr Cys Ala Asn Ser Ser Glu Met Phe Leu Pro
    210                 215                 220

Leu Arg Ser Arg Thr Val Ser Arg Gln
225                 230


<210> 8434
<211> 156
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1751; "

<220>
<221> source
<223> /note="Gene Symbol: BCL10; "
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<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480561"

<400> 8434
Met Glu Pro Thr Ala Pro Ser Leu Thr Glu Glu Asp Leu Thr Glu Val
1 5 10 15

Lys Lys Asp Ala Leu Glu Asn Leu Arg Val Tyr Leu Cys Glu Lys Ile
20 25 30

Ile Ala Glu Arg His Phe Asp His Leu Arg Ala Lys Lys Ile Leu Ser
35 40 45

Arg Glu Asp Thr Glu Glu Ile Ser Cys Arg Thr Ser Ser Arg Lys Arg
50 55 60

Ala Gly Lys Leu Leu Asp Tyr Leu Gln Glu Asn Pro Lys Gly Leu Asp
65 70 75 80

Thr Leu Val Glu Ser Ile Arg Arg Glu Lys Thr Gln Asn Phe Leu Ile
85 90 95

Gln Lys Ile Thr Asp Glu Val Leu Lys Leu Arg Asn Ile Lys Leu Glu
100 105 110

His Leu Lys Asp Gly Ala Thr Asn Asn Leu Ser Arg Ser Asn Ser Asp
115 120 125

Glu Ser Asn Phe Ser Glu Lys Leu Arg Ala Ser Thr Val Met Tyr His
130 135 140

Pro Glu Gly Glu Ser Ser Thr Thr Pro Phe Phe Tyr
145 150 155

<210> 8435
<211> 835
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H165; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338774"

<400> 8435

```
Met Ser Arg Arg Lys Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu
1               5                  10                  15

Phe Ser Pro Glu Pro Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp
            20                  25                  30

His Gly Pro Leu Gly Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys
        35                  40                  45

Gly Gln Cys Gln Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile
    50                  55                  60

Glu His Lys Arg Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala
65                  70                  75                  80

Val Asp Lys Pro Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser
                85                  90                  95

Asn Pro Val Glu Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys
            100                 105                 110

Leu Ser Thr Ser Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala
        115                 120                 125

Asp Lys Leu Leu His Trp Arg Gly Leu Ser Ser Pro Arg Ser Ala His
    130                 135                 140

Gly Ala Leu Ile Pro Thr Pro Gly Met Ser Ala Glu Tyr Ala Pro Gln
```

145 150 155 160

Gly Ile Cys Lys Asp Glu Pro Ser Ser Tyr Thr Cys Thr Thr Cys Lys
165 170 175

Gln Pro Phe Thr Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr
180 185 190

His Gly Leu Arg Ile Tyr Leu Glu Ser Glu His Gly Ser Pro Leu Thr
195 200 205

Pro Arg Val Gly Ile Pro Ser Gly Leu Gly Ala Glu Cys Pro Ser Gln
210 215 220

Pro Pro Leu His Gly Ile His Ile Ala Asp Asn Asn Pro Phe Asn Leu
225 230 235 240

Leu Arg Ile Pro Gly Ser Val Ser Arg Glu Ala Ser Gly Leu Ala Glu
245 250 255

Gly Arg Phe Pro Pro Thr Pro Pro Leu Phe Ser Pro Pro Pro Arg His
260 265 270

His Leu Asp Pro His Arg Ile Glu Arg Leu Gly Ala Glu Glu Met Ala
275 280 285

Leu Ala Thr His His Pro Ser Ala Phe Asp Arg Val Leu Arg Leu Asn
290 295 300

Pro Met Ala Met Glu Pro Pro Ala Met Asp Phe Ser Arg Arg Leu Arg
305 310 315 320

Glu Leu Ala Gly Asn Thr Ser Ser Pro Pro Leu Ser Pro Gly Arg Pro
325 330 335

Ser Pro Met Gln Arg Leu Leu Gln Pro Phe Gln Pro Gly Ser Lys Pro
340 345 350

Pro Phe Leu Ala Thr Pro Pro Leu Pro Pro Leu Gln Ser Ala Pro Pro
355 360 365

Pro Ser Gln Pro Pro Val Lys Ser Lys Ser Cys Glu Phe Cys Gly Lys
370 375 380

```
Thr Phe Lys Phe Gln Ser Asn Leu Val Val His Arg Arg Ser His Thr
385                 390                 395                 400

Gly Glu Lys Pro Tyr Lys Cys Asn Leu Cys Asp His Ala Cys Thr Gln
                405                 410                 415

Ala Ser Lys Leu Lys Arg His Met Lys Thr His Met His Lys Ser Ser
            420                 425                 430

Pro Met Thr Val Lys Ser Asp Asp Gly Leu Ser Thr Ala Ser Ser Pro
        435                 440                 445

Glu Pro Gly Thr Ser Asp Leu Val Gly Ser Ala Ser Ser Ala Leu Lys
    450                 455                 460

Ser Val Val Ala Lys Phe Lys Ser Glu Asn Asp Pro Asn Leu Ile Pro
465                 470                 475                 480

Glu Asn Gly Asp Glu Glu Glu Glu Glu Asp Asp Glu Glu Glu Glu Glu
                485                 490                 495

Glu Glu Glu Glu Glu Glu Glu Glu Leu Thr Glu Ser Glu Arg Val Asp
            500                 505                 510

Tyr Gly Phe Gly Leu Ser Leu Glu Ala Ala Arg His His Glu Asn Ser
        515                 520                 525

Ser Arg Gly Ala Val Val Gly Val Gly Asp Glu Ser Arg Ala Leu Pro
    530                 535                 540

Asp Val Met Gln Gly Met Val Leu Ser Ser Met Gln His Phe Ser Glu
545                 550                 555                 560

Ala Phe His Gln Val Leu Gly Glu Lys His Lys Arg Gly His Leu Ala
                565                 570                 575

Glu Ala Glu Gly His Arg Asp Thr Cys Asp Glu Asp Ser Val Ala Gly
            580                 585                 590

Glu Ser Asp Arg Ile Asp Asp Gly Thr Val Asn Gly Arg Gly Cys Ser
        595                 600                 605
```

```
Pro Gly Glu Ser Ala Ser Gly Gly Leu Ser Lys Lys Leu Leu Leu Gly
    610                 615                 620

Ser Pro Ser Ser Leu Ser Pro Phe Ser Lys Arg Ile Lys Leu Glu Lys
625                 630                 635                 640

Glu Phe Asp Leu Pro Pro Ala Ala Met Pro Asn Thr Glu Asn Val Tyr
                645                 650                 655

Ser Gln Trp Leu Ala Gly Tyr Ala Ala Ser Arg Gln Leu Lys Asp Pro
            660                 665                 670

Phe Leu Ser Phe Gly Asp Ser Arg Gln Ser Pro Phe Ala Ser Ser Ser
        675                 680                 685

Glu His Ser Ser Glu Asn Gly Ser Leu Arg Phe Ser Thr Pro Pro Gly
    690                 695                 700

Glu Leu Asp Gly Gly Ile Ser Gly Arg Ser Gly Thr Gly Ser Gly Gly
705                 710                 715                 720

Ser Thr Pro His Ile Ser Gly Pro Gly Pro Gly Arg Pro Ser Ser Lys
                725                 730                 735

Glu Gly Arg Arg Ser Asp Thr Cys Glu Tyr Cys Gly Lys Val Phe Lys
            740                 745                 750

Asn Cys Ser Asn Leu Thr Val His Arg Arg Ser His Thr Gly Glu Arg
        755                 760                 765

Pro Tyr Lys Cys Glu Leu Cys Asn Tyr Ala Cys Ala Gln Ser Ser Lys
    770                 775                 780

Leu Thr Arg His Met Lys Thr His Gly Gln Val Gly Lys Asp Val Tyr
785                 790                 795                 800

Lys Cys Glu Ile Cys Lys Met Pro Phe Ser Val Tyr Ser Thr Leu Glu
                805                 810                 815

Lys His Met Lys Lys Trp His Ser Asp Arg Val Leu Asn Asn Asp Ile
            820                 825                 830
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Lys Thr Glu
835

<210> 8436
<211> 773
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H165; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349300"

<400> 8436
Met Ser Arg Arg Lys Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu
1 5 10 15

Phe Ser Pro Glu Pro Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp
20 25 30

His Gly Pro Leu Gly Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys
35 40 45

Gly Gln Cys Gln Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile
50 55 60

Glu His Lys Arg Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala
65 70 75 80

Val Asp Lys Pro Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser
85 90 95

Asn Pro Val Glu Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys
100 105 110

```
Leu Ser Thr Ser Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala
        115                 120                 125

Asp Lys Leu Leu His Trp Arg Gly Leu Ser Ser Pro Arg Ser Ala His
    130                 135                 140

Gly Ala Leu Ile Pro Thr Pro Gly Met Ser Ala Glu Tyr Ala Pro Gln
145                 150                 155                 160

Gly Ile Cys Lys Asp Glu Pro Ser Ser Tyr Thr Cys Thr Thr Cys Lys
                165                 170                 175

Gln Pro Phe Thr Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr
            180                 185                 190

His Gly Leu Arg Ile Tyr Leu Glu Ser Glu His Gly Ser Pro Leu Thr
        195                 200                 205

Pro Arg Val Gly Ile Pro Ser Gly Leu Gly Ala Glu Cys Pro Ser Gln
    210                 215                 220

Pro Pro Leu His Gly Ile His Ile Ala Asp Asn Asn Pro Phe Asn Leu
225                 230                 235                 240

Leu Arg Ile Pro Gly Ser Val Ser Arg Glu Ala Ser Gly Leu Ala Glu
                245                 250                 255

Gly Arg Phe Pro Pro Thr Pro Pro Leu Phe Ser Pro Pro Pro Arg His
            260                 265                 270

His Leu Asp Pro His Arg Ile Glu Arg Leu Gly Ala Glu Glu Met Ala
        275                 280                 285

Leu Ala Thr His His Pro Ser Ala Phe Asp Arg Val Leu Arg Leu Asn
    290                 295                 300

Pro Met Ala Met Glu Pro Pro Ala Met Asp Phe Ser Arg Arg Leu Arg
305                 310                 315                 320

Glu Leu Ala Gly Asn Thr Ser Ser Pro Pro Leu Ser Pro Gly Arg Pro
                325                 330                 335
```

```
Ser Pro Met Gln Arg Leu Leu Gln Pro Phe Gln Pro Gly Ser Lys Pro
            340                 345                 350

Pro Phe Leu Ala Thr Pro Pro Leu Pro Pro Leu Gln Ser Ala Pro Pro
        355                 360                 365

Pro Ser Gln Pro Pro Val Lys Ser Lys Ser Cys Glu Phe Cys Gly Lys
    370                 375                 380

Thr Phe Lys Phe Gln Ser Asn Leu Val Val His Arg Arg Ser His Thr
385                 390                 395                 400

Gly Glu Lys Pro Tyr Lys Cys Asn Leu Cys Asp His Ala Cys Thr Gln
                405                 410                 415

Ala Ser Lys Leu Lys Arg His Met Lys Thr His Met His Lys Ser Ser
            420                 425                 430

Pro Met Thr Val Lys Ser Asp Asp Gly Leu Ser Thr Ala Ser Ser Pro
        435                 440                 445

Glu Pro Gly Thr Ser Asp Leu Val Gly Ser Ala Ser Ser Ala Leu Lys
    450                 455                 460

Ser Val Val Ala Lys Phe Lys Ser Glu Asn Asp Pro Asn Leu Ile Pro
465                 470                 475                 480

Glu Asn Gly Asp Glu Glu Glu Glu Glu Asp Asp Glu Glu Glu Glu Glu
                485                 490                 495

Glu Glu Glu Glu Glu Glu Glu Glu Leu Thr Glu Ser Glu Arg Val Asp
            500                 505                 510

Tyr Gly Phe Gly Leu Ser Leu Glu Ala Ala Arg His His Glu Asn Ser
        515                 520                 525

Ser Arg Gly Ala Val Val Gly Val Gly Asp Glu Ser Arg Ala Leu Pro
    530                 535                 540

Asp Val Met Gln Gly Met Val Leu Ser Ser Met Gln His Phe Ser Glu
545                 550                 555                 560
```

```
Ala Phe His Gln Val Leu Gly Glu Lys His Lys Arg Gly His Leu Ala
                565                 570                 575

Glu Ala Glu Gly His Arg Asp Thr Cys Asp Glu Asp Ser Val Ala Gly
            580                 585                 590

Glu Ser Asp Arg Ile Asp Asp Gly Thr Val Asn Gly Arg Gly Cys Ser
        595                 600                 605

Pro Gly Glu Ser Ala Ser Gly Gly Leu Ser Lys Lys Leu Leu Leu Gly
    610                 615                 620

Ser Pro Ser Ser Leu Ser Pro Phe Ser Lys Arg Ile Lys Leu Glu Lys
625                 630                 635                 640

Glu Phe Asp Leu Pro Pro Ala Ala Met Pro Asn Thr Glu Asn Val Tyr
                645                 650                 655

Ser Gln Trp Leu Ala Gly Tyr Ala Ala Ser Arg Gln Leu Lys Asp Pro
            660                 665                 670

Phe Leu Ser Phe Gly Asp Ser Arg Gln Ser Pro Phe Ala Ser Ser Ser
        675                 680                 685

Glu His Ser Ser Glu Asn Gly Ser Leu Arg Phe Ser Thr Pro Pro Gly
    690                 695                 700

Glu Leu Asp Gly Gly Ile Ser Gly Arg Ser Gly Thr Gly Ser Gly Gly
705                 710                 715                 720

Ser Thr Pro His Ile Ser Gly Pro Gly Pro Gly Arg Pro Ser Ser Lys
                725                 730                 735

Glu Gly Arg Arg Ser Asp Thr Cys Ser Ser His Thr Pro Ile Arg Arg
            740                 745                 750

Ser Thr Gln Arg Ala Gln Asp Val Trp Gln Phe Ser Asp Gly Ser Ser
        755                 760                 765

Arg Ala Leu Lys Phe
    770
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<210> 8437

<211> 801
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H165; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351307"

<400> 8437

```
Met Ser Arg Arg Lys Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu
1               5                  10                  15

Phe Ser Pro Glu Pro Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp
            20                  25                  30

His Gly Pro Leu Gly Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys
        35                  40                  45

Gly Gln Cys Gln Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile
    50                  55                  60

Glu His Lys Arg Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala
65                  70                  75                  80

Val Asp Lys Pro Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser
                85                  90                  95

Asn Pro Val Glu Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys
            100                 105                 110

Leu Ser Thr Ser Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala
        115                 120                 125
```

```
Gly Lys Asp Glu Pro Ser Ser Tyr Thr Cys Thr Thr Cys Lys Gln Pro
    130                 135                 140

Phe Thr Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr His Gly
145                 150                 155                 160

Leu Arg Ile Tyr Leu Glu Ser Glu His Gly Ser Pro Leu Thr Pro Arg
                165                 170                 175

Val Gly Ile Pro Ser Gly Leu Gly Ala Glu Cys Pro Ser Gln Pro Pro
            180                 185                 190

Leu His Gly Ile His Ile Ala Asp Asn Asn Pro Phe Asn Leu Leu Arg
        195                 200                 205

Ile Pro Gly Ser Val Ser Arg Glu Ala Ser Gly Leu Ala Glu Gly Arg
    210                 215                 220

Phe Pro Pro Thr Pro Pro Leu Phe Ser Pro Pro Pro Arg His His Leu
225                 230                 235                 240

Asp Pro His Arg Ile Glu Arg Leu Gly Ala Glu Glu Met Ala Leu Ala
                245                 250                 255

Thr His His Pro Ser Ala Phe Asp Arg Val Leu Arg Leu Asn Pro Met
            260                 265                 270

Ala Met Glu Pro Pro Ala Met Asp Phe Ser Arg Arg Leu Arg Glu Leu
        275                 280                 285

Ala Gly Asn Thr Ser Ser Pro Pro Leu Ser Pro Gly Arg Pro Ser Pro
    290                 295                 300

Met Gln Arg Leu Leu Gln Pro Phe Gln Pro Gly Ser Lys Pro Pro Phe
305                 310                 315                 320

Leu Ala Thr Pro Pro Leu Pro Pro Leu Gln Ser Ala Pro Pro Pro Ser
                325                 330                 335

Gln Pro Pro Val Lys Ser Lys Ser Cys Glu Phe Cys Gly Lys Thr Phe
            340                 345                 350
```

```
Lys Phe Gln Ser Asn Leu Val Val His Arg Arg Ser His Thr Gly Glu
        355                 360                 365

Lys Pro Tyr Lys Cys Asn Leu Cys Asp His Ala Cys Thr Gln Ala Ser
    370                 375                 380

Lys Leu Lys Arg His Met Lys Thr His Met His Lys Ser Ser Pro Met
385                 390                 395                 400

Thr Val Lys Ser Asp Asp Gly Leu Ser Thr Ala Ser Ser Pro Glu Pro
                405                 410                 415

Gly Thr Ser Asp Leu Val Gly Ser Ala Ser Ser Ala Leu Lys Ser Val
            420                 425                 430

Val Ala Lys Phe Lys Ser Glu Asn Asp Pro Asn Leu Ile Pro Glu Asn
        435                 440                 445

Gly Asp Glu Glu Glu Glu Glu Asp Asp Glu Glu Glu Glu Glu Glu Glu
    450                 455                 460

Glu Glu Glu Glu Glu Glu Leu Thr Glu Ser Glu Arg Val Asp Tyr Gly
465                 470                 475                 480

Phe Gly Leu Ser Leu Glu Ala Ala Arg His His Glu Asn Ser Ser Arg
                485                 490                 495

Gly Ala Val Val Gly Val Gly Asp Glu Ser Arg Ala Leu Pro Asp Val
            500                 505                 510

Met Gln Gly Met Val Leu Ser Ser Met Gln His Phe Ser Glu Ala Phe
        515                 520                 525

His Gln Val Leu Gly Glu Lys His Lys Arg Gly His Leu Ala Glu Ala
    530                 535                 540

Glu Gly His Arg Asp Thr Cys Asp Glu Asp Ser Val Ala Gly Glu Ser
545                 550                 555                 560

Asp Arg Ile Asp Asp Gly Thr Val Asn Gly Arg Gly Cys Ser Pro Gly
                565                 570                 575

Glu Ser Ala Ser Gly Gly Leu Ser Lys Lys Leu Leu Leu Gly Ser Pro
```

580 585 590

Ser Ser Leu Ser Pro Phe Ser Lys Arg Ile Lys Leu Glu Lys Glu Phe
595 600 605

Asp Leu Pro Pro Ala Ala Met Pro Asn Thr Glu Asn Val Tyr Ser Gln
610 615 620

Trp Leu Ala Gly Tyr Ala Ala Ser Arg Gln Leu Lys Asp Pro Phe Leu
625 630 635 640

Ser Phe Gly Asp Ser Arg Gln Ser Pro Phe Ala Ser Ser Ser Glu His
645 650 655

Ser Ser Glu Asn Gly Ser Leu Arg Phe Ser Thr Pro Pro Gly Glu Leu
660 665 670

Asp Gly Gly Ile Ser Gly Arg Ser Gly Thr Gly Ser Gly Gly Ser Thr
675 680 685

Pro His Ile Ser Gly Pro Gly Pro Gly Arg Pro Ser Ser Lys Glu Gly
690 695 700

Arg Arg Ser Asp Thr Cys Glu Tyr Cys Gly Lys Val Phe Lys Asn Cys
705 710 715 720

Ser Asn Leu Thr Val His Arg Arg Ser His Thr Gly Glu Arg Pro Tyr
725 730 735

Lys Cys Glu Leu Cys Asn Tyr Ala Cys Ala Gln Ser Ser Lys Leu Thr
740 745 750

Arg His Met Lys Thr His Gly Gln Val Gly Lys Asp Val Tyr Lys Cys
755 760 765

Glu Ile Cys Lys Met Pro Phe Ser Val Tyr Ser Thr Leu Glu Lys His
770 775 780

Met Lys Lys Trp His Ser Asp Arg Val Leu Asn Asn Asp Ile Lys Thr
785 790 795 800

Glu

<210> 8438
<211> 243
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H165; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000352648"

<400> 8438
Met Ser Arg Arg Lys Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu
1   5   10   15

Phe Ser Pro Glu Pro Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp
            20   25   30

His Gly Pro Leu Gly Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys
        35   40   45

Gly Gln Cys Gln Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile
    50   55   60

Glu His Lys Arg Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala
65   70   75   80

Val Asp Lys Pro Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser
                85   90   95

Asn Pro Val Glu Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys
            100   105   110

```
Leu Ser Thr Ser Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala
        115                 120                 125

Asp Lys Leu Leu His Trp Arg Gly Leu Ser Ser Pro Arg Ser Ala His
    130                 135                 140

Gly Ala Leu Ile Pro Thr Pro Gly Met Ser Ala Glu Tyr Ala Pro Gln
145                 150                 155                 160

Gly Ile Cys Lys Asp Glu Pro Ser Ser Tyr Thr Cys Thr Thr Cys Lys
                165                 170                 175

Gln Pro Phe Thr Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr
            180                 185                 190

His Gly Leu Arg Ile Tyr Leu Glu Ser Glu His Gly Ser Pro Leu Thr
        195                 200                 205

Pro Arg Val Leu His Thr Pro Pro Phe Gly Val Val Pro Arg Glu Leu
    210                 215                 220

Lys Met Cys Gly Ser Phe Arg Met Glu Ala Arg Glu Pro Leu Ser Ser
225                 230                 235                 240

Glu Lys Ile
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<210> 8439
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<220>
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B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
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<223> /note="ENSP ID: ENSP00000487844"

<400> 8439
Met Ser Arg Arg Lys Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu
1 5 10 15

Phe Ser Pro Glu Pro Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp
20 25 30

His Gly Pro Leu Gly Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys
35 40 45

Gly Gln Cys Gln Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile
50 55 60

Glu His Lys Arg Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala
65 70 75 80

Val Asp Lys Pro Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser
85 90 95

Asn Pro Val Glu Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys
100 105 110

Leu Ser Thr Ser Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala
115 120 125

Ala Gln Thr Glu Leu Glu Asp Val Phe Val Tyr Leu Met Val
130 135 140

<210> 8440
<211> 191
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
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B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000488390"

<400> 8440
Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile Glu His Lys Arg
1 5 10 15

Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala Val Asp Lys Pro
20 25 30

Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser Asn Pro Val Glu
35 40 45

Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys Leu Ser Thr Ser
50 55 60

Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala Asp Lys Leu Leu
65 70 75 80

His Trp Arg Gly Leu Ser Ser Pro Arg Ser Ala His Gly Ala Leu Ile
85 90 95

Pro Thr Pro Gly Met Ser Ala Glu Tyr Ala Pro Gln Gly Ile Cys Lys
100 105 110

Asp Glu Pro Ser Ser Tyr Thr Cys Thr Thr Cys Lys Gln Pro Phe Thr
115 120 125

Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr His Gly Leu Arg
130 135 140

Ile Tyr Leu Glu Ser Glu His Gly Ser Pro Leu Thr Pro Arg Val Leu
145 150 155 160

His Thr Pro Pro Phe Gly Val Val Pro Arg Glu Leu Lys Met Cys Gly
165 170 175

Ser Phe Arg Met Glu Ala Arg Glu Pro Leu Ser Ser Glu Lys Ile
180 185 190

<210> 8441
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488636"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8441
Xaa Lys Lys Trp His Ser Asp Arg Val Leu Asn Asn Asp Ile Lys Thr
1 5 10 15

Glu

<210> 8442
<211> 167
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1752; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11A; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 11A (zinc finger prt); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488886"

<400> 8442
Met Ser Arg Arg Lys Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu
1 5 10 15

```
Phe Ser Pro Glu Pro Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp
            20                  25                  30

His Gly Pro Leu Gly Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys
        35                  40                  45

Gly Gln Cys Gln Met Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile
    50                  55                  60

Glu His Lys Arg Lys Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala
65                  70                  75                  80

Val Asp Lys Pro Pro Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser
                85                  90                  95

Asn Pro Val Glu Val Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys
            100                 105                 110

Leu Ser Thr Ser Ser Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala
        115                 120                 125

Gly Asn Pro Arg Gly Ser Ser Glu Lys Ser Pro Gly Cys Gln Cys Lys
    130                 135                 140

Gly Pro Ala Leu Ser Pro Arg Arg Pro Ser Gly Lys Cys Thr Gly Leu
145                 150                 155                 160

Gln Leu Phe Pro Arg Pro Leu
                165
```

<210> 8443
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1753; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11B; "

<220>
<221> source

<223> /note="Gene Name:
B-cell CLL/lymphoma 11B (zinc finger prt); "

<220>
<221> source
<223> /note="Uniprot ID: Q9C0K0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000280435"

<400> 8443

```
Met Ser Arg Arg Lys Gln Gly Asn Pro Gln His Leu Ser Gln Arg Glu
1               5                  10                  15

Leu Ile Thr Pro Glu Ala Asp His Val Glu Ala Ala Ile Leu Glu Glu
            20                  25                  30

Asp Glu Gly Leu Glu Ile Glu Glu Pro Ser Gly Leu Gly Leu Met Val
        35                  40                  45

Gly Gly Pro Asp Pro Asp Leu Leu Thr Cys Gly Gln Cys Gln Met Asn
    50                  55                  60

Phe Pro Leu Gly Asp Ile Leu Val Phe Ile Glu His Lys Arg Lys Gln
65                  70                  75                  80

Cys Gly Gly Ser Leu Gly Ala Cys Tyr Asp Lys Ala Leu Asp Lys Asp
                85                  90                  95

Ser Pro Pro Pro Ser Ser Arg Ser Glu Leu Arg Lys Val Ser Glu Pro
            100                 105                 110

Val Glu Ile Gly Ile Gln Val Thr Pro Asp Glu Asp Asp His Leu Leu
        115                 120                 125

Ser Pro Thr Lys Gly Ile Cys Pro Lys Gln Glu Asn Ile Ala Gly Lys
    130                 135                 140

Asp Glu Pro Ser Ser Tyr Ile Cys Thr Thr Cys Lys Gln Pro Phe Asn
145                 150                 155                 160

Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr His Gly Phe Arg
                165                 170                 175

Ile Tyr Leu Glu Pro Gly Pro Ala Ser Ser Ser Leu Thr Pro Arg Leu
```

```
            180                 185                 190

Thr Ile Pro Pro Pro Leu Gly Pro Glu Ala Val Ala Gln Ser Pro Leu
        195                 200                 205

Met Asn Phe Leu Gly Asp Ser Asn Pro Phe Asn Leu Leu Arg Met Thr
    210                 215                 220

Gly Pro Ile Leu Arg Asp His Pro Gly Phe Gly Glu Gly Arg Leu Pro
225                 230                 235                 240

Gly Thr Pro Pro Leu Phe Ser Pro Pro Pro Arg His His Leu Asp Pro
                245                 250                 255

His Arg Leu Ser Ala Glu Glu Met Gly Leu Val Ala Gln His Pro Ser
            260                 265                 270

Ala Phe Asp Arg Val Met Arg Leu Asn Pro Met Ala Ile Asp Ser Pro
        275                 280                 285

Ala Met Asp Phe Ser Arg Arg Leu Arg Glu Leu Ala Gly Asn Ser Ser
    290                 295                 300

Thr Pro Pro Pro Val Ser Pro Gly Arg Gly Asn Pro Met His Arg Leu
305                 310                 315                 320

Leu Asn Pro Phe Gln Pro Ser Pro Lys Ser Pro Phe Leu Ser Thr Pro
                325                 330                 335

Pro Leu Pro Pro Met Pro Pro Gly Gly Thr Pro Pro Pro Gln Pro Pro
            340                 345                 350

Ala Lys Ser Lys Ser Cys Glu Phe Cys Gly Lys Thr Phe Lys Phe Gln
        355                 360                 365

Ser Asn Leu Ile Val His Arg Arg Ser His Thr Gly Glu Lys Pro Tyr
    370                 375                 380

Lys Cys Gln Leu Cys Asp His Ala Cys Ser Gln Ala Ser Lys Leu Lys
385                 390                 395                 400

Arg His Met Lys Thr His Met His Lys Ala Gly Ser Leu Ala Gly Arg
                405                 410                 415
```

Ser Asp Asp Gly Leu Ser Ala Ala Ser Ser Pro Glu Pro Gly Thr Ser
420 425 430

Glu Leu Ala Gly Glu Gly Leu Lys Ala Ala Asp Gly Asp Phe Arg His
435 440 445

His Glu Ser Asp Pro Ser Leu Gly His Glu Pro Glu Glu Glu Asp Glu
450 455 460

Glu Glu Glu Glu Glu Glu Glu Glu Leu Leu Leu Glu Asn Glu Ser Arg
465 470 475 480

Pro Glu Ser Ser Phe Ser Met Asp Ser Glu Leu Ser Arg Asn Arg Glu
485 490 495

Asn Gly Gly Gly Gly Val Pro Gly Val Pro Gly Ala Gly Gly Gly Ala
500 505 510

Ala Lys Ala Leu Ala Asp Glu Lys Ala Leu Val Leu Gly Lys Val Met
515 520 525

Glu Asn Val Gly Leu Gly Ala Leu Pro Gln Tyr Gly Glu Leu Leu Ala
530 535 540

Asp Lys Gln Lys Arg Gly Ala Phe Leu Lys Arg Ala Ala Gly Gly Gly
545 550 555 560

Asp Ala Gly Asp Asp Asp Asp Ala Gly Gly Cys Gly Asp Ala Gly Ala
565 570 575

Gly Gly Ala Val Asn Gly Arg Gly Gly Gly Phe Ala Pro Gly Thr Glu
580 585 590

Pro Phe Pro Gly Leu Phe Pro Arg Lys Pro Ala Pro Leu Pro Ser Pro
595 600 605

Gly Leu Asn Ser Ala Ala Lys Arg Ile Lys Val Glu Lys Asp Leu Glu
610 615 620

Leu Pro Pro Ala Ala Leu Ile Pro Ser Glu Asn Val Tyr Ser Gln Trp
625 630 635 640

```
Leu Val Gly Tyr Ala Ala Ser Arg His Phe Met Lys Asp Pro Phe Leu
                645                 650                 655

Gly Phe Thr Asp Ala Arg Gln Ser Pro Phe Ala Thr Ser Ser Glu His
            660                 665                 670

Ser Ser Glu Asn Gly Ser Leu Arg Phe Ser Thr Pro Pro Gly Asp Leu
        675                 680                 685

Leu Asp Gly Gly Leu Ser Gly Arg Ser Gly Thr Ala Ser Gly Gly Ser
    690                 695                 700

Thr Pro His Leu Gly Gly Pro Gly Pro Gly Arg Pro Ser Ser Lys Glu
705                 710                 715                 720

Gly Arg Arg Ser Asp Thr Cys Glu Tyr Cys Gly Lys Val Phe Lys Asn
                725                 730                 735

Cys Ser Asn Leu Thr Val His Arg Arg Ser His Thr Gly Glu Arg Pro
            740                 745                 750

Tyr Lys Cys Glu Leu Cys Asn Tyr Ala Cys Ala Gln Ser Ser Lys Leu
        755                 760                 765

Thr Arg His Met Lys Thr His Gly Gln Ile Gly Lys Glu Val Tyr Arg
    770                 775                 780

Cys Asp Ile Cys Gln Met Pro Phe Ser Val Tyr Ser Thr Leu Glu Lys
785                 790                 795                 800

His Met Lys Lys Trp His Gly Glu His Leu Leu Thr Asn Asp Val Lys
                805                 810                 815

Ile Glu Gln Ala Glu Arg Ser
            820
```

<210> 8444
<211> 894
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1753; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11B; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 11B (zinc finger prt); "

<220>
<221> source
<223> /note="Uniprot ID: Q9C0K0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349723"

<400> 8444

```
Met Ser Arg Arg Lys Gln Gly Asn Pro Gln His Leu Ser Gln Arg Glu
1               5                  10                  15

Leu Ile Thr Pro Glu Ala Asp His Val Glu Ala Ala Ile Leu Glu Glu
            20                  25                  30

Asp Glu Gly Leu Glu Ile Glu Glu Pro Ser Gly Leu Gly Leu Met Val
        35                  40                  45

Gly Gly Pro Asp Pro Asp Leu Leu Thr Cys Gly Gln Cys Gln Met Asn
    50                  55                  60

Phe Pro Leu Gly Asp Ile Leu Val Phe Ile Glu His Lys Arg Lys Gln
65                  70                  75                  80

Cys Gly Gly Ser Leu Gly Ala Cys Tyr Asp Lys Ala Leu Asp Lys Asp
                85                  90                  95

Ser Pro Pro Pro Ser Ser Arg Ser Glu Leu Arg Lys Val Ser Glu Pro
            100                 105                 110

Val Glu Ile Gly Ile Gln Val Thr Pro Asp Glu Asp Asp His Leu Leu
        115                 120                 125

Ser Pro Thr Lys Gly Ile Cys Pro Lys Gln Glu Asn Ile Ala Gly Pro
    130                 135                 140

Cys Arg Pro Ala Gln Leu Pro Ala Val Ala Pro Ile Ala Ala Ser Ser
145                 150                 155                 160
```

```
His Pro His Ser Ser Val Ile Thr Ser Pro Leu Arg Ala Leu Gly Ala
                165                 170                 175

Leu Pro Pro Cys Leu Pro Leu Pro Cys Cys Ser Ala Arg Pro Val Ser
            180                 185                 190

Gly Asp Gly Thr Gln Gly Glu Gly Gln Thr Glu Ala Pro Phe Gly Cys
        195                 200                 205

Gln Cys Gln Leu Ser Gly Lys Asp Glu Pro Ser Ser Tyr Ile Cys Thr
    210                 215                 220

Thr Cys Lys Gln Pro Phe Asn Ser Ala Trp Phe Leu Leu Gln His Ala
225                 230                 235                 240

Gln Asn Thr His Gly Phe Arg Ile Tyr Leu Glu Pro Gly Pro Ala Ser
                245                 250                 255

Ser Ser Leu Thr Pro Arg Leu Thr Ile Pro Pro Pro Leu Gly Pro Glu
            260                 265                 270

Ala Val Ala Gln Ser Pro Leu Met Asn Phe Leu Gly Asp Ser Asn Pro
        275                 280                 285

Phe Asn Leu Leu Arg Met Thr Gly Pro Ile Leu Arg Asp His Pro Gly
    290                 295                 300

Phe Gly Glu Gly Arg Leu Pro Gly Thr Pro Pro Leu Phe Ser Pro Pro
305                 310                 315                 320

Pro Arg His His Leu Asp Pro His Arg Leu Ser Ala Glu Glu Met Gly
                325                 330                 335

Leu Val Ala Gln His Pro Ser Ala Phe Asp Arg Val Met Arg Leu Asn
            340                 345                 350

Pro Met Ala Ile Asp Ser Pro Ala Met Asp Phe Ser Arg Arg Leu Arg
        355                 360                 365

Glu Leu Ala Gly Asn Ser Ser Thr Pro Pro Pro Val Ser Pro Gly Arg
    370                 375                 380
```

```
Gly Asn Pro Met His Arg Leu Leu Asn Pro Phe Gln Pro Ser Pro Lys
385                 390                 395                 400

Ser Pro Phe Leu Ser Thr Pro Pro Leu Pro Pro Met Pro Pro Gly Gly
                405                 410                 415

Thr Pro Pro Pro Gln Pro Pro Ala Lys Ser Lys Ser Cys Glu Phe Cys
            420                 425                 430

Gly Lys Thr Phe Lys Phe Gln Ser Asn Leu Ile Val His Arg Arg Ser
        435                 440                 445

His Thr Gly Glu Lys Pro Tyr Lys Cys Gln Leu Cys Asp His Ala Cys
    450                 455                 460

Ser Gln Ala Ser Lys Leu Lys Arg His Met Lys Thr His Met His Lys
465                 470                 475                 480

Ala Gly Ser Leu Ala Gly Arg Ser Asp Asp Gly Leu Ser Ala Ala Ser
                485                 490                 495

Ser Pro Glu Pro Gly Thr Ser Glu Leu Ala Gly Glu Gly Leu Lys Ala
            500                 505                 510

Ala Asp Gly Asp Phe Arg His His Glu Ser Asp Pro Ser Leu Gly His
        515                 520                 525

Glu Pro Glu Glu Glu Asp Glu Glu Glu Glu Glu Glu Glu Glu Glu Leu
    530                 535                 540

Leu Leu Glu Asn Glu Ser Arg Pro Glu Ser Ser Phe Ser Met Asp Ser
545                 550                 555                 560

Glu Leu Ser Arg Asn Arg Glu Asn Gly Gly Gly Gly Val Pro Gly Val
                565                 570                 575

Pro Gly Ala Gly Gly Gly Ala Ala Lys Ala Leu Ala Asp Glu Lys Ala
            580                 585                 590

Leu Val Leu Gly Lys Val Met Glu Asn Val Gly Leu Gly Ala Leu Pro
        595                 600                 605
```

```
Gln Tyr Gly Glu Leu Leu Ala Asp Lys Gln Lys Arg Gly Ala Phe Leu
    610                 615                 620

Lys Arg Ala Ala Gly Gly Gly Asp Ala Gly Asp Asp Asp Asp Ala Gly
625                 630                 635                 640

Gly Cys Gly Asp Ala Gly Ala Gly Gly Ala Val Asn Gly Arg Gly Gly
                645                 650                 655

Gly Phe Ala Pro Gly Thr Glu Pro Phe Pro Gly Leu Phe Pro Arg Lys
            660                 665                 670

Pro Ala Pro Leu Pro Ser Pro Gly Leu Asn Ser Ala Ala Lys Arg Ile
        675                 680                 685

Lys Val Glu Lys Asp Leu Glu Leu Pro Pro Ala Ala Leu Ile Pro Ser
    690                 695                 700

Glu Asn Val Tyr Ser Gln Trp Leu Val Gly Tyr Ala Ala Ser Arg His
705                 710                 715                 720

Phe Met Lys Asp Pro Phe Leu Gly Phe Thr Asp Ala Arg Gln Ser Pro
                725                 730                 735

Phe Ala Thr Ser Ser Glu His Ser Ser Glu Asn Gly Ser Leu Arg Phe
            740                 745                 750

Ser Thr Pro Pro Gly Asp Leu Leu Asp Gly Gly Leu Ser Gly Arg Ser
        755                 760                 765

Gly Thr Ala Ser Gly Gly Ser Thr Pro His Leu Gly Gly Pro Gly Pro
    770                 775                 780

Gly Arg Pro Ser Ser Lys Glu Gly Arg Arg Ser Asp Thr Cys Glu Tyr
785                 790                 795                 800

Cys Gly Lys Val Phe Lys Asn Cys Ser Asn Leu Thr Val His Arg Arg
                805                 810                 815

Ser His Thr Gly Glu Arg Pro Tyr Lys Cys Glu Leu Cys Asn Tyr Ala
            820                 825                 830

Cys Ala Gln Ser Ser Lys Leu Thr Arg His Met Lys Thr His Gly Gln
```

835 840 845

Ile Gly Lys Glu Val Tyr Arg Cys Asp Ile Cys Gln Met Pro Phe Ser
850 855 860

Val Tyr Ser Thr Leu Glu Lys His Met Lys Lys Trp His Gly Glu His
865 870 875 880

Leu Leu Thr Asn Asp Val Lys Ile Glu Gln Ala Glu Arg Ser
885 890

<210> 8445
<211> 700
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1753; "

<220>
<221> source
<223> /note="Gene Symbol: BCL11B; "

<220>
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B-cell CLL/lymphoma 11B (zinc finger prt); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387419"

<400> 8445
Met Ser Arg Arg Lys Gln Gly Asn Pro Gln His Leu Ser Gln Arg Glu
1 5 10 15

Leu Ile Thr Arg Lys Asp Glu Pro Ser Ser Tyr Ile Cys Thr Thr Cys
20 25 30

Lys Gln Pro Phe Asn Ser Ala Trp Phe Leu Leu Gln His Ala Gln Asn
35 40 45

Thr His Gly Phe Arg Ile Tyr Leu Glu Pro Gly Pro Ala Ser Ser Ser
50 55 60

Leu Thr Pro Arg Leu Thr Ile Pro Pro Pro Leu Gly Pro Glu Ala Val
65 70 75 80

```
Ala Gln Ser Pro Leu Met Asn Phe Leu Gly Asp Ser Asn Pro Phe Asn
                85                  90                  95

Leu Leu Arg Met Thr Gly Pro Ile Leu Arg Asp His Pro Gly Phe Gly
            100                 105                 110

Glu Gly Arg Leu Pro Gly Thr Pro Pro Leu Phe Ser Pro Pro Pro Arg
        115                 120                 125

His His Leu Asp Pro His Arg Leu Ser Ala Glu Glu Met Gly Leu Val
    130                 135                 140

Ala Gln His Pro Ser Ala Phe Asp Arg Val Met Arg Leu Asn Pro Met
145                 150                 155                 160

Ala Ile Asp Ser Pro Ala Met Asp Phe Ser Arg Arg Leu Arg Glu Leu
                165                 170                 175

Ala Gly Asn Ser Ser Thr Pro Pro Pro Val Ser Pro Gly Arg Gly Asn
            180                 185                 190

Pro Met His Arg Leu Leu Asn Pro Phe Gln Pro Ser Pro Lys Ser Pro
        195                 200                 205

Phe Leu Ser Thr Pro Pro Leu Pro Pro Met Pro Pro Gly Gly Thr Pro
    210                 215                 220

Pro Pro Gln Pro Pro Ala Lys Ser Lys Ser Cys Glu Phe Cys Gly Lys
225                 230                 235                 240

Thr Phe Lys Phe Gln Ser Asn Leu Ile Val His Arg Arg Ser His Thr
                245                 250                 255

Gly Glu Lys Pro Tyr Lys Cys Gln Leu Cys Asp His Ala Cys Ser Gln
            260                 265                 270

Ala Ser Lys Leu Lys Arg His Met Lys Thr His Met His Lys Ala Gly
        275                 280                 285

Ser Leu Ala Gly Arg Ser Asp Asp Gly Leu Ser Ala Ala Ser Ser Pro
    290                 295                 300
```

```
Glu Pro Gly Thr Ser Glu Leu Ala Gly Glu Gly Leu Lys Ala Ala Asp
305                 310                 315                 320

Gly Asp Phe Arg His His Glu Ser Asp Pro Ser Leu Gly His Glu Pro
                325                 330                 335

Glu Glu Glu Asp Glu Glu Glu Glu Glu Glu Glu Glu Glu Leu Leu Leu
            340                 345                 350

Glu Asn Glu Ser Arg Pro Glu Ser Ser Phe Ser Met Asp Ser Glu Leu
        355                 360                 365

Ser Arg Asn Arg Glu Asn Gly Gly Gly Gly Val Pro Gly Val Pro Gly
    370                 375                 380

Ala Gly Gly Gly Ala Ala Lys Ala Leu Ala Asp Glu Lys Ala Leu Val
385                 390                 395                 400

Leu Gly Lys Val Met Glu Asn Val Gly Leu Gly Ala Leu Pro Gln Tyr
                405                 410                 415

Gly Glu Leu Leu Ala Asp Lys Gln Lys Arg Gly Ala Phe Leu Lys Arg
            420                 425                 430

Ala Ala Gly Gly Gly Asp Ala Gly Asp Asp Asp Asp Ala Gly Gly Cys
        435                 440                 445

Gly Asp Ala Gly Ala Gly Gly Ala Val Asn Gly Arg Gly Gly Gly Phe
    450                 455                 460

Ala Pro Gly Thr Glu Pro Phe Pro Gly Leu Phe Pro Arg Lys Pro Ala
465                 470                 475                 480

Pro Leu Pro Ser Pro Gly Leu Asn Ser Ala Ala Lys Arg Ile Lys Val
                485                 490                 495

Glu Lys Asp Leu Glu Leu Pro Pro Ala Ala Leu Ile Pro Ser Glu Asn
            500                 505                 510

Val Tyr Ser Gln Trp Leu Val Gly Tyr Ala Ala Ser Arg His Phe Met
        515                 520                 525

Lys Asp Pro Phe Leu Gly Phe Thr Asp Ala Arg Gln Ser Pro Phe Ala
```

```
    530                 535                 540

Thr Ser Ser Glu His Ser Ser Glu Asn Gly Ser Leu Arg Phe Ser Thr
545                 550                 555                 560

Pro Pro Gly Asp Leu Leu Asp Gly Gly Leu Ser Gly Arg Ser Gly Thr
                565                 570                 575

Ala Ser Gly Gly Ser Thr Pro His Leu Gly Gly Pro Gly Pro Gly Arg
            580                 585                 590

Pro Ser Ser Lys Glu Gly Arg Arg Ser Asp Thr Cys Glu Tyr Cys Gly
        595                 600                 605

Lys Val Phe Lys Asn Cys Ser Asn Leu Thr Val His Arg Arg Ser His
    610                 615                 620

Thr Gly Glu Arg Pro Tyr Lys Cys Glu Leu Cys Asn Tyr Ala Cys Ala
625                 630                 635                 640

Gln Ser Ser Lys Leu Thr Arg His Met Lys Thr His Gly Gln Ile Gly
                645                 650                 655

Lys Glu Val Tyr Arg Cys Asp Ile Cys Gln Met Pro Phe Ser Val Tyr
            660                 665                 670

Ser Thr Leu Glu Lys His Met Lys Lys Trp His Gly Glu His Leu Leu
        675                 680                 685

Thr Asn Asp Val Lys Ile Glu Gln Ala Glu Arg Ser
    690                 695                 700


<210> 8446
<211> 239
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BCL2; "

<220>
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<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 2; "

<220>
<221> source
<223> /note="Uniprot ID: P10415; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000329623"

<400> 8446

```
Met Ala His Ala Gly Arg Thr Gly Tyr Asp Asn Arg Glu Ile Val Met
1               5                  10                  15

Lys Tyr Ile His Tyr Lys Leu Ser Gln Arg Gly Tyr Glu Trp Asp Ala
            20                  25                  30

Gly Asp Val Gly Ala Ala Pro Pro Gly Ala Ala Pro Ala Pro Gly Ile
        35                  40                  45

Phe Ser Ser Gln Pro Gly His Thr Pro His Pro Ala Ala Ser Arg Asp
    50                  55                  60

Pro Val Ala Arg Thr Ser Pro Leu Gln Thr Pro Ala Ala Pro Gly Ala
65                  70                  75                  80

Ala Ala Gly Pro Ala Leu Ser Pro Val Pro Pro Val Val His Leu Thr
                85                  90                  95

Leu Arg Gln Ala Gly Asp Asp Phe Ser Arg Arg Tyr Arg Arg Asp Phe
            100                 105                 110

Ala Glu Met Ser Ser Gln Leu His Leu Thr Pro Phe Thr Ala Arg Gly
        115                 120                 125

Arg Phe Ala Thr Val Val Glu Glu Leu Phe Arg Asp Gly Val Asn Trp
    130                 135                 140

Gly Arg Ile Val Ala Phe Phe Glu Phe Gly Gly Val Met Cys Val Glu
145                 150                 155                 160

Ser Val Asn Arg Glu Met Ser Pro Leu Val Asp Asn Ile Ala Leu Trp
                165                 170                 175
```

```
Met Thr Glu Tyr Leu Asn Arg His Leu His Thr Trp Ile Gln Asp Asn
            180                 185                 190


Gly Gly Trp Asp Ala Phe Val Glu Leu Tyr Gly Pro Ser Met Arg Pro
        195                 200                 205


Leu Phe Asp Phe Ser Trp Leu Ser Leu Lys Thr Leu Leu Ser Leu Ala
    210                 215                 220


Leu Val Gly Ala Cys Ile Thr Leu Gly Ala Tyr Leu Gly His Lys
225                 230                 235


<210> 8447
<211> 239
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P10415; "

<220>
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<223> /note="ENSP ID: ENSP00000381185"

<400> 8447
Met Ala His Ala Gly Arg Thr Gly Tyr Asp Asn Arg Glu Ile Val Met
1               5                   10                  15


Lys Tyr Ile His Tyr Lys Leu Ser Gln Arg Gly Tyr Glu Trp Asp Ala
            20                  25                  30


Gly Asp Val Gly Ala Ala Pro Pro Gly Ala Ala Pro Ala Pro Gly Ile
        35                  40                  45


Phe Ser Ser Gln Pro Gly His Thr Pro His Pro Ala Ala Ser Arg Asp
    50                  55                  60
```

```
Pro Val Ala Arg Thr Ser Pro Leu Gln Thr Pro Ala Ala Pro Gly Ala
65                  70                  75                  80

Ala Ala Gly Pro Ala Leu Ser Pro Val Pro Pro Val Val His Leu Thr
                85                  90                  95

Leu Arg Gln Ala Gly Asp Asp Phe Ser Arg Arg Tyr Arg Arg Asp Phe
            100                 105                 110

Ala Glu Met Ser Ser Gln Leu His Leu Thr Pro Phe Thr Ala Arg Gly
        115                 120                 125

Arg Phe Ala Thr Val Val Glu Glu Leu Phe Arg Asp Gly Val Asn Trp
    130                 135                 140

Gly Arg Ile Val Ala Phe Phe Glu Phe Gly Gly Val Met Cys Val Glu
145                 150                 155                 160

Ser Val Asn Arg Glu Met Ser Pro Leu Val Asp Asn Ile Ala Leu Trp
                165                 170                 175

Met Thr Glu Tyr Leu Asn Arg His Leu His Thr Trp Ile Gln Asp Asn
            180                 185                 190

Gly Gly Trp Asp Ala Phe Val Glu Leu Tyr Gly Pro Ser Met Arg Pro
        195                 200                 205

Leu Phe Asp Phe Ser Trp Leu Ser Leu Lys Thr Leu Leu Ser Leu Ala
    210                 215                 220

Leu Val Gly Ala Cys Ile Thr Leu Gly Ala Tyr Leu Gly His Lys
225                 230                 235


<210> 8448
<211> 205
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1754; "

<220>
<221> source
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<223> /note="Gene Symbol: BCL2; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 2; "

<220>
<221> source
<223> /note="Uniprot ID: P10415; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466417"

<400> 8448

```
Met Ala His Ala Gly Arg Thr Gly Tyr Asp Asn Arg Glu Ile Val Met
1               5                   10                  15

Lys Tyr Ile His Tyr Lys Leu Ser Gln Arg Gly Tyr Glu Trp Asp Ala
            20                  25                  30

Gly Asp Val Gly Ala Ala Pro Pro Gly Ala Ala Pro Ala Pro Gly Ile
        35                  40                  45

Phe Ser Ser Gln Pro Gly His Thr Pro His Pro Ala Ala Ser Arg Asp
    50                  55                  60

Pro Val Ala Arg Thr Ser Pro Leu Gln Thr Pro Ala Ala Pro Gly Ala
65                  70                  75                  80

Ala Ala Gly Pro Ala Leu Ser Pro Val Pro Pro Val Val His Leu Thr
                85                  90                  95

Leu Arg Gln Ala Gly Asp Asp Phe Ser Arg Arg Tyr Arg Arg Asp Phe
            100                 105                 110

Ala Glu Met Ser Ser Gln Leu His Leu Thr Pro Phe Thr Ala Arg Gly
        115                 120                 125

Arg Phe Ala Thr Val Val Glu Glu Leu Phe Arg Asp Gly Val Asn Trp
    130                 135                 140

Gly Arg Ile Val Ala Phe Phe Glu Phe Gly Gly Val Met Cys Val Glu
145                 150                 155                 160

Ser Val Asn Arg Glu Met Ser Pro Leu Val Asp Asn Ile Ala Leu Trp
```

```
                165                 170                 175

Met Thr Glu Tyr Leu Asn Arg His Leu His Thr Trp Ile Gln Asp Asn
            180                 185                 190

Gly Gly Trp Val Gly Ala Leu Gly Asp Val Ser Leu Gly
        195                 200                 205


<210> 8449
<211> 454
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1755; "

<220>
<221> source
<223> /note="Gene Symbol: BCL3; "

<220>
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<223> /note="Gene Name:
      B-cell CLL/lymphoma 3; "

<220>
<221> source
<223> /note="Uniprot ID:  P20749; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000164227"

<400> 8449
Met Pro Arg Cys Pro Ala Gly Ala Met Asp Glu Gly Pro Val Asp Leu
1               5                   10                  15

Arg Thr Arg Pro Lys Ala Ala Gly Leu Pro Gly Ala Ala Leu Pro Leu
            20                  25                  30

Arg Lys Arg Pro Leu Arg Ala Pro Ser Pro Glu Pro Ala Ala Pro Arg
        35                  40                  45

Gly Ala Ala Gly Leu Val Val Pro Leu Asp Pro Leu Arg Gly Gly Cys
    50                  55                  60

Asp Leu Pro Ala Val Pro Gly Pro Pro His Gly Leu Ala Arg Pro Glu
65                  70                  75                  80
```

```
Ala Leu Tyr Tyr Pro Gly Ala Leu Leu Pro Leu Tyr Pro Thr Arg Ala
                85                  90                  95

Met Gly Ser Pro Phe Pro Leu Val Asn Leu Pro Thr Pro Leu Tyr Pro
            100                 105                 110

Met Met Cys Pro Met Glu His Pro Leu Ser Ala Asp Ile Ala Met Ala
        115                 120                 125

Thr Arg Ala Asp Glu Asp Gly Asp Thr Pro Leu His Ile Ala Val Val
    130                 135                 140

Gln Gly Asn Leu Pro Ala Val His Arg Leu Val Asn Leu Phe Gln Gln
145                 150                 155                 160

Gly Gly Arg Glu Leu Asp Ile Tyr Asn Asn Leu Arg Gln Thr Pro Leu
                165                 170                 175

His Leu Ala Val Ile Thr Thr Leu Pro Ser Val Val Arg Leu Leu Val
            180                 185                 190

Thr Ala Gly Ala Ser Pro Met Ala Leu Asp Arg His Gly Gln Thr Ala
        195                 200                 205

Ala His Leu Ala Cys Glu His Arg Ser Pro Thr Cys Leu Arg Ala Leu
    210                 215                 220

Leu Asp Ser Ala Ala Pro Gly Thr Leu Asp Leu Glu Ala Arg Asn Tyr
225                 230                 235                 240

Asp Gly Leu Thr Ala Leu His Val Ala Val Asn Thr Glu Cys Gln Glu
                245                 250                 255

Thr Val Gln Leu Leu Leu Glu Arg Gly Ala Asp Ile Asp Ala Val Asp
            260                 265                 270

Ile Lys Ser Gly Arg Ser Pro Leu Ile His Ala Val Glu Asn Asn Ser
        275                 280                 285

Leu Ser Met Val Gln Leu Leu Leu Gln His Gly Ala Asn Val Asn Ala
    290                 295                 300
```

```
Gln Met Tyr Ser Gly Ser Ser Ala Leu His Ser Ala Ser Gly Arg Gly
305                 310                 315                 320

Leu Leu Pro Leu Val Arg Thr Leu Val Arg Ser Gly Ala Asp Ser Ser
                325                 330                 335

Leu Lys Asn Cys His Asn Asp Thr Pro Leu Met Val Ala Arg Ser Arg
            340                 345                 350

Arg Val Ile Asp Ile Leu Arg Gly Lys Ala Thr Arg Pro Ala Ser Thr
        355                 360                 365

Ser Gln Pro Asp Pro Ser Pro Asp Arg Ser Ala Asn Thr Ser Pro Glu
    370                 375                 380

Ser Ser Ser Arg Leu Ser Ser Asn Gly Leu Leu Ser Ala Ser Pro Ser
385                 390                 395                 400

Ser Ser Pro Ser Gln Ser Pro Pro Arg Asp Pro Pro Gly Phe Pro Met
                405                 410                 415

Ala Pro Pro Asn Phe Phe Leu Pro Ser Pro Ser Pro Pro Ala Phe Leu
            420                 425                 430

Pro Phe Ala Gly Val Leu Arg Gly Pro Gly Arg Pro Val Pro Pro Ser
        435                 440                 445

Pro Ala Pro Gly Gly Ser
    450


<210> 8450
<211> 308
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1755; "

<220>
<221> source
<223> /note="Gene Symbol: BCL3; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell CLL/lymphoma 3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000393731"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8450
Xaa Glu His Pro Leu Ser Ala Asp Ile Ala Met Ala Thr Arg Ala Asp
1 5 10 15

Glu Asp Gly Asp Thr Pro Leu His Ile Ala Val Val Gln Gly Asn Leu
20 25 30

Pro Ala Val His Arg Leu Val Asn Leu Phe Gln Gln Gly Gly Arg Glu
35 40 45

Leu Asp Ile Tyr Asn Asn Leu Arg Gln Thr Pro Leu His Leu Ala Val
50 55 60

Ile Thr Thr Leu Pro Ser Val Val Arg Leu Leu Val Thr Ala Gly Ala
65 70 75 80

Ser Pro Met Ala Leu Asp Arg His Gly Gln Thr Ala Ala His Leu Ala
85 90 95

Cys Glu His Arg Ser Pro Thr Cys Leu Arg Ala Leu Leu Asp Ser Ala
100 105 110

Ala Pro Gly Thr Leu Asp Leu Glu Ala Arg Asn Tyr Asp Gly Leu Thr
115 120 125

Ala Leu His Val Ala Val Asn Thr Glu Cys Gln Glu Thr Val Gln Leu
130 135 140

Leu Leu Glu Arg Gly Ala Asp Ile Asp Ala Val Asp Ile Lys Ser Gly
145 150 155 160

Arg Ser Pro Leu Ile His Ala Val Glu Asn Asn Ser Leu Ser Met Val
165 170 175

Gln Leu Leu Leu Gln His Gly Ala Asn Val Asn Ala Gln Met Tyr Ser

```
            180                 185                 190

Gly Ser Ser Ala Leu His Ser Ala Ser Gly Arg Gly Leu Leu Pro Leu
        195                 200                 205

Val Arg Thr Leu Val Arg Ser Gly Ala Asp Ser Ser Leu Lys Asn Cys
    210                 215                 220

His Asn Asp Thr Pro Leu Met Val Ala Arg Ser Arg Arg Val Ser Arg
225                 230                 235                 240

Gly Ser Cys Gly His Ala Pro Cys Thr Arg Val Ser Ala Gly Trp Leu
                245                 250                 255

Gln Val Ile Asp Ile Leu Arg Gly Lys Ala Thr Arg Pro Ala Ser Thr
            260                 265                 270

Ser Gln Pro Asp Pro Ser Pro Asp Arg Ser Ala Asn Thr Ser Pro Glu
        275                 280                 285

Ser Ser Ser Arg Leu Ser Ser Asn Gly Leu Leu Ser Ala Ser Pro Ser
    290                 295                 300

Ser Ser Pro Ser
305


<210> 8451
<211> 706
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1756; "

<220>
<221> source
<223> /note="Gene Symbol: BCL6; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell CLL/lymphoma 6; "

<220>
<221> source
<223> /note="Uniprot ID:  P41182; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000232014"

<400> 8451
Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1 5 10 15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
20 25 30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
35 40 45

Val Leu Met Ala Cys Ser Gly Leu Phe Tyr Ser Ile Phe Thr Asp Gln
50 55 60

Leu Lys Cys Asn Leu Ser Val Ile Asn Leu Asp Pro Glu Ile Asn Pro
65 70 75 80

Glu Gly Phe Cys Ile Leu Leu Asp Phe Met Tyr Thr Ser Arg Leu Asn
85 90 95

Leu Arg Glu Gly Asn Ile Met Ala Val Met Ala Thr Ala Met Tyr Leu
100 105 110

Gln Met Glu His Val Val Asp Thr Cys Arg Lys Phe Ile Lys Ala Ser
115 120 125

Glu Ala Glu Met Val Ser Ala Ile Lys Pro Pro Arg Glu Glu Phe Leu
130 135 140

Asn Ser Arg Met Leu Met Pro Gln Asp Ile Met Ala Tyr Arg Gly Arg
145 150 155 160

Glu Val Val Glu Asn Asn Leu Pro Leu Arg Ser Ala Pro Gly Cys Glu
165 170 175

Ser Arg Ala Phe Ala Pro Ser Leu Tyr Ser Gly Leu Ser Thr Pro Pro
180 185 190

Ala Ser Tyr Ser Met Tyr Ser His Leu Pro Val Ser Ser Leu Leu Phe
195 200 205

```
Ser Asp Glu Glu Phe Arg Asp Val Arg Met Pro Val Ala Asn Pro Phe
    210                 215                 220

Pro Lys Glu Arg Ala Leu Pro Cys Asp Ser Ala Arg Pro Val Pro Gly
225                 230                 235                 240

Glu Tyr Ser Arg Pro Thr Leu Glu Val Ser Pro Asn Val Cys His Ser
                245                 250                 255

Asn Ile Tyr Ser Pro Lys Glu Thr Ile Pro Glu Glu Ala Arg Ser Asp
            260                 265                 270

Met His Tyr Ser Val Ala Glu Gly Leu Lys Pro Ala Ala Pro Ser Ala
        275                 280                 285

Arg Asn Ala Pro Tyr Phe Pro Cys Asp Lys Ala Ser Lys Glu Glu Glu
    290                 295                 300

Arg Pro Ser Ser Glu Asp Glu Ile Ala Leu His Phe Glu Pro Pro Asn
305                 310                 315                 320

Ala Pro Leu Asn Arg Lys Gly Leu Val Ser Pro Gln Ser Pro Gln Lys
                325                 330                 335

Ser Asp Cys Gln Pro Asn Ser Pro Thr Glu Ser Cys Ser Ser Lys Asn
            340                 345                 350

Ala Cys Ile Leu Gln Ala Ser Gly Ser Pro Pro Ala Lys Ser Pro Thr
        355                 360                 365

Asp Pro Lys Ala Cys Asn Trp Lys Lys Tyr Lys Phe Ile Val Leu Asn
    370                 375                 380

Ser Leu Asn Gln Asn Ala Lys Pro Glu Gly Pro Glu Gln Ala Glu Leu
385                 390                 395                 400

Gly Arg Leu Ser Pro Arg Ala Tyr Thr Ala Pro Pro Ala Cys Gln Pro
                405                 410                 415

Pro Met Glu Pro Glu Asn Leu Asp Leu Gln Ser Pro Thr Lys Leu Ser
            420                 425                 430

Ala Ser Gly Glu Asp Ser Thr Ile Pro Gln Ala Ser Arg Leu Asn Asn
```

```
        435                 440                 445

Ile Val Asn Arg Ser Met Thr Gly Ser Pro Arg Ser Ser Ser Glu Ser
    450                 455                 460

His Ser Pro Leu Tyr Met His Pro Pro Lys Cys Thr Ser Cys Gly Ser
465                 470                 475                 480

Gln Ser Pro Gln His Ala Glu Met Cys Leu His Thr Ala Gly Pro Thr
                485                 490                 495

Phe Pro Glu Glu Met Gly Glu Thr Gln Ser Glu Tyr Ser Asp Ser Ser
            500                 505                 510

Cys Glu Asn Gly Ala Phe Phe Cys Asn Glu Cys Asp Cys Arg Phe Ser
        515                 520                 525

Glu Glu Ala Ser Leu Lys Arg His Thr Leu Gln Thr His Ser Asp Lys
    530                 535                 540

Pro Tyr Lys Cys Asp Arg Cys Gln Ala Ser Phe Arg Tyr Lys Gly Asn
545                 550                 555                 560

Leu Ala Ser His Lys Thr Val His Thr Gly Glu Lys Pro Tyr Arg Cys
                565                 570                 575

Asn Ile Cys Gly Ala Gln Phe Asn Arg Pro Ala Asn Leu Lys Thr His
            580                 585                 590

Thr Arg Ile His Ser Gly Glu Lys Pro Tyr Lys Cys Glu Thr Cys Gly
        595                 600                 605

Ala Arg Phe Val Gln Val Ala His Leu Arg Ala His Val Leu Ile His
    610                 615                 620

Thr Gly Glu Lys Pro Tyr Pro Cys Glu Ile Cys Gly Thr Arg Phe Arg
625                 630                 635                 640

His Leu Gln Thr Leu Lys Ser His Leu Arg Ile His Thr Gly Glu Lys
                645                 650                 655

Pro Tyr His Cys Glu Lys Cys Asn Leu His Phe Arg His Lys Ser Gln
            660                 665                 670
```

```
Leu Arg Leu His Leu Arg Gln Lys His Gly Ala Ile Thr Asn Thr Lys
        675                 680                 685

Val Gln Tyr Arg Val Ser Ala Thr Asp Leu Pro Pro Glu Leu Pro Lys
    690                 695                 700

Ala Cys
705
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<210> 8452
<211> 706
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1756; "

<220>
<221> source
<223> /note="Gene Symbol: BCL6; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 6; "

<220>
<221> source
<223> /note="Uniprot ID: P41182; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384371"

<400> 8452

```
Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1               5                  10                  15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
            20                  25                  30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
        35                  40                  45

Val Leu Met Ala Cys Ser Gly Leu Phe Tyr Ser Ile Phe Thr Asp Gln
    50                  55                  60
```

```
Leu Lys Cys Asn Leu Ser Val Ile Asn Leu Asp Pro Glu Ile Asn Pro
65                  70                  75                  80

Glu Gly Phe Cys Ile Leu Leu Asp Phe Met Tyr Thr Ser Arg Leu Asn
                85                  90                  95

Leu Arg Glu Gly Asn Ile Met Ala Val Met Ala Thr Ala Met Tyr Leu
            100                 105                 110

Gln Met Glu His Val Val Asp Thr Cys Arg Lys Phe Ile Lys Ala Ser
        115                 120                 125

Glu Ala Glu Met Val Ser Ala Ile Lys Pro Pro Arg Glu Glu Phe Leu
    130                 135                 140

Asn Ser Arg Met Leu Met Pro Gln Asp Ile Met Ala Tyr Arg Gly Arg
145                 150                 155                 160

Glu Val Val Glu Asn Asn Leu Pro Leu Arg Ser Ala Pro Gly Cys Glu
                165                 170                 175

Ser Arg Ala Phe Ala Pro Ser Leu Tyr Ser Gly Leu Ser Thr Pro Pro
            180                 185                 190

Ala Ser Tyr Ser Met Tyr Ser His Leu Pro Val Ser Ser Leu Leu Phe
        195                 200                 205

Ser Asp Glu Glu Phe Arg Asp Val Arg Met Pro Val Ala Asn Pro Phe
    210                 215                 220

Pro Lys Glu Arg Ala Leu Pro Cys Asp Ser Ala Arg Pro Val Pro Gly
225                 230                 235                 240

Glu Tyr Ser Arg Pro Thr Leu Glu Val Ser Pro Asn Val Cys His Ser
                245                 250                 255

Asn Ile Tyr Ser Pro Lys Glu Thr Ile Pro Glu Glu Ala Arg Ser Asp
            260                 265                 270

Met His Tyr Ser Val Ala Glu Gly Leu Lys Pro Ala Ala Pro Ser Ala
        275                 280                 285

Arg Asn Ala Pro Tyr Phe Pro Cys Asp Lys Ala Ser Lys Glu Glu Glu
```

```
    290                 295                 300

Arg Pro Ser Ser Glu Asp Glu Ile Ala Leu His Phe Glu Pro Pro Asn
305                 310                 315                 320

Ala Pro Leu Asn Arg Lys Gly Leu Val Ser Pro Gln Ser Pro Gln Lys
                325                 330                 335

Ser Asp Cys Gln Pro Asn Ser Pro Thr Glu Ser Cys Ser Ser Lys Asn
            340                 345                 350

Ala Cys Ile Leu Gln Ala Ser Gly Ser Pro Pro Ala Lys Ser Pro Thr
        355                 360                 365

Asp Pro Lys Ala Cys Asn Trp Lys Lys Tyr Lys Phe Ile Val Leu Asn
    370                 375                 380

Ser Leu Asn Gln Asn Ala Lys Pro Glu Gly Pro Glu Gln Ala Glu Leu
385                 390                 395                 400

Gly Arg Leu Ser Pro Arg Ala Tyr Thr Ala Pro Pro Ala Cys Gln Pro
                405                 410                 415

Pro Met Glu Pro Glu Asn Leu Asp Leu Gln Ser Pro Thr Lys Leu Ser
            420                 425                 430

Ala Ser Gly Glu Asp Ser Thr Ile Pro Gln Ala Ser Arg Leu Asn Asn
        435                 440                 445

Ile Val Asn Arg Ser Met Thr Gly Ser Pro Arg Ser Ser Ser Glu Ser
    450                 455                 460

His Ser Pro Leu Tyr Met His Pro Pro Lys Cys Thr Ser Cys Gly Ser
465                 470                 475                 480

Gln Ser Pro Gln His Ala Glu Met Cys Leu His Thr Ala Gly Pro Thr
                485                 490                 495

Phe Pro Glu Glu Met Gly Glu Thr Gln Ser Glu Tyr Ser Asp Ser Ser
            500                 505                 510

Cys Glu Asn Gly Ala Phe Phe Cys Asn Glu Cys Asp Cys Arg Phe Ser
        515                 520                 525
```

Glu Glu Ala Ser Leu Lys Arg His Thr Leu Gln Thr His Ser Asp Lys
530 535 540

Pro Tyr Lys Cys Asp Arg Cys Gln Ala Ser Phe Arg Tyr Lys Gly Asn
545 550 555 560

Leu Ala Ser His Lys Thr Val His Thr Gly Glu Lys Pro Tyr Arg Cys
565 570 575

Asn Ile Cys Gly Ala Gln Phe Asn Arg Pro Ala Asn Leu Lys Thr His
580 585 590

Thr Arg Ile His Ser Gly Glu Lys Pro Tyr Lys Cys Glu Thr Cys Gly
595 600 605

Ala Arg Phe Val Gln Val Ala His Leu Arg Ala His Val Leu Ile His
610 615 620

Thr Gly Glu Lys Pro Tyr Pro Cys Glu Ile Cys Gly Thr Arg Phe Arg
625 630 635 640

His Leu Gln Thr Leu Lys Ser His Leu Arg Ile His Thr Gly Glu Lys
645 650 655

Pro Tyr His Cys Glu Lys Cys Asn Leu His Phe Arg His Lys Ser Gln
660 665 670

Leu Arg Leu His Leu Arg Gln Lys His Gly Ala Ile Thr Asn Thr Lys
675 680 685

Val Gln Tyr Arg Val Ser Ala Thr Asp Leu Pro Pro Glu Leu Pro Lys
690 695 700

Ala Cys
705

<210> 8453
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1756; "

<220>
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<223> /note="Gene Symbol: BCL6; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398014"

<400> 8453
Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1 5 10 15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
20 25 30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
35 40 45

Val Leu Met Ala Cys Arg Ser
50 55

<210> 8454
<211> 650
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1756; "

<220>
<221> source
<223> /note="Gene Symbol: BCL6; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 6; "

<220>
<221> source
<223> /note="Uniprot ID: P41182; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413122"

<400> 8454
Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1 5 10 15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
20 25 30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
35 40 45

Val Leu Met Ala Cys Ser Gly Leu Phe Tyr Ser Ile Phe Thr Asp Gln
50 55 60

Leu Lys Cys Asn Leu Ser Val Ile Asn Leu Asp Pro Glu Ile Asn Pro
65 70 75 80

Glu Gly Phe Cys Ile Leu Leu Asp Phe Met Tyr Thr Ser Arg Leu Asn
85 90 95

Leu Arg Glu Gly Asn Ile Met Ala Val Met Ala Thr Ala Met Tyr Leu
100 105 110

Gln Met Glu His Val Val Asp Thr Cys Arg Lys Phe Ile Lys Ala Ser
115 120 125

Glu Ala Glu Met Val Ser Ala Ile Lys Pro Pro Arg Glu Glu Phe Leu
130 135 140

Asn Ser Arg Met Leu Met Pro Gln Asp Ile Met Ala Tyr Arg Gly Arg
145 150 155 160

Glu Val Val Glu Asn Asn Leu Pro Leu Arg Ser Ala Pro Gly Cys Glu
165 170 175

Ser Arg Ala Phe Ala Pro Ser Leu Tyr Ser Gly Leu Ser Thr Pro Pro
180 185 190

Ala Ser Tyr Ser Met Tyr Ser His Leu Pro Val Ser Ser Leu Leu Phe
195 200 205

Ser Asp Glu Glu Phe Arg Asp Val Arg Met Pro Val Ala Asn Pro Phe
210 215 220

```
Pro Lys Glu Arg Ala Leu Pro Cys Asp Ser Ala Arg Pro Val Pro Gly
225                 230                 235                 240

Glu Tyr Ser Arg Pro Thr Leu Glu Val Ser Pro Asn Val Cys His Ser
                245                 250                 255

Asn Ile Tyr Ser Pro Lys Glu Thr Ile Pro Glu Glu Ala Arg Ser Asp
            260                 265                 270

Met His Tyr Ser Val Ala Glu Gly Leu Lys Pro Ala Ala Pro Ser Ala
        275                 280                 285

Arg Asn Ala Pro Tyr Phe Pro Cys Asp Lys Ala Ser Lys Glu Glu Glu
    290                 295                 300

Arg Pro Ser Ser Glu Asp Glu Ile Ala Leu His Phe Glu Pro Pro Asn
305                 310                 315                 320

Ala Pro Leu Asn Arg Lys Gly Leu Val Ser Pro Gln Ser Pro Gln Lys
                325                 330                 335

Ser Asp Cys Gln Pro Asn Ser Pro Thr Glu Ser Cys Ser Ser Lys Asn
            340                 345                 350

Ala Cys Ile Leu Gln Ala Ser Gly Ser Pro Pro Ala Lys Ser Pro Thr
        355                 360                 365

Asp Pro Lys Ala Cys Asn Trp Lys Lys Tyr Lys Phe Ile Val Leu Asn
    370                 375                 380

Ser Leu Asn Gln Asn Ala Lys Pro Glu Gly Pro Glu Gln Ala Glu Leu
385                 390                 395                 400

Gly Arg Leu Ser Pro Arg Ala Tyr Thr Ala Pro Pro Ala Cys Gln Pro
                405                 410                 415

Pro Met Glu Pro Glu Asn Leu Asp Leu Gln Ser Pro Thr Lys Leu Ser
            420                 425                 430

Ala Ser Gly Glu Asp Ser Thr Ile Pro Gln Ala Ser Arg Leu Asn Asn
        435                 440                 445
```

```
Ile Val Asn Arg Ser Met Thr Gly Ser Pro Arg Ser Ser Ser Glu Ser
    450                 455                 460

His Ser Pro Leu Tyr Met His Pro Pro Lys Cys Thr Ser Cys Gly Ser
465                 470                 475                 480

Gln Ser Pro Gln His Ala Glu Met Cys Leu His Thr Ala Gly Pro Thr
                485                 490                 495

Phe Pro Glu Glu Met Gly Glu Thr Gln Ser Glu Tyr Ser Asp Ser Ser
            500                 505                 510

Cys Gly Glu Lys Pro Tyr Arg Cys Asn Ile Cys Gly Ala Gln Phe Asn
        515                 520                 525

Arg Pro Ala Asn Leu Lys Thr His Thr Arg Ile His Ser Gly Glu Lys
    530                 535                 540

Pro Tyr Lys Cys Glu Thr Cys Gly Ala Arg Phe Val Gln Val Ala His
545                 550                 555                 560

Leu Arg Ala His Val Leu Ile His Thr Gly Glu Lys Pro Tyr Pro Cys
                565                 570                 575

Glu Ile Cys Gly Thr Arg Phe Arg His Leu Gln Thr Leu Lys Ser His
            580                 585                 590

Leu Arg Ile His Thr Gly Glu Lys Pro Tyr His Cys Glu Lys Cys Asn
        595                 600                 605

Leu His Phe Arg His Lys Ser Gln Leu Arg Leu His Leu Arg Gln Lys
    610                 615                 620

His Gly Ala Ile Thr Asn Thr Lys Val Gln Tyr Arg Val Ser Ala Thr
625                 630                 635                 640

Asp Leu Pro Pro Glu Leu Pro Lys Ala Cys
                645                 650
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<210> 8455
<211> 104
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<220>
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<220>
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<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 6; "

<220>
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<400> 8455
Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1 5 10 15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
20 25 30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
35 40 45

Val Leu Met Ala Cys Ser Gly Leu Phe Tyr Ser Ile Phe Thr Asp Gln
50 55 60

Leu Lys Cys Asn Leu Ser Val Ile Asn Leu Asp Pro Glu Ile Asn Pro
65 70 75 80

Glu Gly Phe Cys Ile Leu Leu Asp Phe Met Tyr Thr Ser Arg Leu Asn
85 90 95

Leu Arg Glu Gly Asn Ile Met Ala
100

<210> 8456
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 8456
Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1 5 10 15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
20 25 30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
35 40 45

Val Leu Met Ala Cys Ser Gly Leu Phe Tyr Ser Ile Phe Thr Asp Gln
50 55 60

Leu Lys Cys Asn Leu Ser Val Ile Asn Leu Asp Pro Glu Ile Asn Pro
65 70 75 80

Glu Gly Phe Cys Ile Leu Leu Asp Phe Met Tyr Thr Ser Arg Leu Asn
85 90 95

Leu Arg Glu Gly Asn Ile Met Ala Val Met Ala Thr Ala Met Tyr Leu
100 105 110

Gln Met Glu His Val Val Asp Thr Cys
115 120

<210> 8457
<211> 650
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<220>
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<220>
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<400> 8457

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Met Ala Ser Pro Ala Asp Ser Cys Ile Gln Phe Thr Arg His Ala Ser
1               5                   10                  15

Asp Val Leu Leu Asn Leu Asn Arg Leu Arg Ser Arg Asp Ile Leu Thr
            20                  25                  30

Asp Val Val Ile Val Val Ser Arg Glu Gln Phe Arg Ala His Lys Thr
        35                  40                  45

Val Leu Met Ala Cys Ser Gly Leu Phe Tyr Ser Ile Phe Thr Asp Gln
    50                  55                  60

Leu Lys Cys Asn Leu Ser Val Ile Asn Leu Asp Pro Glu Ile Asn Pro
65                  70                  75                  80

Glu Gly Phe Cys Ile Leu Leu Asp Phe Met Tyr Thr Ser Arg Leu Asn
                85                  90                  95

Leu Arg Glu Gly Asn Ile Met Ala Val Met Ala Thr Ala Met Tyr Leu
            100                 105                 110

Gln Met Glu His Val Val Asp Thr Cys Arg Lys Phe Ile Lys Ala Ser
        115                 120                 125

Glu Ala Glu Met Val Ser Ala Ile Lys Pro Pro Arg Glu Glu Phe Leu
    130                 135                 140

Asn Ser Arg Met Leu Met Pro Gln Asp Ile Met Ala Tyr Arg Gly Arg
145                 150                 155                 160

Glu Val Val Glu Asn Asn Leu Pro Leu Arg Ser Ala Pro Gly Cys Glu
                165                 170                 175
```

```
Ser Arg Ala Phe Ala Pro Ser Leu Tyr Ser Gly Leu Ser Thr Pro Pro
            180                 185                 190

Ala Ser Tyr Ser Met Tyr Ser His Leu Pro Val Ser Ser Leu Leu Phe
        195                 200                 205

Ser Asp Glu Glu Phe Arg Asp Val Arg Met Pro Val Ala Asn Pro Phe
    210                 215                 220

Pro Lys Glu Arg Ala Leu Pro Cys Asp Ser Ala Arg Pro Val Pro Gly
225                 230                 235                 240

Glu Tyr Ser Arg Pro Thr Leu Glu Val Ser Pro Asn Val Cys His Ser
                245                 250                 255

Asn Ile Tyr Ser Pro Lys Glu Thr Ile Pro Glu Glu Ala Arg Ser Asp
            260                 265                 270

Met His Tyr Ser Val Ala Glu Gly Leu Lys Pro Ala Ala Pro Ser Ala
        275                 280                 285

Arg Asn Ala Pro Tyr Phe Pro Cys Asp Lys Ala Ser Lys Glu Glu Glu
    290                 295                 300

Arg Pro Ser Ser Glu Asp Glu Ile Ala Leu His Phe Glu Pro Pro Asn
305                 310                 315                 320

Ala Pro Leu Asn Arg Lys Gly Leu Val Ser Pro Gln Ser Pro Gln Lys
                325                 330                 335

Ser Asp Cys Gln Pro Asn Ser Pro Thr Glu Ser Cys Ser Ser Lys Asn
            340                 345                 350

Ala Cys Ile Leu Gln Ala Ser Gly Ser Pro Pro Ala Lys Ser Pro Thr
        355                 360                 365

Asp Pro Lys Ala Cys Asn Trp Lys Lys Tyr Lys Phe Ile Val Leu Asn
    370                 375                 380

Ser Leu Asn Gln Asn Ala Lys Pro Glu Gly Pro Glu Gln Ala Glu Leu
385                 390                 395                 400
```

```
Gly Arg Leu Ser Pro Arg Ala Tyr Thr Ala Pro Pro Ala Cys Gln Pro
                405                 410                 415

Pro Met Glu Pro Glu Asn Leu Asp Leu Gln Ser Pro Thr Lys Leu Ser
            420                 425                 430

Ala Ser Gly Glu Asp Ser Thr Ile Pro Gln Ala Ser Arg Leu Asn Asn
        435                 440                 445

Ile Val Asn Arg Ser Met Thr Gly Ser Pro Arg Ser Ser Ser Glu Ser
    450                 455                 460

His Ser Pro Leu Tyr Met His Pro Pro Lys Cys Thr Ser Cys Gly Ser
465                 470                 475                 480

Gln Ser Pro Gln His Ala Glu Met Cys Leu His Thr Ala Gly Pro Thr
                485                 490                 495

Phe Pro Glu Glu Met Gly Glu Thr Gln Ser Glu Tyr Ser Asp Ser Ser
            500                 505                 510

Cys Gly Glu Lys Pro Tyr Arg Cys Asn Ile Cys Gly Ala Gln Phe Asn
        515                 520                 525

Arg Pro Ala Asn Leu Lys Thr His Thr Arg Ile His Ser Gly Glu Lys
    530                 535                 540

Pro Tyr Lys Cys Glu Thr Cys Gly Ala Arg Phe Val Gln Val Ala His
545                 550                 555                 560

Leu Arg Ala His Val Leu Ile His Thr Gly Glu Lys Pro Tyr Pro Cys
                565                 570                 575

Glu Ile Cys Gly Thr Arg Phe Arg His Leu Gln Thr Leu Lys Ser His
            580                 585                 590

Leu Arg Ile His Thr Gly Glu Lys Pro Tyr His Cys Glu Lys Cys Asn
        595                 600                 605

Leu His Phe Arg His Lys Ser Gln Leu Arg Leu His Leu Arg Gln Lys
    610                 615                 620

His Gly Ala Ile Thr Asn Thr Lys Val Gln Tyr Arg Val Ser Ala Thr
```

625 630 635 640

Asp Leu Pro Pro Glu Leu Pro Lys Ala Cys
645 650

<210> 8458
<211> 479
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<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BCL6B; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 6,
member B; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N143; "

<220>
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<223> /note="ENSP ID: ENSP00000293805"

<400> 8458
Met Gly Ser Pro Ala Ala Pro Glu Gly Ala Leu Gly Tyr Val Arg Glu
1 5 10 15

Phe Thr Arg His Ser Ser Asp Val Leu Gly Asn Leu Asn Glu Leu Arg
20 25 30

Leu Arg Gly Ile Leu Thr Asp Val Thr Leu Leu Val Gly Gly Gln Pro
35 40 45

Leu Arg Ala His Lys Ala Val Leu Ile Ala Cys Ser Gly Phe Phe Tyr
50 55 60

Ser Ile Phe Arg Gly Arg Ala Gly Val Gly Val Asp Val Leu Ser Leu
65 70 75 80

Pro Gly Gly Pro Glu Ala Arg Gly Phe Ala Pro Leu Leu Asp Phe Met
85 90 95

```
Tyr Thr Ser Arg Leu Arg Leu Ser Pro Ala Thr Ala Pro Ala Val Leu
            100                 105                 110

Ala Ala Ala Thr Tyr Leu Gln Met Glu His Val Val Gln Ala Cys His
        115                 120                 125

Arg Phe Ile Gln Ala Ser Tyr Glu Pro Leu Gly Ile Ser Leu Arg Pro
    130                 135                 140

Leu Glu Ala Glu Pro Pro Thr Pro Pro Thr Ala Pro Pro Pro Gly Ser
145                 150                 155                 160

Pro Arg Arg Ser Glu Gly His Pro Asp Pro Pro Thr Glu Ser Arg Ser
                165                 170                 175

Cys Ser Gln Gly Pro Pro Ser Pro Ala Ser Pro Asp Pro Lys Ala Cys
            180                 185                 190

Asn Trp Lys Lys Tyr Lys Tyr Ile Val Leu Asn Ser Gln Ala Ser Gln
        195                 200                 205

Ala Gly Ser Leu Val Gly Glu Arg Ser Ser Gly Gln Pro Cys Pro Gln
    210                 215                 220

Ala Arg Leu Pro Ser Gly Asp Glu Ala Ser Ser Ser Ser Ser Ser Ser
225                 230                 235                 240

Ser Ser Ser Ser Glu Glu Gly Pro Ile Pro Gly Pro Gln Ser Arg Leu
                245                 250                 255

Ser Pro Thr Ala Ala Thr Val Gln Phe Lys Cys Gly Ala Pro Ala Ser
            260                 265                 270

Thr Pro Tyr Leu Leu Thr Ser Gln Ala Gln Asp Thr Ser Gly Ser Pro
        275                 280                 285

Ser Glu Arg Ala Arg Pro Leu Pro Gly Ser Glu Phe Phe Ser Cys Gln
    290                 295                 300

Asn Cys Glu Ala Val Ala Gly Cys Ser Ser Gly Leu Asp Ser Leu Val
305                 310                 315                 320
```

```
Pro Gly Asp Glu Asp Lys Pro Tyr Lys Cys Gln Leu Cys Arg Ser Ser
                325                 330                 335

Phe Arg Tyr Lys Gly Asn Leu Ala Ser His Arg Thr Val His Thr Gly
            340                 345                 350

Glu Lys Pro Tyr His Cys Ser Ile Cys Gly Ala Arg Phe Asn Arg Pro
        355                 360                 365

Ala Asn Leu Lys Thr His Ser Arg Ile His Ser Gly Glu Lys Pro Tyr
    370                 375                 380

Lys Cys Glu Thr Cys Gly Ser Arg Phe Val Gln Val Ala His Leu Arg
385                 390                 395                 400

Ala His Val Leu Ile His Thr Gly Glu Lys Pro Tyr Pro Cys Pro Thr
                405                 410                 415

Cys Gly Thr Arg Phe Arg His Leu Gln Thr Leu Lys Ser His Val Arg
            420                 425                 430

Ile His Thr Gly Glu Lys Pro Tyr His Cys Asp Pro Cys Gly Leu His
        435                 440                 445

Phe Arg His Lys Ser Gln Leu Arg Leu His Leu Arg Gln Lys His Gly
    450                 455                 460

Ala Ala Thr Asn Thr Lys Val His Tyr His Ile Leu Gly Gly Pro
465                 470                 475


<210> 8459
<211> 135
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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B-cell CLL/lymphoma 6,
member B; "

<220>
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<223> /note="ENSP ID: ENSP00000445010"

<400> 8459
Cys Ser Ser Gly Leu Asp Ser Leu Val Pro Gly Asp Glu Asp Lys Pro
1   5   10   15

Tyr Lys Cys Gln Leu Cys Arg Ser Ser Phe Arg Tyr Lys Gly Asn Leu
            20   25   30

Ala Ser His Arg Thr Val His Thr Gly Glu Lys Pro Tyr His Cys Ser
        35   40   45

Ile Cys Gly Ala Arg Phe Asn Arg Pro Ala Asn Leu Lys Thr His Ser
    50   55   60

Arg Ile His Ser Gly Glu Lys Pro Tyr Lys Cys Glu Thr Cys Gly Ser
65   70   75   80

Arg Phe Val Gln Val Ala His Leu Arg Ala His Val Leu Ile His Thr
                85   90   95

Gly Glu Lys Pro Tyr Pro Cys Pro Thr Cys Gly Thr Arg Phe Arg His
            100   105   110

Leu Gln Thr Leu Lys Ser His Val Arg Ile His Thr Gly Glu Lys Pro
        115   120   125

Tyr His Glu Pro Val Thr Ser
    130   135

<210> 8460
<211> 133
<212> PRT
<213> Homo sapiens

<220>
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<220>
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B-cell CLL/lymphoma 6,
member B; "

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<223> /note="ENSP ID: ENSP00000460071"

<400> 8460
Met Gly Ser Pro Ala Ala Pro Glu Gly Ala Leu Gly Tyr Val Arg Glu
1   5   10   15

Phe Thr Arg His Ser Ser Asp Val Leu Gly Asn Leu Asn Glu Leu Arg
            20   25   30

Leu Arg Gly Ile Leu Thr Asp Val Thr Leu Leu Val Gly Gly Gln Pro
        35   40   45

Leu Arg Ala His Lys Ala Val Leu Ile Ala Cys Ser Gly Phe Phe Tyr
    50   55   60

Ser Ile Phe Arg Gly Arg Ala Gly Val Gly Val Asp Val Leu Ser Leu
65   70   75   80

Pro Gly Gly Pro Glu Ala Arg Gly Phe Ala Pro Leu Leu Asp Phe Met
                85   90   95

Tyr Thr Ser Arg Leu Arg Leu Ser Pro Ala Thr Ala Pro Ala Val Leu
            100   105   110

Ala Ala Ala Thr Tyr Leu Gln Met Glu His Val Val Gln Ala Cys His
        115   120   125

Arg Phe Ile Gln Ala
    130

<210> 8461
<211> 111
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1757; "

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<220>
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member B; "

<220>
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<223> /note="ENSP ID: ENSP00000460282"

<400> 8461
Met Gly Ser Pro Ala Ala Pro Glu Gly Ala Leu Gly Tyr Val Arg Glu
1   5   10   15

Phe Thr Arg His Ser Ser Asp Val Leu Gly Asn Leu Asn Glu Leu Arg
            20   25   30

Leu Arg Gly Ile Leu Thr Asp Val Thr Leu Leu Val Gly Gly Gln Pro
        35   40   45

Leu Arg Ala His Lys Ala Val Leu Ile Ala Cys Ser Gly Phe Phe Tyr
    50   55   60

Ser Ile Phe Arg Gly Arg Ala Gly Val Gly Val Asp Val Leu Ser Leu
65   70   75   80

Pro Gly Gly Pro Glu Ala Arg Gly Phe Ala Pro Leu Leu Asp Phe Met
                85   90   95

Tyr Thr Ser Arg Leu Arg Leu Ser Pro Ala Thr Ala Pro Ala Val
            100   105   110

<210> 8462
<211> 210
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1758; "

<220>
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<223> /note="Gene Symbol: BCL7A; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q4VC05; "

<220>
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<223> /note="ENSP ID: ENSP00000261822"

<400> 8462

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Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1               5                  10                  15

Asp Ile Lys Arg Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
            20                  25                  30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Tyr Lys Trp
        35                  40                  45

Val Pro Val Thr Glu Pro Lys Val Asp Asp Lys Asn Lys Asn Lys Lys
    50                  55                  60

Lys Gly Lys Asp Glu Lys Cys Gly Ser Glu Val Thr Thr Pro Glu Asn
65                  70                  75                  80

Ser Ser Ser Pro Gly Met Met Asp Met His Asp Asp Asn Ser Asn Gln
                85                  90                  95

Ser Ser Ile Ala Asp Ala Ser Pro Ile Lys Gln Glu Asn Ser Ser Asn
            100                 105                 110

Ser Ser Pro Ala Pro Glu Pro Asn Ser Ala Val Pro Ser Asp Gly Thr
        115                 120                 125

Glu Ala Lys Val Asp Glu Ala Gln Ala Asp Gly Lys Glu His Pro Gly
    130                 135                 140

Ala Glu Asp Ala Ser Asp Glu Gln Asn Ser Gln Ser Ser Met Glu His
145                 150                 155                 160

Ser Met Asn Ser Ser Glu Lys Val Asp Arg Gln Pro Ser Gly Asp Ser
                165                 170                 175

Gly Leu Ala Ala Glu Thr Ser Ala Ile Ser Gln Asp Leu Glu Gly Val
```

```
            180                 185                 190

Pro Pro Ser Lys Lys Met Lys Leu Glu Ala Ser Gln Gln Asn Ser Glu
        195                 200                 205

Glu Met
    210


<210> 8463
<211> 231
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1758; "

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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000445868"

<400> 8463
Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1               5                   10                  15

Asp Ile Lys Arg Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
            20                  25                  30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Tyr Lys Trp
        35                  40                  45

Val Pro Val Thr Glu Pro Lys Val Asp Asp Lys Asn Lys Asn Lys Lys
    50                  55                  60

Lys Gly Lys Asp Glu Lys Cys Gly Ser Glu Val Thr Thr Pro Glu Asn
65                  70                  75                  80
```

```
Ser Ser Ser Pro Gly Met Met Asp Met His Asp Asp Asn Ser Asn Gln
                85                  90                  95

Ser Ser Ile Ala Asp Ala Ser Pro Ile Lys Gln Glu Asn Ser Ser Asn
            100                 105                 110

Ser Ser Pro Ala Pro Glu Pro Asn Ser Ala Val Pro Ser Asp Gly Thr
        115                 120                 125

Glu Ala Lys Val Asp Glu Ala Gln Ala Asp Gly Lys Glu His Pro Gly
    130                 135                 140

Ala Glu Asp Ala Ser Asp Glu Gln Asn Ser Gln Ser Ser Met Glu His
145                 150                 155                 160

Ser Met Asn Ser Ser Glu Lys Val Asp Arg Gln Pro Ser Gly Asp Ser
                165                 170                 175

Gly Leu Ala Ala Glu Thr Ser Ala Ile Ser Gln Val Pro Arg Ser Arg
            180                 185                 190

Ser Gln Arg Gly Ser Gln Ile Gly Arg Glu Pro Ile Gly Leu Ser Gly
        195                 200                 205

Asp Leu Glu Gly Val Pro Pro Ser Lys Lys Met Lys Leu Glu Ala Ser
    210                 215                 220

Gln Gln Asn Ser Glu Glu Met
225                 230


<210> 8464
<211> 231
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BCL7A; "

<220>
<221> source
<223> /note="Gene Name:
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B-cell CLL/lymphoma 7A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489010"

<400> 8464

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Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1               5                  10                  15

Asp Ile Lys Arg Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
            20                  25                  30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Tyr Lys Trp
        35                  40                  45

Val Pro Val Thr Glu Pro Lys Val Asp Asp Lys Asn Lys Asn Lys Lys
    50                  55                  60

Lys Gly Lys Asp Glu Lys Cys Gly Ser Glu Val Thr Thr Pro Glu Asn
65                  70                  75                  80

Ser Ser Ser Pro Gly Met Met Asp Met His Asp Asp Asn Ser Asn Gln
                85                  90                  95

Ser Ser Ile Ala Asp Ala Ser Pro Ile Lys Gln Glu Asn Ser Ser Asn
            100                 105                 110

Ser Ser Pro Ala Pro Glu Pro Asn Ser Ala Val Pro Ser Asp Gly Thr
        115                 120                 125

Glu Ala Lys Val Asp Glu Ala Gln Ala Asp Gly Lys Glu His Pro Gly
    130                 135                 140

Ala Glu Asp Ala Ser Asp Glu Gln Asn Ser Gln Ser Ser Met Glu His
145                 150                 155                 160

Ser Met Asn Ser Ser Glu Lys Val Asp Arg Gln Pro Ser Gly Asp Ser
                165                 170                 175

Gly Leu Ala Ala Glu Thr Ser Ala Ile Ser Gln Val Pro Arg Ser Arg
            180                 185                 190

Ser Gln Arg Gly Ser Gln Ile Gly Arg Glu Pro Ile Gly Leu Ser Gly
        195                 200                 205
```

Asp Leu Glu Gly Val Pro Pro Ser Lys Lys Met Lys Leu Glu Ala Ser
210 215 220

Gln Gln Asn Ser Glu Glu Met
225 230

<210> 8465
<211> 210
<212> PRT
<213> Homo sapiens

<220>
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<220>
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B-cell CLL/lymphoma 7A; "

<220>
<221> source
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<400> 8465
Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1 5 10 15

Asp Ile Lys Arg Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
20 25 30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Tyr Lys Trp
35 40 45

Val Pro Val Thr Glu Pro Lys Val Asp Asp Lys Asn Lys Asn Lys Lys
50 55 60

Lys Gly Lys Asp Glu Lys Cys Gly Ser Glu Val Thr Thr Pro Glu Asn
65 70 75 80

Ser Ser Ser Pro Gly Met Met Asp Met His Asp Asp Asn Ser Asn Gln
85 90 95

```
Ser Ser Ile Ala Asp Ala Ser Pro Ile Lys Gln Glu Asn Ser Ser Asn
            100                 105                 110

Ser Ser Pro Ala Pro Glu Pro Asn Ser Ala Val Pro Ser Asp Gly Thr
        115                 120                 125

Glu Ala Lys Val Asp Glu Ala Gln Ala Asp Gly Lys Glu His Pro Gly
    130                 135                 140

Ala Glu Asp Ala Ser Asp Glu Gln Asn Ser Gln Ser Ser Met Glu His
145                 150                 155                 160

Ser Met Asn Ser Ser Glu Lys Val Asp Arg Gln Pro Ser Gly Asp Ser
                165                 170                 175

Gly Leu Ala Ala Glu Thr Ser Ala Ile Ser Gln Asp Leu Glu Gly Val
            180                 185                 190

Pro Pro Ser Lys Lys Met Lys Leu Glu Ala Ser Gln Gln Asn Ser Glu
        195                 200                 205

Glu Met
    210


<210> 8466
<211> 202
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1759; "

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<220>
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      B-cell CLL/lymphoma 7B; "

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<223> /note="Uniprot ID:  Q9BQE9; "

<220>
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<223> /note="ENSP ID: ENSP00000223368"
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<400> 8466
Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1 5 10 15

Asp Ile Lys Lys Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
20 25 30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
35 40 45

Val Pro Val Thr Asp Ser Lys Glu Lys Glu Lys Ser Lys Ser Asn Ser
50 55 60

Ser Ala Ala Arg Glu Pro Asn Gly Phe Pro Ser Asp Ala Ser Ala Asn
65 70 75 80

Ser Ser Leu Leu Leu Glu Phe Gln Asp Glu Asn Ser Asn Gln Ser Ser
85 90 95

Val Ser Asp Val Tyr Gln Leu Lys Val Asp Ser Ser Thr Asn Ser Ser
100 105 110

Pro Ser Pro Gln Gln Ser Glu Ser Leu Ser Pro Ala His Thr Ser Asp
115 120 125

Phe Arg Thr Asp Asp Ser Gln Pro Pro Thr Leu Gly Gln Glu Ile Leu
130 135 140

Glu Glu Pro Ser Leu Pro Ser Ser Glu Val Ala Asp Glu Pro Pro Thr
145 150 155 160

Leu Thr Lys Glu Glu Pro Val Pro Leu Glu Thr Gln Val Val Glu Glu
165 170 175

Glu Glu Asp Ser Gly Ala Pro Pro Leu Lys Arg Phe Cys Val Asp Gln
180 185 190

Pro Thr Val Pro Gln Thr Ala Ser Glu Ser
195 200

<210> 8467
<211> 145
<212> PRT

<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BCL7B; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 7B; "

<220>
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<223> /note="Uniprot ID: Q9BQE9; "

<220>
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<223> /note="ENSP ID: ENSP00000393230"

<400> 8467

```
Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1               5                  10                  15

Asp Ile Lys Lys Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
            20                  25                  30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
        35                  40                  45

Val Pro Val Thr Asp Ser Lys Glu Lys Glu Lys Ser Lys Ser Asn Ser
    50                  55                  60

Ser Ala Ala Arg Glu Pro Asn Gly Phe Pro Ser Asp Ala Ser Ala Asn
65                  70                  75                  80

Ser Ser Leu Leu Leu Glu Phe Gln Glu Pro Ser Leu Pro Ser Ser Glu
                85                  90                  95

Val Ala Asp Glu Pro Pro Thr Leu Thr Lys Glu Glu Pro Val Pro Leu
            100                 105                 110

Glu Thr Gln Val Val Glu Glu Glu Glu Asp Ser Gly Ala Pro Pro Leu
        115                 120                 125

Lys Arg Phe Cys Val Asp Gln Pro Thr Val Pro Gln Thr Ala Ser Glu
```

130 135 140

Ser
145

<210> 8468
<211> 213
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1759; "

<220>
<221> source
<223> /note="Gene Symbol: BCL7B; "

<220>
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<223> /note="Gene Name:
B-cell CLL/lymphoma 7B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411073"

<400> 8468
Met Thr Glu Ser Arg Ser Val Thr Gln Ala Gly Val His Trp Arg Asn
1 5 10 15

Leu Gly Ser Leu Gln Pro Leu Pro Leu Arg Phe Lys Gln Phe Ser Cys
20 25 30

Leu Ser Leu Leu Ser Ser Trp Asp Tyr Arg Glu Lys Lys Trp Val Thr
35 40 45

Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp Val Pro Val Thr Asp
50 55 60

Ser Lys Glu Lys Glu Lys Ser Lys Ser Asn Ser Ser Ala Ala Arg Glu
65 70 75 80

Pro Asn Gly Phe Pro Ser Asp Ala Ser Ala Asn Ser Ser Leu Leu Leu
85 90 95

Glu Phe Gln Asp Glu Asn Ser Asn Gln Ser Ser Val Ser Asp Val Tyr
100 105 110

```
Gln Leu Lys Val Asp Ser Ser Thr Asn Ser Ser Pro Ser Pro Gln Gln
        115                 120                 125

Ser Glu Ser Leu Ser Pro Ala His Thr Ser Asp Phe Arg Thr Asp Asp
    130                 135                 140

Ser Gln Pro Pro Thr Leu Gly Gln Glu Ile Leu Glu Glu Pro Ser Leu
145                 150                 155                 160

Pro Ser Ser Glu Val Ala Asp Glu Pro Pro Thr Leu Thr Lys Glu Glu
                165                 170                 175

Pro Val Pro Leu Glu Thr Gln Val Val Glu Glu Glu Glu Asp Ser Gly
            180                 185                 190

Ala Pro Pro Leu Lys Arg Phe Cys Val Asp Gln Pro Thr Val Pro Gln
        195                 200                 205

Thr Ala Ser Glu Ser
    210


<210> 8469
<211> 78
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000414231"

<400> 8469
Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1               5                   10                  15

Asp Ile Lys Lys Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
```

```
            20                  25                  30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
        35                  40                  45

Val Pro Val Thr Asp Ser Lys Glu Arg Gln Ser Leu Ala Met Leu Ser
    50                  55                  60

Arg Leu Val Val Asn Ser Trp Pro Gln Ala Val Pro Gln Pro
65                  70                  75


<210> 8470
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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<223> /note="Gene Name:
      B-cell CLL/lymphoma 7B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414473"

<400> 8470
Met Ser Gly Arg Ser Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1               5                   10                  15

Asp Ile Lys Lys Val Met Ala Ala Ile Glu Lys Val Arg Lys Trp Glu
            20                  25                  30

Lys Lys Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
        35                  40                  45

Val Pro Val Thr Asp Ser Lys Glu Thr Lys Thr Ala Thr Arg Val Pro
    50                  55                  60

Cys Leu Thr Ser Ile Ser Leu Arg Trp Thr Ala Ala Pro Thr Gln Ala
65                  70                  75                  80
```

Pro Ala Pro Ser Arg Val Ser Pro
85

<210> 8471
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1760; "

<220>
<221> source
<223> /note="Gene Symbol: BCL7C; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 7C; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WUZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000215115"

<400> 8471
Met Ala Gly Arg Thr Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1 5 10 15

Asp Ile Lys Lys Val Met Ala Thr Ile Glu Lys Val Arg Arg Trp Glu
20 25 30

Lys Arg Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
35 40 45

Val Pro Val Val Asp Pro Gln Glu Glu Glu Arg Arg Arg Ala Gly Gly
50 55 60

Gly Ala Glu Arg Ser Arg Gly Arg Glu Arg Arg Gly Arg Gly Ala Ser
65 70 75 80

Pro Arg Gly Gly Gly Pro Leu Ile Leu Leu Asp Leu Asn Asp Glu Asn
85 90 95

Ser Asn Gln Ser Phe His Ser Glu Gly Ser Leu Gln Lys Gly Thr Glu

```
            100                 105                 110

Pro Ser Pro Gly Gly Thr Pro Gln Pro Ser Arg Pro Val Ser Pro Ala
        115                 120                 125

Gly Pro Pro Glu Gly Val Pro Glu Glu Ala Gln Pro Pro Arg Leu Gly
    130                 135                 140

Gln Glu Arg Asp Pro Gly Gly Ile Thr Ala Gly Ser Thr Asp Glu Pro
145                 150                 155                 160

Pro Met Leu Thr Lys Glu Glu Pro Val Pro Glu Leu Leu Glu Ala Glu
                165                 170                 175

Ala Pro Glu Ala Tyr Pro Val Phe Glu Pro Val Pro Pro Val Pro Glu
            180                 185                 190

Ala Ala Gln Gly Asp Thr Glu Asp Ser Glu Gly Ala Pro Pro Leu Lys
        195                 200                 205

Arg Ile Cys Pro Asn Ala Pro Asp Pro
    210                 215


<210> 8472
<211> 242
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1760; "

<220>
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<223> /note="Gene Symbol: BCL7C; "

<220>
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<223> /note="Gene Name:
      B-cell CLL/lymphoma 7C; "

<220>
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<223> /note="Uniprot ID:  Q8WUZ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369674"
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<400> 8472
Met Ala Gly Arg Thr Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1 5 10 15

Asp Ile Lys Lys Val Met Ala Thr Ile Glu Lys Val Arg Arg Trp Glu
20 25 30

Lys Arg Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
35 40 45

Val Pro Val Val Asp Pro Gln Glu Glu Glu Arg Arg Arg Ala Gly Gly
50 55 60

Gly Ala Glu Arg Ser Arg Gly Arg Glu Arg Arg Gly Arg Gly Ala Ser
65 70 75 80

Pro Arg Gly Gly Gly Pro Leu Ile Leu Leu Asp Leu Asn Asp Glu Asn
85 90 95

Ser Asn Gln Ser Phe His Ser Glu Gly Ser Leu Gln Lys Gly Thr Glu
100 105 110

Pro Ser Pro Gly Gly Thr Pro Gln Pro Ser Arg Pro Val Ser Pro Ala
115 120 125

Gly Pro Pro Glu Gly Val Pro Glu Glu Ala Gln Pro Pro Arg Leu Gly
130 135 140

Gln Glu Arg Asp Pro Gly Gly Ile Thr Ala Gly Ser Thr Asp Glu Pro
145 150 155 160

Pro Met Leu Thr Lys Glu Glu Pro Val Pro Glu Leu Leu Glu Ala Glu
165 170 175

Asp Ser Gly Val Arg Met Thr Arg Arg Ala Leu His Glu Lys Gly Leu
180 185 190

Lys Thr Glu Pro Leu Arg Arg Leu Leu Pro Arg Arg Gly Leu Arg Thr
195 200 205

Asn Val Arg Pro Ser Ser Met Ala Val Pro Asp Thr Arg Ala Pro Gly
210 215 220

Gly Gly Ser Lys Ala Pro Arg Ala Pro Arg Thr Ile Pro Gln Gly Lys
225 230 235 240

Gly Arg

<210> 8473
<211> 293
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1760; "

<220>
<221> source
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<220>
<221> source
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B-cell CLL/lymphoma 7C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459007"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8473
Xaa Ala Gly Arg Thr Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1 5 10 15

Asp Ile Lys Lys Val Met Ala Thr Ile Glu Lys Val Arg Arg Trp Glu
20 25 30

Lys Arg Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
35 40 45

Val Pro Val Val Asp Pro Gln Glu Glu Glu Arg Arg Arg Ala Gly Gly
50 55 60

Gly Ala Glu Arg Ser Arg Gly Arg Glu Arg Arg Gly Arg Gly Ala Ser
65 70 75 80

```
Pro Arg Gly Gly Gly Pro Leu Ile Leu Leu Asp Leu Asn Asp Glu Asn
                85                  90                  95

Ser Asn Gln Ser Phe His Ser Glu Gly Ser Leu Gln Lys Gly Thr Glu
            100                 105                 110

Pro Ser Pro Gly Gly Thr Pro Gln Pro Ser Arg Pro Val Ser Pro Ala
        115                 120                 125

Gly Pro Pro Glu Gly Val Pro Glu Glu Ala Gln Pro Pro Arg Leu Gly
    130                 135                 140

Gln Glu Arg Asp Pro Gly Gly Ile Thr Ala Gly Ser Thr Asp Glu Pro
145                 150                 155                 160

Pro Met Leu Thr Lys Glu Glu Pro Val Pro Glu Leu Leu Glu Ala Glu
                165                 170                 175

Thr Met Glu Met Met Leu Asp Lys Lys Gln Ile Gln Ala Ile Phe Leu
            180                 185                 190

Phe Glu Leu Lys Met Gly His Lys Ala Val Glu Thr Leu Arg Asn Ile
        195                 200                 205

Asn Asn Thr Leu Gly Pro Gly Thr Ala Asn Glu His Ile Val Gln Trp
    210                 215                 220

Trp Phe Lys Lys Phe Cys Lys Glu Asp Lys Ser Leu Glu Asp Glu Lys
225                 230                 235                 240

His Ser Val Trp Pro Ser Glu Val Asp Asn Asp Gln Leu Lys Ala Leu
                245                 250                 255

Ile Glu Ala Asp Pro Val Lys Thr Thr Gln Glu Val Ala Gln Glu Leu
            260                 265                 270

Asn His Arg Pro Phe Tyr Gly Arg Leu Ala Phe Glu Ala Asn Trp Lys
        275                 280                 285

Gly Glu Lys Ala Gln
    290
```

<210> 8474

<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1760; "

<220>
<221> source
<223> /note="Gene Symbol: BCL7C; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 7C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461177"

<400> 8474
Met Ala Gly Arg Thr Val Arg Ala Glu Thr Arg Ser Arg Ala Lys Asp
1 5 10 15

Asp Ile Lys Lys Val Met Ala Thr Ile Glu Lys Val Arg Arg Trp Glu
20 25 30

Lys Arg Trp Val Thr Val Gly Asp Thr Ser Leu Arg Ile Phe Lys Trp
35 40 45

Val Pro Val Val Asp Pro Gln Glu Glu Val Pro Cys Lys Arg Ala Gln
50 55 60

Ser Pro Val Leu Gly Ala Pro Pro Ser Pro Ala Ala Leu Cys His Leu
65 70 75 80

Pro Asp Pro Gln Lys Gly Ser Leu Arg Arg Leu Ser Pro His Gly Trp
85 90 95

Ala Lys Arg Glu Ile Pro Gly Ala
100

<210> 8475
<211> 1426
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1761; "

<220>
<221> source
<223> /note="Gene Symbol: BCL9; "

<220>
<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 9; "

<220>
<221> source
<223> /note="Uniprot ID: O00512; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000234739"

<400> 8475

```
Met His Ser Ser Asn Pro Lys Val Arg Ser Ser Pro Ser Gly Asn Thr
1               5                   10                  15

Gln Ser Ser Pro Lys Ser Lys Gln Glu Val Met Val Arg Pro Pro Thr
            20                  25                  30

Val Met Ser Pro Ser Gly Asn Pro Gln Leu Asp Ser Lys Phe Ser Asn
        35                  40                  45

Gln Gly Lys Gln Gly Gly Ser Ala Ser Gln Ser Gln Pro Ser Pro Cys
    50                  55                  60

Asp Ser Lys Ser Gly Gly His Thr Pro Lys Ala Leu Pro Gly Pro Gly
65                  70                  75                  80

Gly Ser Met Gly Leu Lys Asn Gly Ala Gly Asn Gly Ala Lys Gly Lys
                85                  90                  95

Gly Lys Arg Glu Arg Ser Ile Ser Ala Asp Ser Phe Asp Gln Arg Asp
            100                 105                 110

Pro Gly Thr Pro Asn Asp Asp Ser Asp Ile Lys Glu Cys Asn Ser Ala
        115                 120                 125

Asp His Ile Lys Ser Gln Asp Ser Gln His Thr Pro His Ser Met Thr
    130                 135                 140

Pro Ser Asn Ala Thr Ala Pro Arg Ser Ser Thr Pro Ser His Gly Gln
```

145 150 155 160

Thr Thr Ala Thr Glu Pro Thr Pro Ala Gln Lys Thr Pro Ala Lys Val
165 170 175

Val Tyr Val Phe Ser Thr Glu Met Ala Asn Lys Ala Ala Glu Ala Val
180 185 190

Leu Lys Gly Gln Val Glu Thr Ile Val Ser Phe His Ile Gln Asn Ile
195 200 205

Ser Asn Asn Lys Thr Glu Arg Ser Thr Ala Pro Leu Asn Thr Gln Ile
210 215 220

Ser Ala Leu Arg Asn Asp Pro Lys Pro Leu Pro Gln Gln Pro Pro Ala
225 230 235 240

Pro Ala Asn Gln Asp Gln Asn Ser Ser Gln Asn Thr Arg Leu Gln Pro
245 250 255

Thr Pro Pro Ile Pro Ala Pro Ala Pro Lys Pro Ala Ala Pro Pro Arg
260 265 270

Pro Leu Asp Arg Glu Ser Pro Gly Val Glu Asn Lys Leu Ile Pro Ser
275 280 285

Val Gly Ser Pro Ala Ser Ser Thr Pro Leu Pro Pro Asp Gly Thr Gly
290 295 300

Pro Asn Ser Thr Pro Asn Asn Arg Ala Val Thr Pro Val Ser Gln Gly
305 310 315 320

Ser Asn Ser Ser Ser Ala Asp Pro Lys Ala Pro Pro Pro Pro Pro Val
325 330 335

Ser Ser Gly Glu Pro Pro Thr Leu Gly Glu Asn Pro Asp Gly Leu Ser
340 345 350

Gln Glu Gln Leu Glu His Arg Glu Arg Ser Leu Gln Thr Leu Arg Asp
355 360 365

Ile Gln Arg Met Leu Phe Pro Asp Glu Lys Glu Phe Thr Gly Ala Gln
370 375 380

```
Ser Gly Gly Pro Gln Gln Asn Pro Gly Val Leu Asp Gly Pro Gln Lys
385                 390                 395                 400

Lys Pro Glu Gly Pro Ile Gln Ala Met Met Ala Gln Ser Gln Ser Leu
                405                 410                 415

Gly Lys Gly Pro Gly Pro Arg Thr Asp Val Gly Ala Pro Phe Gly Pro
            420                 425                 430

Gln Gly His Arg Asp Val Pro Phe Ser Pro Asp Glu Met Val Pro Pro
        435                 440                 445

Ser Met Asn Ser Gln Ser Gly Thr Ile Gly Pro Asp His Leu Asp His
    450                 455                 460

Met Thr Pro Glu Gln Ile Ala Trp Leu Lys Leu Gln Gln Glu Phe Tyr
465                 470                 475                 480

Glu Glu Lys Arg Arg Lys Gln Glu Gln Val Val Val Gln Gln Cys Ser
                485                 490                 495

Leu Gln Asp Met Met Val His Gln His Gly Pro Arg Gly Val Val Arg
            500                 505                 510

Gly Pro Pro Pro Pro Tyr Gln Met Thr Pro Ser Glu Gly Trp Ala Pro
        515                 520                 525

Gly Gly Thr Glu Pro Phe Ser Asp Gly Ile Asn Met Pro His Ser Leu
    530                 535                 540

Pro Pro Arg Gly Met Ala Pro His Pro Asn Met Pro Gly Ser Gln Met
545                 550                 555                 560

Arg Leu Pro Gly Phe Ala Gly Met Ile Asn Ser Glu Met Glu Gly Pro
                565                 570                 575

Asn Val Pro Asn Pro Ala Ser Arg Pro Gly Leu Ser Gly Val Ser Trp
            580                 585                 590

Pro Asp Asp Val Pro Lys Ile Pro Asp Gly Arg Asn Phe Pro Pro Gly
        595                 600                 605
```

```
Gln Gly Ile Phe Ser Gly Pro Gly Arg Gly Glu Arg Phe Pro Asn Pro
    610                 615                 620

Gln Gly Leu Ser Glu Glu Met Phe Gln Gln Leu Ala Glu Lys Gln
625                 630                 635                 640

Leu Gly Leu Pro Pro Gly Met Ala Met Glu Gly Ile Arg Pro Ser Met
                645                 650                 655

Glu Met Asn Arg Met Ile Pro Gly Ser Gln Arg His Met Glu Pro Gly
            660                 665                 670

Asn Asn Pro Ile Phe Pro Arg Ile Pro Val Glu Gly Pro Leu Ser Pro
        675                 680                 685

Ser Arg Gly Asp Phe Pro Lys Gly Ile Pro Pro Gln Met Gly Pro Gly
    690                 695                 700

Arg Glu Leu Glu Phe Gly Met Val Pro Ser Gly Met Lys Gly Asp Val
705                 710                 715                 720

Asn Leu Asn Val Asn Met Gly Ser Asn Ser Gln Met Ile Pro Gln Lys
                725                 730                 735

Met Arg Glu Ala Gly Ala Gly Pro Glu Glu Met Leu Lys Leu Arg Pro
            740                 745                 750

Gly Gly Ser Asp Met Leu Pro Ala Gln Gln Lys Met Val Pro Leu Pro
        755                 760                 765

Phe Gly Glu His Pro Gln Gln Glu Tyr Gly Met Gly Pro Arg Pro Phe
    770                 775                 780

Leu Pro Met Ser Gln Gly Pro Gly Ser Asn Ser Gly Leu Arg Asn Leu
785                 790                 795                 800

Arg Glu Pro Ile Gly Pro Asp Gln Arg Thr Asn Ser Arg Leu Ser His
                805                 810                 815

Met Pro Pro Leu Pro Leu Asn Pro Ser Ser Asn Pro Thr Ser Leu Asn
            820                 825                 830
```

```
Thr Ala Pro Pro Val Gln Arg Gly Leu Gly Arg Lys Pro Leu Asp Ile
        835                 840                 845

Ser Val Ala Gly Ser Gln Val His Ser Pro Gly Ile Asn Pro Leu Lys
    850                 855                 860

Ser Pro Thr Met His Gln Val Gln Ser Pro Met Leu Gly Ser Pro Ser
865                 870                 875                 880

Gly Asn Leu Lys Ser Pro Gln Thr Pro Ser Gln Leu Ala Gly Met Leu
                885                 890                 895

Ala Gly Pro Ala Ala Ala Ala Ser Ile Lys Ser Pro Pro Val Leu Gly
            900                 905                 910

Ser Ala Ala Ala Ser Pro Val His Leu Lys Ser Pro Ser Leu Pro Ala
        915                 920                 925

Pro Ser Pro Gly Trp Thr Ser Ser Pro Lys Pro Pro Leu Gln Ser Pro
    930                 935                 940

Gly Ile Pro Pro Asn His Lys Ala Pro Leu Thr Met Ala Ser Pro Ala
945                 950                 955                 960

Met Leu Gly Asn Val Glu Ser Gly Gly Pro Pro Pro Pro Thr Ala Ser
                965                 970                 975

Gln Pro Ala Ser Val Asn Ile Pro Gly Ser Leu Pro Ser Ser Thr Pro
            980                 985                 990

Tyr Thr Met Pro Pro Glu Pro Thr  Leu Ser Gln Asn Pro  Leu Ser
Ile
        995                 1000                1005

Met Met  Ser Arg Met Ser Lys  Phe Ala Met Pro Ser  Ser Thr Pro
    1010                1015                1020

Leu Tyr  His Asp Ala Ile Lys  Thr Val Ala Ser Ser  Asp Asp Asp
    1025                1030                1035

Ser Pro  Pro Ala Arg Ser Pro  Asn Leu Pro Ser Met  Asn Asn Met
    1040                1045                1050
```

```
Pro Gly  Met Gly Ile Asn Thr  Gln Asn Pro Arg Ile  Ser Gly Pro
    1055                1060                1065

Asn Pro  Val Val Pro Met Pro  Thr Leu Ser Pro Met  Gly Met Thr
    1070                1075                1080

Gln Pro  Leu Ser His Ser Asn  Gln Met Pro Ser Pro  Asn Ala Val
    1085                1090                1095

Gly Pro  Asn Ile Pro Pro His  Gly Val Pro Met Gly  Pro Gly Leu
    1100                1105                1110

Met Ser  His Asn Pro Ile Met  Gly His Gly Ser Gln  Glu Pro Pro
    1115                1120                1125

Met Val  Pro Gln Gly Arg Met  Gly Phe Pro Gln Gly  Phe Pro Pro
    1130                1135                1140

Val Gln  Ser Pro Pro Gln Gln  Val Pro Phe Pro His  Asn Gly Pro
    1145                1150                1155

Ser Gly  Gly Gln Gly Ser Phe  Pro Gly Gly Met Gly  Phe Pro Gly
    1160                1165                1170

Glu Gly  Pro Leu Gly Arg Pro  Ser Asn Leu Pro Gln  Ser Ser Ala
    1175                1180                1185

Asp Ala  Ala Leu Cys Lys Pro  Gly Gly Pro Gly Gly  Pro Asp Ser
    1190                1195                1200

Phe Thr  Val Leu Gly Asn Ser  Met Pro Ser Val Phe  Thr Asp Pro
    1205                1210                1215

Asp Leu  Gln Glu Val Ile Arg  Pro Gly Ala Thr Gly  Ile Pro Glu
    1220                1225                1230

Phe Asp  Leu Ser Arg Ile Ile  Pro Ser Glu Lys Pro  Ser Gln Thr
    1235                1240                1245

Leu Gln  Tyr Phe Pro Arg Gly  Glu Val Pro Gly Arg  Lys Gln Pro
    1250                1255                1260

Gln Gly  Pro Gly Pro Gly Phe  Ser His Met Gln Gly  Met Met Gly
```

```
    1265                1270                1275

Glu Gln  Ala Pro Arg Met Gly  Leu Ala Leu Pro Gly  Met Gly Gly
    1280                1285                1290

Pro Gly  Pro Val Gly Thr Pro  Asp Ile Pro Leu Gly  Thr Ala Pro
    1295                1300                1305

Ser Met  Pro Gly His Asn Pro  Met Arg Pro Pro Ala  Phe Leu Gln
    1310                1315                1320

Gln Gly  Met Met Gly Pro His  His Arg Met Met Ser  Pro Ala Gln
    1325                1330                1335

Ser Thr  Met Pro Gly Gln Pro  Thr Leu Met Ser Asn  Pro Ala Ala
    1340                1345                1350

Ala Val  Gly Met Ile Pro Gly  Lys Asp Arg Gly Pro  Ala Gly Leu
    1355                1360                1365

Tyr Thr  His Pro Gly Pro Val  Gly Ser Pro Gly Met  Met Met Ser
    1370                1375                1380

Met Gln  Gly Met Met Gly Pro  Gln Gln Asn Ile Met  Ile Pro Pro
    1385                1390                1395

Gln Met  Arg Pro Arg Gly Met  Ala Ala Asp Val Gly  Met Gly Gly
    1400                1405                1410

Phe Ser  Gln Gly Pro Gly Asn  Pro Gly Asn Met Met  Phe
    1415                1420                1425


<210> 8476
<211> 1394
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1761; "

<220>
<221> source
<223> /note="Gene Symbol: BCL9; "

<220>
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<221> source
<223> /note="Gene Name:
B-cell CLL/lymphoma 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479694"

<400> 8476

```
Met His Ser Ser Asn Pro Lys Val Arg Ser Ser Pro Ser Gly Asn Thr
1               5                  10                  15

Gln Ser Ser Pro Lys Ser Lys Gln Glu Val Met Val Arg Pro Pro Thr
            20                  25                  30

Val Met Ser Pro Ser Gly Asn Pro Gln Leu Asp Ser Lys Phe Ser Asn
        35                  40                  45

Gln Gly Lys Gln Gly Gly Ser Ala Ser Gln Ser Gln Pro Ser Pro Cys
    50                  55                  60

Asp Ser Lys Ser Gly Gly His Thr Pro Lys Ala Leu Pro Gly Pro Gly
65                  70                  75                  80

Gly Ser Met Gly Leu Lys Asn Gly Ala Gly Asn Gly Ala Lys Gly Lys
                85                  90                  95

Gly Lys Arg Glu Arg Ser Ile Ser Ala Asp Ser Phe Asp Gln Arg Asp
            100                 105                 110

Pro Gly Thr Pro Asn Asp Asp Ser Asp Ile Lys Glu Cys Asn Ser Ala
        115                 120                 125

Asp His Ile Lys Ser Gln Asp Ser Gln His Thr Pro His Ser Met Thr
    130                 135                 140

Pro Ser Asn Ala Thr Ala Pro Arg Ser Ser Thr Pro Ser His Gly Gln
145                 150                 155                 160

Thr Thr Ala Thr Glu Pro Thr Pro Ala Gln Lys Thr Pro Ala Lys Val
                165                 170                 175

Val Tyr Val Phe Ser Thr Glu Met Ala Asn Lys Ala Ala Glu Ala Val
            180                 185                 190
```

```
Leu Lys Gly Gln Val Glu Thr Ile Val Ser Phe His Ile Gln Asn Ile
        195                 200                 205

Ser Asn Asn Lys Thr Glu Arg Ser Thr Ala Pro Leu Asn Thr Gln Ile
    210                 215                 220

Ser Ala Leu Arg Asn Asp Pro Lys Pro Leu Pro Gln Gln Pro Pro Ala
225                 230                 235                 240

Pro Ala Asn Gln Asp Gln Asn Ser Ser Gln Asn Thr Arg Leu Gln Pro
                245                 250                 255

Thr Pro Pro Ile Pro Ala Pro Ala Pro Lys Pro Ala Ala Pro Pro Arg
            260                 265                 270

Pro Leu Asp Arg Glu Ser Pro Gly Val Glu Asn Lys Leu Ile Pro Ser
        275                 280                 285

Val Gly Ser Pro Ala Ser Ser Thr Pro Leu Pro Pro Asp Gly Thr Gly
    290                 295                 300

Pro Asn Ser Thr Pro Asn Asn Arg Ala Val Thr Pro Val Ser Gln Gly
305                 310                 315                 320

Ser Asn Ser Ser Ser Ala Asp Pro Lys Ala Pro Pro Pro Pro Pro Val
                325                 330                 335

Ser Ser Gly Glu Pro Pro Thr Leu Gly Glu Asn Pro Asp Gly Leu Ser
            340                 345                 350

Gln Glu Gln Leu Glu His Arg Glu Arg Ser Leu Gln Thr Leu Arg Asp
        355                 360                 365

Ile Gln Arg Met Leu Phe Pro Asp Glu Lys Glu Phe Thr Gly Ala Gln
    370                 375                 380

Ser Gly Gly Pro Gln Gln Asn Pro Gly Val Leu Asp Gly Pro Gln Lys
385                 390                 395                 400

Lys Pro Glu Gly Pro Ile Gln Ala Met Met Ala Gln Ser Gln Ser Leu
                405                 410                 415

Gly Lys Gly Pro Gly Pro Arg Thr Asp Val Gly Ala Pro Phe Gly Pro
```

```
            420                 425                 430

Gln Gly His Arg Asp Val Pro Phe Ser Pro Asp Glu Met Val Pro Pro
        435                 440                 445

Ser Met Asn Ser Gln Ser Gly Thr Ile Gly Pro Asp His Leu Asp His
    450                 455                 460

Met Thr Pro Glu Gln Ile Ala Trp Leu Lys Leu Gln Gln Glu Phe Tyr
465                 470                 475                 480

Glu Glu Lys Arg Arg Lys Gln Glu Gln Val Val Val Gln Gln Cys Ser
                485                 490                 495

Leu Gln Asp Met Met Val His Gln His Gly Pro Arg Gly Val Val Arg
            500                 505                 510

Gly Pro Pro Pro Pro Tyr Gln Met Thr Pro Ser Glu Gly Trp Ala Pro
        515                 520                 525

Gly Gly Thr Glu Pro Phe Ser Asp Gly Ile Asn Met Pro His Ser Leu
    530                 535                 540

Pro Pro Arg Gly Met Ala Pro His Pro Asn Met Pro Gly Ser Gln Met
545                 550                 555                 560

Arg Leu Pro Gly Phe Ala Gly Met Ile Asn Ser Glu Met Glu Gly Pro
                565                 570                 575

Asn Val Pro Asn Pro Ala Ser Arg Pro Gly Leu Ser Gly Val Ser Trp
            580                 585                 590

Pro Asp Asp Val Pro Lys Ile Pro Asp Gly Arg Asn Phe Pro Pro Gly
        595                 600                 605

Gln Gly Ile Phe Ser Gly Pro Gly Arg Gly Glu Arg Phe Pro Asn Pro
    610                 615                 620

Gln Gly Leu Ser Glu Glu Met Phe Gln Gln Gln Leu Ala Glu Lys Gln
625                 630                 635                 640

Leu Gly Leu Pro Pro Gly Met Ala Met Glu Gly Ile Arg Pro Ser Met
                645                 650                 655
```

```
Glu Met Asn Arg Met Ile Pro Gly Ser Gln Arg His Met Glu Pro Gly
            660                 665                 670

Asn Asn Pro Ile Phe Pro Arg Ile Pro Val Glu Gly Pro Leu Ser Pro
        675                 680                 685

Ser Arg Gly Asp Phe Pro Lys Gly Ile Pro Pro Gln Met Gly Pro Gly
    690                 695                 700

Arg Glu Leu Glu Phe Gly Met Val Pro Ser Gly Met Lys Gly Asp Val
705                 710                 715                 720

Asn Leu Asn Val Asn Met Gly Ser Asn Ser Gln Met Ile Pro Gln Lys
                725                 730                 735

Met Arg Glu Ala Gly Ala Gly Pro Glu Glu Met Leu Lys Leu Arg Pro
            740                 745                 750

Gly Gly Ser Asp Met Leu Pro Ala Gln Gln Lys Met Val Pro Leu Pro
        755                 760                 765

Phe Gly Glu His Pro Gln Gln Glu Tyr Gly Met Gly Pro Arg Pro Phe
    770                 775                 780

Leu Pro Met Ser Gln Gly Pro Gly Ser Asn Ser Gly Leu Arg Asn Leu
785                 790                 795                 800

Arg Glu Pro Ile Gly Pro Asp Gln Arg Thr Asn Ser Arg Leu Ser His
                805                 810                 815

Met Pro Pro Leu Pro Leu Asn Pro Ser Ser Asn Pro Thr Ser Leu Asn
            820                 825                 830

Thr Ala Pro Pro Val Gln Arg Gly Leu Gly Arg Lys Pro Leu Asp Ile
        835                 840                 845

Ser Val Ala Gly Ser Gln Val His Ser Pro Gly Ile Asn Pro Leu Lys
    850                 855                 860

Ser Pro Thr Met His Gln Val Gln Ser Pro Met Leu Gly Ser Pro Ser
865                 870                 875                 880
```

```
Gly Asn Leu Lys Ser Pro Gln Thr Pro Ser Gln Leu Ala Gly Met Leu
                885                 890                 895

Ala Gly Pro Ala Ala Ala Ala Ser Ile Lys Ser Pro Pro Val Leu Gly
            900                 905                 910

Ser Ala Ala Ala Ser Pro Val His Leu Lys Ser Pro Ser Leu Pro Ala
        915                 920                 925

Pro Ser Pro Gly Trp Thr Ser Ser Pro Lys Pro Pro Leu Gln Ser Pro
    930                 935                 940

Gly Ile Pro Pro Asn His Lys Ala Pro Leu Thr Met Ala Ser Pro Ala
945                 950                 955                 960

Met Leu Gly Asn Val Glu Ser Gly Gly Pro Pro Pro Pro Thr Ala Ser
                965                 970                 975

Gln Pro Ala Ser Val Asn Ile Pro Gly Ser Leu Pro Ser Ser Thr Pro
            980                 985                 990

Tyr Thr Met Pro Pro Glu Pro Thr  Leu Ser Gln Asn Pro  Leu Ser
Ile
        995                 1000                1005

Met Met  Ser Arg Met Ser Lys  Phe Ala Met Pro Ser  Ser Thr Pro
    1010                1015                1020

Leu Tyr  His Asp Ala Ile Lys  Thr Val Ala Ser Ser  Asp Asp Asp
    1025                1030                1035

Ser Pro  Pro Ala Arg Ser Pro  Asn Leu Pro Ser Met  Asn Asn Met
    1040                1045                1050

Pro Gly  Met Gly Ile Asn Thr  Gln Asn Pro Arg Ile  Ser Gly Pro
    1055                1060                1065

Asn Pro  Val Val Pro Met Pro  Thr Leu Ser Pro Met  Gly Met Thr
    1070                1075                1080

Gln Pro  Leu Ser His Ser Asn  Gln Met Pro Ser Pro  Asn Ala Val
    1085                1090                1095
```

```
Gly Pro  Asn Ile Pro Pro His  Gly Val Pro Met Gly  Pro Gly Leu
    1100                1105                1110

Met Ser  His Asn Pro Ile Met  Gly His Gly Ser Gln  Glu Pro Pro
    1115                1120                1125

Met Val  Pro Gln Gly Arg Met  Gly Phe Pro Gln Gly  Phe Pro Pro
    1130                1135                1140

Val Gln  Ser Pro Pro Gln Gln  Val Pro Phe Pro His  Asn Gly Pro
    1145                1150                1155

Ser Gly  Gly Gln Gly Ser Phe  Pro Gly Gly Met Gly  Phe Pro Gly
    1160                1165                1170

Glu Gly  Pro Leu Gly Arg Pro  Ser Asn Leu Pro Gln  Ser Ser Ala
    1175                1180                1185

Asp Ala  Ala Leu Cys Lys Pro  Gly Gly Pro Gly Gly  Pro Asp Ser
    1190                1195                1200

Phe Thr  Val Leu Gly Asn Ser  Met Pro Ser Val Phe  Thr Asp Pro
    1205                1210                1215

Asp Leu  Gln Glu Val Ile Arg  Pro Gly Ala Thr Gly  Ile Pro Glu
    1220                1225                1230

Phe Asp  Leu Ser Arg Ile Ile  Pro Ser Glu Lys Pro  Ser Gln Thr
    1235                1240                1245

Leu Gln  Tyr Phe Pro Arg Gly  Glu Val Pro Gly Arg  Lys Gln Pro
    1250                1255                1260

Gln Gly  Pro Gly Pro Gly Phe  Ser His Met Gln Gly  Met Met Gly
    1265                1270                1275

Glu Gln  Ala Pro Arg Met Gly  Leu Ala Leu Pro Gly  Met Gly Gly
    1280                1285                1290

Pro Gly  Pro Val Gly Thr Pro  Asp Ile Pro Leu Gly  Thr Ala Pro
    1295                1300                1305
```

```
Ser Met  Pro Gly His Asn Pro  Met Arg Pro Pro Ala  Phe Leu Gln
    1310                1315                1320


Gln Gly  Met Met Gly Pro His  His Arg Met Met Ser  Pro Ala Gln
    1325                1330                1335


Ser Thr  Met Pro Gly Gln Pro  Thr Leu Met Ser Asn  Pro Ala Ala
    1340                1345                1350


Ala Val  Gly Met Ile Pro Gly  Lys Asp Arg Gly Pro  Ala Gly Leu
    1355                1360                1365


Tyr Thr  His Pro Gly Pro Val  Gly Ser Pro Gly Met  Met Met Ser
    1370                1375                1380


Met Gln  Gly Met Met Gly Pro  Asn Arg Thr Ser
    1385                1390


<210> 8477
<211> 1499
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<220>
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<400> 8477
Met Arg Ile Leu Ala Asn Lys Thr Arg Leu Pro His Pro Arg Arg Arg
1               5                  10                  15


Glu Ala Pro Gly Ser Pro Pro Leu Ser Pro Arg Gly His Cys Pro Pro
            20                  25                  30
```

```
Ala Pro Ala Lys Pro Met His Pro Glu Asn Lys Leu Thr Asn His Gly
        35                  40                  45

Lys Thr Gly Asn Gly Gly Ala Gln Ser Gln His Gln Asn Val Asn Gln
    50                  55                  60

Gly Pro Thr Cys Asn Val Gly Ser Lys Gly Val Gly Ala Gly Asn His
65                  70                  75                  80

Gly Ala Lys Ala Asn Gln Ile Ser Pro Ser Asn Ser Ser Leu Lys Asn
                85                  90                  95

Pro Gln Ala Gly Val Pro Pro Phe Ser Ser Leu Lys Gly Lys Val Lys
            100                 105                 110

Arg Asp Arg Ser Val Ser Val Asp Ser Gly Glu Gln Arg Glu Ala Gly
        115                 120                 125

Thr Pro Ser Leu Asp Ser Glu Ala Lys Glu Val Ala Pro Arg Ser Lys
    130                 135                 140

Arg Arg Cys Val Leu Glu Arg Lys Gln Pro Tyr Ser Gly Asp Glu Trp
145                 150                 155                 160

Cys Ser Gly Pro Asp Ser Glu Glu Asp Asp Lys Pro Ile Gly Ala Thr
                165                 170                 175

His Asn Cys Asn Val Ala Asp Pro Ala Met Ala Ala Pro Gln Leu Gly
            180                 185                 190

Pro Gly Gln Thr Thr Gln Leu Pro Leu Ser Glu Ser Ser Val Pro Gly
        195                 200                 205

Ala Pro His Gly Pro Pro Pro Gly Leu Arg Pro Asp Ala Pro Gly Gly
    210                 215                 220

Gly Gly Gly Gly Gly Gly Val Pro Gly Lys Pro Pro Ser Gln Phe Val
225                 230                 235                 240

Tyr Val Phe Thr Thr His Leu Ala Asn Thr Ala Ala Glu Ala Val Leu
                245                 250                 255
```

```
Gln Gly Arg Ala Asp Ser Ile Leu Ala Tyr His Gln Gln Asn Val Pro
            260                 265                 270

Arg Ala Lys Leu Asp Gln Ala Pro Lys Val Pro Pro Thr Pro Glu Pro
        275                 280                 285

Leu Pro Leu Ser Thr Pro Ser Ala Gly Thr Pro Gln Ser Gln Pro Pro
    290                 295                 300

Pro Leu Pro Pro Pro Pro Pro Pro Ala Pro Gly Ser Ala Pro Pro Ala
305                 310                 315                 320

Leu Pro Pro Glu Gly Pro Pro Glu Asp Ser Ser Gln Asp Leu Ala Pro
                325                 330                 335

Asn Ser Val Gly Ala Ala Ser Thr Gly Gly Gly Thr Gly Gly Thr His
            340                 345                 350

Pro Asn Thr Pro Thr Ala Thr Thr Ala Asn Asn Pro Leu Pro Pro Gly
        355                 360                 365

Gly Asp Pro Ser Ser Ala Pro Gly Pro Ala Leu Leu Gly Glu Ala Ala
    370                 375                 380

Ala Pro Gly Asn Gly Gln Arg Ser Leu Val Gly Ser Glu Gly Leu Ser
385                 390                 395                 400

Lys Glu Gln Leu Glu His Arg Glu Arg Ser Leu Gln Thr Leu Arg Asp
                405                 410                 415

Ile Glu Arg Leu Leu Leu Arg Ser Gly Glu Thr Glu Pro Phe Leu Lys
            420                 425                 430

Gly Pro Pro Gly Gly Ala Gly Glu Gly Gly Pro Pro Ala Gln Ala Pro
        435                 440                 445

Pro Pro Pro Gln Gln Pro Pro Thr Ala Pro Pro Ser Gly Leu Lys Lys
    450                 455                 460

Tyr Glu Glu Pro Leu Gln Ser Met Ile Ser Gln Thr Gln Ser Leu Gly
465                 470                 475                 480
```

```
Gly Pro Pro Leu Glu His Glu Val Pro Gly His Pro Pro Gly Gly Asp
                485                 490                 495

Met Gly Gln Gln Met Asn Met Met Ile Gln Arg Leu Gly Gln Asp Ser
            500                 505                 510

Leu Thr Pro Glu Gln Val Ala Trp Arg Lys Leu Gln Glu Glu Tyr Tyr
        515                 520                 525

Glu Glu Lys Arg Arg Lys Glu Glu Gln Ile Gly Leu His Gly Ser Arg
    530                 535                 540

Pro Leu Gln Asp Met Met Gly Met Gly Gly Met Met Val Arg Gly Pro
545                 550                 555                 560

Pro Pro Pro Tyr His Ser Lys Pro Gly Asp Gln Trp Pro Pro Gly Met
                565                 570                 575

Gly Ala Gln Leu Arg Gly Pro Met Asp Val Gln Asp Pro Met Gln Leu
            580                 585                 590

Arg Gly Gly Pro Pro Phe Pro Gly Pro Arg Phe Pro Gly Asn Gln Ile
        595                 600                 605

Gln Arg Val Pro Gly Phe Gly Gly Met Gln Ser Met Pro Met Glu Val
    610                 615                 620

Pro Met Asn Ala Met Gln Arg Pro Val Arg Pro Gly Met Gly Trp Thr
625                 630                 635                 640

Glu Asp Leu Pro Pro Met Gly Gly Pro Ser Asn Phe Ala Gln Asn Thr
                645                 650                 655

Met Pro Tyr Pro Gly Gly Gln Gly Glu Ala Glu Arg Phe Met Thr Pro
            660                 665                 670

Arg Val Arg Glu Glu Leu Leu Arg His Gln Leu Leu Glu Lys Arg Ser
        675                 680                 685

Met Gly Met Gln Arg Pro Leu Gly Met Ala Gly Ser Gly Met Gly Gln
    690                 695                 700

Ser Met Glu Met Glu Arg Met Met Gln Ala His Arg Gln Met Asp Pro
```

705 710 715 720

Ala Met Phe Pro Gly Gln Met Ala Gly Gly Glu Gly Leu Ala Gly Thr
725 730 735

Pro Met Gly Met Glu Phe Gly Gly Gly Arg Gly Leu Leu Ser Pro Pro
740 745 750

Met Gly Gln Ser Gly Leu Arg Glu Val Asp Pro Pro Met Gly Pro Gly
755 760 765

Asn Leu Asn Met Asn Met Asn Val Asn Met Asn Met Asn Met Asn Leu
770 775 780

Asn Val Gln Met Thr Pro Gln Gln Gln Met Leu Met Ser Gln Lys Met
785 790 795 800

Arg Gly Pro Gly Asp Leu Met Gly Pro Gln Gly Leu Ser Pro Glu Glu
805 810 815

Met Ala Arg Val Arg Ala Gln Asn Ser Ser Gly Val Met Gly Gly Pro
820 825 830

Gln Lys Met Leu Met Pro Ser Gln Phe Pro Asn Gln Gly Gln Gln Gly
835 840 845

Phe Ser Gly Gly Gln Gly Pro Tyr Gln Ala Met Ser Gln Asp Met Gly
850 855 860

Asn Thr Gln Asp Met Phe Ser Pro Asp Gln Ser Ser Met Pro Met Ser
865 870 875 880

Asn Val Gly Thr Thr Arg Leu Ser His Met Pro Leu Pro Pro Ala Ser
885 890 895

Asn Pro Pro Gly Thr Val His Ser Ala Pro Asn Arg Gly Leu Gly Arg
900 905 910

Arg Pro Ser Asp Leu Thr Ile Ser Ile Asn Gln Met Gly Ser Pro Gly
915 920 925

Met Gly His Leu Lys Ser Pro Thr Leu Ser Gln Val His Ser Pro Leu
930 935 940

```
Val Thr Ser Pro Ser Ala Asn Leu Lys Ser Pro Gln Thr Pro Ser Gln
945                 950                 955                 960

Met Val Pro Leu Pro Ser Ala Asn Pro Pro Gly Pro Leu Lys Ser Pro
                965                 970                 975

Gln Val Leu Gly Ser Ser Leu Ser Val Arg Ser Pro Thr Gly Ser Pro
            980                 985                 990

Ser Arg Leu Lys Ser Pro Ser Met  Ala Val Pro Ser Pro  Gly Trp
Val
        995                 1000                1005

Ala Ser  Pro Lys Thr Ala Met  Pro Ser Pro Gly Val  Ser Gln Asn
    1010                1015                1020

Lys Gln  Pro Pro Leu Asn Met  Asn Ser Ser Thr Thr  Leu Ser Asn
    1025                1030                1035

Met Glu  Gln Gly Thr Leu Pro  Pro Ser Gly Pro Arg  Ser Ser Ser
    1040                1045                1050

Ser Ala  Pro Pro Ala Asn Pro  Pro Ser Gly Leu Met  Asn Pro Ser
    1055                1060                1065

Leu Pro  Phe Thr Ser Ser Pro  Asp Pro Thr Pro Ser  Gln Asn Pro
    1070                1075                1080

Leu Ser  Leu Met Met Thr Gln  Met Ser Lys Tyr Ala  Met Pro Ser
    1085                1090                1095

Ser Thr  Pro Leu Tyr His Asn  Ala Ile Lys Thr Ile  Ala Thr Ser
    1100                1105                1110

Asp Asp  Glu Leu Leu Pro Asp  Arg Pro Leu Leu Pro  Pro Pro Pro
    1115                1120                1125

Pro Pro  Gln Gly Ser Gly Pro  Gly Ile Ser Asn Ser  Gln Pro Ser
    1130                1135                1140

Gln Met  His Leu Asn Ser Ala  Ala Ala Gln Ser Pro  Met Gly Met
    1145                1150                1155
```

```
Asn Leu  Pro Gly Gln Gln Pro  Leu Ser His Glu Pro  Pro Pro Ala
    1160                1165                1170

Met Leu  Pro Ser Pro Thr Pro  Leu Gly Ser Asn Ile  Pro Leu His
    1175                1180                1185

Pro Asn  Ala Gln Gly Thr Gly  Gly Pro Pro Gln Asn  Ser Met Met
    1190                1195                1200

Met Ala  Pro Gly Gly Pro Asp  Ser Leu Asn Ala Pro  Cys Gly Pro
    1205                1210                1215

Val Pro  Ser Ser Ser Gln Met  Met Pro Phe Pro Pro  Arg Leu Gln
    1220                1225                1230

Gln Pro  His Gly Ala Met Ala  Pro Thr Gly Gly Gly  Gly Gly Gly
    1235                1240                1245

Pro Gly  Leu Gln Gln His Tyr  Pro Ser Gly Met Ala  Leu Pro Pro
    1250                1255                1260

Glu Asp  Leu Pro Asn Gln Pro  Pro Gly Pro Met Pro  Pro Gln Gln
    1265                1270                1275

His Leu  Met Gly Lys Ala Met  Ala Gly Arg Met Gly  Asp Ala Tyr
    1280                1285                1290

Pro Pro  Gly Val Leu Pro Gly  Val Ala Ser Val Leu  Asn Asp Pro
    1295                1300                1305

Glu Leu  Ser Glu Val Ile Arg  Pro Thr Pro Thr Gly  Ile Pro Glu
    1310                1315                1320

Phe Asp  Leu Ser Arg Ile Ile  Pro Ser Glu Lys Pro  Ser Ser Thr
    1325                1330                1335

Leu Gln  Tyr Phe Pro Lys Ser  Glu Asn Gln Pro Pro  Lys Ala Gln
    1340                1345                1350

Pro Pro  Asn Leu His Leu Met  Asn Leu Gln Asn Met  Met Ala Glu
    1355                1360                1365
```

```
Gln Thr  Pro Ser Arg Pro Pro  Asn Leu Pro Gly Gln  Gln Gly Val
    1370                1375                1380

Gln Arg  Gly Leu Asn Met Ser  Met Cys His Pro Gly  Gln Met Ser
    1385                1390                1395

Leu Leu  Gly Arg Thr Gly Val  Pro Pro Gln Gln Gly  Met Val Pro
    1400                1405                1410

His Gly  Leu His Gln Gly Val  Met Ser Pro Pro Gln  Gly Leu Met
    1415                1420                1425

Thr Gln  Gln Asn Phe Met Leu  Met Lys Gln Arg Gly  Val Gly Gly
    1430                1435                1440

Glu Val  Tyr Ser Gln Pro Pro  His Met Leu Ser Pro  Gln Gly Ser
    1445                1450                1455

Leu Met  Gly Pro Pro Pro Gln  Gln Asn Leu Met Val  Ser His Pro
    1460                1465                1470

Leu Arg  Gln Arg Ser Val Ser  Leu Asp Ser Gln Met  Gly Tyr Leu
    1475                1480                1485

Pro Ala  Pro Gly Gly Met Ala  Asn Leu Pro Phe
    1490                1495


<210> 8478
<211> 88
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1762; "

<220>
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<223> /note="Gene Symbol: BCL9L; "

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<223> /note="Gene Name:
      B-cell CLL/lymphoma 9-like; "

<220>
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<223> /note="ENSP ID: ENSP00000432804"

<400> 8478
Met Arg Ile Leu Ala Asn Lys Thr Arg Leu Pro His Pro Arg Arg Arg
1   5   10   15

Glu Ala Pro Gly Ser Pro Pro Leu Ser Pro Arg Gly His Cys Pro Pro
            20   25   30

Ala Pro Ala Lys Pro Met His Pro Glu Asn Lys Leu Thr Asn His Gly
        35   40   45

Lys Thr Gly Asn Gly Gly Ala Gln Ser Gln His Gln Asn Val Asn Gln
    50   55   60

Gly Pro Thr Cys Asn Val Gly Ser Lys Gly Val Gly Ala Gly Asn His
65   70   75   80

Gly Ala Lys Ala Asn Gln Ile Ser
                85

<210> 8479
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<212> PRT
<213> Homo sapiens

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<400> 8479
Met His Pro Glu Asn Lys Leu Thr Asn His Gly Lys Thr Gly Asn Gly
1   5   10   15

Gly Ala Gln Ser Gln His Gln Asn Val Asn Gln Gly Pro Thr Cys Asn
            20   25   30

```
Val Gly Ser Lys Gly Val Gly Ala Gly Asn His Gly Ala Lys Ala Asn
        35                  40                  45

Gln Ile Ser Pro Ser Asn Ser Ser Leu Lys Asn Pro Gln Ala Gly Val
    50                  55                  60

Pro Pro Phe Ser Ser Leu Lys Gly Lys Val Lys Arg Asp Arg Ser Val
65                  70                  75                  80

Ser Val Asp Ser Gly Glu Gln Arg Glu Ala Gly Thr Pro Ser Leu Asp
                85                  90                  95

Ser Glu Ala Lys Glu Val Ala Pro Arg Ser Lys Arg Arg Cys Val Leu
            100                 105                 110

Glu Arg Lys Gln Pro Tyr Ser Gly Asp Glu Trp Cys Ser Gly Pro Asp
        115                 120                 125

Ser Glu Glu Asp Asp Lys Pro Ile Gly Ala Thr His Asn Cys Asn Val
    130                 135                 140

Ala Asp Pro Ala Met Ala Ala Pro Gln Leu Gly Pro Gly Gln Thr Thr
145                 150                 155                 160

Gln Leu Pro Leu Ser Glu Ser Ser Val Pro Gly Ala Pro His Gly Pro
                165                 170                 175

Pro Pro Gly Leu Arg Pro Asp Ala Pro Gly Gly Gly Gly Gly Gly Gly
            180                 185                 190

Gly Val Pro Gly Lys Pro Pro Ser Gln Phe Val Tyr Val Phe Thr Thr
        195                 200                 205

His Leu Ala Asn Thr Ala Ala Glu Ala Val Leu Gln Gly Arg Ala Asp
    210                 215                 220

Ser Ile Leu Ala Tyr His Gln Gln Asn Val Pro Arg Ala Lys Leu Asp
225                 230                 235                 240

Gln Ala Pro Lys Val Pro Pro Thr Pro Glu Pro Leu Pro Leu Ser Thr
                245                 250                 255
```

```
Pro Ser Ala Gly Thr Pro Gln Ser Gln Pro Pro Pro Leu Pro Pro Pro
            260                 265                 270

Pro Pro Pro Ala Pro Gly Ser Ala Pro Pro Ala Leu Pro Pro Glu Gly
        275                 280                 285

Pro Pro Glu Asp Ser Ser Gln Asp Leu Ala Pro Asn Ser Val Gly Ala
    290                 295                 300

Ala Ser Thr Gly Gly Gly Thr Gly Gly Thr His Pro Asn Thr Pro Thr
305                 310                 315                 320

Ala Thr Thr Ala Asn Asn Pro Leu Pro Pro Gly Gly Asp Pro Ser Ser
                325                 330                 335

Ala Pro Gly Pro Ala Leu Leu Gly Glu Ala Ala Ala Pro Gly Asn Gly
            340                 345                 350

Gln Arg Ser Leu Val Gly Ser Glu Gly Leu Ser Lys Glu Gln Leu Glu
        355                 360                 365

His Arg Glu Arg Ser Leu Gln Thr Leu Arg Asp Ile Glu Arg Leu Leu
    370                 375                 380

Leu Arg Ser Gly Glu Thr Glu Pro Phe Leu Lys Gly Pro Pro Gly Gly
385                 390                 395                 400

Ala Gly Glu Gly Gly Pro Pro Ala Gln Ala Pro Pro Pro Pro Gln Gln
                405                 410                 415

Pro Pro Thr Ala Pro Pro Ser Gly Leu Lys Lys Tyr Glu Glu Pro Leu
            420                 425                 430

Gln Ser Met Ile Ser Gln Thr Gln Ser Leu Gly Gly Pro Pro Leu Glu
        435                 440                 445

His Glu Val Pro Gly His Pro Pro Gly Gly Asp Met Gly Gln Gln Met
    450                 455                 460

Asn Met Met Ile Gln Arg Leu Gly Gln Asp Ser Leu Thr Pro Glu Gln
465                 470                 475                 480

Val Ala Trp Arg Lys Leu Gln Glu Glu Tyr Tyr Glu Glu Lys Arg Arg
```

485 490 495

Lys Glu Glu Gln Ile Gly Leu His Gly Ser Arg Pro Leu Gln Asp Met
500 505 510

Met Gly Met Gly Gly Met Met Val Arg Gly Pro Pro Pro Pro Tyr His
515 520 525

Ser Lys Pro Gly Asp Gln Trp Pro Pro Gly Met Gly Ala Gln Leu Arg
530 535 540

Gly Pro Met Asp Val Gln Asp Pro Met Gln Leu Arg Gly Gly Pro Pro
545 550 555 560

Phe Pro Gly Pro Arg Phe Pro Gly Asn Gln Ile Gln Arg Val Pro Gly
565 570 575

Phe Gly Gly Met Gln Ser Met Pro Met Glu Val Pro Met Asn Ala Met
580 585 590

Gln Arg Pro Val Arg Pro Gly Met Gly Trp Thr Glu Asp Leu Pro Pro
595 600 605

Met Gly Gly Pro Ser Asn Phe Ala Gln Asn Thr Met Pro Tyr Pro Gly
610 615 620

Gly Gln Gly Glu Ala Glu Arg Phe Met Thr Pro Arg Val Arg Glu Glu
625 630 635 640

Leu Leu Arg His Gln Leu Leu Glu Lys Arg Ser Met Gly Met Gln Arg
645 650 655

Pro Leu Gly Met Ala Gly Ser Gly Met Gly Gln Ser Met Glu Met Glu
660 665 670

Arg Met Met Gln Ala His Arg Gln Met Asp Pro Ala Met Phe Pro Gly
675 680 685

Gln Met Ala Gly Gly Glu Gly Leu Ala Gly Thr Pro Met Gly Met Glu
690 695 700

Phe Gly Gly Gly Arg Gly Leu Leu Ser Pro Pro Met Gly Gln Ser Gly
705 710 715 720

```
Leu Arg Glu Val Asp Pro Pro Met Gly Pro Gly Asn Leu Asn Met Asn
                725                 730                 735

Met Asn Val Asn Met Asn Met Asn Met Asn Leu Asn Val Gln Met Thr
            740                 745                 750

Pro Gln Gln Gln Met Leu Met Ser Gln Lys Met Arg Gly Pro Gly Asp
        755                 760                 765

Leu Met Gly Pro Gln Gly Leu Ser Pro Glu Glu Met Ala Arg Val Arg
    770                 775                 780

Ala Gln Asn Ser Ser Gly Val Met Gly Gly Pro Gln Lys Met Leu Met
785                 790                 795                 800

Pro Ser Gln Phe Pro Asn Gln Gly Gln Gln Gly Phe Ser Gly Gly Gln
                805                 810                 815

Gly Pro Tyr Gln Ala Met Ser Gln Asp Met Gly Asn Thr Gln Asp Met
            820                 825                 830

Phe Ser Pro Asp Gln Ser Ser Met Pro Met Ser Asn Val Gly Thr Thr
        835                 840                 845

Arg Leu Ser His Met Pro Leu Pro Pro Ala Ser Asn Pro Pro Gly Thr
    850                 855                 860

Val His Ser Ala Pro Asn Arg Gly Leu Gly Arg Arg Pro Ser Asp Leu
865                 870                 875                 880

Thr Ile Ser Ile Asn Gln Met Gly Ser Pro Gly Met Gly His Leu Lys
                885                 890                 895

Ser Pro Thr Leu Ser Gln Val His Ser Pro Leu Val Thr Ser Pro Ser
            900                 905                 910

Ala Asn Leu Lys Ser Pro Gln Thr Pro Ser Gln Met Val Pro Leu Pro
        915                 920                 925

Ser Ala Asn Pro Pro Gly Pro Leu Lys Ser Pro Gln Val Leu Gly Ser
    930                 935                 940
```

```
Ser Leu Ser Val Arg Ser Pro Thr Gly Ser Pro Ser Arg Leu Lys Ser
945                 950                 955                 960

Pro Ser Met Ala Val Pro Ser Pro Gly Trp Val Ala Ser Pro Lys Thr
                965                 970                 975

Ala Met Pro Ser Pro Gly Val Ser Gln Asn Lys Gln Pro Pro Leu Asn
            980                 985                 990

Met Asn Ser Ser Thr Thr Leu Ser  Asn Met Glu Gln Gly  Thr Leu
Pro
        995                 1000                1005

Pro Ser  Gly Pro Arg Ser Ser  Ser Ser Ala Pro Pro  Ala Asn Pro
    1010                1015                1020

Pro Ser  Gly Leu Met Asn Pro  Ser Leu Pro Phe Thr  Ser Ser Pro
    1025                1030                1035

Asp Pro  Thr Pro Ser Gln Asn  Pro Leu Ser Leu Met  Met Thr Gln
    1040                1045                1050

Met Ser  Lys Tyr Ala Met Pro  Ser Ser Thr Pro Leu  Tyr His Asn
    1055                1060                1065

Ala Ile  Lys Thr Ile Ala Thr  Ser Asp Asp Glu Leu  Leu Pro Asp
    1070                1075                1080

Arg Pro  Leu Leu Pro Pro Pro  Pro Pro Pro Gln Gly  Ser Gly Pro
    1085                1090                1095

Gly Ile  Ser Asn Ser Gln Pro  Ser Gln Met His Leu  Asn Ser Ala
    1100                1105                1110

Ala Ala  Gln Ser Pro Met Gly  Met Asn Leu Pro Gly  Gln Gln Pro
    1115                1120                1125

Leu Ser  His Glu Pro Pro Pro  Ala Met Leu Pro Ser  Pro Thr Pro
    1130                1135                1140

Leu Gly  Ser Asn Ile Pro Leu  His Pro Asn Ala Gln  Gly Thr Gly
    1145                1150                1155
```

```
Gly Pro  Pro Gln Asn Ser Met  Met Met Ala Pro Gly  Gly Pro Asp
    1160                1165                1170

Ser Leu  Asn Ala Pro Cys Gly  Pro Val Pro Ser Ser  Ser Gln Met
    1175                1180                1185

Met Pro  Phe Pro Pro Arg Leu  Gln Gln Pro His Gly  Ala Met Ala
    1190                1195                1200

Pro Thr  Gly Gly Gly Gly Gly  Gly Pro Gly Leu Gln  Gln His Tyr
    1205                1210                1215

Pro Ser  Gly Met Ala Leu Pro  Pro Glu Asp Leu Pro  Asn Gln Pro
    1220                1225                1230

Pro Gly  Pro Met Pro Pro Gln  Gln His Leu Met Gly  Lys Ala Met
    1235                1240                1245

Ala Gly  Arg Met Gly Asp Ala  Tyr Pro Pro Gly Val  Leu Pro Gly
    1250                1255                1260

Val Ala  Ser Val Leu Asn Asp  Pro Glu Leu Ser Glu  Val Ile Arg
    1265                1270                1275

Pro Thr  Pro Thr Gly Ile Pro  Glu Phe Asp Leu Ser  Arg Ile Ile
    1280                1285                1290

Pro Ser  Glu Lys Pro Ser Ser  Thr Leu Gln Tyr Phe  Pro Lys Ser
    1295                1300                1305

Glu Asn  Gln Pro Pro Lys Ala  Gln Pro Pro Asn Leu  His Leu Met
    1310                1315                1320

Asn Leu  Gln Asn Met Met Ala  Glu Gln Thr Pro Ser  Arg Pro Pro
    1325                1330                1335

Asn Leu  Pro Gly Gln Gln Gly  Val Gln Arg Gly Leu  Asn Met Ser
    1340                1345                1350

Met Cys  His Pro Gly Gln Met  Ser Leu Leu Gly Arg  Thr Gly Val
    1355                1360                1365
```

```
Pro Pro  Gln Gln Gly Met Val  Pro His Gly Leu His  Gln Gly Val
    1370                1375                1380

Met Ser  Pro Pro Gln Gly Leu  Met Thr Gln Gln Asn  Phe Met Leu
    1385                1390                1395

Met Lys  Gln Arg Gly Val Gly  Gly Glu Val Tyr Ser  Gln Pro Pro
    1400                1405                1410

His Met  Leu Ser Pro Gln Gly  Ser Leu Met Gly Pro  Pro Pro Gln
    1415                1420                1425

Gln Asn  Leu Met Val Ser His  Pro Leu Arg Gln Arg  Ser Val Ser
    1430                1435                1440

Leu Asp  Ser Gln Met Gly Tyr  Leu Pro Ala Pro Gly  Gly Met Ala
    1445                1450                1455

Asn Leu  Pro Phe
    1460


<210> 8480
<211> 456
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID:  Q8WV28; "

<220>
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<400> 8480
Met Asp Lys Leu Asn Lys Ile Thr Val Pro Ala Ser Gln Lys Leu Arg
1               5                  10                  15
```

```
Gln Leu Gln Lys Met Val His Asp Ile Lys Asn Asn Glu Gly Gly Ile
            20                  25                  30

Met Asn Lys Ile Lys Lys Leu Lys Val Lys Ala Pro Pro Ser Val Pro
        35                  40                  45

Arg Arg Asp Tyr Ala Ser Glu Ser Pro Ala Asp Glu Glu Glu Gln Trp
    50                  55                  60

Ser Asp Asp Phe Asp Ser Asp Tyr Glu Asn Pro Asp Glu His Ser Asp
65                  70                  75                  80

Ser Glu Met Tyr Val Met Pro Ala Glu Glu Asn Ala Asp Asp Ser Tyr
                85                  90                  95

Glu Pro Pro Pro Val Glu Gln Glu Thr Arg Pro Val His Pro Ala Leu
            100                 105                 110

Pro Phe Ala Arg Gly Glu Tyr Ile Asp Asn Arg Ser Ser Gln Arg His
        115                 120                 125

Ser Pro Pro Phe Ser Lys Thr Leu Pro Ser Lys Pro Ser Trp Pro Ser
    130                 135                 140

Glu Lys Ala Arg Leu Thr Ser Thr Leu Pro Ala Leu Thr Ala Leu Gln
145                 150                 155                 160

Lys Pro Gln Val Pro Pro Lys Pro Lys Gly Leu Leu Glu Asp Glu Ala
                165                 170                 175

Asp Tyr Val Val Pro Val Glu Asp Asn Asp Glu Asn Tyr Ile His Pro
            180                 185                 190

Thr Glu Ser Ser Ser Pro Pro Pro Glu Lys Ala Pro Met Val Asn Arg
        195                 200                 205

Ser Thr Lys Pro Asn Ser Ser Thr Pro Ala Ser Pro Pro Gly Thr Ala
    210                 215                 220

Ser Gly Arg Asn Ser Gly Ala Trp Glu Thr Lys Ser Pro Pro Pro Ala
225                 230                 235                 240
```

```
Ala Pro Ser Pro Leu Pro Arg Ala Gly Lys Lys Pro Thr Thr Pro Leu
                245                 250                 255

Lys Thr Thr Pro Val Ala Ser Gln Gln Asn Ala Ser Ser Val Cys Glu
            260                 265                 270

Glu Lys Pro Ile Pro Ala Glu Arg His Arg Gly Ser Ser His Arg Gln
        275                 280                 285

Glu Ala Val Gln Ser Pro Val Phe Pro Pro Ala Gln Lys Gln Ile His
    290                 295                 300

Gln Lys Pro Ile Pro Leu Pro Arg Phe Thr Glu Gly Gly Asn Pro Thr
305                 310                 315                 320

Val Asp Gly Pro Leu Pro Ser Phe Ser Ser Asn Ser Thr Ile Ser Glu
                325                 330                 335

Gln Glu Ala Gly Val Leu Cys Lys Pro Trp Tyr Ala Gly Ala Cys Asp
            340                 345                 350

Arg Lys Ser Ala Glu Glu Ala Leu His Arg Ser Asn Lys Asp Gly Ser
        355                 360                 365

Phe Leu Ile Arg Lys Ser Ser Gly His Asp Ser Lys Gln Pro Tyr Thr
    370                 375                 380

Leu Val Val Phe Phe Asn Lys Arg Val Tyr Asn Ile Pro Val Arg Phe
385                 390                 395                 400

Ile Glu Ala Thr Lys Gln Tyr Ala Leu Gly Arg Lys Lys Asn Gly Glu
                405                 410                 415

Glu Tyr Phe Gly Ser Val Ala Glu Ile Ile Arg Asn His Gln His Ser
            420                 425                 430

Pro Leu Val Leu Ile Asp Ser Gln Asn Asn Thr Lys Asp Ser Thr Arg
        435                 440                 445

Leu Lys Tyr Ala Val Lys Val Ser
    450                 455
```

<210> 8481
<211> 433
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: Q8WV28; "

<220>
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<400> 8481
Met Asp Lys Leu Asn Lys Ile Thr Val Pro Ala Ser Gln Lys Leu Arg
1   5   10   15

Gln Leu Gln Lys Met Val His Asp Ile Lys Asn Asn Glu Gly Gly Ile
            20   25   30

Met Asn Lys Ile Lys Lys Leu Lys Val Lys Ala Pro Pro Ser Val Pro
        35   40   45

Arg Arg Asp Tyr Ala Ser Glu Ser Pro Ala Asp Glu Glu Glu Gln Trp
    50   55   60

Ser Asp Asp Phe Asp Ser Asp Tyr Glu Asn Pro Asp Glu His Ser Asp
65   70   75   80

Ser Glu Met Tyr Val Met Pro Ala Glu Glu Asn Ala Asp Asp Ser Tyr
                85   90   95

Glu Pro Pro Pro Val Glu Gln Glu Thr Arg Pro Val His Pro Ala Leu
            100   105   110

Pro Phe Ala Arg Gly Glu Tyr Ile Asp Asn Arg Ser Ser Gln Arg His
        115   120   125

```
Ser Pro Pro Phe Ser Lys Thr Leu Pro Ser Lys Pro Ser Trp Pro Ser
    130                 135                 140

Glu Lys Ala Arg Leu Thr Ser Thr Leu Pro Ala Leu Thr Ala Leu Gln
145                 150                 155                 160

Lys Pro Gln Val Pro Pro Lys Pro Lys Gly Leu Leu Glu Asp Glu Ala
                165                 170                 175

Asp Tyr Val Val Pro Val Glu Asp Asn Asp Glu Asn Tyr Ile His Pro
            180                 185                 190

Thr Glu Ser Ser Ser Pro Pro Pro Glu Lys Gly Arg Asn Ser Gly Ala
        195                 200                 205

Trp Glu Thr Lys Ser Pro Pro Pro Ala Ala Pro Ser Pro Leu Pro Arg
    210                 215                 220

Ala Gly Lys Lys Pro Thr Thr Pro Leu Lys Thr Thr Pro Val Ala Ser
225                 230                 235                 240

Gln Gln Asn Ala Ser Ser Val Cys Glu Glu Lys Pro Ile Pro Ala Glu
                245                 250                 255

Arg His Arg Gly Ser Ser His Arg Gln Glu Ala Val Gln Ser Pro Val
            260                 265                 270

Phe Pro Pro Ala Gln Lys Gln Ile His Gln Lys Pro Ile Pro Leu Pro
        275                 280                 285

Arg Phe Thr Glu Gly Gly Asn Pro Thr Val Asp Gly Pro Leu Pro Ser
    290                 295                 300

Phe Ser Ser Asn Ser Thr Ile Ser Glu Gln Glu Ala Gly Val Leu Cys
305                 310                 315                 320

Lys Pro Trp Tyr Ala Gly Ala Cys Asp Arg Lys Ser Ala Glu Glu Ala
                325                 330                 335

Leu His Arg Ser Asn Lys Asp Gly Ser Phe Leu Ile Arg Lys Ser Ser
            340                 345                 350
```

```
Gly His Asp Ser Lys Gln Pro Tyr Thr Leu Val Val Phe Phe Asn Lys
        355                 360                 365

Arg Val Tyr Asn Ile Pro Val Arg Phe Ile Glu Ala Thr Lys Gln Tyr
    370                 375                 380

Ala Leu Gly Arg Lys Lys Asn Gly Glu Glu Tyr Phe Gly Ser Val Ala
385                 390                 395                 400

Glu Ile Ile Arg Asn His Gln His Ser Pro Leu Val Leu Ile Asp Ser
                405                 410                 415

Gln Asn Asn Thr Lys Asp Ser Thr Arg Leu Lys Tyr Ala Val Lys Val
            420                 425                 430

Ser
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<210> 8482
<211> 299
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1763; "

<220>
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<223> /note="Gene Symbol: BLNK; "

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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000391924"

<400> 8482

```
Met Asp Lys Leu Asn Lys Ile Thr Val Pro Ala Ser Gln Lys Leu Arg
1               5                   10                  15

Gln Leu Gln Lys Met Val His Asp Ile Lys Asn Asn Glu Gly Gly Ile
            20                  25                  30

Met Asn Lys Ile Lys Lys Leu Lys Val Lys Ala Pro Pro Ser Val Pro
```

```
        35                  40                  45

Arg Arg Asp Tyr Ala Ser Glu Ser Pro Ala Asp Glu Glu Glu Gln Trp
    50                  55                  60

Ser Asp Asp Phe Asp Ser Asp Tyr Glu Asn Pro Asp Glu His Ser Asp
65                  70                  75                  80

Ser Glu Met Tyr Val Met Pro Ala Glu Glu Asn Ala Asp Asp Ser Tyr
                85                  90                  95

Glu Pro Pro Pro Val Glu Gln Glu Thr Arg Pro Val His Pro Ala Leu
            100                 105                 110

Pro Phe Ala Arg Gly Thr Ala Ser Gly Arg Asn Ser Gly Ala Trp Glu
        115                 120                 125

Thr Lys Ser Pro Pro Pro Ala Ala Pro Ser Pro Leu Pro Arg Ala Gly
    130                 135                 140

Lys Lys Pro Thr Thr Pro Leu Lys Thr Thr Pro Val Ala Ser Gln Gln
145                 150                 155                 160

Asn Ala Ser Ser Val Cys Glu Glu Lys Pro Ile Pro Ala Glu Arg His
                165                 170                 175

Arg Gly Ser Ser His Arg Gln Glu Ala Val Gln Ser Pro Val Phe Pro
            180                 185                 190

Pro Ala Gln Lys Gln Ile His Gln Lys Pro Ile Pro Leu Pro Arg Phe
        195                 200                 205

Thr Glu Gly Gly Asn Pro Thr Val Asp Gly Pro Leu Pro Ser Phe Ser
    210                 215                 220

Ser Asn Ser Thr Ile Ser Glu Gln Glu Ala Gly Val Leu Cys Lys Pro
225                 230                 235                 240

Trp Tyr Ala Gly Ala Cys Asp Arg Lys Ser Ala Glu Glu Ala Leu His
                245                 250                 255

Arg Ser Asn Lys Tyr Phe Gly Ser Val Ala Glu Ile Ile Arg Asn His
            260                 265                 270
```

```
Gln His Ser Pro Leu Val Leu Ile Asp Ser Gln Asn Asn Thr Lys Asp
        275                 280                 285

Ser Thr Arg Leu Lys Tyr Ala Val Lys Val Ser
    290                 295


<210> 8483
<211> 404
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1763; "

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<220>
<221> source
<223> /note="Uniprot ID:  Q8WV28; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397487"

<400> 8483
Met Asp Lys Leu Asn Lys Ile Thr Val Pro Ala Ser Gln Lys Leu Arg
1               5                   10                  15

Gln Leu Gln Lys Met Val His Asp Ile Lys Asn Asn Glu Gly Gly Ile
            20                  25                  30

Met Asn Lys Ile Lys Lys Leu Lys Val Lys Ala Pro Pro Ser Val Pro
        35                  40                  45

Arg Arg Asp Tyr Ala Ser Glu Ser Pro Ala Asp Glu Glu Glu Gln Trp
    50                  55                  60

Ser Asp Asp Phe Asp Ser Asp Tyr Glu Asn Pro Asp Glu His Ser Asp
65                  70                  75                  80
```

```
Ser Glu Met Tyr Val Met Pro Ala Glu Glu Asn Ala Asp Asp Ser Tyr
                85                  90                  95

Glu Pro Pro Pro Val Glu Gln Glu Thr Arg Pro Val His Pro Ala Leu
            100                 105                 110

Pro Phe Ala Arg Gly Glu Tyr Ile Asp Asn Arg Ser Ser Gln Arg His
        115                 120                 125

Ser Pro Pro Phe Ser Lys Thr Leu Pro Ser Lys Pro Ser Trp Pro Ser
    130                 135                 140

Glu Lys Ala Arg Leu Thr Ser Thr Leu Pro Ala Leu Thr Ala Leu Gln
145                 150                 155                 160

Lys Pro Gln Val Pro Pro Lys Pro Lys Gly Leu Leu Glu Asp Glu Ala
                165                 170                 175

Asp Tyr Val Val Pro Val Glu Asp Asn Asp Glu Asn Tyr Ile His Pro
            180                 185                 190

Thr Glu Ser Ser Ser Pro Pro Pro Glu Lys Ala Pro Met Val Asn Arg
        195                 200                 205

Ser Thr Lys Pro Asn Ser Ser Thr Pro Ala Ser Pro Pro Gly Thr Ala
    210                 215                 220

Ser Gly Arg Asn Ser Gly Ala Trp Glu Thr Lys Ser Pro Pro Pro Ala
225                 230                 235                 240

Ala Pro Ser Pro Leu Pro Arg Ala Gly Lys Lys Pro Thr Thr Pro Leu
                245                 250                 255

Lys Thr Thr Pro Val Ala Ser Gln Gln Asn Ala Ser Ser Val Cys Glu
            260                 265                 270

Glu Lys Pro Ile Pro Ala Glu Arg His Arg Gly Ser Ser His Arg Gln
        275                 280                 285

Glu Ala Val Gln Ser Pro Val Phe Pro Pro Ala Gln Lys Gln Ile His
    290                 295                 300

Gln Lys Pro Ile Pro Leu Pro Arg Phe Thr Glu Gly Gly Asn Pro Thr
```

305 310 315 320

Val Asp Gly Pro Leu Pro Ser Phe Ser Ser Asn Ser Thr Ile Ser Glu
325 330 335

Gln Glu Ala Gly Val Leu Cys Lys Pro Trp Tyr Ala Gly Ala Cys Asp
340 345 350

Arg Lys Ser Ala Glu Glu Ala Leu His Arg Ser Asn Lys Tyr Phe Gly
355 360 365

Ser Val Ala Glu Ile Ile Arg Asn His Gln His Ser Pro Leu Val Leu
370 375 380

Ile Asp Ser Gln Asn Asn Thr Lys Asp Ser Thr Arg Leu Lys Tyr Ala
385 390 395 400

Val Lys Val Ser

<210> 8484
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1763; "

<220>
<221> source
<223> /note="Gene Symbol: BLNK; "

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<221> source
<223> /note="Gene Name:
B-cell linker; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465741"

<400> 8484
Met Asp Lys Leu Asn Lys Ile Thr Val Pro Ala Ser Gln Lys Leu Arg
1 5 10 15

Gln Leu Gln Lys Met Val His Asp Ile Lys Asn Asn Glu Gly Gly Ile
20 25 30

```
Met Asn Lys Ile Lys Lys Leu Lys Val Lys Ala Pro Pro Ser Val Pro
        35                  40                  45

Arg Arg Asp Tyr Ala Ser Asp Thr Cys Ser Leu Ser Trp Asn Pro Ser
    50                  55                  60

Lys
65
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<210> 8485
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1763; "

<220>
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<223> /note="Gene Symbol: BLNK; "

<220>
<221> source
<223> /note="Gene Name:
B-cell linker; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466331"

<400> 8485

```
Met Asp Lys Leu Asn Lys Ile Thr Val Pro Ala Ser Gln Lys Leu Arg
1               5                   10                  15

Gln Leu Gln Lys Met Val His Asp Ile Lys Asn Asn Glu Gly Gly Ile
            20                  25                  30

Met Asn Lys Ile Lys Lys Leu Lys Val Lys Ala Pro Pro Ser Val Pro
        35                  40                  45

Arg Arg Asp Tyr Ala Ser Glu Ser Pro Ala Asp Glu Glu Glu Gln Trp
    50                  55                  60

Ser Asp Asp Phe Asp Ser Asp Tyr Glu Asn Pro Asp Glu His Ser Asp
65                  70                  75                  80

Ser Glu Met Tyr Val Met Pro Ala Glu Glu Asn Ala Asp Asp Ser Tyr
```

```
                85                  90                  95

Glu Pro Pro Pro Val Glu Gln Glu Thr Arg Pro Val His Pro Ala Leu
            100                 105                 110

Pro Phe Ala Arg Gly Glu Tyr Ile Gly
        115                 120


<210> 8486
<211> 241
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 29; "

<220>
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<223> /note="Uniprot ID:  Q9UHQ4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000005259"

<400> 8486
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                   10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65                  70                  75                  80
```

```
Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
                85                  90                  95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
            100                 105                 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
        115                 120                 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
    130                 135                 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145                 150                 155                 160

Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu Ala Glu
                165                 170                 175

Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg
            180                 185                 190

Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn Asp Val Met Glu Met
        195                 200                 205

Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr Asp Gln Leu Leu Lys
    210                 215                 220

Glu His Ser Glu Leu Gln Asp Arg Leu Glu Arg Gly Asn Lys Lys Arg
225                 230                 235                 240

Leu
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<210> 8487
<211> 241
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
B-cell receptor-associated prt 29; "

<220>
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<223> /note="Uniprot ID: Q9UHQ4; "

<220>
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<223> /note="ENSP ID: ENSP00000368412"

<400> 8487

```
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                  10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65                  70                  75                  80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
                85                  90                  95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
            100                 105                 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
        115                 120                 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
    130                 135                 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145                 150                 155                 160

Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu Ala Glu
                165                 170                 175
```

```
Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg
            180                 185                 190

Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn Asp Val Met Glu Met
        195                 200                 205

Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr Asp Gln Leu Leu Lys
    210                 215                 220

Glu His Ser Glu Leu Gln Asp Arg Leu Glu Arg Gly Asn Lys Lys Arg
225                 230                 235                 240

Leu
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<210> 8488
<211> 348
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
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<223> /note="Gene Name:
B-cell receptor-associated prt 29; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UHQ4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368414"

<400> 8488

```
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                  10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30
```

```
Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65                  70                  75                  80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
                85                  90                  95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
            100                 105                 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
        115                 120                 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
    130                 135                 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145                 150                 155                 160

Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu Ala Glu
                165                 170                 175

Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg
            180                 185                 190

Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn Asp Val Met Glu Met
        195                 200                 205

Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr Asp Gln Leu Leu Lys
    210                 215                 220

Glu His Ser Glu Leu Gln His Ser Ser Phe Gly Glu Phe Leu Ser Lys
225                 230                 235                 240

Arg Ser His Lys Asn Gly Ser Ile Gly Lys Gln Thr Gly Ser Arg Lys
                245                 250                 255

Gly Ser Phe Arg Lys Arg Gln Gln Glu Lys Thr Val Asn Phe Ile Lys
```

```
            260                 265                 270

Asp Thr Cys Asn Ile Leu Cys Gln Asn Asp Asn Phe Val Met Leu Ala
        275                 280                 285

Ser Arg Lys Phe Lys Phe Arg Lys Met His Tyr Asp Arg Phe Val Ile
    290                 295                 300

Phe Leu Met Pro His Ile Gly Cys Ile Val Met Ala Leu Ser Lys Tyr
305                 310                 315                 320

Leu Met Met Phe Gln Ile Tyr Cys Lys Val Cys Ile Pro Ala Leu Lys
                325                 330                 335

Lys Asn Ile Ser Met Leu Asn Thr Ile Phe Thr Tyr
            340                 345


<210> 8489
<211> 171
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390733"

<400> 8489
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                   10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45
```

```
Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65                  70                  75                  80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
                85                  90                  95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
            100                 105                 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
        115                 120                 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
    130                 135                 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145                 150                 155                 160

Phe Leu Leu Ala Lys Val His Cys Arg Lys Leu
                165                 170


<210> 8490
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000395828"

<400> 8490
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
```

```
1               5                   10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65                  70                  75                  80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
                85                  90                  95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
            100                 105                 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
        115                 120                 125

Lys Glu Leu Ser Asn
    130


<210> 8491
<211> 348
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q9UHQ4; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000400718"

<400> 8491
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1 5 10 15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
20 25 30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
35 40 45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
50 55 60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65 70 75 80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
85 90 95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
100 105 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
115 120 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
130 135 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145 150 155 160

Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu Ala Glu
165 170 175

Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg
180 185 190

Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn Asp Val Met Glu Met
195 200 205

```
Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr Asp Gln Leu Leu Lys
    210                 215                 220

Glu His Ser Glu Leu Gln His Ser Ser Phe Gly Glu Phe Leu Ser Lys
225                 230                 235                 240

Arg Ser His Lys Asn Gly Ser Ile Gly Lys Gln Thr Gly Ser Arg Lys
                245                 250                 255

Gly Ser Phe Arg Lys Arg Gln Gln Glu Lys Thr Val Asn Phe Ile Lys
            260                 265                 270

Asp Thr Cys Asn Ile Leu Cys Gln Asn Asp Asn Phe Val Met Leu Ala
        275                 280                 285

Ser Arg Lys Phe Lys Phe Arg Lys Met His Tyr Asp Arg Phe Val Ile
    290                 295                 300

Phe Leu Met Pro His Ile Gly Cys Ile Val Met Ala Leu Ser Lys Tyr
305                 310                 315                 320

Leu Met Met Phe Gln Ile Tyr Cys Lys Val Cys Ile Pro Ala Leu Lys
                325                 330                 335

Lys Asn Ile Ser Met Leu Asn Thr Ile Phe Thr Tyr
            340                 345
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<210> 8492
<211> 230
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
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<223> /note="Gene Name:
B-cell receptor-associated prt 29; "

<220>
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<223> /note="ENSP ID: ENSP00000409350"

<400> 8492
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1 5 10 15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
20 25 30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
35 40 45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
50 55 60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65 70 75 80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
85 90 95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
100 105 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
115 120 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
130 135 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145 150 155 160

Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu Ala Glu
165 170 175

Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg
180 185 190

Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn Asp Val Met Glu Met
195 200 205

Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr Asp Gln Leu Leu Lys
210 215 220

```
Glu His Ser Glu Leu Gln
225                 230


<210> 8493
<211> 163
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000414164"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8493
Xaa Asp Ala Tyr Glu His Thr Gln Met Lys Leu Phe Arg Ser Gln Arg
1               5                   10                  15


Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe Phe Trp Leu Val Leu Arg
            20                  25                  30


Arg Leu Val Thr Leu Ile Thr Gln Leu Ala Lys Glu Leu Ser Asn Lys
        35                  40                  45


Gly Val Leu Lys Thr Gln Ala Glu Asn Thr Asn Lys Ala Ala Lys Lys
    50                  55                  60


Phe Met Glu Glu Asn Glu Lys Leu Lys Arg Ile Leu Lys Ser His Gly
65                  70                  75                  80


Lys Asp Glu Glu Cys Val Leu Glu Ala Glu Asn Lys Lys Leu Val Glu
                85                  90                  95
```

```
Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg Lys Thr Ser Asp Ala Leu
            100                 105                 110

Ser Lys Ala Gln Asn Asp Val Met Glu Met Lys Met Gln Ser Glu Arg
        115                 120                 125

Leu Ser Lys Glu Tyr Asp Gln Leu Leu Lys Glu His Ser Glu Leu Gln
    130                 135                 140

Lys Ser His Ser Gln Pro Gly Ala Ala Ala Phe Leu Val Lys Glu Val
145                 150                 155                 160

Glu Ser Phe
```

<210> 8494
<211> 196
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BCAP29; "

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B-cell receptor-associated prt 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418816"

<400> 8494

```
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                   10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
```

```
    50                  55                  60

Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser Val His Thr Ile Glu
65                  70                  75                  80

Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu His Thr Gln Met Lys
                85                  90                  95

Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser Leu Phe
            100                 105                 110

Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln Leu Ala
        115                 120                 125

Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu Asn Thr
    130                 135                 140

Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu Lys Arg
145                 150                 155                 160

Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu Ala Glu
                165                 170                 175

Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu Leu Arg
            180                 185                 190

Lys Thr Ser Asp
        195


<210> 8495
<211> 147
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1764; "

<220>
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<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 29; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000418993"

<400> 8495
Met Lys Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser Gly Phe Ser
1   5   10   15

Leu Phe Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu Ile Thr Gln
            20   25   30

Leu Ala Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr Gln Ala Glu
        35   40   45

Asn Thr Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn Glu Lys Leu
    50   55   60

Lys Arg Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys Val Leu Glu
65   70   75   80

Ala Glu Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu Lys Thr Glu
                85   90   95

Leu Arg Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn Asp Val Met
            100   105   110

Glu Met Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr Asp Gln Leu
        115   120   125

Leu Lys Glu His Ser Glu Leu Gln Asp Arg Leu Glu Arg Gly Asn Lys
    130   135   140

Lys Arg Leu
145

<210> 8496
<211> 294
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1764; "

<220>
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<223> /note="Gene Name:
B-cell receptor-associated prt 29; "

<220>
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<223> /note="ENSP ID: ENSP00000419681"

<400> 8496
Ile Ala Thr Phe Trp Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu
1 5 10 15

Ile Val Leu Phe Leu Asp Ala Val Arg Glu Val Arg Lys Tyr Ser Ser
20 25 30

Val His Thr Ile Glu Lys Ser Ser Thr Ser Arg Pro Asp Ala Tyr Glu
35 40 45

His Thr Gln Met Lys Leu Phe Arg Ser Gln Arg Asn Leu Tyr Ile Ser
50 55 60

Gly Phe Ser Leu Phe Phe Trp Leu Val Leu Arg Arg Leu Val Thr Leu
65 70 75 80

Ile Thr Gln Leu Ala Lys Glu Leu Ser Asn Lys Gly Val Leu Lys Thr
85 90 95

Gln Ala Glu Asn Thr Asn Lys Ala Ala Lys Lys Phe Met Glu Glu Asn
100 105 110

Glu Lys Leu Lys Arg Ile Leu Lys Ser His Gly Lys Asp Glu Glu Cys
115 120 125

Val Leu Glu Ala Glu Asn Lys Lys Leu Val Glu Asp Gln Glu Lys Leu
130 135 140

Lys Thr Glu Leu Arg Lys Thr Ser Asp Ala Leu Ser Lys Ala Gln Asn
145 150 155 160

Asp Val Met Glu Met Lys Met Gln Ser Glu Arg Leu Ser Lys Glu Tyr
165 170 175

Asp Gln Leu Leu Lys Glu His Ser Glu Leu Gln Lys Gln Arg Glu Ile
180 185 190

```
Leu Pro His Arg Arg Gly Glu Ser Thr Val Thr Thr Glu Ala Glu Ile
        195                 200                 205

Gly Val Met Glu Pro Gln Gln Arg Asn Ala Asp Ser His Gln Lys Leu
    210                 215                 220

Glu Glu Ala Lys Asn Arg Phe Phe Pro Arg Ala Ser Ser Ser Arg Ser
225                 230                 235                 240

Met Ala Leu Gln Ile Pro Ile Lys Leu Ile Leu Asp Phe Leu Ala Ser
                245                 250                 255

Arg Thr Met Gly Ile Asn Leu Leu Phe Gln Ala Ile Lys Phe Val Ile
            260                 265                 270

Ile Cys Tyr Cys Cys His Ser Lys Leu Ile Gln Glu His Ala Gly Gln
        275                 280                 285

Ile Cys Asn Gly Leu Asn
    290


<210> 8497
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420313"

<400> 8497
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                   10                  15
```

```
Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60


<210> 8498
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1764; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP29; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420365"

<400> 8498
Met Thr Leu Gln Trp Ala Ala Val Ala Thr Phe Leu Tyr Ala Glu Ile
1               5                   10                  15

Gly Leu Ile Leu Ile Phe Cys Leu Pro Phe Ile Pro Pro Gln Arg Trp
            20                  25                  30

Gln Lys Ile Phe Ser Phe Asn Val Trp Gly Lys Ile Ala Thr Phe Trp
        35                  40                  45

Asn Lys Ala Phe Leu Thr Ile Ile Ile Leu Leu Ile Val Leu Phe Leu
    50                  55                  60

Glu Phe
65


<210> 8499
<211> 246
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<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1765; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="Uniprot ID: P51572; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000343458"

<400> 8499

```
Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr Ala Glu Val
1               5                  10                  15

Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro Lys Arg Trp
            20                  25                  30

Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val Ser Tyr Gly
        35                  40                  45

Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu Leu Val Ile
    50                  55                  60

Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr Glu Lys Val
65                  70                  75                  80

Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His Met Lys Leu
                85                  90                  95

Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser Leu Leu Leu
            100                 105                 110

Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln Gln Ala Thr
        115                 120                 125
```

```
Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys Gln Ala Glu Ser Ala Ser
    130                 135                 140

Glu Ala Ala Lys Lys Tyr Met Glu Glu Asn Asp Gln Leu Lys Lys Gly
145                 150                 155                 160

Ala Ala Val Asp Gly Gly Lys Leu Asp Val Gly Asn Ala Glu Val Lys
                165                 170                 175

Leu Glu Glu Glu Asn Arg Ser Leu Lys Ala Asp Leu Gln Lys Leu Lys
            180                 185                 190

Asp Glu Leu Ala Ser Thr Lys Gln Lys Leu Glu Lys Ala Glu Asn Gln
        195                 200                 205

Val Leu Ala Met Arg Lys Gln Ser Glu Gly Leu Thr Lys Glu Tyr Asp
    210                 215                 220

Arg Leu Leu Glu Glu His Ala Lys Leu Gln Ala Ala Val Asp Gly Pro
225                 230                 235                 240

Met Asp Lys Lys Glu Glu
                245


<210> 8500
<211> 178
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1765; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389740"

<400> 8500
Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr Ala Glu Val
1               5                   10                  15
```

```
Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro Lys Arg Trp
            20                  25                  30

Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val Ser Tyr Gly
        35                  40                  45

Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu Leu Val Ile
    50                  55                  60

Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr Glu Lys Val
65                  70                  75                  80

Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His Met Lys Leu
                85                  90                  95

Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser Leu Leu Leu
            100                 105                 110

Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln Gln Ala Thr
        115                 120                 125

Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys Gln Ala Glu Ser Ala Ser
    130                 135                 140

Glu Ala Ala Lys Lys Tyr Met Glu Glu Asn Asp Gln Leu Lys Lys Gly
145                 150                 155                 160

Ala Ala Val Asp Gly Gly Lys Leu Asp Val Gly Asn Ala Glu Val Lys
                165                 170                 175

Leu Glu
```

<210> 8501
<211> 313
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1765; "

<220>
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<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="Uniprot ID: P51572; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392330"

<400> 8501
Met Gly Ala Glu Ala Ser Ser Ser Trp Cys Pro Gly Thr Ala Leu Pro
1   5   10   15

Glu Glu Arg Leu Ser Val Lys Arg Ala Ser Glu Ile Ser Gly Phe Leu
            20   25   30

Gly Gln Gly Ser Ser Gly Glu Ala Ala Leu Asp Val Leu Thr His Val
        35   40   45

Leu Glu Gly Ala Gly Asn Lys Leu Thr Ser Ser Cys Gly Lys Pro Ser
    50   55   60

Ser Asn Arg Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr
65   70   75   80

Ala Glu Val Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro
                85   90   95

Lys Arg Trp Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val
            100   105   110

Ser Tyr Gly Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu
        115   120   125

Leu Val Ile Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr
    130   135   140

Glu Lys Val Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His
145   150   155   160

Met Lys Leu Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser

```
                165                 170                 175

Leu Leu Leu Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln
            180                 185                 190

Gln Ala Thr Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys Gln Ala Glu
        195                 200                 205

Ser Ala Ser Glu Ala Ala Lys Lys Tyr Met Glu Glu Asn Asp Gln Leu
    210                 215                 220

Lys Lys Gly Ala Ala Val Asp Gly Gly Lys Leu Asp Val Gly Asn Ala
225                 230                 235                 240

Glu Val Lys Leu Glu Glu Glu Asn Arg Ser Leu Lys Ala Asp Leu Gln
                245                 250                 255

Lys Leu Lys Asp Glu Leu Ala Ser Thr Lys Gln Lys Leu Glu Lys Ala
            260                 265                 270

Glu Asn Gln Val Leu Ala Met Arg Lys Gln Ser Glu Gly Leu Thr Lys
        275                 280                 285

Glu Tyr Asp Arg Leu Leu Glu Glu His Ala Lys Leu Gln Ala Ala Val
    290                 295                 300

Asp Gly Pro Met Asp Lys Lys Glu Glu
305                 310
```

<210> 8502
<211> 182
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1765; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394270"

<400> 8502
Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr Ala Glu Val
1 5 10 15

Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro Lys Arg Trp
20 25 30

Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val Ser Tyr Gly
35 40 45

Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu Leu Val Ile
50 55 60

Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr Glu Lys Val
65 70 75 80

Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His Met Lys Leu
85 90 95

Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser Leu Leu Leu
100 105 110

Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln Gln Ala Thr
115 120 125

Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys Gln Ala Glu Ser Ala Ser
130 135 140

Glu Ala Ala Lys Lys Tyr Met Glu Glu Asn Asp Gln Leu Lys Lys Gly
145 150 155 160

Ala Ala Val Asp Gly Gly Lys Leu Asp Val Gly Asn Ala Glu Val Lys
165 170 175

Leu Glu Glu Glu Asn Arg
180

<210> 8503
<211> 188
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1765; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400345"

<400> 8503
Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr Ala Glu Val
1 5 10 15

Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro Lys Arg Trp
20 25 30

Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val Ser Tyr Gly
35 40 45

Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu Leu Val Ile
50 55 60

Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr Glu Lys Val
65 70 75 80

Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His Met Lys Leu
85 90 95

Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser Leu Leu Leu
100 105 110

Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln Gln Ala Thr
115 120 125

Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys Gln Ala Glu Ser Ala Ser
130 135 140

Glu Ala Ala Lys Lys Tyr Met Glu Glu Asn Asp Gln Leu Lys Lys Gly
145 150 155 160

```
Ala Ala Val Asp Gly Gly Lys Leu Asp Val Gly Asn Ala Glu Val Lys
                165                 170                 175

Leu Glu Glu Glu Asn Arg Ser Leu Lys Ala Asp Leu
            180                 185


<210> 8504
<211> 138
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1765; "

<220>
<221> source
<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402342"

<400> 8504
Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr Ala Glu Val
1               5                   10                  15

Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro Lys Arg Trp
            20                  25                  30

Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val Ser Tyr Gly
        35                  40                  45

Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu Leu Val Ile
    50                  55                  60

Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr Glu Lys Val
65                  70                  75                  80

Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His Met Lys Leu
                85                  90                  95
```

```
Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser Leu Leu Leu
            100                 105                 110

Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln Gln Ala Thr
        115                 120                 125

Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys
    130                 135


<210> 8505
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BCAP31; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell receptor-associated prt 31; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409888"

<400> 8505
Met Ser Leu Gln Trp Thr Ala Val Ala Thr Phe Leu Tyr Ala Glu Val
1               5                   10                  15

Phe Val Val Leu Leu Leu Cys Ile Pro Phe Ile Ser Pro Lys Arg Trp
            20                  25                  30

Gln Lys Ile Phe Lys Ser Arg Leu Val Glu Leu Leu Val Ser Tyr Gly
        35                  40                  45

Asn Thr Phe Phe Val Val Leu Ile Val Ile Leu Val Leu Leu Val Ile
    50                  55                  60

Asp Ala Val Arg Glu Ile Arg Lys Tyr Asp Asp Val Thr Glu Lys Val
65                  70                  75                  80

Asn Leu Gln Asn Asn Pro Gly Ala Met Glu His Phe His Met Lys Leu
                85                  90                  95
```

```
Phe Arg Ala Gln Arg Asn Leu Tyr Ile Ala Gly Phe Ser Leu Leu Leu
            100                 105                 110

Ser Phe Leu Leu Arg Arg Leu Val Thr Leu Ile Ser Gln Gln Ala Thr
        115                 120                 125

Leu Leu Ala Ser Asn Glu Ala Phe Lys Lys Gln Ala Glu Ser Ala Ser
    130                 135                 140

Glu Ala Ala Lys Lys Tyr Met Glu Glu Asn Asp Gln Leu Lys Lys Gly
145                 150                 155                 160

Ala Ala Val Asp Gly Gly Lys Leu Asp Val Gly Asn Ala Glu Val Lys
                165                 170                 175

Leu Glu Glu Glu Asn Arg Ser Leu Lys Ala Asp
            180                 185


<210> 8506
<211> 785
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1766; "

<220>
<221> source
<223> /note="Gene Symbol: BANK1; "

<220>
<221> source
<223> /note="Gene Name:
      B-cell scaffold prt with ankyrin repeats 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NDB2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000320509"

<400> 8506
Met Leu Pro Ala Ala Pro Gly Lys Gly Leu Gly Ser Pro Asp Pro Ala
1               5                   10                  15
```

```
Pro Cys Gly Pro Ala Pro Pro Gly Asn Thr Lys Asp Ile Ile Met Ile
            20                  25                  30

Tyr Glu Glu Asp Ala Glu Glu Trp Ala Leu Tyr Leu Thr Glu Val Phe
        35                  40                  45

Leu His Val Val Lys Arg Glu Ala Ile Leu Leu Tyr Arg Leu Glu Asn
    50                  55                  60

Phe Ser Phe Arg His Leu Glu Leu Leu Asn Leu Thr Ser Tyr Lys Cys
65                  70                  75                  80

Lys Leu Leu Ile Leu Ser Asn Ser Leu Leu Arg Asp Leu Thr Pro Lys
                85                  90                  95

Lys Cys Gln Phe Leu Glu Lys Ile Leu His Ser Pro Lys Ser Val Val
            100                 105                 110

Thr Leu Leu Cys Gly Val Lys Ser Ser Asp Gln Leu Tyr Glu Leu Leu
        115                 120                 125

Asn Ile Ser Gln Ser Arg Trp Glu Ile Ser Thr Glu Gln Glu Pro Glu
    130                 135                 140

Asp Tyr Ile Ser Val Ile Gln Ser Ile Ile Phe Lys Asp Ser Glu Asp
145                 150                 155                 160

Tyr Phe Glu Val Asn Ile Pro Thr Asp Leu Arg Ala Lys His Ser Gly
                165                 170                 175

Glu Ile Ser Glu Arg Lys Glu Ile Glu Glu Leu Ser Glu Ala Ser Arg
            180                 185                 190

Asn Thr Ile Pro Leu Ala Val Val Leu Pro Thr Glu Ile Pro Cys Glu
        195                 200                 205

Asn Pro Gly Glu Ile Phe Ile Ile Leu Arg Asp Glu Val Ile Gly Asp
    210                 215                 220

Thr Val Glu Val Glu Phe Thr Ser Ser Asn Lys Arg Ile Arg Thr Arg
225                 230                 235                 240

Pro Ala Leu Trp Asn Lys Lys Val Trp Cys Met Lys Ala Leu Glu Phe
```

245 250 255

Pro Ala Gly Ser Val His Val Asn Val Tyr Cys Asp Gly Ile Val Lys
260 265 270

Ala Thr Thr Lys Ile Lys Tyr Tyr Pro Thr Ala Lys Ala Lys Glu Cys
275 280 285

Leu Phe Arg Met Ala Asp Ser Gly Glu Ser Leu Cys Gln Asn Ser Ile
290 295 300

Glu Glu Leu Asp Gly Val Leu Thr Ser Ile Phe Lys His Glu Ile Pro
305 310 315 320

Tyr Tyr Glu Phe Gln Ser Leu Gln Thr Glu Ile Cys Ser Gln Asn Lys
325 330 335

Tyr Thr His Phe Lys Glu Leu Pro Thr Leu Leu His Cys Ala Ala Lys
340 345 350

Phe Gly Leu Lys Asn Leu Ala Ile His Leu Leu Gln Cys Ser Gly Ala
355 360 365

Thr Trp Ala Ser Lys Met Lys Asn Met Glu Gly Ser Asp Pro Ala His
370 375 380

Ile Ala Glu Arg His Gly His Lys Glu Leu Lys Lys Ile Phe Glu Asp
385 390 395 400

Phe Ser Ile Gln Glu Ile Asp Ile Asn Asn Glu Gln Glu Asn Asp Tyr
405 410 415

Glu Glu Asp Ile Ala Ser Phe Ser Thr Tyr Ile Pro Ser Thr Gln Asn
420 425 430

Pro Ala Phe His His Glu Ser Arg Lys Thr Tyr Gly Gln Ser Ala Asp
435 440 445

Gly Ala Glu Ala Asn Glu Met Glu Gly Glu Gly Lys Gln Asn Gly Ser
450 455 460

Gly Met Glu Thr Lys His Ser Pro Leu Glu Val Gly Ser Glu Ser Ser
465 470 475 480

```
Glu Asp Gln Tyr Asp Asp Leu Tyr Val Phe Ile Pro Gly Ala Asp Pro
                485                 490                 495

Glu Asn Asn Ser Gln Glu Pro Leu Met Ser Ser Arg Pro Pro Leu Pro
            500                 505                 510

Pro Pro Arg Pro Val Ala Asn Ala Phe Gln Leu Glu Arg Pro His Phe
        515                 520                 525

Thr Leu Pro Gly Thr Met Val Glu Gly Gln Met Glu Arg Ser Gln Asn
    530                 535                 540

Trp Gly His Pro Gly Val Arg Gln Glu Thr Gly Asp Glu Pro Lys Gly
545                 550                 555                 560

Glu Lys Glu Lys Lys Glu Glu Glu Lys Glu Gln Glu Glu Glu Glu Asp
                565                 570                 575

Pro Tyr Thr Phe Ala Glu Ile Asp Asp Ser Glu Tyr Asp Met Ile Leu
            580                 585                 590

Ala Asn Leu Ser Ile Lys Lys Lys Thr Gly Ser Arg Ser Phe Ile Ile
        595                 600                 605

Asn Arg Pro Pro Ala Pro Thr Pro Arg Pro Thr Ser Ile Pro Pro Lys
    610                 615                 620

Glu Glu Thr Thr Pro Tyr Ile Ala Gln Val Phe Gln Gln Lys Thr Ala
625                 630                 635                 640

Arg Arg Gln Ser Asp Asp Asp Lys Phe Cys Gly Leu Pro Lys Lys Gln
                645                 650                 655

Asp Arg Ala Arg Ile Glu Ser Pro Ala Phe Ser Thr Leu Arg Gly Cys
            660                 665                 670

Leu Thr Asp Gly Gln Glu Glu Leu Ile Leu Leu Gln Glu Lys Val Lys
        675                 680                 685

Asn Gly Lys Met Ser Met Asp Glu Ala Leu Glu Lys Phe Lys His Trp
    690                 695                 700
```

```
Gln Met Gly Lys Ser Gly Leu Glu Met Ile Gln Gln Glu Lys Leu Arg
705                 710                 715                 720


Gln Leu Arg Asp Cys Ile Ile Gly Lys Arg Pro Glu Glu Glu Asn Val
                725                 730                 735


Tyr Asn Lys Leu Thr Ile Val His His Pro Gly Gly Lys Glu Thr Ala
            740                 745                 750


His Asn Glu Asn Lys Phe Tyr Asn Val His Phe Ser Asn Lys Leu Pro
        755                 760                 765


Ala Arg Pro Gln Val Glu Lys Glu Phe Gly Phe Cys Cys Lys Lys Asp
    770                 775                 780


His
785


<210> 8507
<211> 755
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 8507
Met Ile Tyr Glu Glu Asp Ala Glu Glu Trp Ala Leu Tyr Leu Thr Glu
1               5                   10                  15


Val Phe Leu His Val Val Lys Arg Glu Ala Ile Leu Leu Tyr Arg Leu
```

```
            20                  25                  30

Glu Asn Phe Ser Phe Arg His Leu Glu Leu Leu Asn Leu Thr Ser Tyr
        35                  40                  45

Lys Cys Lys Leu Leu Ile Leu Ser Asn Ser Leu Leu Arg Asp Leu Thr
    50                  55                  60

Pro Lys Lys Cys Gln Phe Leu Glu Lys Ile Leu His Ser Pro Lys Ser
65                  70                  75                  80

Val Val Thr Leu Leu Cys Gly Val Lys Ser Ser Asp Gln Leu Tyr Glu
                85                  90                  95

Leu Leu Asn Ile Ser Gln Ser Arg Trp Glu Ile Ser Thr Glu Gln Glu
            100                 105                 110

Pro Glu Asp Tyr Ile Ser Val Ile Gln Ser Ile Ile Phe Lys Asp Ser
        115                 120                 125

Glu Asp Tyr Phe Glu Val Asn Ile Pro Thr Asp Leu Arg Ala Lys His
    130                 135                 140

Ser Gly Glu Ile Ser Glu Arg Lys Glu Ile Glu Glu Leu Ser Glu Ala
145                 150                 155                 160

Ser Arg Asn Thr Ile Pro Leu Ala Val Val Leu Pro Thr Glu Ile Pro
                165                 170                 175

Cys Glu Asn Pro Gly Glu Ile Phe Ile Ile Leu Arg Asp Glu Val Ile
            180                 185                 190

Gly Asp Thr Val Glu Val Glu Phe Thr Ser Ser Asn Lys Arg Ile Arg
        195                 200                 205

Thr Arg Pro Ala Leu Trp Asn Lys Lys Val Trp Cys Met Lys Ala Leu
    210                 215                 220

Glu Phe Pro Ala Gly Ser Val His Val Asn Val Tyr Cys Asp Gly Ile
225                 230                 235                 240

Val Lys Ala Thr Thr Lys Ile Lys Tyr Tyr Pro Thr Ala Lys Ala Lys
                245                 250                 255
```

```
Glu Cys Leu Phe Arg Met Ala Asp Ser Gly Glu Ser Leu Cys Gln Asn
            260                 265                 270

Ser Ile Glu Glu Leu Asp Gly Val Leu Thr Ser Ile Phe Lys His Glu
        275                 280                 285

Ile Pro Tyr Tyr Glu Phe Gln Ser Leu Gln Thr Glu Ile Cys Ser Gln
    290                 295                 300

Asn Lys Tyr Thr His Phe Lys Glu Leu Pro Thr Leu Leu His Cys Ala
305                 310                 315                 320

Ala Lys Phe Gly Leu Lys Asn Leu Ala Ile His Leu Leu Gln Cys Ser
                325                 330                 335

Gly Ala Thr Trp Ala Ser Lys Met Lys Asn Met Glu Gly Ser Asp Pro
            340                 345                 350

Ala His Ile Ala Glu Arg His Gly His Lys Glu Leu Lys Lys Ile Phe
        355                 360                 365

Glu Asp Phe Ser Ile Gln Glu Ile Asp Ile Asn Asn Glu Gln Glu Asn
    370                 375                 380

Asp Tyr Glu Glu Asp Ile Ala Ser Phe Ser Thr Tyr Ile Pro Ser Thr
385                 390                 395                 400

Gln Asn Pro Ala Phe His His Glu Ser Arg Lys Thr Tyr Gly Gln Ser
                405                 410                 415

Ala Asp Gly Ala Glu Ala Asn Glu Met Glu Gly Glu Gly Lys Gln Asn
            420                 425                 430

Gly Ser Gly Met Glu Thr Lys His Ser Pro Leu Glu Val Gly Ser Glu
        435                 440                 445

Ser Ser Glu Asp Gln Tyr Asp Asp Leu Tyr Val Phe Ile Pro Gly Ala
    450                 455                 460

Asp Pro Glu Asn Asn Ser Gln Glu Pro Leu Met Ser Ser Arg Pro Pro
465                 470                 475                 480
```

```
Leu Pro Pro Pro Arg Pro Val Ala Asn Ala Phe Gln Leu Glu Arg Pro
                485                 490                 495

His Phe Thr Leu Pro Gly Thr Met Val Glu Gly Gln Met Glu Arg Ser
            500                 505                 510

Gln Asn Trp Gly His Pro Gly Val Arg Gln Glu Thr Gly Asp Glu Pro
        515                 520                 525

Lys Gly Glu Lys Glu Lys Lys Glu Glu Glu Lys Glu Gln Glu Glu Glu
    530                 535                 540

Glu Asp Pro Tyr Thr Phe Ala Glu Ile Asp Asp Ser Glu Tyr Asp Met
545                 550                 555                 560

Ile Leu Ala Asn Leu Ser Ile Lys Lys Lys Thr Gly Ser Arg Ser Phe
                565                 570                 575

Ile Ile Asn Arg Pro Pro Ala Pro Thr Pro Arg Pro Thr Ser Ile Pro
            580                 585                 590

Pro Lys Glu Glu Thr Thr Pro Tyr Ile Ala Gln Val Phe Gln Gln Lys
        595                 600                 605

Thr Ala Arg Arg Gln Ser Asp Asp Asp Lys Phe Cys Gly Leu Pro Lys
    610                 615                 620

Lys Gln Asp Arg Ala Arg Ile Glu Ser Pro Ala Phe Ser Thr Leu Arg
625                 630                 635                 640

Gly Cys Leu Thr Asp Gly Gln Glu Glu Leu Ile Leu Leu Gln Glu Lys
                645                 650                 655

Val Lys Asn Gly Lys Met Ser Met Asp Glu Ala Leu Glu Lys Phe Lys
            660                 665                 670

His Trp Gln Met Gly Lys Ser Gly Leu Glu Met Ile Gln Gln Glu Lys
        675                 680                 685

Leu Arg Gln Leu Arg Asp Cys Ile Ile Gly Lys Arg Pro Glu Glu Glu
    690                 695                 700
```

```
Asn Val Tyr Asn Lys Leu Thr Ile Val His His Pro Gly Gly Lys Glu
705                 710                 715                 720


Thr Ala His Asn Glu Asn Lys Phe Tyr Asn Val His Phe Ser Asn Lys
                725                 730                 735


Leu Pro Ala Arg Pro Gln Val Glu Lys Glu Phe Gly Phe Cys Cys Lys
            740                 745                 750


Lys Asp His
        755


<210> 8508
<211> 652
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8508
Met Leu Pro Ala Ala Pro Gly Lys Gly Leu Gly Ser Pro Asp Pro Ala
1               5                   10                  15


Pro Cys Gly Pro Ala Pro Pro Asp Ser Glu Asp Tyr Phe Glu Val Asn
            20                  25                  30


Ile Pro Thr Asp Leu Arg Ala Lys His Ser Gly Glu Ile Ser Glu Arg
        35                  40                  45


Lys Glu Ile Glu Glu Leu Ser Glu Ala Ser Arg Asn Thr Ile Pro Leu
    50                  55                  60
```

```
Ala Val Val Leu Pro Thr Glu Ile Pro Cys Glu Asn Pro Gly Glu Ile
65                  70                  75                  80

Phe Ile Ile Leu Arg Asp Glu Val Ile Gly Asp Thr Val Glu Val Glu
                85                  90                  95

Phe Thr Ser Ser Asn Lys Arg Ile Arg Thr Arg Pro Ala Leu Trp Asn
            100                 105                 110

Lys Lys Val Trp Cys Met Lys Ala Leu Glu Phe Pro Ala Gly Ser Val
        115                 120                 125

His Val Asn Val Tyr Cys Asp Gly Ile Val Lys Ala Thr Thr Lys Ile
    130                 135                 140

Lys Tyr Tyr Pro Thr Ala Lys Ala Lys Glu Cys Leu Phe Arg Met Ala
145                 150                 155                 160

Asp Ser Gly Glu Ser Leu Cys Gln Asn Ser Ile Glu Glu Leu Asp Gly
                165                 170                 175

Val Leu Thr Ser Ile Phe Lys His Glu Ile Pro Tyr Tyr Glu Phe Gln
            180                 185                 190

Ser Leu Gln Thr Glu Ile Cys Ser Gln Asn Lys Tyr Thr His Phe Lys
        195                 200                 205

Glu Leu Pro Thr Leu Leu His Cys Ala Ala Lys Phe Gly Leu Lys Asn
    210                 215                 220

Leu Ala Ile His Leu Leu Gln Cys Ser Gly Ala Thr Trp Ala Ser Lys
225                 230                 235                 240

Met Lys Asn Met Glu Gly Ser Asp Pro Ala His Ile Ala Glu Arg His
                245                 250                 255

Gly His Lys Glu Leu Lys Lys Ile Phe Glu Asp Phe Ser Ile Gln Glu
            260                 265                 270

Ile Asp Ile Asn Asn Glu Gln Glu Asn Asp Tyr Glu Glu Asp Ile Ala
        275                 280                 285
```

Ser Phe Ser Thr Tyr Ile Pro Ser Thr Gln Asn Pro Ala Phe His His
290 295 300

Glu Ser Arg Lys Thr Tyr Gly Gln Ser Ala Asp Gly Ala Glu Ala Asn
305 310 315 320

Glu Met Glu Gly Glu Gly Lys Gln Asn Gly Ser Gly Met Glu Thr Lys
325 330 335

His Ser Pro Leu Glu Val Gly Ser Glu Ser Ser Glu Asp Gln Tyr Asp
340 345 350

Asp Leu Tyr Val Phe Ile Pro Gly Ala Asp Pro Glu Asn Asn Ser Gln
355 360 365

Glu Pro Leu Met Ser Ser Arg Pro Pro Leu Pro Pro Pro Arg Pro Val
370 375 380

Ala Asn Ala Phe Gln Leu Glu Arg Pro His Phe Thr Leu Pro Gly Thr
385 390 395 400

Met Val Glu Gly Gln Met Glu Arg Ser Gln Asn Trp Gly His Pro Gly
405 410 415

Val Arg Gln Glu Thr Gly Asp Glu Pro Lys Gly Glu Lys Glu Lys Lys
420 425 430

Glu Glu Glu Lys Glu Gln Glu Glu Glu Glu Asp Pro Tyr Thr Phe Ala
435 440 445

Glu Ile Asp Asp Ser Glu Tyr Asp Met Ile Leu Ala Asn Leu Ser Ile
450 455 460

Lys Lys Lys Thr Gly Ser Arg Ser Phe Ile Ile Asn Arg Pro Pro Ala
465 470 475 480

Pro Thr Pro Arg Pro Thr Ser Ile Pro Pro Lys Glu Glu Thr Thr Pro
485 490 495

Tyr Ile Ala Gln Val Phe Gln Gln Lys Thr Ala Arg Arg Gln Ser Asp
500 505 510

```
Asp Asp Lys Phe Cys Gly Leu Pro Lys Lys Gln Asp Arg Ala Arg Ile
        515                 520                 525

Glu Ser Pro Ala Phe Ser Thr Leu Arg Gly Cys Leu Thr Asp Gly Gln
    530                 535                 540

Glu Glu Leu Ile Leu Leu Gln Glu Lys Val Lys Asn Gly Lys Met Ser
545                 550                 555                 560

Met Asp Glu Ala Leu Glu Lys Phe Lys His Trp Gln Met Gly Lys Ser
                565                 570                 575

Gly Leu Glu Met Ile Gln Gln Glu Lys Leu Arg Gln Leu Arg Asp Cys
            580                 585                 590

Ile Ile Gly Lys Arg Pro Glu Glu Glu Asn Val Tyr Asn Lys Leu Thr
        595                 600                 605

Ile Val His His Pro Gly Gly Lys Glu Thr Ala His Asn Glu Asn Lys
    610                 615                 620

Phe Tyr Asn Val His Phe Ser Asn Lys Leu Pro Ala Arg Pro Gln Val
625                 630                 635                 640

Glu Lys Glu Phe Gly Phe Cys Cys Lys Lys Asp His
                645                 650


<210> 8509
<211> 770
<212> PRT
<213> Homo sapiens

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Met Val Asn Cys His Leu Lys Ile Gly Asn Thr Lys Asp Ile Ile Met
1   5   10   15

Ile Tyr Glu Glu Asp Ala Glu Glu Trp Ala Leu Tyr Leu Thr Glu Val
            20   25   30

Phe Leu His Val Val Lys Arg Glu Ala Ile Leu Leu Tyr Arg Leu Glu
        35   40   45

Asn Phe Ser Phe Arg His Leu Glu Leu Leu Asn Leu Thr Ser Tyr Lys
    50   55   60

Cys Lys Leu Leu Ile Leu Ser Asn Ser Leu Leu Arg Asp Leu Thr Pro
65   70   75   80

Lys Lys Cys Gln Phe Leu Glu Lys Ile Leu His Ser Pro Lys Ser Val
                85   90   95

Val Thr Leu Leu Cys Gly Val Lys Ser Ser Asp Gln Leu Tyr Glu Leu
            100   105   110

Leu Asn Ile Ser Gln Ser Arg Trp Glu Ile Ser Thr Glu Gln Glu Pro
        115   120   125

Glu Asp Tyr Ile Ser Val Ile Gln Ser Ile Ile Phe Lys Asp Ser Glu
    130   135   140

Asp Tyr Phe Glu Val Asn Ile Pro Thr Asp Leu Arg Ala Lys His Ser
145   150   155   160

Gly Glu Ile Ser Glu Arg Lys Glu Ile Glu Glu Leu Ser Glu Ala Ser
                165   170   175

Arg Asn Thr Ile Pro Leu Ala Val Val Leu Pro Thr Glu Ile Pro Cys
            180   185   190

Glu Asn Pro Gly Glu Ile Phe Ile Ile Leu Arg Asp Glu Val Ile Gly
        195   200   205

```
Asp Thr Val Glu Val Glu Phe Thr Ser Ser Asn Lys Arg Ile Arg Thr
    210                 215                 220

Arg Pro Ala Leu Trp Asn Lys Lys Val Trp Cys Met Lys Ala Leu Glu
225                 230                 235                 240

Phe Pro Ala Gly Ser Val His Val Asn Val Tyr Cys Asp Gly Ile Val
                245                 250                 255

Lys Ala Thr Thr Lys Ile Lys Tyr Tyr Pro Thr Ala Lys Ala Lys Glu
            260                 265                 270

Cys Leu Phe Arg Met Ala Asp Ser Gly Glu Ser Leu Cys Gln Asn Ser
        275                 280                 285

Ile Glu Glu Leu Asp Gly Val Leu Thr Ser Ile Phe Lys His Glu Ile
    290                 295                 300

Pro Tyr Tyr Glu Phe Gln Ser Leu Gln Thr Glu Ile Cys Ser Gln Asn
305                 310                 315                 320

Lys Tyr Thr His Phe Lys Glu Leu Pro Thr Leu Leu His Cys Ala Ala
                325                 330                 335

Lys Phe Gly Leu Lys Asn Leu Ala Ile His Leu Leu Gln Cys Ser Gly
            340                 345                 350

Ala Thr Trp Ala Ser Lys Met Lys Asn Met Glu Gly Ser Asp Pro Ala
        355                 360                 365

His Ile Ala Glu Arg His Gly His Lys Glu Leu Lys Lys Ile Phe Glu
    370                 375                 380

Asp Phe Ser Ile Gln Glu Ile Asp Ile Asn Asn Glu Gln Glu Asn Asp
385                 390                 395                 400

Tyr Glu Glu Asp Ile Ala Ser Phe Ser Thr Tyr Ile Pro Ser Thr Gln
                405                 410                 415

Asn Pro Ala Phe His His Glu Ser Arg Lys Thr Tyr Gly Gln Ser Ala
            420                 425                 430
```

```
Asp Gly Ala Glu Ala Asn Glu Met Glu Gly Glu Gly Lys Gln Asn Gly
        435                 440                 445

Ser Gly Met Glu Thr Lys His Ser Pro Leu Glu Val Gly Ser Glu Ser
    450                 455                 460

Ser Glu Asp Gln Tyr Asp Asp Leu Tyr Val Phe Ile Pro Gly Ala Asp
465                 470                 475                 480

Pro Glu Asn Asn Ser Gln Glu Pro Leu Met Ser Ser Arg Pro Pro Leu
                485                 490                 495

Pro Pro Pro Arg Pro Val Ala Asn Ala Phe Gln Leu Glu Arg Pro His
            500                 505                 510

Phe Thr Leu Pro Gly Thr Met Val Glu Gly Gln Met Glu Arg Ser Gln
        515                 520                 525

Asn Trp Gly His Pro Gly Val Arg Gln Glu Thr Gly Asp Glu Pro Lys
    530                 535                 540

Gly Glu Lys Glu Lys Lys Glu Glu Glu Lys Glu Gln Glu Glu Glu Glu
545                 550                 555                 560

Asp Pro Tyr Thr Phe Ala Glu Ile Asp Asp Ser Glu Tyr Asp Met Ile
                565                 570                 575

Leu Ala Asn Leu Ser Ile Lys Lys Lys Thr Gly Ser Arg Ser Phe Ile
            580                 585                 590

Ile Asn Arg Pro Pro Ala Pro Thr Pro Arg Pro Thr Ser Ile Pro Pro
        595                 600                 605

Lys Glu Glu Thr Thr Pro Tyr Ile Ala Gln Val Phe Gln Gln Lys Thr
    610                 615                 620

Ala Arg Arg Gln Ser Asp Asp Asp Lys Phe Cys Gly Leu Pro Lys Lys
625                 630                 635                 640

Gln Asp Arg Ala Arg Ile Glu Ser Pro Ala Phe Ser Thr Leu Arg Gly
                645                 650                 655

Cys Leu Thr Asp Gly Gln Glu Glu Leu Ile Leu Leu Gln Glu Lys Val
```

660 665 670

Lys Asn Gly Lys Met Ser Met Asp Glu Ala Leu Glu Lys Phe Lys His
675 680 685

Trp Gln Met Gly Lys Ser Gly Leu Glu Met Ile Gln Gln Glu Lys Leu
690 695 700

Arg Gln Leu Arg Asp Cys Ile Ile Gly Lys Arg Pro Glu Glu Glu Asn
705 710 715 720

Val Tyr Asn Lys Leu Thr Ile Val His His Pro Gly Gly Lys Glu Thr
725 730 735

Ala His Asn Glu Asn Lys Phe Tyr Asn Val His Phe Ser Asn Lys Leu
740 745 750

Pro Ala Arg Pro Gln Val Glu Lys Glu Phe Gly Phe Cys Cys Lys Lys
755 760 765

Asp His
770

<210> 8510
<211> 652
<212> PRT
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B-cell scaffold prt with ankyrin repeats 1; "

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Met Leu Pro Ala Ala Pro Gly Lys Gly Leu Gly Ser Pro Asp Pro Ala
1 5 10 15

Pro Cys Gly Pro Ala Pro Pro Asp Ser Glu Asp Tyr Phe Glu Val Asn
20 25 30

Ile Pro Thr Asp Leu Arg Ala Lys His Ser Gly Glu Ile Ser Glu Arg
35 40 45

Lys Glu Ile Glu Glu Leu Ser Glu Ala Ser Arg Asn Thr Ile Pro Leu
50 55 60

Ala Val Val Leu Pro Thr Glu Ile Pro Cys Glu Asn Pro Gly Glu Ile
65 70 75 80

Phe Ile Ile Leu Arg Asp Glu Val Ile Gly Asp Thr Val Glu Val Glu
85 90 95

Phe Thr Ser Ser Asn Lys Arg Ile Arg Thr Arg Pro Ala Leu Trp Asn
100 105 110

Lys Lys Val Trp Cys Met Lys Ala Leu Glu Phe Pro Ala Gly Ser Val
115 120 125

His Val Asn Val Tyr Cys Asp Gly Ile Val Lys Ala Thr Thr Lys Ile
130 135 140

Lys Tyr Tyr Pro Thr Ala Lys Ala Lys Glu Cys Leu Phe Arg Met Ala
145 150 155 160

Asp Ser Gly Glu Ser Leu Cys Gln Asn Ser Ile Glu Glu Leu Asp Gly
165 170 175

Val Leu Thr Ser Ile Phe Lys His Glu Ile Pro Tyr Tyr Glu Phe Gln
180 185 190

Ser Leu Gln Thr Glu Ile Cys Ser Gln Asn Lys Tyr Thr His Phe Lys
195 200 205

Glu Leu Pro Thr Leu Leu His Cys Ala Ala Lys Phe Gly Leu Lys Asn
210 215 220

```
Leu Ala Ile His Leu Leu Gln Cys Ser Gly Ala Thr Trp Ala Ser Lys
225                 230                 235                 240

Met Lys Asn Met Glu Gly Ser Asp Pro Ala His Ile Ala Glu Arg His
                245                 250                 255

Gly His Lys Glu Leu Lys Lys Ile Phe Glu Asp Phe Ser Ile Gln Glu
            260                 265                 270

Ile Asp Ile Asn Asn Glu Gln Glu Asn Asp Tyr Glu Glu Asp Ile Ala
        275                 280                 285

Ser Phe Ser Thr Tyr Ile Pro Ser Thr Gln Asn Pro Ala Phe His His
    290                 295                 300

Glu Ser Arg Lys Thr Tyr Gly Gln Ser Ala Asp Gly Ala Glu Ala Asn
305                 310                 315                 320

Glu Met Glu Gly Glu Gly Lys Gln Asn Gly Ser Gly Met Glu Thr Lys
                325                 330                 335

His Ser Pro Leu Glu Val Gly Ser Glu Ser Ser Glu Asp Gln Tyr Asp
            340                 345                 350

Asp Leu Tyr Val Phe Ile Pro Gly Ala Asp Pro Glu Asn Asn Ser Gln
        355                 360                 365

Glu Pro Leu Met Ser Ser Arg Pro Pro Leu Pro Pro Pro Arg Pro Val
    370                 375                 380

Ala Asn Ala Phe Gln Leu Glu Arg Pro His Phe Thr Leu Pro Gly Thr
385                 390                 395                 400

Met Val Glu Gly Gln Met Glu Arg Ser Gln Asn Trp Gly His Pro Gly
                405                 410                 415

Val Arg Gln Glu Thr Gly Asp Glu Pro Lys Gly Glu Lys Glu Lys Lys
            420                 425                 430

Glu Glu Glu Lys Glu Gln Glu Glu Glu Glu Asp Pro Tyr Thr Phe Ala
        435                 440                 445

Glu Ile Asp Asp Ser Glu Tyr Asp Met Ile Leu Ala Asn Leu Ser Ile
```

```
    450                 455                 460

Lys Lys Lys Thr Gly Ser Arg Ser Phe Ile Ile Asn Arg Pro Pro Ala
465                 470                 475                 480

Pro Thr Pro Arg Pro Thr Ser Ile Pro Pro Lys Glu Glu Thr Thr Pro
                485                 490                 495

Tyr Ile Ala Gln Val Phe Gln Gln Lys Thr Ala Arg Arg Gln Ser Asp
            500                 505                 510

Asp Asp Lys Phe Cys Gly Leu Pro Lys Lys Gln Asp Arg Ala Arg Ile
        515                 520                 525

Glu Ser Pro Ala Phe Ser Thr Leu Arg Gly Cys Leu Thr Asp Gly Gln
    530                 535                 540

Glu Glu Leu Ile Leu Leu Gln Glu Lys Val Lys Asn Gly Lys Met Ser
545                 550                 555                 560

Met Asp Glu Ala Leu Glu Lys Phe Lys His Trp Gln Met Gly Lys Ser
                565                 570                 575

Gly Leu Glu Met Ile Gln Gln Glu Lys Leu Arg Gln Leu Arg Asp Cys
            580                 585                 590

Ile Ile Gly Lys Arg Pro Glu Glu Glu Asn Val Tyr Asn Lys Leu Thr
        595                 600                 605

Ile Val His His Pro Gly Gly Lys Glu Thr Ala His Asn Glu Asn Lys
    610                 615                 620

Phe Tyr Asn Val His Phe Ser Asn Lys Leu Pro Ala Arg Pro Gln Val
625                 630                 635                 640

Glu Lys Glu Phe Gly Phe Cys Cys Lys Lys Asp His
                645                 650

<210> 8511
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<213> Homo sapiens

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Met His Pro Phe Tyr Thr Arg Ala Ala Thr Met Ile Gly Glu Ile Ala
1   5   10   15

Ala Ala Val Ser Phe Ile Ser Lys Phe Leu Arg Thr Lys Gly Leu Thr
            20   25   30

Ser Glu Arg Gln Leu Gln Thr Phe Ser Gln Ser Leu Gln Glu Leu Leu
        35   40   45

Ala Glu His Tyr Lys His His Trp Phe Pro Glu Lys Pro Cys Lys Gly
    50   55   60

Ser Gly Tyr Arg Cys Ile Arg Ile Asn His Lys Met Asp Pro Leu Ile
65   70   75   80

Gly Gln Ala Ala Gln Arg Ile Gly Leu Ser Ser Gln Glu Leu Phe Arg
                85   90   95

Leu Leu Pro Ser Glu Leu Thr Leu Trp Val Asp Pro Tyr Glu Val Ser
            100   105   110

Tyr Arg Ile Gly Glu Asp Gly Ser Ile Cys Val Leu Tyr Glu Ala Ser
        115   120   125

Pro Ala Gly Gly Ser Thr Gln Asn Ser Thr Asn Val Gln Met Val Asp
    130   135   140

```
Ser Arg Ile Ser Cys Lys Glu Glu Leu Leu Leu Gly Arg Thr Ser Pro
145                 150                 155                 160


Ser Lys Asn Tyr Asn Met Met Thr Val Ser Gly
                165                 170


<210> 8512
<211> 84
<212> PRT
<213> Homo sapiens

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      B-cell translocation gene 1, anti-proliferative; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447551"

<400> 8512
Met Asp Pro Leu Ile Gly Gln Ala Ala Gln Arg Ile Gly Leu Ser Ser
1               5                   10                  15


Gln Glu Leu Phe Arg Leu Leu Pro Ser Glu Leu Thr Leu Trp Val Asp
            20                  25                  30


Pro Tyr Glu Val Ser Tyr Arg Ile Gly Glu Asp Gly Ser Ile Cys Val
        35                  40                  45


Leu Tyr Glu Ala Ser Pro Ala Gly Gly Ser Thr Gln Asn Ser Thr Asn
    50                  55                  60


Val Gln Met Val Asp Ser Arg Ile Ser Cys Lys Glu Glu Leu Leu Leu
65                  70                  75                  80


Gly Arg Thr Ser



<210> 8513
<211> 223
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<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1768; "

<220>
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<223> /note="Gene Symbol: BTG4; "

<220>
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<223> /note="Gene Name:
B-cell translocation gene 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NY30; "

<220>
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<223> /note="ENSP ID: ENSP00000348300"

<400> 8513
Met Arg Asp Glu Ile Ala Thr Thr Val Phe Phe Val Thr Arg Leu Val
1   5   10   15

Lys Lys His Asp Lys Leu Ser Lys Gln Gln Ile Glu Asp Phe Ala Glu
            20   25   30

Lys Leu Met Thr Ile Leu Phe Glu Thr Tyr Arg Ser His Trp His Ser
        35   40   45

Asp Cys Pro Ser Lys Gly Gln Ala Phe Arg Cys Ile Arg Ile Asn Asn
    50   55   60

Asn Gln Asn Lys Asp Pro Ile Leu Glu Arg Ala Cys Val Glu Ser Asn
65   70   75   80

Val Asp Phe Ser His Leu Gly Leu Pro Lys Glu Met Thr Ile Trp Val
                85   90   95

Asp Pro Phe Glu Val Cys Cys Arg Tyr Gly Glu Lys Asn His Pro Phe
            100   105   110

Thr Val Ala Ser Phe Lys Gly Arg Trp Glu Glu Trp Glu Leu Tyr Gln
        115   120   125

```
Gln Ile Ser Tyr Ala Val Ser Arg Ala Ser Ser Asp Val Ser Ser Gly
    130                 135                 140

Thr Ser Cys Asp Glu Glu Ser Cys Ser Lys Glu Pro Arg Val Ile Pro
145                 150                 155                 160

Lys Val Ser Asn Pro Lys Ser Ile Tyr Gln Val Glu Asn Leu Lys Gln
                165                 170                 175

Pro Phe Gln Ser Trp Leu Gln Ile Pro Arg Lys Lys Asn Val Val Asp
            180                 185                 190

Gly Arg Val Gly Leu Leu Gly Asn Thr Tyr His Gly Ser Gln Lys His
        195                 200                 205

Pro Lys Cys Tyr Arg Pro Ala Met His Arg Leu Asp Arg Ile Leu
    210                 215                 220
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<210> 8514
<211> 160
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
B-cell translocation gene 4; "

<220>
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<223> /note="ENSP ID: ENSP00000392358"

<400> 8514

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Met Arg Asp Glu Ile Ala Thr Thr Val Phe Phe Val Thr Arg Leu Val
1               5                   10                  15

Lys Lys His Asp Lys Leu Ser Lys Gln Gln Ile Glu Asp Phe Ala Glu
            20                  25                  30

Lys Leu Met Thr Ile Leu Phe Glu Thr Tyr Arg Ser His Trp His Ser
        35                  40                  45
```

```
Asp Cys Pro Ser Lys Gly Gln Ala Phe Arg Cys Ile Arg Ile Asn Asn
    50                  55                  60

Asn Gln Asn Lys Asp Pro Ile Leu Glu Arg Ala Cys Val Glu Ser Asn
65                  70                  75                  80

Val Asp Phe Ser His Leu Gly Leu Pro Lys Glu Met Thr Ile Trp Val
                85                  90                  95

Asp Pro Phe Glu Val Cys Cys Arg Tyr Gly Glu Lys Asn His Pro Phe
            100                 105                 110

Thr Val Ala Ser Phe Lys Gly Arg Trp Glu Glu Trp Glu Leu Tyr Gln
        115                 120                 125

Gln Ile Ser Tyr Ala Val Ser Arg Ala Ser Ser Asp Val Ser Ser Gly
    130                 135                 140

Thr Ser Cys Asp Glu Glu Ser Cys Ser Lys Glu Pro Arg Val Ile Pro
145                 150                 155                 160
```

<210> 8515
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
B-cell translocation gene 4; "

<220>
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<223> /note="Uniprot ID: Q9NY30; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432018"

<400> 8515

```
Met Arg Asp Glu Ile Ala Thr Thr Val Phe Phe Val Thr Arg Leu Val
1               5                  10                  15

Lys Lys His Asp Lys Leu Ser Lys Gln Gln Ile Glu Asp Phe Ala Glu
            20                  25                  30

Lys Leu Met Thr Ile Leu Phe Glu Thr Tyr Arg Ser His Trp His Ser
        35                  40                  45

Asp Cys Pro Ser Lys Gly Gln Ala Phe Arg Cys Ile Arg Ile Asn Asn
    50                  55                  60

Asn Gln Asn Lys Asp Pro Ile Leu Glu Arg Ala Cys Val Glu Ser Asn
65                  70                  75                  80

Val Asp Phe Ser His Leu Gly Leu Pro Lys Glu Met Thr Ile Trp Val
                85                  90                  95

Asp Pro Phe Glu Val Cys Cys Arg Tyr Gly Glu Lys Asn His Pro Phe
            100                 105                 110

Thr Val Ala Ser Phe Lys Gly Arg Trp Glu Glu Trp Glu Leu Tyr Gln
        115                 120                 125

Gln Ile Ser Tyr Ala Val Ser Arg Ala Ser Ser Asp Val Ser Ser Gly
    130                 135                 140

Thr Ser Cys Asp Glu Glu Ser Cys Ser Lys Glu Pro Arg Val Ile Pro
145                 150                 155                 160

Lys Val Ser Asn Pro Lys Ser Ile Tyr Gln Val Lys Ser Val Pro Val
                165                 170                 175

Leu Phe Tyr Thr Phe Phe Leu Ser Asn Ser Lys Lys Asn Ala Leu Ile
            180                 185                 190

Met Lys Thr Lys Lys Gln Lys Asn Met Glu Arg Thr Lys Leu
        195                 200                 205
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<210> 8516
<211> 101
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1769; "

<220>
<221> source
<223> /note="Gene Symbol: BBC3; "

<220>
<221> source
<223> /note="Gene Name:
BCL2 binding component 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96PG8; "

<220>
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<223> /note="ENSP ID: ENSP00000300880"

<400> 8516
Met Lys Phe Gly Met Gly Ser Ala Gln Ala Cys Pro Cys Gln Val Pro
1   5   10   15

Arg Ala Ala Ser Thr Thr Trp Val Pro Cys Gln Ile Cys Glu Thr Arg
            20   25   30

Gly Ala Ala Ala Ala Pro Pro Leu Thr Leu Glu Gly Pro Val Gln Ser
        35   40   45

His His Gly Thr Pro Ala Leu Thr Gln Gly Pro Gln Ser Pro Arg Asp
    50   55   60

Gly Ala Gln Leu Gly Ala Cys Thr Arg Pro Val Asp Val Arg Asp Ser
65   70   75   80

Gly Gly Arg Pro Leu Pro Pro Pro Asp Thr Leu Ala Ser Ala Gly Asp
                85   90   95

Phe Leu Cys Thr Met
            100

<210> 8517
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1769; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
BCL2 binding component 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXH1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000341155"

<400> 8517

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Met Lys Phe Gly Met Gly Ser Ala Gln Ala Cys Pro Cys Gln Val Pro
1               5                  10                  15

Arg Ala Ala Ser Thr Thr Trp Val Pro Cys Gln Ile Cys Gly Pro Gln
            20                  25                  30

Pro Ser Leu Ser Leu Ala Glu Gln His Leu Glu Ser Pro Val Pro Ser
        35                  40                  45

Ala Pro Gly Ala Leu Ala Gly Gly Pro Thr Gln Ala Ala Pro Gly Val
    50                  55                  60

Arg Gly Glu Glu Glu Gln Trp Ala Arg Glu Ile Gly Ala Gln Leu Arg
65                  70                  75                  80

Arg Met Ala Asp Asp Leu Asn Ala Gln Tyr Glu Arg Arg Arg Gln Glu
                85                  90                  95

Glu Gln Gln Arg His Arg Pro Ser Pro Trp Arg Val Leu Tyr Asn Leu
            100                 105                 110

Ile Met Gly Leu Leu Pro Leu Pro Arg Gly His Arg Ala Pro Glu Met
        115                 120                 125

Glu Pro Asn
    130
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<210> 8518

<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1769; "

<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q9BXH1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395862"

<400> 8518
Met Ala Arg Ala Arg Gln Glu Gly Ser Ser Pro Glu Pro Val Glu Gly
1   5   10   15

Leu Ala Arg Asp Gly Pro Arg Pro Phe Pro Leu Gly Arg Leu Val Pro
            20   25   30

Ser Ala Val Ser Cys Gly Leu Cys Glu Pro Gly Leu Ala Ala Ala Pro
        35   40   45

Ala Ala Pro Thr Leu Leu Pro Ala Ala Tyr Leu Cys Ala Pro Thr Ala
    50   55   60

Pro Pro Ala Val Thr Ala Ala Leu Gly Gly Ser Arg Trp Pro Gly Gly
65   70   75   80

Pro Arg Ser Arg Pro Arg Gly Pro Arg Pro Asp Gly Pro Gln Pro Ser
                85   90   95

Leu Ser Leu Ala Glu Gln His Leu Glu Ser Pro Val Pro Ser Ala Pro
            100   105   110

Gly Ala Leu Ala Gly Gly Pro Thr Gln Ala Ala Pro Gly Val Arg Gly
        115   120   125

Glu Glu Glu Gln Trp Ala Arg Glu Ile Gly Ala Gln Leu Arg Arg Met
    130   135   140

Ala Asp Asp Leu Asn Ala Gln Tyr Glu Arg Arg Arg Gln Glu Glu Gln
145   150   155   160

Gln Arg His Arg Pro Ser Pro Trp Arg Val Leu Tyr Asn Leu Ile Met
                165   170   175

Gly Leu Leu Pro Leu Pro Arg Gly His Arg Ala Pro Glu Met Glu Pro
            180   185   190

Asn

<210> 8519
<211> 261
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1769; "

<220>
<221> source
<223> /note="Gene Symbol: BBC3; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2 binding component 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96PG8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404503"

<400> 8519
Met Lys Phe Gly Met Gly Ser Ala Gln Ala Cys Pro Cys Gln Val Pro
1   5   10   15

Arg Ala Ala Ser Thr Thr Trp Val Pro Cys Gln Ile Cys Gly Pro Arg
            20   25   30

Glu Arg His Gly Pro Arg Thr Pro Gly Gly Gln Leu Pro Gly Ala Arg

```
        35                  40                  45

Arg Gly Pro Gly Pro Arg Arg Pro Ala Pro Leu Pro Ala Arg Pro Pro
    50                  55                  60

Gly Ala Leu Gly Ser Val Leu Arg Pro Leu Arg Ala Arg Pro Gly Cys
65                  70                  75                  80

Arg Pro Arg Arg Pro His Pro Ala Ala Arg Cys Leu Pro Leu Arg Pro
                85                  90                  95

His Arg Pro Thr Arg Arg His Arg Arg Pro Gly Gly Phe Pro Leu Ala
            100                 105                 110

Trp Gly Ser Pro Gln Pro Ala Pro Arg Pro Ala Pro Gly Arg Ser Ser
        115                 120                 125

Ala Leu Ala Leu Ala Gly Gly Ala Ala Pro Gly Val Ala Arg Ala Gln
    130                 135                 140

Arg Pro Gly Gly Ser Gly Gly Arg Ser His Pro Gly Gly Pro Gly Ser
145                 150                 155                 160

Pro Arg Gly Gly Gly Thr Val Gly Pro Gly Asp Arg Gly Pro Ala Ala
                165                 170                 175

Ala Asp Gly Gly Arg Pro Gln Arg Thr Val Arg Ala Ala Glu Thr Arg
            180                 185                 190

Gly Ala Ala Ala Ala Pro Pro Leu Thr Leu Glu Gly Pro Val Gln Ser
        195                 200                 205

His His Gly Thr Pro Ala Leu Thr Gln Gly Pro Gln Ser Pro Arg Asp
    210                 215                 220

Gly Ala Gln Leu Gly Ala Cys Thr Arg Pro Val Asp Val Arg Asp Ser
225                 230                 235                 240

Gly Gly Arg Pro Leu Pro Pro Pro Asp Thr Leu Ala Ser Ala Gly Asp
                245                 250                 255

Phe Leu Cys Thr Met
            260
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<210> 8520
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
Bcl2 modifying
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000346697"

<400> 8520
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1   5   10   15

Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20   25   30

Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35   40   45

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
    50   55   60

Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65   70   75   80

Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85   90   95

Tyr Gly Asn Ala Gly Tyr Arg Leu Pro Leu Pro Ala Ser Phe Pro Ala
            100   105   110

```
Val Leu Pro Ile Gly Glu Gln Pro Pro Glu Gly Gln Trp Gln His Gln
        115                 120                 125

Ala Glu Val Gln Ile Ala Arg Lys Leu Gln Cys Ile Ala Asp Gln Phe
    130                 135                 140

His Arg Leu His Val Gln Gln His Gln Gln Asn Gln Asn Arg Val Trp
145                 150                 155                 160

Trp Gln Ile Leu Leu Phe Leu His Asn Leu Ala Leu Asn Gly Glu Glu
                165                 170                 175

Asn Arg Asn Gly Ala Gly Pro Arg
            180


<210> 8521
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
      Bcl2 modifying
      factor; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380703"

<400> 8521
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1               5                   10                  15

Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20                  25                  30
```

```
Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35                  40                  45

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
    50                  55                  60

Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65                  70                  75                  80

Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85                  90                  95

Tyr Gly Asn Ala Gly Tyr Arg Leu Pro Leu Pro Ala Ser Phe Pro Ala
            100                 105                 110

Val Leu Pro Ile Gly Glu Gln Pro Pro Glu Gly Gln Trp Gln His Gln
        115                 120                 125

Ala Glu Val Gln Ile Ala Arg Lys Leu Gln Cys Ile Ala Asp Gln Phe
    130                 135                 140

His Arg Leu His Val Gln Gln His Gln Gln Asn Gln Asn Arg Val Trp
145                 150                 155                 160

Trp Gln Ile Leu Leu Phe Leu His Asn Leu Ala Leu Asn Gly Glu Glu
                165                 170                 175

Asn Arg Asn Gly Ala Gly Pro Arg
            180


<210> 8522
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
      Bcl2 modifying
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factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396511"

<400> 8522
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1   5   10   15

Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20   25   30

Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35   40   45

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
    50   55   60

Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65   70   75   80

Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85   90   95

Tyr Gly Asn Ala Gly Tyr Arg Leu Pro Leu Pro Ala Ser Phe Pro Ala
            100   105   110

Val Leu Pro Ile Gly Glu Gln Pro Pro Glu Gly Gln Trp Gln His Gln
        115   120   125

Ala Glu His Gln Gln Asn Gln Asn Arg Val Trp Trp Gln Ile Leu Leu
    130   135   140

Phe Leu His Asn Leu Ala Leu Asn Gly Glu Glu Asn Arg Asn Gly Ala
145   150   155   160

Gly Pro Arg

<210> 8523
<211> 13

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
Bcl2 modifying
factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452660"

<400> 8523
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp
1 5 10

<210> 8524
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
Bcl2 modifying
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453522"

<400> 8524
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1 5 10 15

```
Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20                  25                  30

Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35                  40                  45

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
    50                  55                  60

Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65                  70                  75                  80

Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85                  90                  95

Tyr Gly Asn Ala Gly Tyr Arg Leu Pro Leu Pro Ala Ser Phe Pro Ala
            100                 105                 110

Val Leu Pro Ile Gly Glu Gln Pro Pro Glu Gly Gln Trp Gln His Gln
        115                 120                 125

Ala Glu Val Gln Ile Ala Arg Lys Leu Gln Cys Ile Ala Asp Gln Phe
    130                 135                 140

His Arg Leu His Val Gln Gln His Gln Gln Asn Gln Asn Arg Val Trp
145                 150                 155                 160

Trp Gln Ile Leu Leu Phe Leu His Asn Leu Ala Leu Asn Gly Glu Glu
                165                 170                 175

Asn Arg Asn Gly Ala Gly Pro Arg
            180


<210> 8525
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "
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<220>
<221> source
<223> /note="Gene Name:
Bcl2 modifying
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453892"

<400> 8525
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1   5   10   15

Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20   25   30

Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35   40   45

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
    50   55   60

Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65   70   75   80

Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85   90   95

Tyr Gly Asn Ala Gly Tyr Arg Leu Pro Leu Pro Ala Ser Phe Pro Ala
            100   105   110

Val Leu Pro Ile Gly Glu Gln Pro Pro Glu Gly Gln Trp Gln His Gln
        115   120   125

Ala Glu Val Gln Ile Ala Arg Lys Leu Gln Cys Ile Ala Asp Gln Phe
    130   135   140

His Arg Leu His Val Gln Gln His Gln Gln Asn Gln Asn Arg Val Trp
145   150   155   160

Trp Gln Ile Leu Leu Phe Leu His Asn Leu Ala Leu Asn Gly Glu Glu

```
                165                 170                 175

Asn Arg Asn Gly Ala Gly Pro Arg
            180


<210> 8526
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
      Bcl2 modifying
      factor; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453913"

<400> 8526
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1               5                   10                  15


Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20                  25                  30


Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35                  40                  45


Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
    50                  55                  60


Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65                  70                  75                  80


Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85                  90                  95
```

Tyr Ala Pro Ala Glu Pro Lys Ser Cys Val Val Ala Asp Pro Pro Leu
100 105 110

Pro Ala Gln Pro Cys Phe Glu Trp Arg Arg Glu Gln Glu Arg Gly Arg
115 120 125

Pro

<210> 8527
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
Bcl2 modifying
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LC9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453919"

<400> 8527
Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1 5 10 15

Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
20 25 30

Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
35 40 45

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg Pro Thr Ser
50 55 60

```
Gln Glu Asp Lys Ala Thr Gln Thr Leu Ser Pro Ala Ser Pro Ser Gln
65                  70                  75                  80

Gly Val Met Leu Pro Cys Gly Val Thr Glu Glu Pro Gln Arg Leu Phe
                85                  90                  95

Tyr Ala Pro Ala Glu Pro Lys Ser Cys Val Val Ala Asp Pro Pro Leu
            100                 105                 110

Pro Ala Gln Pro Cys Phe Glu Trp Arg Arg Glu Gln Glu Arg Gly Arg
        115                 120                 125

Pro
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<210> 8528
<211> 61
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1770; "

<220>
<221> source
<223> /note="Gene Symbol: BMF; "

<220>
<221> source
<223> /note="Gene Name:
Bcl2 modifying
factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454142"

<400> 8528

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Met Glu Pro Ser Gln Cys Val Glu Glu Leu Glu Asp Asp Val Phe Gln
1               5                   10                  15

Pro Glu Asp Gly Glu Pro Val Thr Gln Pro Gly Ser Leu Leu Ser Ala
            20                  25                  30

Asp Leu Phe Ala Gln Ser Leu Leu Asp Cys Pro Leu Ser Arg Leu Gln
        35                  40                  45
```

Leu Phe Pro Leu Thr His Cys Cys Gly Pro Gly Leu Arg
50 55 60

<210> 8529
<211> 275
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1771; "

<220>
<221> source
<223> /note="Gene Symbol: BNIPL; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kD
interacting
prt like; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z465; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295294"

<400> 8529
Met Arg Lys Arg Leu Ser Ala Pro Glu Leu Arg Leu Ser Leu Thr Lys
1 5 10 15

Gly Pro Gly Asn Asp Gly Ala Ser Pro Thr Gln Ser Ala Pro Ser Ser
20 25 30

Pro Asp Gly Ser Ser Asp Leu Glu Ile Asp Glu Leu Glu Thr Pro Ser
35 40 45

Asp Ser Glu Gln Leu Asp Ser Gly His Glu Phe Glu Trp Glu Asp Glu
50 55 60

Leu Pro Arg Ala Glu Gly Leu Gly Thr Ser Glu Thr Ala Glu Arg Leu
65 70 75 80

Gly Arg Gly Cys Met Trp Asp Val Thr Gly Glu Asp Gly His His Trp
85 90 95

```
Arg Val Phe Arg Met Gly Pro Arg Glu Gln Arg Val Asp Met Thr Val
            100                 105                 110

Ile Glu Pro Tyr Lys Lys Val Leu Ser His Gly Gly Tyr His Gly Asp
        115                 120                 125

Gly Leu Asn Ala Val Ile Leu Phe Ala Ser Cys Tyr Leu Pro Arg Ser
    130                 135                 140

Ser Ile Pro Asn Tyr Thr Tyr Val Met Glu His Leu Phe Arg Tyr Met
145                 150                 155                 160

Val Gly Thr Leu Glu Leu Leu Val Ala Glu Asn Tyr Leu Leu Val His
                165                 170                 175

Leu Ser Gly Gly Thr Ser Arg Ala Gln Val Pro Pro Leu Ser Trp Ile
            180                 185                 190

Arg Gln Cys Tyr Arg Thr Leu Asp Arg Arg Leu Arg Lys Asn Leu Arg
        195                 200                 205

Ala Leu Val Val Val His Ala Thr Trp Tyr Val Lys Ala Phe Leu Ala
    210                 215                 220

Leu Leu Arg Pro Phe Ile Ser Ser Lys Phe Thr Arg Lys Ile Arg Phe
225                 230                 235                 240

Leu Asp Ser Leu Gly Glu Leu Ala Gln Leu Ile Ser Leu Asp Gln Val
                245                 250                 255

His Ile Pro Glu Ala Val Arg Gln Leu Asp Arg Asp Leu His Gly Ser
            260                 265                 270

Gly Gly Thr
        275


<210> 8530
<211> 341
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1771; "
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<220>
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BCL2/adenovirus E1B 19kD
interacting
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8530
Xaa Arg Glu Ile Ala Glu Ala Pro Glu Leu Gly Ala Ala Leu Arg His
1 5 10 15

Gly Glu Leu Glu Leu Lys Glu Glu Trp Gln Asp Glu Glu Phe Pro Arg
20 25 30

Leu Leu Pro Glu Glu Ala Gly Thr Ser Glu Asp Pro Glu Asp Pro Lys
35 40 45

Gly Asp Ser Gln Ala Gly Thr Pro Ser Thr Leu Ala Leu Cys Gly Gln
50 55 60

Arg Pro Met Arg Lys Arg Leu Ser Ala Pro Glu Leu Arg Leu Ser Leu
65 70 75 80

Thr Lys Gly Pro Gly Asn Asp Gly Ala Ser Pro Thr Gln Ser Ala Pro
85 90 95

Ser Ser Pro Asp Gly Ser Ser Asp Leu Glu Ile Asp Glu Leu Glu Thr
100 105 110

Pro Ser Asp Ser Glu Gln Leu Asp Ser Gly His Glu Phe Glu Trp Glu
115 120 125

Asp Glu Leu Pro Arg Ala Glu Gly Leu Gly Thr Ser Glu Thr Ala Glu
130 135 140

```
Arg Leu Gly Arg Gly Cys Met Trp Asp Val Thr Gly Glu Asp Gly His
145                 150                 155                 160

His Trp Arg Val Phe Arg Met Gly Pro Arg Glu Gln Arg Val Asp Met
                165                 170                 175

Thr Val Ile Glu Pro Tyr Lys Lys Val Leu Ser His Gly Gly Tyr His
            180                 185                 190

Gly Asp Gly Leu Asn Ala Val Ile Leu Phe Ala Ser Cys Tyr Leu Pro
        195                 200                 205

Arg Ser Ser Ile Pro Asn Tyr Thr Tyr Val Met Glu His Leu Phe Arg
    210                 215                 220

Tyr Met Val Gly Thr Leu Glu Leu Leu Val Ala Glu Asn Tyr Leu Leu
225                 230                 235                 240

Val His Leu Ser Gly Gly Thr Ser Arg Ala Gln Val Pro Pro Leu Ser
                245                 250                 255

Trp Ile Arg Gln Cys Tyr Arg Thr Leu Asp Arg Arg Leu Arg Lys Asn
            260                 265                 270

Leu Arg Ala Leu Val Val Val His Ala Thr Trp Tyr Val Lys Ala Phe
        275                 280                 285

Leu Ala Leu Leu Arg Pro Phe Ile Ser Ser Lys Phe Thr Arg Lys Ile
    290                 295                 300

Arg Phe Leu Asp Ser Leu Gly Glu Leu Ala Gln Leu Ile Ser Leu Asp
305                 310                 315                 320

Gln Val His Ile Pro Glu Ala Val Arg Gln Leu Asp Arg Asp Leu His
                325                 330                 335

Gly Ser Gly Gly Thr
            340
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<210> 8531
<211> 357
<212> PRT
<213> Homo sapiens

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<220>
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prt like; "

<220>
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<223> /note="Uniprot ID: Q7Z465; "

<220>
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<223> /note="ENSP ID: ENSP00000357927"

<400> 8531
Met Gly Thr Ile Gln Glu Ala Gly Lys Lys Thr Asp Val Gly Val Arg
1   5   10   15

Glu Ile Ala Glu Ala Pro Glu Leu Gly Ala Ala Leu Arg His Gly Glu
            20   25   30

Leu Glu Leu Lys Glu Glu Trp Gln Asp Glu Glu Phe Pro Arg Leu Leu
        35   40   45

Pro Glu Glu Ala Gly Thr Ser Glu Asp Pro Glu Asp Pro Lys Gly Asp
    50   55   60

Ser Gln Ala Ala Ala Gly Thr Pro Ser Thr Leu Ala Leu Cys Gly Gln
65   70   75   80

Arg Pro Met Arg Lys Arg Leu Ser Ala Pro Glu Leu Arg Leu Ser Leu
                85   90   95

Thr Lys Gly Pro Gly Asn Asp Gly Ala Ser Pro Thr Gln Ser Ala Pro
            100   105   110

Ser Ser Pro Asp Gly Ser Ser Asp Leu Glu Ile Asp Glu Leu Glu Thr
        115   120   125

```
Pro Ser Asp Ser Glu Gln Leu Asp Ser Gly His Glu Phe Glu Trp Glu
    130                 135                 140

Asp Glu Leu Pro Arg Ala Glu Gly Leu Gly Thr Ser Glu Thr Ala Glu
145                 150                 155                 160

Arg Leu Gly Arg Gly Cys Met Trp Asp Val Thr Gly Glu Asp Gly His
                165                 170                 175

His Trp Arg Val Phe Arg Met Gly Pro Arg Glu Gln Arg Val Asp Met
            180                 185                 190

Thr Val Ile Glu Pro Tyr Lys Lys Val Leu Ser His Gly Gly Tyr His
        195                 200                 205

Gly Asp Gly Leu Asn Ala Val Ile Leu Phe Ala Ser Cys Tyr Leu Pro
    210                 215                 220

Arg Ser Ser Ile Pro Asn Tyr Thr Tyr Val Met Glu His Leu Phe Arg
225                 230                 235                 240

Tyr Met Val Gly Thr Leu Glu Leu Leu Val Ala Glu Asn Tyr Leu Leu
                245                 250                 255

Val His Leu Ser Gly Gly Thr Ser Arg Ala Gln Val Pro Pro Leu Ser
            260                 265                 270

Trp Ile Arg Gln Cys Tyr Arg Thr Leu Asp Arg Arg Leu Arg Lys Asn
        275                 280                 285

Leu Arg Ala Leu Val Val Val His Ala Thr Trp Tyr Val Lys Ala Phe
    290                 295                 300

Leu Ala Leu Leu Arg Pro Phe Ile Ser Ser Lys Phe Thr Arg Lys Ile
305                 310                 315                 320

Arg Phe Leu Asp Ser Leu Gly Glu Leu Ala Gln Leu Ile Ser Leu Asp
                325                 330                 335

Gln Val His Ile Pro Glu Ala Val Arg Gln Leu Asp Arg Asp Leu His
            340                 345                 350

Gly Ser Gly Gly Thr
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355

<210> 8532
<211> 100
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1771; "

<220>
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<223> /note="Gene Symbol: BNIPL; "

<220>
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BCL2/adenovirus E1B 19kD
interacting
prt like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376550"

<400> 8532
Met Arg Lys Arg Leu Ser Ala Pro Glu Leu Arg Leu Ser Leu Thr Lys
1 5 10 15

Gly Pro Gly Asn Asp Gly Ala Ser Pro Thr Gln Ser Ala Pro Ser Ser
20 25 30

Pro Asp Gly Ser Ser Asp Leu Glu Ile Asp Glu Leu Glu Thr Pro Ser
35 40 45

Asp Ser Glu Gln Leu Asp Ser Gly His Glu Phe Glu Trp Glu Asp Glu
50 55 60

Leu Pro Arg Ala Glu Gly Leu Gly Thr Ser Glu Thr Ala Glu Arg Leu
65 70 75 80

Gly Arg Gly Cys Met Trp Asp Val Thr Gly Glu Asp Gly His His Trp
85 90 95

Arg Val Phe Arg
100

<210> 8533

<211> 204
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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BCL2/adenovirus E1B 19kD
interacting
prt like; "

<220>
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<223> /note="Uniprot ID: Q7Z465; "

<220>
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<223> /note="ENSP ID: ENSP00000435072"

<400> 8533
Met Arg Lys Arg Leu Ser Ala Pro Glu Leu Arg Leu Ser Leu Thr Lys
1   5   10   15

Gly Pro Gly Asn Asp Gly Ala Ser Pro Thr Gln Ser Ala Pro Ser Ser
            20   25   30

Pro Asp Gly Ser Ser Asp Leu Glu Ile Asp Glu Leu Glu Thr Pro Ser
        35   40   45

Asp Ser Glu Gln Leu Asp Ser Gly His Glu Phe Glu Trp Glu Asp Glu
    50   55   60

Leu Pro Arg Ala Glu Gly Leu Gly Thr Ser Glu Thr Ala Glu Arg Leu
65   70   75   80

Gly Arg Gly Cys Met Trp Asp Val Thr Gly Glu Asp Gly His His Trp
                85   90   95

Arg Val Phe Arg Met Gly Pro Arg Glu Gln Arg Val Asp Met Thr Val
            100   105   110

Ile Glu Pro Tyr Lys Lys Val Leu Ser His Gly Gly Tyr His Gly Asp

```
        115                 120                 125

Gly Leu Asn Ala Val Ile Leu Phe Ala Ser Cys Tyr Leu Pro Arg Ser
    130                 135                 140

Ser Ile Pro Asn Tyr Thr Tyr Val Met Glu His Leu Phe Arg Tyr Met
145                 150                 155                 160

Val Gly Thr Leu Glu Leu Leu Val Ala Glu Asn Tyr Leu Leu Val His
                165                 170                 175

Leu Ser Gly Gly Thr Ser Arg Ala Gln Val Pro Pro Leu Ser Trp Ile
            180                 185                 190

Arg Gln Cys Tyr Arg Thr Leu Asp Arg Arg Val Leu
        195                 200


<210> 8534
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1772; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP1; "

<220>
<221> source
<223> /note="Gene Name:
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      interacting prt 1; "

<220>
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<223> /note="Uniprot ID:  Q12981; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000231668"

<400> 8534
Met Ala Ala Pro Gln Asp Val His Val Arg Ile Cys Asn Gln Glu Ile
1               5                   10                  15

Val Lys Phe Asp Leu Glu Val Lys Ala Leu Ile Gln Asp Ile Arg Asp
            20                  25                  30
```

```
Cys Ser Gly Pro Leu Ser Ala Leu Thr Glu Leu Asn Thr Lys Val Lys
        35                  40                  45

Glu Lys Phe Gln Gln Leu Arg His Arg Ile Gln Pro Val Leu Tyr Gln
    50                  55                  60

Arg Ala Phe Ile Trp Thr Ala Ser Thr Phe Phe Phe Lys Leu Thr Tyr
65                  70                  75                  80

Ser Leu Thr Asp Phe Ser Ser Thr Gln His Asp Phe Asn Ser Pro Thr
                85                  90                  95

Thr Pro Val Thr Phe Ser Asp Leu Glu Gln Leu Ala Lys Glu Gln Asp
            100                 105                 110

Lys Glu Ser Glu Lys Gln Leu Leu Leu Gln Glu Val Glu Asn His Lys
        115                 120                 125

Lys Gln Met Leu Ser Asn Gln Ala Ser Trp Arg Lys Ala Asn Leu Thr
    130                 135                 140

Cys Lys Ile Ala Ile Asp Asn Leu Glu Lys Ala Glu Leu Leu Gln Gly
145                 150                 155                 160

Gly Asp Leu Leu Arg Gln Arg Lys Thr Thr Lys Glu Ser Leu Ala Gln
                165                 170                 175

Thr Ser Ser Thr Ile Thr Glu Ser Leu Met Gly Ile Ser Arg Met Met
            180                 185                 190

Ala Gln Gln Val Gln Gln Ser Glu Glu Ala Met Gln Ser Leu Val Thr
        195                 200                 205

Ser Ser Arg Thr Ile Leu Asp Ala Asn Glu Glu Phe Lys Ser Met Ser
    210                 215                 220

Gly Thr Ile Gln Leu Gly Arg Lys Leu Ile Thr Lys Tyr Asn Arg Arg
225                 230                 235                 240

Glu Leu Thr Asp Lys Leu Leu Ile Phe Leu Ala Leu Ala Leu Phe Leu
                245                 250                 255
```

```
Ala Thr Val Leu Tyr Ile Val Lys Lys Arg Leu Phe Pro Phe Leu
            260                 265                 270


<210> 8535
<211> 237
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1772; "

<220>
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<220>
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<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting prt 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q12981; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000239214"

<400> 8535
Met Ala Ala Pro Gln Asp Val His Val Arg Ile Cys Asn Gln Glu Ile
1               5                  10                  15


Val Lys Phe Asp Leu Glu Val Lys Ala Leu Ile Gln Asp Ile Arg Asp
            20                  25                  30


Cys Ser Gly Pro Leu Ser Ala Leu Thr Glu Leu Asn Thr Lys Val Lys
        35                  40                  45


Glu Lys Phe Gln Gln Leu Arg His Arg Ile Gln Pro Val Leu Tyr Gln
    50                  55                  60


Arg Ala Phe Ile Trp Thr Ala Ser Thr Phe Phe Phe Lys Leu Thr Tyr
65                  70                  75                  80


Ser Leu Thr Asp Phe Ser Ser Thr Gln His Asp Phe Asn Ser Pro Thr
                85                  90                  95
```

```
Thr Pro Val Thr Phe Ser Asp Leu Glu Gln Leu Ala Lys Glu Gln Asp
            100                 105                 110

Lys Glu Ser Glu Lys Gln Leu Leu Leu Gln Glu Val Glu Asn His Lys
        115                 120                 125

Lys Gln Met Leu Arg Lys Thr Thr Lys Glu Ser Leu Ala Gln Thr Ser
    130                 135                 140

Ser Thr Ile Thr Glu Ser Leu Met Gly Ile Ser Arg Met Met Ala Gln
145                 150                 155                 160

Gln Val Gln Gln Ser Glu Glu Ala Met Gln Ser Leu Val Thr Ser Ser
                165                 170                 175

Arg Thr Ile Leu Asp Ala Asn Glu Glu Phe Lys Ser Met Ser Gly Thr
            180                 185                 190

Ile Gln Leu Gly Arg Lys Leu Ile Thr Lys Tyr Asn Arg Arg Glu Leu
        195                 200                 205

Thr Asp Lys Leu Leu Ile Phe Leu Ala Leu Ala Leu Phe Leu Ala Thr
    210                 215                 220

Val Leu Tyr Ile Val Lys Lys Arg Leu Phe Pro Phe Leu
225                 230                 235


<210> 8536
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1772; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting prt 1; "

<220>
<221> source
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<223> /note="Uniprot ID: Q12981; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000239215"

<400> 8536
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Met Ala Ala Pro Gln Asp Val His Val Arg Ile Cys Asn Gln Glu Ile
1               5                  10                  15

Val Lys Phe Asp Leu Glu Val Lys Ala Leu Ile Gln Asp Ile Arg Asp
            20                  25                  30

Cys Ser Gly Pro Leu Ser Ala Leu Thr Glu Leu Asn Thr Lys Val Lys
        35                  40                  45

Glu Lys Phe Gln Gln Leu Arg His Arg Ile Gln Asp Leu Glu Gln Leu
    50                  55                  60

Ala Lys Glu Gln Asp Lys Glu Ser Glu Lys Gln Leu Leu Leu Gln Glu
65                  70                  75                  80

Val Glu Asn His Lys Lys Gln Met Leu Ser Asn Gln Ala Ser Trp Arg
                85                  90                  95

Lys Ala Asn Leu Thr Cys Lys Ile Ala Ile Asp Asn Leu Glu Lys Ala
            100                 105                 110

Glu Leu Leu Gln Gly Gly Asp Leu Leu Arg Gln Arg Lys Thr Thr Lys
        115                 120                 125

Glu Ser Leu Ala Gln Thr Ser Ser Thr Ile Thr Glu Ser Leu Met Gly
    130                 135                 140

Ile Ser Arg Met Met Ala Gln Gln Val Gln Gln Ser Glu Glu Ala Met
145                 150                 155                 160

Gln Ser Leu Val Thr Ser Ser Arg Thr Ile Leu Asp Ala Asn Glu Glu
                165                 170                 175

Phe Lys Ser Met Ser Gly Thr Ile Gln Leu Gly Arg Lys Leu Ile Thr
            180                 185                 190

Lys Tyr Asn Arg Arg Glu Leu Thr Asp Lys Leu Leu Ile Phe Leu Ala
        195                 200                 205
```

```
Leu Ala Leu Phe Leu Ala Thr Val Leu Tyr Ile Val Lys Lys Arg Leu
    210                 215                 220


Phe Pro Phe Leu
225
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<210> 8537
<211> 194
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BNIP1; "

<220>
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<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q12981; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377365"

<400> 8537

```
Met Ala Ala Pro Gln Asp Val His Val Arg Ile Cys Asn Gln Glu Ile
1               5                   10                  15


Val Lys Phe Asp Leu Glu Val Lys Ala Leu Ile Gln Asp Ile Arg Asp
            20                  25                  30


Cys Ser Gly Pro Leu Ser Ala Leu Thr Glu Leu Asn Thr Lys Val Lys
        35                  40                  45


Glu Lys Phe Gln Gln Leu Arg His Arg Ile Gln Asp Leu Glu Gln Leu
    50                  55                  60


Ala Lys Glu Gln Asp Lys Glu Ser Glu Lys Gln Leu Leu Leu Gln Glu
65                  70                  75                  80
```

```
Val Glu Asn His Lys Lys Gln Met Leu Arg Lys Thr Thr Lys Glu Ser
                85                  90                  95

Leu Ala Gln Thr Ser Ser Thr Ile Thr Glu Ser Leu Met Gly Ile Ser
            100                 105                 110

Arg Met Met Ala Gln Gln Val Gln Gln Ser Glu Glu Ala Met Gln Ser
        115                 120                 125

Leu Val Thr Ser Ser Arg Thr Ile Leu Asp Ala Asn Glu Glu Phe Lys
    130                 135                 140

Ser Met Ser Gly Thr Ile Gln Leu Gly Arg Lys Leu Ile Thr Lys Tyr
145                 150                 155                 160

Asn Arg Arg Glu Leu Thr Asp Lys Leu Leu Ile Phe Leu Ala Leu Ala
                165                 170                 175

Leu Phe Leu Ala Thr Val Leu Tyr Ile Val Lys Lys Arg Leu Phe Pro
            180                 185                 190

Phe Leu
```

<210> 8538
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1772; "

<220>
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<223> /note="Gene Symbol: BNIP1; "

<220>
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<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting prt 1; "

<220>
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<400> 8538

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Thr Glu Ser Leu Met Gly Ile Ser Arg Met Met Ala Gln Gln Val Gln
1               5                   10                  15

Gln Ser Glu Glu Ala Met Gln Ser Leu Val Pro Phe Lys Arg Cys Glu
            20                  25                  30

Ser Glu Ala Thr Gly Glu Thr Ala
        35                  40


<210> 8539
<211> 435
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1773; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP2; "

<220>
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<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting
      prt 2; "

<220>
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<223> /note="ENSP ID: ENSP00000267859"

<400> 8539
Met Leu Cys Gly Phe Gln Glu Asp Ala Thr Pro Pro Pro Pro Pro Arg
1               5                   10                  15

Pro Arg Arg Leu His Arg Arg Leu Pro Arg Pro Glu Glu Val Gly Met
            20                  25                  30

Leu Ser Leu Pro Pro Gly Leu Leu Thr Val Ser Gly Ser Ala Ala Ala
        35                  40                  45

Ala Asp Ala Val Pro Leu Arg Pro Gly Asp Trp Ala Gly Val Ser Thr
    50                  55                  60

Ala Asp Arg Gly Glu Arg Ala Pro Leu Gly Pro Ala Phe Cys Asp Leu
65                  70                  75                  80
```

```
Ala Val Ser Pro Thr Ser Pro Ala Trp Arg Gly Glu Glu Asp Glu Gly
                85                  90                  95

Ala Lys Ala Ser Ser Gly Asp Ile Gly Ser Leu Asp Tyr Gln Glu Phe
            100                 105                 110

Val Val Asp Ile Glu Ser Arg Leu Arg Met Glu Gly Val Glu Leu Lys
        115                 120                 125

Glu Glu Trp Gln Asp Glu Asp Phe Pro Ile Pro Leu Pro Glu Asp Asp
    130                 135                 140

Ser Ile Glu Ala Asp Ile Leu Ala Ile Thr Gly Pro Glu Asp Gln Pro
145                 150                 155                 160

Gly Ser Leu Glu Val Asn Gly Asn Lys Val Arg Lys Lys Leu Met Ala
                165                 170                 175

Pro Asp Ile Ser Leu Thr Leu Asp Pro Ser Asp Gly Ser Val Leu Ser
            180                 185                 190

Asp Asp Leu Asp Glu Ser Gly Glu Ile Asp Leu Asp Gly Leu Asp Thr
        195                 200                 205

Pro Ser Glu Asn Ser Asn Glu Phe Glu Trp Glu Asp Asp Leu Pro Lys
    210                 215                 220

Pro Lys Thr Thr Glu Val Ile Arg Lys Gly Ser Ile Thr Glu Tyr Thr
225                 230                 235                 240

Ala Ala Glu Glu Lys Glu Asp Gly Arg Arg Trp Arg Met Phe Arg Ile
                245                 250                 255

Gly Glu Gln Asp His Arg Val Asp Met Lys Ala Ile Glu Pro Tyr Lys
            260                 265                 270

Lys Val Ile Ser His Gly Gly Tyr Tyr Gly Asp Gly Leu Asn Ala Ile
        275                 280                 285

Val Val Phe Ala Val Cys Phe Met Pro Glu Ser Ser Gln Pro Asn Tyr
    290                 295                 300

Arg Tyr Leu Met Asp Asn Leu Phe Lys Tyr Val Ile Gly Thr Leu Glu
```

```
305                 310                 315                 320

Leu Leu Val Ala Glu Asn Tyr Met Ile Val Tyr Leu Asn Gly Ala Thr
                325                 330                 335

Thr Arg Arg Lys Met Pro Ser Leu Gly Trp Leu Arg Lys Cys Tyr Gln
            340                 345                 350

Gln Ile Asp Arg Arg Leu Arg Lys Asn Leu Lys Ser Leu Ile Ile Val
        355                 360                 365

His Pro Ser Trp Phe Ile Arg Thr Leu Leu Ala Val Thr Arg Pro Phe
    370                 375                 380

Ile Ser Ser Lys Phe Ser Gln Lys Ile Arg Tyr Val Phe Asn Leu Ala
385                 390                 395                 400

Glu Leu Ala Glu Leu Val Pro Met Glu Tyr Val Gly Ile Pro Glu Cys
                405                 410                 415

Ile Lys Gln Val Asp Gln Glu Leu Asn Gly Lys Gln Asp Glu Pro Lys
            420                 425                 430

Asn Glu Gln
        435


<210> 8540
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1773; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP2; "

<220>
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<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting
      prt 2; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000393644"

<400> 8540
Glu Lys Glu Asp Gly Arg Arg Trp Arg Met Phe Arg Ile Gly Glu Gln
1 5 10 15

Asp His Arg Val Asp Met Lys Ala Ile Glu Pro Tyr Lys Lys Val Ile
20 25 30

Ser His Gly Gly Tyr Tyr Gly Asp Gly Leu Asn Ala Ile Val Val Phe
35 40 45

Ala Val Cys Phe Met Pro Glu Ser Ser Gln Pro Asn Tyr Arg Tyr Leu
50 55 60

Met Asp Asn Leu Phe Lys Tyr Val Ile Gly Thr Leu Glu Leu Leu Val
65 70 75 80

Ala Glu Asn Tyr Met Ile Val Tyr Leu Asn Gly Ala Thr Thr Arg Arg
85 90 95

Lys Met Pro Ser Leu Gly Trp Leu Arg Lys Cys Tyr Gln Gln Ile Asp
100 105 110

Arg Arg Leu Arg Lys Asn Leu Lys Ser Leu Ile Ile Val His Pro Ser
115 120 125

Trp Phe Ile Arg Thr Leu Leu Ala Val Thr Arg Pro Phe Ile Ser Ser
130 135 140

Lys Phe Ser Gln Lys Ile Arg Tyr Val Phe Asn Leu Ala Glu Leu Ala
145 150 155 160

Glu Leu Val Pro Met Glu Tyr Val Gly Ile Pro Glu Cys Ile Lys Gln
165 170 175

Tyr Glu Glu Glu Lys Phe Lys Lys Lys Gln Lys Arg Val Asp Gln Glu
180 185 190

Leu Asn Gly Lys Gln Asp Glu Pro Lys Asn Glu Gln
195 200

<210> 8541
<211> 87

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1773; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398364"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8541
Xaa Asp Asp Ser Ile Glu Ala Asp Ile Leu Ala Ile Thr Gly Pro Glu
1 5 10 15

Asp Gln Pro Gly Ser Leu Glu Val Asn Gly Asn Lys Val Arg Lys Lys
20 25 30

Leu Met Ala Pro Asp Ile Ser Leu Thr Leu Asp Pro Ser Asp Gly Ser
35 40 45

Val Leu Ser Asp Asp Leu Asp Glu Ser Gly Glu Ile Asp Leu Asp Gly
50 55 60

Leu Asp Thr Pro Ser Glu Asn Ser Asn Glu Phe Glu Trp Glu Val Ile
65 70 75 80

Ser Trp Lys Asp Ile Phe Arg
85

<210> 8542
<211> 376
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1773; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 2; "

<220>
<221> source
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000412767"

<400> 8542
Met Glu Pro Cys Pro Ser Ser Ala Pro Pro Pro Phe Tyr Pro Gly Val
1   5   10   15

Gly Glu Val Ala Gly Leu Arg Trp Phe Ser Ile Tyr Asp Gln Arg Pro
            20   25   30

Ser Trp Tyr Arg Thr Lys Lys Leu Gly Leu Leu Asp Ile Gly Ser Leu
        35   40   45

Asp Tyr Gln Glu Phe Val Val Asp Ile Glu Ser Arg Leu Arg Met Glu
    50   55   60

Gly Val Glu Leu Lys Glu Glu Trp Gln Asp Glu Asp Phe Pro Ile Pro
65   70   75   80

Leu Pro Glu Asp Asp Ser Ile Glu Ala Asp Ile Leu Ala Ile Thr Gly
                85   90   95

Pro Glu Asp Gln Pro Gly Ser Leu Glu Val Asn Gly Asn Lys Val Arg
            100   105   110

Lys Lys Leu Met Ala Pro Asp Ile Ser Leu Thr Leu Asp Pro Ser Asp
        115   120   125

```
Gly Ser Val Leu Ser Asp Asp Leu Asp Glu Ser Gly Glu Ile Asp Leu
    130                 135                 140

Asp Gly Leu Asp Thr Pro Ser Glu Asn Ser Asn Glu Phe Glu Trp Glu
145                 150                 155                 160

Asp Asp Leu Pro Lys Pro Lys Thr Thr Glu Val Ile Arg Lys Gly Ser
                165                 170                 175

Ile Thr Glu Tyr Thr Ala Ala Glu Glu Lys Glu Asp Gly Arg Arg Trp
            180                 185                 190

Arg Met Phe Arg Ile Gly Glu Gln Asp His Arg Val Asp Met Lys Ala
        195                 200                 205

Ile Glu Pro Tyr Lys Lys Val Ile Ser His Gly Gly Tyr Tyr Gly Asp
    210                 215                 220

Gly Leu Asn Ala Ile Val Val Phe Ala Val Cys Phe Met Pro Glu Ser
225                 230                 235                 240

Ser Gln Pro Asn Tyr Arg Tyr Leu Met Asp Asn Leu Phe Lys Tyr Val
                245                 250                 255

Ile Gly Thr Leu Glu Leu Leu Val Ala Glu Asn Tyr Met Ile Val Tyr
            260                 265                 270

Leu Asn Gly Ala Thr Thr Arg Arg Lys Met Pro Ser Leu Gly Trp Leu
        275                 280                 285

Arg Lys Cys Tyr Gln Gln Ile Asp Arg Arg Leu Arg Lys Asn Leu Lys
    290                 295                 300

Ser Leu Ile Ile Val His Pro Ser Trp Phe Ile Arg Thr Leu Leu Ala
305                 310                 315                 320

Val Thr Arg Pro Phe Ile Ser Ser Lys Phe Ser Gln Lys Ile Arg Tyr
                325                 330                 335

Val Phe Asn Leu Ala Glu Leu Ala Glu Leu Val Pro Met Glu Tyr Val
            340                 345                 350

Gly Ile Pro Glu Cys Ile Lys Gln Val Asp Gln Glu Leu Asn Gly Lys
```

355 360 365

Gln Asp Glu Pro Lys Asn Glu Gln
370 375

<210> 8543
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1773; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q12982; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475320"

<400> 8543
Met Glu Gly Val Glu Leu Lys Glu Glu Trp Gln Asp Glu Asp Phe Pro
1 5 10 15

Ile Pro Leu Pro Glu Asp Asp Ser Ile Glu Ala Asp Ile Leu Ala Ile
20 25 30

Thr Gly Pro Glu Asp Gln Pro Gly Ser Leu Glu Val Asn Gly Asn Lys
35 40 45

Val Arg Lys Lys Leu Met Ala Pro Asp Ile Ser Leu Thr Leu Asp Pro
50 55 60

Ser Asp Gly Ser Val Leu Ser Asp Asp Leu Asp Glu Ser Gly Glu Ile
65 70 75 80

Asp Leu Asp Gly Leu Asp Thr Pro Ser Glu Asn Ser Asn Glu Phe Glu

```
                85                  90                  95

Trp Glu Asp Asp Leu Pro Lys Pro Lys Thr Thr Glu Val Ile Arg Lys
            100                 105                 110

Gly Ser Ile Thr Glu Tyr Thr Ala Ala Glu Glu Lys Glu Asp Gly Arg
        115                 120                 125

Arg Trp Arg Met Phe Arg Ile Gly Glu Gln Asp His Arg Val Asp Met
    130                 135                 140

Lys Ala Ile Glu Pro Tyr Lys Lys Val Ile Ser His Gly Gly Tyr Tyr
145                 150                 155                 160

Gly Asp Gly Leu Asn Ala Ile Val Val Phe Ala Val Cys Phe Met Pro
                165                 170                 175

Glu Ser Ser Gln Pro Asn Tyr Arg Tyr Leu Met Asp Asn Leu Phe Lys
            180                 185                 190

Tyr Val Ile Gly Thr Leu Glu Leu Leu Val Ala Glu Asn Tyr Met Ile
        195                 200                 205

Val Tyr Leu Asn Gly Ala Thr Thr Arg Arg Lys Met Pro Ser Leu Gly
    210                 215                 220

Trp Leu Arg Lys Cys Tyr Gln Gln Ile Asp Arg Arg Leu Arg Lys Asn
225                 230                 235                 240

Leu Lys Ser Leu Ile Ile Val His Pro Ser Trp Phe Ile Arg Thr Leu
                245                 250                 255

Leu Ala Val Thr Arg Pro Phe Ile Ser Ser Lys Phe Ser Gln Lys Ile
            260                 265                 270

Arg Tyr Val Phe Asn Leu Ala Glu Leu Ala Glu Leu Val Pro Met Glu
        275                 280                 285

Tyr Val Gly Ile Pro Glu Cys Ile Lys Gln Val Asp Gln Glu Leu Asn
    290                 295                 300

Gly Lys Gln Asp Glu Pro Lys Asn Glu Gln
305                 310
```

<210> 8544
<211> 435
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1773; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479818"

<400> 8544
Met Leu Cys Gly Phe Gln Glu Asp Ala Thr Pro Pro Pro Pro Pro Arg
1 5 10 15

Pro Arg Arg Leu His Arg Arg Leu Pro Arg Pro Glu Glu Val Gly Met
20 25 30

Leu Ser Leu Pro Pro Gly Leu Leu Thr Val Ser Gly Ser Ala Ala Ala
35 40 45

Ala Asp Ala Val Pro Leu Arg Pro Gly Asp Trp Ala Gly Val Ser Thr
50 55 60

Ala Asp Arg Gly Glu Arg Ala Pro Leu Gly Pro Ala Phe Cys Asp Leu
65 70 75 80

Ala Val Ser Pro Thr Ser Pro Ala Trp Arg Gly Glu Glu Asp Glu Gly
85 90 95

Ala Lys Ala Ser Ser Gly Asp Ile Gly Ser Leu Asp Tyr Gln Glu Phe
100 105 110

Val Val Asp Ile Glu Ser Arg Leu Arg Met Glu Gly Val Glu Leu Lys
115 120 125

```
Glu Glu Trp Gln Asp Glu Asp Phe Pro Ile Pro Leu Pro Glu Asp Asp
    130                 135                 140

Ser Ile Glu Ala Asp Ile Leu Ala Ile Thr Gly Pro Glu Asp Gln Pro
145                 150                 155                 160

Gly Ser Leu Glu Val Asn Gly Asn Lys Val Arg Lys Lys Leu Met Ala
                165                 170                 175

Pro Asp Ile Ser Leu Thr Leu Asp Pro Ser Asp Gly Ser Val Leu Ser
            180                 185                 190

Asp Asp Leu Asp Glu Ser Gly Glu Ile Asp Leu Asp Gly Leu Asp Thr
        195                 200                 205

Pro Ser Glu Asn Ser Asn Glu Phe Glu Trp Glu Asp Asp Leu Pro Lys
    210                 215                 220

Pro Lys Thr Thr Glu Val Ile Arg Lys Gly Ser Ile Thr Glu Tyr Thr
225                 230                 235                 240

Ala Ala Glu Glu Lys Glu Asp Gly Arg Arg Trp Arg Met Phe Arg Ile
                245                 250                 255

Gly Glu Gln Asp His Arg Val Asp Met Lys Ala Ile Glu Pro Tyr Lys
            260                 265                 270

Lys Val Ile Ser His Gly Gly Tyr Tyr Gly Asp Gly Leu Asn Ala Ile
        275                 280                 285

Val Val Phe Ala Val Cys Phe Met Pro Glu Ser Ser Gln Pro Asn Tyr
    290                 295                 300

Arg Tyr Leu Met Asp Asn Leu Phe Lys Tyr Val Ile Gly Thr Leu Glu
305                 310                 315                 320

Leu Leu Val Ala Glu Asn Tyr Met Ile Val Tyr Leu Asn Gly Ala Thr
                325                 330                 335

Thr Arg Arg Lys Met Pro Ser Leu Gly Trp Leu Arg Lys Cys Tyr Gln
            340                 345                 350
```

```
Gln Ile Asp Arg Arg Leu Arg Lys Asn Leu Lys Ser Leu Ile Ile Val
        355                 360                 365

His Pro Ser Trp Phe Ile Arg Thr Leu Leu Ala Val Thr Arg Pro Phe
    370                 375                 380

Ile Ser Ser Lys Phe Ser Gln Lys Ile Arg Tyr Val Phe Asn Leu Ala
385                 390                 395                 400

Glu Leu Ala Glu Leu Val Pro Met Glu Tyr Val Gly Ile Pro Glu Cys
                405                 410                 415

Ile Lys Gln Val Asp Gln Glu Leu Asn Gly Lys Gln Asp Glu Pro Lys
            420                 425                 430

Asn Glu Gln
        435


<210> 8545
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1774; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting
      prt 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q12983; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357625"

<400> 8545
Met Gly Asp Ala Ala Ala Asp Pro Pro Gly Pro Ala Leu Pro Cys Glu
1               5                   10                  15
```

```
Phe Leu Arg Pro Gly Cys Gly Ala Pro Leu Ser Pro Gly Ala Gln Leu
            20                  25                  30

Gly Arg Gly Ala Pro Thr Ser Ala Phe Pro Pro Pro Ala Ala Glu Ala
        35                  40                  45

His Pro Ala Ala Arg Arg Gly Leu Arg Ser Pro Gln Leu Pro Ser Gly
    50                  55                  60

Ala Met Ser Gln Asn Gly Ala Pro Gly Met Gln Glu Glu Ser Leu Gln
65                  70                  75                  80

Gly Ser Trp Val Glu Leu His Phe Ser Asn Asn Gly Asn Gly Gly Ser
                85                  90                  95

Val Pro Ala Ser Val Ser Ile Tyr Asn Gly Asp Met Glu Lys Ile Leu
            100                 105                 110

Leu Asp Ala Gln His Glu Ser Gly Arg Ser Ser Ser Lys Ser Ser His
        115                 120                 125

Cys Asp Ser Pro Pro Arg Ser Gln Thr Pro Gln Asp Thr Asn Arg Ala
    130                 135                 140

Ser Glu Thr Asp Thr His Ser Ile Gly Glu Lys Asn Ser Ser Gln Ser
145                 150                 155                 160

Glu Glu Asp Asp Ile Glu Arg Arg Lys Glu Val Glu Ser Ile Leu Lys
                165                 170                 175

Lys Asn Ser Asp Trp Ile Trp Asp Trp Ser Ser Arg Pro Glu Asn Ile
            180                 185                 190

Pro Pro Lys Glu Phe Leu Phe Lys His Pro Lys Arg Thr Ala Thr Leu
        195                 200                 205

Ser Met Arg Asn Thr Ser Val Met Lys Lys Gly Gly Ile Phe Ser Ala
    210                 215                 220

Glu Phe Leu Lys Val Phe Leu Pro Ser Leu Leu Leu Ser His Leu Leu
225                 230                 235                 240
```

Ala Ile Gly Leu Gly Ile Tyr Ile Gly Arg Arg Leu Thr Thr Ser Thr
245 250 255

Ser Thr Phe

<210> 8546
<211> 219
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1774; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446145"

<400> 8546
Ser Pro Gly Ala Gln Leu Gly Arg Gly Ala Pro Thr Ser Ala Phe Pro
1 5 10 15

Pro Pro Ala Ala Glu Ala His Pro Ala Ala Arg Arg Gly Leu Arg Ser
20 25 30

Pro Gln Leu Pro Ser Gly Ala Met Ser Gln Asn Gly Ala Pro Gly Met
35 40 45

Gln Glu Glu Ser Leu Gln Gly Ser Trp Val Glu Leu His Phe Ser Asn
50 55 60

Asn Gly Asn Gly Gly Ser Val Pro Ala Ser Val Ser Ile Tyr Asn Gly
65 70 75 80

Asp Met Glu Lys Ile Leu Leu Asp Ala Gln His Glu Ser Gly Arg Ser
85 90 95

```
Ser Ser Lys Ser Ser His Cys Asp Ser Pro Pro Arg Ser Gln Thr Pro
            100                 105                 110

Gln Asp Thr Asn Arg Ala Ser Glu Thr Asp Thr His Ser Ile Gly Glu
        115                 120                 125

Lys Asn Ser Ser Gln Ser Glu Glu Asp Asp Ile Glu Arg Arg Lys Glu
    130                 135                 140

Val Glu Ser Ile Leu Lys Lys Asn Ser Asp Trp Ile Trp Asp Trp Ser
145                 150                 155                 160

Ser Arg Pro Glu Asn Ile Pro Pro Lys Glu Phe Leu Phe Lys His Pro
                165                 170                 175

Lys Arg Thr Ala Thr Leu Ser Met Arg Asn Thr Ser Val Met Lys Lys
            180                 185                 190

Gly Gly Ile Phe Ser Ala Glu Phe Leu Lys Val Phe Leu Pro Ser Leu
        195                 200                 205

Leu Leu Ser His Leu Leu Ala Ile Gly Leu Gly
    210                 215


<210> 8547
<211> 243
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1774; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting
      prt 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487769"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8547
Xaa Leu Pro Cys Glu Phe Leu Arg Pro Gly Cys Gly Ala Pro Leu Ser
1 5 10 15

Pro Gly Ala Gln Leu Gly Arg Gly Ala Pro Thr Ser Ala Phe Pro Pro
20 25 30

Pro Ala Ala Glu Ala His Pro Ala Ala Arg Arg Gly Leu Arg Ser Pro
35 40 45

Gln Leu Pro Ser Gly Ala Met Ser Gln Asn Gly Ala Pro Gly Met Gln
50 55 60

Glu Glu Ser Leu Gln Gly Ser Trp Val Glu Leu His Phe Ser Asn Asn
65 70 75 80

Gly Asn Gly Gly Ser Val Pro Ala Ser Val Ser Ile Tyr Asn Gly Asp
85 90 95

Met Glu Lys Ile Leu Leu Asp Ala Gln His Glu Ser Gly Arg Ser Ser
100 105 110

Ser Lys Ser Ser His Cys Asp Ser Pro Pro Arg Ser Gln Thr Pro Gln
115 120 125

Asp Thr Asn Arg Ala Ser Glu Thr Asp Thr His Ser Ile Gly Glu Lys
130 135 140

Asn Ser Ser Gln Ser Glu Glu Asp Asp Ile Glu Arg Arg Lys Glu Val
145 150 155 160

Glu Ser Ile Leu Lys Lys Asn Ser Asp Trp Ile Trp Asp Trp Ser Ser
165 170 175

Arg Pro Glu Asn Ile Pro Pro Lys Glu Phe Leu Phe Lys His Pro Lys
180 185 190

Arg Thr Ala Thr Leu Ser Met Arg Asn Thr Ser Val Met Lys Lys Gly
195 200 205

```
Gly Ile Phe Ser Ala Glu Phe Leu Lys Val Phe Leu Pro Ser Leu Leu
    210                 215                 220

Leu Ser His Leu Leu Ala Ile Gly Leu Gly Asp Gly Ala Ser Pro Arg
225                 230                 235                 240

Cys Pro Gly
```

<210> 8548
<211> 219
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 3-like; "

<220>
<221> source
<223> /note="Uniprot ID: O60238; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370003"

<400> 8548

```
Met Ser Ser His Leu Val Glu Pro Pro Pro Pro Leu His Asn Asn Asn
1               5                   10                  15

Asn Asn Cys Glu Glu Asn Glu Gln Ser Leu Pro Pro Pro Ala Gly Leu
            20                  25                  30

Asn Ser Ser Trp Val Glu Leu Pro Met Asn Ser Ser Asn Gly Asn Asp
        35                  40                  45

Asn Gly Asn Gly Lys Asn Gly Gly Leu Glu His Val Pro Ser Ser Ser
    50                  55                  60
```

```
Ser Ile His Asn Gly Asp Met Glu Lys Ile Leu Leu Asp Ala Gln His
65                  70                  75                  80

Glu Ser Gly Gln Ser Ser Ser Arg Gly Ser Ser His Cys Asp Ser Pro
                85                  90                  95

Ser Pro Gln Glu Asp Gly Gln Ile Met Phe Asp Val Glu Met His Thr
            100                 105                 110

Ser Arg Asp His Ser Ser Gln Ser Glu Glu Glu Val Val Glu Gly Glu
        115                 120                 125

Lys Glu Val Glu Ala Leu Lys Lys Ser Ala Asp Trp Val Ser Asp Trp
    130                 135                 140

Ser Ser Arg Pro Glu Asn Ile Pro Pro Lys Glu Phe His Phe Arg His
145                 150                 155                 160

Pro Lys Arg Ser Val Ser Leu Ser Met Arg Lys Ser Gly Ala Met Lys
                165                 170                 175

Lys Gly Gly Ile Phe Ser Ala Glu Phe Leu Lys Val Phe Ile Pro Ser
            180                 185                 190

Leu Phe Leu Ser His Val Leu Ala Leu Gly Leu Gly Ile Tyr Ile Gly
        195                 200                 205

Lys Arg Leu Ser Thr Pro Ser Ala Ser Thr Tyr
    210                 215


<210> 8549
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
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BCL2/adenovirus E1B 19kDa
interacting
prt 3-like; "

<220>
<221> source
<223> /note="Uniprot ID: O60238; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428597"

<400> 8549

```
Met Asn Ser Ser Asn Gly Asn Asp Asn Gly Asn Gly Lys Asn Gly Gly
1               5                  10                  15

Leu Glu His Val Pro Ser Ser Ser Ser Ile His Asn Gly Asp Met Glu
            20                  25                  30

Lys Ile Leu Leu Asp Ala Gln His Glu Ser Gly Gln Ser Ser Ser Arg
        35                  40                  45

Gly Ser Ser His Cys Asp Ser Pro Ser Pro Gln Glu Asp Gly Gln Ile
    50                  55                  60

Met Phe Asp Val Glu Met His Thr Ser Arg Asp His Ser Ser Gln Ser
65                  70                  75                  80

Glu Glu Glu Val Val Glu Gly Glu Lys Glu Val Glu Ala Leu Lys Lys
                85                  90                  95

Ser Ala Asp Trp Val Ser Asp Trp Ser Ser Arg Pro Glu Asn Ile Pro
            100                 105                 110

Pro Lys Glu Phe His Phe Arg His Pro Lys Arg Ser Val Ser Leu Ser
        115                 120                 125

Met Arg Lys Ser Gly Ala Met Lys Lys Gly Gly Ile Phe Ser Ala Glu
    130                 135                 140

Phe Leu Lys Val Phe Ile Pro Ser Leu Phe Leu Ser His Val Leu Ala
145                 150                 155                 160

Leu Gly Leu Gly Ile Tyr Ile Gly Lys Arg Leu Ser Thr Pro Ser Ala
                165                 170                 175
```

Ser Thr Tyr

<210> 8550
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 3-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428919"

<400> 8550
Met Ser Ser His Leu Val Glu Pro Pro Pro Pro Leu His Asn Asn Asn
1 5 10 15

Asn Asn Cys Glu Glu Asn Glu Gln Ser Leu Pro Pro Pro Ala Gly Leu
20 25 30

Asn Ile Arg Arg Arg Ser Cys Arg Arg Arg Glu Gly Ser Arg Gly Phe
35 40 45

Glu Glu Lys Cys Gly Leu Gly Ile Arg Leu Val Gln
50 55 60

<210> 8551
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 3-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429171"

<400> 8551
Glu Gln Ser Leu Pro Pro Pro Ala Gly Leu Asn Ser Ser Trp Val Glu
1 5 10 15

Leu Pro Met Asn Ser Ser Asn Gly Asn Asp Asn Gly Asn Gly Lys Asn
20 25 30

Gly Gly Leu Glu His Val Pro Ser Ser Ser Ser Ile His Asn Gly Asp
35 40 45

Met Glu Lys Ile Leu Leu Asp Ala Gln His Glu Ser Gly Gln Ser Ser
50 55 60

Ser Arg Gly Ser Ser His Cys Asp Ser Pro Ser Pro Gln Glu Asp Gly
65 70 75 80

Gln Ile Met Phe Asp Val Glu Met His Thr Ser Arg Asp His Ser Ser
85 90 95

Gln Ser Glu Glu Glu Val Val Glu Gly Glu Lys Glu Val Glu Ala Leu
100 105 110

Lys Lys Ser Ala Asp Trp Val Ser Asp Trp Ser Ser Arg Pro Glu Asn
115 120 125

Ile Pro Pro Lys Glu Phe His Phe Arg His Pro Lys Arg Ser Val Ser
130 135 140

Leu Ser Met Arg Lys Ser Gly Ala Met Lys Lys Gly Gly Ile Phe Ser
145 150 155 160

Ala Glu Phe Leu Lys Val Phe Ile Pro Ser Leu Phe Leu Ser His Val
165 170 175

```
Leu Ala Leu Gly Leu Gly Cys Gly Asn
            180                 185


<210> 8552
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2/adenovirus E1B 19kDa
      interacting
      prt 3-like; "

<220>
<221> source
<223> /note="Uniprot ID:  O60238; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429698"

<400> 8552
Met Asn Ser Ser Asn Gly Asn Asp Asn Gly Asn Gly Lys Asn Gly Gly
1               5                  10                  15


Leu Glu His Val Pro Ser Ser Ser Ser Ile His Asn Gly Asp Met Glu
            20                  25                  30


Lys Ile Leu Leu Asp Ala Gln His Glu Ser Gly Gln Ser Ser Ser Arg
        35                  40                  45


Gly Ser Ser His Cys Asp Ser Pro Ser Pro Gln Glu Asp Gly Gln Ile
    50                  55                  60


Met Phe Asp Val Glu Met His Thr Ser Arg Asp His Ser Ser Gln Ser
65                  70                  75                  80


Glu Glu Glu Val Val Glu Gly Glu Lys Glu Val Glu Ala Leu Lys Lys
                85                  90                  95
```

```
Ser Ala Asp Trp Val Ser Asp Trp Ser Ser Arg Pro Glu Asn Ile Pro
            100                 105                 110

Pro Lys Glu Phe His Phe Arg His Pro Lys Arg Ser Val Ser Leu Ser
        115                 120                 125

Met Arg Lys Ser Gly Ala Met Lys Lys Gly Gly Ile Phe Ser Ala Glu
    130                 135                 140

Phe Leu Lys Val Phe Ile Pro Ser Leu Phe Leu Ser His Val Leu Ala
145                 150                 155                 160

Leu Gly Leu Gly Ile Tyr Ile Gly Lys Arg Leu Ser Thr Pro Ser Ala
                165                 170                 175

Ser Thr Tyr
```

<210> 8553
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 3-like; "

<220>
<221> source
<223> /note="Uniprot ID: O60238; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429851"

<400> 8553

```
Met Asn Ser Ser Asn Gly Asn Asp Asn Gly Asn Gly Lys Asn Gly Gly
1               5                   10                  15
```

```
Leu Glu His Val Pro Ser Ser Ser Ser Ile His Asn Gly Asp Met Glu
            20                  25                  30

Lys Ile Leu Leu Asp Ala Gln His Glu Ser Gly Gln Ser Ser Ser Arg
        35                  40                  45

Gly Ser Ser His Cys Asp Ser Pro Ser Pro Gln Glu Asp Gly Gln Ile
    50                  55                  60

Met Phe Asp Val Glu Met His Thr Ser Arg Asp His Ser Ser Gln Ser
65                  70                  75                  80

Glu Glu Glu Val Val Glu Gly Glu Lys Glu Val Glu Ala Leu Lys Lys
                85                  90                  95

Ser Ala Asp Trp Val Ser Asp Trp Ser Ser Arg Pro Glu Asn Ile Pro
            100                 105                 110

Pro Lys Glu Phe His Phe Arg His Pro Lys Arg Ser Val Ser Leu Ser
        115                 120                 125

Met Arg Lys Ser Gly Ala Met Lys Lys Gly Gly Ile Phe Ser Ala Glu
    130                 135                 140

Phe Leu Lys Val Phe Ile Pro Ser Leu Phe Leu Ser His Val Leu Ala
145                 150                 155                 160

Leu Gly Leu Gly Ile Tyr Ile Gly Lys Arg Leu Ser Thr Pro Ser Ala
                165                 170                 175

Ser Thr Tyr
```

<210> 8554
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1775; "

<220>
<221> source
<223> /note="Gene Symbol: BNIP3L; "

<220>
<221> source
<223> /note="Gene Name:
BCL2/adenovirus E1B 19kDa
interacting
prt 3-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479522"

<400> 8554
Met Ser Ser His Leu Val Glu Pro Pro Pro Pro Leu His Asn Asn Asn
1 5 10 15

Asn Asn Cys Glu Glu Asn Glu Gln Ser Leu Pro Pro Pro Ala Gly Leu
20 25 30

Asn Ser Ser Trp Val Glu Leu Pro Met Asn Ser Ser Asn Gly Asn Asp
35 40 45

Asn Gly Asn Gly Lys Asn Gly Gly Leu Glu His Val Pro Ser Ser Ser
50 55 60

Ser Ile His Asn Gly Asp Met Glu Lys Ile Leu Leu Asp Ala Gln His
65 70 75 80

Glu Ser Gly Gln Ser Ser Ser Arg Gly Ser Ser His Cys Asp Ser Pro
85 90 95

Ser Pro Gln Glu Asp Gly Gln Ile Met Phe Asp Val Glu Met His Thr
100 105 110

Ser Arg Asp His Ser Ser Gln Ser Glu Glu Glu Val Val Glu Gly Glu
115 120 125

Lys Glu Val Glu Ala Leu Lys Lys Ser Ala Asp Trp Val Ser Asp Trp
130 135 140

Ser Ser Arg Pro Glu Asn Ile Pro Pro Lys Glu Phe His Phe Arg His
145 150 155 160

Pro Lys Arg Ser Val Ser Leu Ser Met Arg Lys Ser Gly Ala Met Lys
165 170 175

Lys Gly Gly Ile Phe Ser Ala Glu Phe Leu Lys Val Phe Ile Pro Ser

```
            180                 185                 190

Leu Phe Leu Ser His Val Leu Ala Leu Gly Leu Gly Ile Tyr Ile Gly
        195                 200                 205

Lys Arg Leu Ser Thr Pro Cys Gln His Leu Leu Arg Glu Arg Lys Ser
    210                 215                 220

Pro Trp Lys Cys Val
225
```

<210> 8555
<211> 191
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1776; "

<220>
<221> source
<223> /note="Gene Symbol: BAK1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-antagonist/killer 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353878"

<400> 8555

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Met Ala Ser Gly Gln Gly Pro Gly Pro Pro Arg Gln Glu Cys Gly Glu
1               5                   10                  15

Pro Ala Leu Pro Ser Ala Ser Glu Glu Gln Val Ala Gln Asp Thr Glu
            20                  25                  30

Glu Val Phe Arg Ser Tyr Val Phe Tyr Arg His Gln Gln Gln Pro Ser
        35                  40                  45

Ser Thr Met Gly Gln Val Gly Arg Gln Leu Ala Ile Ile Gly Asp Asp
    50                  55                  60

Ile Asn Arg Arg Tyr Asp Ser Glu Phe Gln Thr Met Leu Gln His Leu
65                  70                  75                  80
```

```
Gln Pro Thr Ala Glu Asn Ala Tyr Glu Tyr Phe Thr Lys Ile Ala Thr
                85                  90                  95

Ser Leu Phe Glu Ser Gly Ile Asn Trp Gly Arg Val Val Ala Leu Leu
            100                 105                 110

Gly Phe Gly Tyr Arg Leu Ala Leu His Val Tyr Gln His Gly Leu Thr
        115                 120                 125

Gly Phe Leu Gly Gln Val Thr Arg Phe Val Val Asp Phe Met Leu His
    130                 135                 140

His Cys Ile Ala Arg Trp Ile Ala Gln Arg Gly Gly Trp Val Ala Ala
145                 150                 155                 160

Leu Asn Leu Gly Asn Gly Pro Ile Leu Asn Val Leu Val Val Leu Gly
                165                 170                 175

Val Val Leu Leu Gly Gln Phe Val Val Arg Arg Phe Phe Lys Ser
            180                 185                 190


<210> 8556
<211> 211
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1776; "

<220>
<221> source
<223> /note="Gene Symbol: BAK1; "

<220>
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<223> /note="Gene Name:
      BCL2-antagonist/killer 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q16611; "

<220>
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<223> /note="ENSP ID: ENSP00000363591"

<400> 8556
Met Ala Ser Gly Gln Gly Pro Gly Pro Pro Arg Gln Glu Cys Gly Glu
```

```
1               5                   10                  15

Pro Ala Leu Pro Ser Ala Ser Glu Glu Gln Val Ala Gln Asp Thr Glu
            20                  25                  30

Glu Val Phe Arg Ser Tyr Val Phe Tyr Arg His Gln Gln Glu Gln Glu
        35                  40                  45

Ala Glu Gly Val Ala Ala Pro Ala Asp Pro Glu Met Val Thr Leu Pro
    50                  55                  60

Leu Gln Pro Ser Ser Thr Met Gly Gln Val Gly Arg Gln Leu Ala Ile
65                  70                  75                  80

Ile Gly Asp Asp Ile Asn Arg Arg Tyr Asp Ser Glu Phe Gln Thr Met
                85                  90                  95

Leu Gln His Leu Gln Pro Thr Ala Glu Asn Ala Tyr Glu Tyr Phe Thr
            100                 105                 110

Lys Ile Ala Thr Ser Leu Phe Glu Ser Gly Ile Asn Trp Gly Arg Val
        115                 120                 125

Val Ala Leu Leu Gly Phe Gly Tyr Arg Leu Ala Leu His Val Tyr Gln
    130                 135                 140

His Gly Leu Thr Gly Phe Leu Gly Gln Val Thr Arg Phe Val Val Asp
145                 150                 155                 160

Phe Met Leu His His Cys Ile Ala Arg Trp Ile Ala Gln Arg Gly Gly
                165                 170                 175

Trp Val Ala Ala Leu Asn Leu Gly Asn Gly Pro Ile Leu Asn Val Leu
            180                 185                 190

Val Val Leu Gly Val Val Leu Leu Gly Gln Phe Val Val Arg Arg Phe
        195                 200                 205

Phe Lys Ser
    210
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<210> 8557
<211> 153

<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
BCL2-antagonist/killer 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q16611; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391258"

<400> 8557
Met Ala Ser Gly Gln Gly Pro Gly Pro Pro Arg Gln Glu Cys Gly Glu
1   5   10   15

Pro Ala Leu Pro Ser Ala Ser Glu Glu Gln Val Ala Gln Asp Thr Glu
            20   25   30

Glu Val Phe Arg Ser Tyr Val Phe Tyr Arg His Gln Gln Glu Gln Glu
        35   40   45

Ala Glu Gly Val Ala Ala Pro Ala Asp Pro Glu Met Val Thr Leu Pro
    50   55   60

Leu Gln Pro Ser Ser Thr Met Gly Gln Val Gly Arg Gln Leu Ala Ile
65   70   75   80

Ile Gly Asp Asp Ile Asn Arg Arg Tyr Asp Ser Glu Phe Gln Thr Met
                85   90   95

Leu Gln His Leu Gln Pro Thr Ala Glu Asn Ala Tyr Glu Tyr Phe Thr
            100   105   110

Lys Ile Ala Thr Arg Pro Ala Ala Thr Pro Thr Ala Cys Leu Arg Val
        115   120   125

```
Ala Ser Ile Gly Ala Val Trp Trp Leu Phe Trp Ala Ser Ala Thr Val
    130                 135                 140


Trp Pro Tyr Thr Ser Thr Ser Met Ala
145                 150


<210> 8558
<211> 168
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAD; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated agonist of cell death; "

<220>
<221> source
<223> /note="Uniprot ID:  Q92934; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000309103"

<400> 8558
Met Phe Gln Ile Pro Glu Phe Glu Pro Ser Glu Gln Glu Asp Ser Ser
1               5                   10                  15


Ser Ala Glu Arg Gly Leu Gly Pro Ser Pro Ala Gly Asp Gly Pro Ser
            20                  25                  30


Gly Ser Gly Lys His His Arg Gln Ala Pro Gly Leu Leu Trp Asp Ala
        35                  40                  45


Ser His Gln Gln Glu Gln Pro Thr Ser Ser Ser His His Gly Gly Ala
    50                  55                  60


Gly Ala Val Glu Ile Arg Ser Arg His Ser Ser Tyr Pro Ala Gly Thr
65                  70                  75                  80


Glu Asp Asp Glu Gly Met Gly Glu Glu Pro Ser Pro Phe Arg Gly Arg
                85                  90                  95
```

```
Ser Arg Ser Ala Pro Pro Asn Leu Trp Ala Ala Gln Arg Tyr Gly Arg
            100                 105                 110

Glu Leu Arg Arg Met Ser Asp Glu Phe Val Asp Ser Phe Lys Lys Gly
        115                 120                 125

Leu Pro Arg Pro Lys Ser Ala Gly Thr Ala Thr Gln Met Arg Gln Ser
    130                 135                 140

Ser Ser Trp Thr Arg Val Phe Gln Ser Trp Trp Asp Arg Asn Leu Gly
145                 150                 155                 160

Arg Gly Ser Ser Ala Pro Ser Gln
                165
```

<210> 8559
<211> 163
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAD; "

<220>
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<223> /note="Gene Name:
BCL2-associated agonist of cell death; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378039"

<400> 8559

```
Met Phe Gln Ile Pro Glu Phe Glu Pro Ser Glu Gln Glu Asp Ser Ser
1               5                   10                  15

Ser Ala Glu Arg Gly Leu Gly Pro Ser Pro Ala Gly Asp Gly Pro Ser
            20                  25                  30

Gly Ser Gly Lys His His Arg Gln Ala Pro Gly Leu Leu Trp Asp Ala
        35                  40                  45
```

```
Ser His Gln Gln Glu Gln Pro Thr Ser Ser Ser His His Gly Gly Arg
    50                  55                  60

Thr Ser Tyr Ser Pro Ser Trp Glu Ser Glu Asp Ser Glu Asn Pro Ser
65                  70                  75                  80

Ala Gly Met Leu Ala Glu Ala Ser Ala Gly Met Ser Ala Pro Ala Ala
                85                  90                  95

Asp Ser Glu Ala Gln His Ala Glu Asn Val Lys Leu Glu Ala Leu Gly
            100                 105                 110

Leu Trp Arg Ser Gly Val Ala Thr Ala Pro Thr Pro Arg Gly Arg Arg
        115                 120                 125

Thr Thr Lys Gly Trp Gly Arg Ser Pro Ala Pro Phe Gly Ala Ala Arg
    130                 135                 140

Ala Arg Arg Pro Pro Thr Ser Gly Gln His Ser Ala Met Ala Ala Ser
145                 150                 155                 160

Ser Gly Gly
```

<210> 8560
<211> 168
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAD; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q92934; "

<220>
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<223> /note="ENSP ID: ENSP00000378040"

<400> 8560
Met Phe Gln Ile Pro Glu Phe Glu Pro Ser Glu Gln Glu Asp Ser Ser
1 5 10 15

Ser Ala Glu Arg Gly Leu Gly Pro Ser Pro Ala Gly Asp Gly Pro Ser
20 25 30

Gly Ser Gly Lys His His Arg Gln Ala Pro Gly Leu Leu Trp Asp Ala
35 40 45

Ser His Gln Gln Glu Gln Pro Thr Ser Ser Ser His His Gly Gly Ala
50 55 60

Gly Ala Val Glu Ile Arg Ser Arg His Ser Ser Tyr Pro Ala Gly Thr
65 70 75 80

Glu Asp Asp Glu Gly Met Gly Glu Glu Pro Ser Pro Phe Arg Gly Arg
85 90 95

Ser Arg Ser Ala Pro Pro Asn Leu Trp Ala Ala Gln Arg Tyr Gly Arg
100 105 110

Glu Leu Arg Arg Met Ser Asp Glu Phe Val Asp Ser Phe Lys Lys Gly
115 120 125

Leu Pro Arg Pro Lys Ser Ala Gly Thr Ala Thr Gln Met Arg Gln Ser
130 135 140

Ser Ser Trp Thr Arg Val Phe Gln Ser Trp Trp Asp Arg Asn Leu Gly
145 150 155 160

Arg Gly Ser Ser Ala Pro Ser Gln
165

<210> 8561
<211> 64
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAD; "

<220>
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<223> /note="Gene Name:
BCL2-associated agonist of cell death; "

<220>
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<223> /note="ENSP ID: ENSP00000438975"

<400> 8561
Met Gly Glu Glu Pro Ser Pro Phe Arg Gly Arg Ser Arg Ser Ala Pro
1 5 10 15

Pro Asn Leu Trp Ala Ala Gln Arg Tyr Gly Arg Glu Leu Arg Arg Met
20 25 30

Ser Asp Glu Phe Val Asp Ser Phe Lys Lys Gly Leu Pro Arg Pro Lys
35 40 45

Ser Ala Gly Thr Ala Thr Gln Met Arg Gln Ser Ser Ser Trp Thr Arg
50 55 60

<210> 8562
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1777; "

<220>
<221> source
<223> /note="Gene Symbol: BAD; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated agonist of cell death; "

<220>
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<223> /note="ENSP ID: ENSP00000439202"

<400> 8562
Met Gly Glu Glu Pro Ser Pro Phe Arg Gly Arg Ser Arg Ser Ala Pro
1 5 10 15

Pro Asn Leu Trp Ala Ala Gln Arg Tyr Gly Arg Glu Leu Arg Arg Met
20 25 30

Ser Asp Glu Phe Val Asp Ser Phe Lys Lys Gly Leu Pro Arg Pro Lys
35 40 45

Ser Ala Gly
50

<210> 8563
<211> 157
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1777; "

<220>
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<223> /note="Gene Symbol: BAD; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated agonist of cell death; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440575"

<400> 8563
Met Phe Gln Ile Pro Glu Phe Glu Pro Ser Glu Gln Glu Asp Ser Ser
1 5 10 15

Ser Ala Glu Arg Gly Leu Gly Pro Ser Pro Ala Gly Asp Gly Pro Ser
20 25 30

Gly Ser Gly Lys His His Arg Gln Ala Pro Gly Leu Leu Trp Asp Ala
35 40 45

Ser His Gln Gln Glu Gln Pro Thr Ser Ser Ser His His Gly Glu Gly
50 55 60

Thr Ser Ser Pro Glu Glu Arg Gly His Ser Asn Ala Asp Ala Ala Lys
65 70 75 80

Leu Gln Leu Asp Ala Ser Leu Pro Val Leu Val Gly Ser Glu Leu Gly
85 90 95

```
Gln Gly Lys Leu Arg Pro Leu Pro Val Thr Phe Ala Pro His Pro Glu
            100                 105                 110

Thr Pro Pro Val Pro Thr Ala Leu Gly Ser His Leu Glu Tyr Gly Arg
        115                 120                 125

Lys Tyr Phe Pro Gln Ala Tyr Ala Lys Arg Gly Ser Val Leu Ser Pro
    130                 135                 140

Leu Glu Gly Gly Leu Thr Gln Ile Pro Phe Arg Cys Val
145                 150                 155
```

<210> 8564
<211> 230
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAG1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene; "

<220>
<221> source
<223> /note="Uniprot ID: Q99933; "

<220>
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<223> /note="ENSP ID: ENSP00000369026"

<400> 8564

```
Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser Thr Arg Ser
1               5                   10                  15

Glu Glu Val Thr Arg Glu Glu Met Ala Ala Ala Gly Leu Thr Val Thr
            20                  25                  30

Val Thr His Ser Asn Glu Lys His Asp Leu His Val Thr Ser Gln Gln
        35                  40                  45

Gly Ser Ser Glu Pro Val Val Gln Asp Leu Ala Gln Val Val Glu Glu
    50                  55                  60
```

```
Val Ile Gly Val Pro Gln Ser Phe Gln Lys Leu Ile Phe Lys Gly Lys
65                  70                  75                  80

Ser Leu Lys Glu Met Glu Thr Pro Leu Ser Ala Leu Gly Ile Gln Asp
                85                  90                  95

Gly Cys Arg Val Met Leu Ile Gly Lys Lys Asn Ser Pro Gln Glu Glu
            100                 105                 110

Val Glu Leu Lys Lys Leu Lys His Leu Glu Lys Ser Val Glu Lys Ile
        115                 120                 125

Ala Asp Gln Leu Glu Glu Leu Asn Lys Glu Leu Thr Gly Ile Gln Gln
    130                 135                 140

Gly Phe Leu Pro Lys Asp Leu Gln Ala Glu Ala Leu Cys Lys Leu Asp
145                 150                 155                 160

Arg Arg Val Lys Ala Thr Ile Glu Gln Phe Met Lys Ile Leu Glu Glu
                165                 170                 175

Ile Asp Thr Leu Ile Leu Pro Glu Asn Phe Lys Asp Ser Arg Leu Lys
            180                 185                 190

Arg Lys Gly Leu Val Lys Lys Val Gln Ala Phe Leu Ala Glu Cys Asp
        195                 200                 205

Thr Val Glu Gln Asn Ile Cys Gln Glu Thr Glu Arg Leu Gln Ser Thr
    210                 215                 220

Asn Phe Ala Leu Ala Glu
225                 230


<210> 8565
<211> 160
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1778; "

<220>
<221> source
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<223> /note="Gene Symbol: BAG1; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000369029"

<400> 8565
Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser Thr Arg Ser
1 5 10 15

Glu Glu Val Thr Arg Glu Glu Met Ala Ala Ala Gly Leu Thr Val Thr
20 25 30

Val Thr His Ser Asn Glu Lys His Asp Leu His Val Thr Ser Gln Gln
35 40 45

Gly Ser Ser Glu Pro Val Val Gln Asp Leu Ala Gln Val Val Glu Glu
50 55 60

Val Ile Gly Val Pro Gln Ser Phe Gln Lys Leu Ile Phe Lys Val Leu
65 70 75 80

Gln Gln Ile Phe Ile Glu Asp Leu Leu Gly Ile Gly His Ser Gln Thr
85 90 95

Pro Gly Gln Val Ser Asp Leu Lys Ser Tyr Asp Asp Gly Arg Asn Leu
100 105 110

Thr Ile Phe Asp Glu Ala His Gly Gln Ser Ser Leu Ala Arg Lys Ile
115 120 125

Ser Glu Gly Asn Gly Asn Thr Val Val Ser Thr Trp Asn Thr Arg Trp
130 135 140

Leu Pro Gly His Val Asn Trp Glu Lys Glu Gln Ser Thr Gly Arg Gly
145 150 155 160

<210> 8566
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1778; "

<220>
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<223> /note="Gene Symbol: BAG1; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417576"

<400> 8566
Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser Thr Arg Ser
1 5 10 15

Glu Glu Ala Met Arg Ser Thr Thr Phe Met Leu Pro Pro Ser Arg Ala
20 25 30

Ala Val Asn Gln Leu Ser Lys Thr Trp Pro Arg Leu Leu Lys Arg Ser
35 40 45

<210> 8567
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1778; "

<220>
<221> source
<223> /note="Gene Symbol: BAG1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419092"

<400> 8567
Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser Thr Arg Ser
1 5 10 15

```
Glu Glu Val Thr Arg Glu Glu Met Ala Ala Ala Gly Leu Thr Val Thr
            20                  25                  30

Val Thr His Ser Glu Cys Arg Ala Pro Gly Asn Glu Lys His Asp Leu
        35                  40                  45

His Val Thr Ser Gln Gln Gly Ser Ser Glu Pro Val Val Gln Asp Leu
    50                  55                  60

Ala Gln Val Val Glu Glu Val Ile Gly Val Pro Gln Ser Phe Gln Lys
65                  70                  75                  80

Leu Ile Phe Lys Gly Lys Ser Leu Lys Glu Met Glu Thr Pro Leu Ser
                85                  90                  95

Ala Leu Gly Ile Gln Asp Gly Cys Arg Val Met Leu Ile Gly Lys Lys
            100                 105                 110

Asn Ser Pro Gln Glu Glu Val Glu Leu Lys Lys Leu Lys His Leu Glu
        115                 120                 125

Lys Ser Val Glu Lys Ile Ala Asp Gln Leu Glu Glu Leu Asn Lys Glu
    130                 135                 140

Leu Thr Gly Ile Gln Gln
145                 150


<210> 8568
<211> 345
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG1; "

<220>
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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000420514"
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<400> 8568
Leu Ala Gln Arg Gly Gly Ala Arg Arg Pro Arg Gly Asp Arg Glu Arg
1 5 10 15

Leu Gly Ser Arg Leu Arg Ala Leu Arg Pro Gly Arg Glu Pro Arg Gln
20 25 30

Ser Glu Pro Pro Ala Gln Arg Gly Pro Pro Pro Ser Gly Arg Pro Pro
35 40 45

Ala Arg Ser Thr Ala Ser Gly His Asp Arg Pro Thr Arg Gly Ala Ala
50 55 60

Ala Gly Ala Arg Arg Pro Arg Met Lys Lys Lys Thr Arg Arg Arg Ser
65 70 75 80

Thr Arg Ser Glu Glu Leu Thr Arg Ser Glu Glu Leu Thr Leu Ser Glu
85 90 95

Glu Ala Thr Trp Ser Glu Glu Ala Thr Gln Ser Glu Glu Ala Thr Gln
100 105 110

Gly Glu Glu Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser
115 120 125

Thr Arg Ser Glu Glu Val Thr Arg Glu Glu Met Ala Ala Ala Gly Leu
130 135 140

Thr Val Thr Val Thr His Ser Asn Glu Lys His Asp Leu His Val Thr
145 150 155 160

Ser Gln Gln Gly Ser Ser Glu Pro Val Val Gln Asp Leu Ala Gln Val
165 170 175

Val Glu Glu Val Ile Gly Val Pro Gln Ser Phe Gln Lys Leu Ile Phe
180 185 190

Lys Gly Lys Ser Leu Lys Glu Met Glu Thr Pro Leu Ser Ala Leu Gly
195 200 205

Ile Gln Asp Gly Cys Arg Val Met Leu Ile Gly Lys Lys Asn Ser Pro
210 215 220

```
Gln Glu Glu Val Glu Leu Lys Lys Leu Lys His Leu Glu Lys Ser Val
225                 230                 235                 240

Glu Lys Ile Ala Asp Gln Leu Glu Glu Leu Asn Lys Glu Leu Thr Gly
                245                 250                 255

Ile Gln Gln Gly Phe Leu Pro Lys Asp Leu Gln Ala Glu Ala Leu Cys
            260                 265                 270

Lys Leu Asp Arg Arg Val Lys Ala Thr Ile Glu Gln Phe Met Lys Ile
        275                 280                 285

Leu Glu Glu Ile Asp Thr Leu Ile Leu Pro Glu Asn Phe Lys Asp Ser
    290                 295                 300

Arg Leu Lys Arg Lys Gly Leu Val Lys Lys Val Gln Ala Phe Leu Ala
305                 310                 315                 320

Glu Cys Asp Thr Val Glu Gln Asn Ile Cys Gln Glu Thr Glu Arg Leu
                325                 330                 335

Gln Ser Thr Asn Phe Ala Leu Ala Glu
            340                 345


<210> 8569
<211> 94
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG1; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488937"

<400> 8569
Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser Thr Arg Ser
```

1 5 10 15

Glu Glu Val Thr Arg Glu Glu Met Ala Ala Ala Gly Leu Thr Val Thr
20 25 30

Val Thr His Ser Glu Cys Arg Ala Pro Gly Asn Glu Lys His Asp Leu
35 40 45

His Val Thr Ser Gln Gln Gly Ser Ser Glu Pro Val Val Gln Asp Leu
50 55 60

Ala Gln Val Val Glu Glu Val Ile Gly Val Pro Gln Ser Phe Gln Lys
65 70 75 80

Leu Ile Phe Lys Val Leu Gln Gln Ile Phe Ile Glu Asp Leu
85 90

<210> 8570
<211> 345
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489189"

<400> 8570
Leu Ala Gln Arg Gly Gly Ala Arg Arg Pro Arg Gly Asp Arg Glu Arg
1 5 10 15

Leu Gly Ser Arg Leu Arg Ala Leu Arg Pro Gly Arg Glu Pro Arg Gln
20 25 30

Ser Glu Pro Pro Ala Gln Arg Gly Pro Pro Pro Ser Gly Arg Pro Pro
35 40 45

```
Ala Arg Ser Thr Ala Ser Gly His Asp Arg Pro Thr Arg Gly Ala Ala
    50                  55                  60

Ala Gly Ala Arg Arg Pro Arg Met Lys Lys Lys Thr Arg Arg Arg Ser
65                  70                  75                  80

Thr Arg Ser Glu Glu Leu Thr Arg Ser Glu Glu Leu Thr Leu Ser Glu
                85                  90                  95

Glu Ala Thr Trp Ser Glu Glu Ala Thr Gln Ser Glu Glu Ala Thr Gln
            100                 105                 110

Gly Glu Glu Met Asn Arg Ser Gln Glu Val Thr Arg Asp Glu Glu Ser
        115                 120                 125

Thr Arg Ser Glu Glu Val Thr Arg Glu Glu Met Ala Ala Ala Gly Leu
    130                 135                 140

Thr Val Thr Val Thr His Ser Asn Glu Lys His Asp Leu His Val Thr
145                 150                 155                 160

Ser Gln Gln Gly Ser Ser Glu Pro Val Val Gln Asp Leu Ala Gln Val
                165                 170                 175

Val Glu Glu Val Ile Gly Val Pro Gln Ser Phe Gln Lys Leu Ile Phe
            180                 185                 190

Lys Gly Lys Ser Leu Lys Glu Met Glu Thr Pro Leu Ser Ala Leu Gly
        195                 200                 205

Ile Gln Asp Gly Cys Arg Val Met Leu Ile Gly Lys Lys Asn Ser Pro
    210                 215                 220

Gln Glu Glu Val Glu Leu Lys Lys Leu Lys His Leu Glu Lys Ser Val
225                 230                 235                 240

Glu Lys Ile Ala Asp Gln Leu Glu Glu Leu Asn Lys Glu Leu Thr Gly
                245                 250                 255

Ile Gln Gln Gly Phe Leu Pro Lys Asp Leu Gln Ala Glu Ala Leu Cys
            260                 265                 270
```

```
Lys Leu Asp Arg Arg Val Lys Ala Thr Ile Glu Gln Phe Met Lys Ile
        275                 280                 285

Leu Glu Glu Ile Asp Thr Leu Ile Leu Pro Glu Asn Phe Lys Asp Ser
    290                 295                 300

Arg Leu Lys Arg Lys Gly Leu Val Lys Lys Val Gln Ala Phe Leu Ala
305                 310                 315                 320

Glu Cys Asp Thr Val Glu Gln Asn Ile Cys Gln Glu Thr Glu Arg Leu
                325                 330                 335

Gln Ser Thr Asn Phe Ala Leu Ala Glu
            340                 345


<210> 8571
<211> 63
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1778; "

<220>
<221> source
<223> /note="Gene Symbol: BAG1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489401"

<400> 8571
Asp Gly Cys Arg Val Met Leu Ile Gly Lys Lys Asn Ser Pro Gln Glu
1               5                   10                  15

Glu Val Glu Leu Lys Lys Leu Lys His Leu Glu Lys Ser Val Glu Lys
            20                  25                  30

Ile Ala Asp Gln Leu Glu Glu Leu Asn Lys Glu Leu Thr Gly Ile Gln
        35                  40                  45

Gln Arg Trp Gly Phe Thr Met Leu Ala Arg Leu Val Ser Asn Ser
    50                  55                  60
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<210> 8572
<211> 211
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 2; "

<220>
<221> source
<223> /note="Uniprot ID: O95816; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359727"

<400> 8572
Met Ala Gln Ala Lys Ile Asn Ala Lys Ala Asn Glu Gly Arg Phe Cys
1   5   10   15

Arg Ser Ser Ser Met Ala Asp Arg Ser Ser Arg Leu Leu Glu Ser Leu
            20   25   30

Asp Gln Leu Glu Leu Arg Val Glu Ala Leu Arg Glu Ala Ala Thr Ala
        35   40   45

Val Glu Gln Glu Lys Glu Ile Leu Leu Glu Met Ile His Ser Ile Gln
    50   55   60

Asn Ser Gln Asp Met Arg Gln Ile Ser Asp Gly Glu Arg Glu Glu Leu
65   70   75   80

Asn Leu Thr Ala Asn Arg Leu Met Gly Arg Thr Leu Thr Val Glu Val
                85   90   95

Ser Val Glu Thr Ile Arg Asn Pro Gln Gln Gln Glu Ser Leu Lys His
            100   105   110

```
Ala Thr Arg Ile Ile Asp Glu Val Val Asn Lys Phe Leu Asp Asp Leu
        115                 120                 125

Gly Asn Ala Lys Ser His Leu Met Ser Leu Tyr Ser Ala Cys Ser Ser
    130                 135                 140

Glu Val Pro His Gly Pro Val Asp Gln Lys Phe Gln Ser Ile Val Ile
145                 150                 155                 160

Gly Cys Ala Leu Glu Asp Gln Lys Lys Ile Lys Arg Arg Leu Glu Thr
                165                 170                 175

Leu Leu Arg Asn Ile Glu Asn Ser Asp Lys Ala Ile Lys Leu Leu Glu
            180                 185                 190

His Ser Lys Gly Ala Gly Ser Lys Thr Leu Gln Gln Asn Ala Glu Ser
        195                 200                 205

Arg Phe Asn
    210


<210> 8573
<211> 575
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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<400> 8573
Met Ser Ala Ala Thr His Ser Pro Met Met Gln Val Ala Ser Gly Asn
1               5                   10                  15
```

```
Gly Asp Arg Asp Pro Leu Pro Pro Gly Trp Glu Ile Lys Ile Asp Pro
            20                  25                  30

Gln Thr Gly Trp Pro Phe Phe Val Asp His Asn Ser Arg Thr Thr Thr
        35                  40                  45

Trp Asn Asp Pro Arg Val Pro Ser Glu Gly Pro Lys Glu Thr Pro Ser
    50                  55                  60

Ser Ala Asn Gly Pro Ser Arg Glu Gly Ser Arg Leu Pro Pro Ala Arg
65                  70                  75                  80

Glu Gly His Pro Val Tyr Pro Gln Leu Arg Pro Gly Tyr Ile Pro Ile
                85                  90                  95

Pro Val Leu His Glu Gly Ala Glu Asn Arg Gln Val His Pro Phe His
            100                 105                 110

Val Tyr Pro Gln Pro Gly Met Gln Arg Phe Arg Thr Glu Ala Ala Ala
        115                 120                 125

Ala Ala Pro Gln Arg Ser Gln Ser Pro Leu Arg Gly Met Pro Glu Thr
    130                 135                 140

Thr Gln Pro Asp Lys Gln Cys Gly Gln Val Ala Ala Ala Ala Ala Ala
145                 150                 155                 160

Gln Pro Pro Ala Ser His Gly Pro Glu Arg Ser Gln Ser Pro Ala Ala
                165                 170                 175

Ser Asp Cys Ser Ser Ser Ser Ser Ser Ala Ser Leu Pro Ser Ser Gly
            180                 185                 190

Arg Ser Ser Leu Gly Ser His Gln Leu Pro Arg Gly Tyr Ile Ser Ile
        195                 200                 205

Pro Val Ile His Glu Gln Asn Val Thr Arg Pro Ala Ala Gln Pro Ser
    210                 215                 220

Phe His Gln Ala Gln Lys Thr His Tyr Pro Ala Gln Gln Gly Glu Tyr
225                 230                 235                 240
```

```
Gln Thr His Gln Pro Val Tyr His Lys Ile Gln Gly Asp Asp Trp Glu
                245                 250                 255

Pro Arg Pro Leu Arg Ala Ala Ser Pro Phe Arg Ser Ser Val Gln Gly
            260                 265                 270

Ala Ser Ser Arg Glu Gly Ser Pro Ala Arg Ser Ser Thr Pro Leu His
        275                 280                 285

Ser Pro Ser Pro Ile Arg Val His Thr Val Val Asp Arg Pro Gln Gln
    290                 295                 300

Pro Met Thr His Arg Glu Thr Ala Pro Val Ser Gln Pro Glu Asn Lys
305                 310                 315                 320

Pro Glu Ser Lys Pro Gly Pro Val Gly Pro Glu Leu Pro Pro Gly His
                325                 330                 335

Ile Pro Ile Gln Val Ile Arg Lys Glu Val Asp Ser Lys Pro Val Ser
            340                 345                 350

Gln Lys Pro Pro Pro Pro Ser Glu Lys Val Glu Val Lys Val Pro Pro
        355                 360                 365

Ala Pro Val Pro Cys Pro Pro Pro Ser Pro Gly Pro Ser Ala Val Pro
    370                 375                 380

Ser Ser Pro Lys Ser Val Ala Thr Glu Glu Arg Ala Ala Pro Ser Thr
385                 390                 395                 400

Ala Pro Ala Glu Ala Thr Pro Pro Lys Pro Gly Glu Ala Glu Ala Pro
                405                 410                 415

Pro Lys His Pro Gly Val Leu Lys Val Glu Ala Ile Leu Glu Lys Val
            420                 425                 430

Gln Gly Leu Glu Gln Ala Val Asp Asn Phe Glu Gly Lys Lys Thr Asp
        435                 440                 445

Lys Lys Tyr Leu Met Ile Glu Glu Tyr Leu Thr Lys Glu Leu Leu Ala
    450                 455                 460
```

```
Leu Asp Ser Val Asp Pro Glu Gly Arg Ala Asp Val Arg Gln Ala Arg
465                 470                 475                 480

Arg Asp Gly Val Arg Lys Val Gln Thr Ile Leu Glu Lys Leu Glu Gln
                485                 490                 495

Lys Ala Ile Asp Val Pro Gly Gln Val Gln Val Tyr Glu Leu Gln Pro
            500                 505                 510

Ser Asn Leu Glu Ala Asp Gln Pro Leu Gln Ala Ile Met Glu Met Gly
        515                 520                 525

Ala Val Ala Ala Asp Lys Gly Lys Lys Asn Ala Gly Asn Ala Glu Asp
    530                 535                 540

Pro His Thr Glu Thr Gln Gln Pro Glu Ala Thr Ala Ala Ala Thr Ser
545                 550                 555                 560

Asn Pro Ser Ser Met Thr Asp Thr Pro Gly Asn Pro Ala Ala Pro
                565                 570                 575


<210> 8574
<211> 325
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<213> Homo sapiens

<220>
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<220>
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<400> 8574
Met Gln Glu Thr Pro Ser Ser Ala Asn Gly Pro Ser Arg Glu Gly Ser
1               5                   10                  15

Arg Leu Pro Pro Ala Arg Glu Gly His Pro Val Tyr Pro Gln Leu Arg
            20                  25                  30
```

```
Pro Gly Tyr Ile Pro Ile Pro Val Leu His Glu Gly Ala Glu Asn Arg
        35                  40                  45

Gln Val His Pro Phe His Val Tyr Pro Gln Pro Gly Met Gln Arg Phe
    50                  55                  60

Arg Thr Glu Ala Ala Ala Ala Ala Pro Gln Arg Ser Gln Ser Pro Leu
65                  70                  75                  80

Arg Gly Met Pro Glu Thr Thr Gln Pro Asp Lys Gln Cys Gly Gln Val
                85                  90                  95

Ala Ala Ala Ala Ala Ala Gln Pro Pro Ala Ser His Gly Pro Glu Arg
            100                 105                 110

Ser Gln Ser Pro Ala Ala Ser Asp Cys Ser Ser Ser Ser Ser Ser Ala
        115                 120                 125

Ser Leu Pro Ser Ser Gly Arg Ser Ser Leu Gly Ser His Gln Leu Pro
    130                 135                 140

Arg Gly Tyr Ile Ser Ile Pro Val Ile His Glu Gln Asn Val Thr Arg
145                 150                 155                 160

Pro Ala Ala Gln Pro Ser Phe His Gln Ala Gln Lys Thr His Tyr Pro
                165                 170                 175

Ala Gln Gln Gly Glu Tyr Gln Thr His Gln Pro Val Tyr His Lys Ile
            180                 185                 190

Gln Gly Asp Asp Trp Glu Pro Arg Pro Leu Arg Ala Ala Ser Pro Phe
        195                 200                 205

Arg Ser Ser Val Gln Gly Ala Ser Ser Arg Glu Gly Ser Pro Ala Arg
    210                 215                 220

Ser Ser Thr Pro Leu His Ser Pro Ser Pro Ile Arg Val His Thr Val
225                 230                 235                 240

Val Asp Arg Pro Gln Pro Met Thr His Arg Glu Thr Ala Pro Val Ser
                245                 250                 255
```

```
Gln Pro Glu Asn Lys Pro Glu Ser Lys Pro Gly Pro Val Gly Pro Glu
            260                 265                 270

Leu Pro Pro Gly His Ile Pro Ile Gln Val Ile Arg Lys Glu Val Asp
        275                 280                 285

Ser Lys Pro Val Ser Gln Lys Pro Pro Pro Pro Ser Glu Lys Val Glu
    290                 295                 300

Val Lys Val Pro Pro Ala Pro Val Pro Cys Pro Pro Pro Ser Pro Gly
305                 310                 315                 320

Pro Ser Ala Val Pro
                325
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<210> 8575
<211> 457
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 4; "

<220>
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<223> /note="Uniprot ID: O95429; "

<220>
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<223> /note="ENSP ID: ENSP00000287322"

<400> 8575

```
Met Ser Ala Leu Arg Arg Ser Gly Tyr Gly Pro Ser Asp Gly Pro Ser
1               5                  10                  15

Tyr Gly Arg Tyr Tyr Gly Pro Gly Gly Gly Asp Val Pro Val His Pro
            20                  25                  30

Pro Pro Pro Leu Tyr Pro Leu Arg Pro Glu Pro Pro Gln Pro Pro Ile
```

```
        35                  40                  45

Ser Trp Arg Val Arg Gly Gly Gly Pro Ala Glu Thr Thr Trp Leu Gly
    50                  55                  60

Glu Gly Gly Gly Gly Asp Gly Tyr Tyr Pro Ser Gly Gly Ala Trp Pro
65                  70                  75                  80

Glu Pro Gly Arg Ala Gly Gly Ser His Gln Glu Gln Pro Pro Tyr Pro
                85                  90                  95

Ser Tyr Asn Ser Asn Tyr Trp Asn Ser Thr Ala Arg Ser Arg Ala Pro
            100                 105                 110

Tyr Pro Ser Thr Tyr Pro Val Arg Pro Glu Leu Gln Gly Gln Ser Leu
        115                 120                 125

Asn Ser Tyr Thr Asn Gly Ala Tyr Gly Pro Thr Tyr Pro Pro Gly Pro
    130                 135                 140

Gly Ala Asn Thr Ala Ser Tyr Ser Gly Ala Tyr Tyr Ala Pro Gly Tyr
145                 150                 155                 160

Thr Gln Thr Ser Tyr Ser Thr Glu Val Pro Ser Thr Tyr Arg Ser Ser
                165                 170                 175

Gly Asn Ser Pro Thr Pro Val Ser Arg Trp Ile Tyr Pro Gln Gln Asp
            180                 185                 190

Cys Gln Thr Glu Ala Pro Pro Leu Arg Gly Gln Val Pro Gly Tyr Pro
        195                 200                 205

Pro Ser Gln Asn Pro Gly Met Thr Leu Pro His Tyr Pro Tyr Gly Asp
    210                 215                 220

Gly Asn Arg Ser Val Pro Gln Ser Gly Pro Thr Val Arg Pro Gln Glu
225                 230                 235                 240

Asp Ala Trp Ala Ser Pro Gly Ala Tyr Gly Met Gly Gly Arg Tyr Pro
                245                 250                 255

Trp Pro Ser Ser Ala Pro Ser Ala Pro Pro Gly Asn Leu Tyr Met Thr
            260                 265                 270
```

```
Glu Ser Thr Ser Pro Trp Pro Ser Ser Gly Ser Pro Gln Ser Pro Pro
        275                 280                 285

Ser Pro Pro Val Gln Gln Pro Lys Asp Ser Ser Tyr Pro Tyr Ser Gln
    290                 295                 300

Ser Asp Gln Ser Met Asn Arg His Asn Phe Pro Cys Ser Val His Gln
305                 310                 315                 320

Tyr Glu Ser Ser Gly Thr Val Asn Asn Asp Asp Ser Asp Leu Leu Asp
                325                 330                 335

Ser Gln Val Gln Tyr Ser Ala Glu Pro Gln Leu Tyr Gly Asn Ala Thr
            340                 345                 350

Ser Asp His Pro Asn Asn Gln Asp Gln Ser Ser Ser Leu Pro Glu Glu
        355                 360                 365

Cys Val Pro Ser Asp Glu Ser Thr Pro Pro Ser Ile Lys Lys Ile Ile
    370                 375                 380

His Val Leu Glu Lys Val Gln Tyr Leu Glu Gln Glu Val Glu Glu Phe
385                 390                 395                 400

Val Gly Lys Lys Thr Asp Lys Ala Tyr Trp Leu Leu Glu Glu Met Leu
                405                 410                 415

Thr Lys Glu Leu Leu Glu Leu Asp Ser Val Glu Thr Gly Gly Gln Asp
            420                 425                 430

Ser Val Arg Gln Ala Arg Lys Glu Ala Val Cys Lys Ile Gln Ala Ile
        435                 440                 445

Leu Glu Lys Leu Glu Lys Lys Gly Leu
    450                 455


<210> 8576
<211> 421
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1781; "

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<223> /note="Gene Name:
BCL2-associated athanogene 4; "

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<223> /note="Uniprot ID: O95429; "

<220>
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<223> /note="ENSP ID: ENSP00000393298"

<400> 8576

```
Met Ser Ala Leu Arg Arg Ser Gly Tyr Gly Pro Ser Asp Gly Pro Ser
1               5                  10                  15

Tyr Gly Arg Tyr Tyr Gly Pro Gly Gly Gly Asp Val Pro Val His Pro
            20                  25                  30

Pro Pro Pro Leu Tyr Pro Leu Arg Pro Glu Pro Pro Gln Pro Pro Ile
        35                  40                  45

Ser Trp Arg Val Arg Gly Gly Gly Pro Ala Glu Thr Thr Trp Leu Gly
    50                  55                  60

Glu Gly Gly Gly Gly Asp Gly Tyr Tyr Pro Ser Gly Gly Ala Trp Pro
65                  70                  75                  80

Glu Pro Gly Arg Ala Gly Gly Ser His Gln Ser Leu Asn Ser Tyr Thr
                85                  90                  95

Asn Gly Ala Tyr Gly Pro Thr Tyr Pro Pro Gly Pro Gly Ala Asn Thr
            100                 105                 110

Ala Ser Tyr Ser Gly Ala Tyr Tyr Ala Pro Gly Tyr Thr Gln Thr Ser
        115                 120                 125

Tyr Ser Thr Glu Val Pro Ser Thr Tyr Arg Ser Ser Gly Asn Ser Pro
    130                 135                 140

Thr Pro Val Ser Arg Trp Ile Tyr Pro Gln Gln Asp Cys Gln Thr Glu
```

145 150 155 160

Ala Pro Pro Leu Arg Gly Gln Val Pro Gly Tyr Pro Pro Ser Gln Asn
165 170 175

Pro Gly Met Thr Leu Pro His Tyr Pro Tyr Gly Asp Gly Asn Arg Ser
180 185 190

Val Pro Gln Ser Gly Pro Thr Val Arg Pro Gln Glu Asp Ala Trp Ala
195 200 205

Ser Pro Gly Ala Tyr Gly Met Gly Gly Arg Tyr Pro Trp Pro Ser Ser
210 215 220

Ala Pro Ser Ala Pro Pro Gly Asn Leu Tyr Met Thr Glu Ser Thr Ser
225 230 235 240

Pro Trp Pro Ser Ser Gly Ser Pro Gln Ser Pro Pro Ser Pro Pro Val
245 250 255

Gln Gln Pro Lys Asp Ser Ser Tyr Pro Tyr Ser Gln Ser Asp Gln Ser
260 265 270

Met Asn Arg His Asn Phe Pro Cys Ser Val His Gln Tyr Glu Ser Ser
275 280 285

Gly Thr Val Asn Asn Asp Asp Ser Asp Leu Leu Asp Ser Gln Val Gln
290 295 300

Tyr Ser Ala Glu Pro Gln Leu Tyr Gly Asn Ala Thr Ser Asp His Pro
305 310 315 320

Asn Asn Gln Asp Gln Ser Ser Ser Leu Pro Glu Glu Cys Val Pro Ser
325 330 335

Asp Glu Ser Thr Pro Pro Ser Ile Lys Lys Ile Ile His Val Leu Glu
340 345 350

Lys Val Gln Tyr Leu Glu Gln Glu Val Glu Glu Phe Val Gly Lys Lys
355 360 365

Thr Asp Lys Ala Tyr Trp Leu Leu Glu Glu Met Leu Thr Lys Glu Leu
370 375 380

```
Leu Glu Leu Asp Ser Val Glu Thr Gly Gly Gln Asp Ser Val Arg Gln
385                 390                 395                 400


Ala Arg Lys Glu Ala Val Cys Lys Ile Gln Ala Ile Leu Glu Lys Leu
                405                 410                 415


Glu Lys Lys Gly Leu
            420


<210> 8577
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1781; "

<220>
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<220>
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<400> 8577
Ala Tyr Tyr Ala Pro Gly Tyr Thr Gln Thr Ser Tyr Ser Thr Glu Val
1               5                   10                  15


Pro Ser Thr Tyr Arg Ser Ser Gly Asn Ser Pro Thr Pro Val Ser Arg
            20                  25                  30


Trp Ile Tyr Pro Gln Gln Asp Cys Gln Thr Glu Ala Pro Pro Leu Arg
        35                  40                  45


Gly Gln Val Pro Gly Tyr Pro Pro Ser Gln Asn Pro Gly Met Thr Leu
    50                  55                  60


Pro His Tyr Pro Tyr Gly Asp Gly Asn Arg Ser Val Pro Gln Ser Gly
65                  70                  75                  80
```

```
Pro Thr Val Arg Pro Gln Glu Asp Ala Trp Ala Ser Pro Gly Ala Tyr
                85                  90                  95

Gly Met Gly Gly Arg Tyr Pro Trp Pro Ser Ser Ala Pro Ser Ala Pro
            100                 105                 110

Pro Gly Asn Leu Tyr Met Thr Glu Ser Thr Ser Pro Trp Pro Ser Ser
        115                 120                 125

Gly Ser Pro Gln Ser Pro Pro Ser Pro Pro Val Gln Gln Pro Lys Val
    130                 135                 140

Gly Asp Leu Asn Val Val Pro Leu Met Cys Val
145                 150                 155


<210> 8578
<211> 447
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BAG5; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q9UL15; "

<220>
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<223> /note="ENSP ID: ENSP00000299204"

<400> 8578
Met Asp Met Gly Asn Gln His Pro Ser Ile Ser Arg Leu Gln Glu Ile
1               5                   10                  15

Gln Lys Glu Val Lys Ser Val Glu Gln Gln Val Ile Gly Phe Ser Gly
            20                  25                  30

Leu Ser Asp Asp Lys Asn Tyr Lys Lys Leu Glu Arg Ile Leu Thr Lys
        35                  40                  45
```

```
Gln Leu Phe Glu Ile Asp Ser Val Asp Thr Glu Gly Lys Gly Asp Ile
    50                  55                  60

Gln Gln Ala Arg Lys Arg Ala Ala Gln Glu Thr Glu Arg Leu Leu Lys
65                  70                  75                  80

Glu Leu Glu Gln Asn Ala Asn His Pro His Arg Ile Glu Ile Gln Asn
                85                  90                  95

Ile Phe Glu Glu Ala Gln Ser Leu Val Arg Glu Lys Ile Val Pro Phe
            100                 105                 110

Tyr Asn Gly Gly Asn Cys Val Thr Asp Glu Phe Glu Glu Gly Ile Gln
        115                 120                 125

Asp Ile Ile Leu Arg Leu Thr His Val Lys Thr Gly Gly Lys Ile Ser
    130                 135                 140

Leu Arg Lys Ala Arg Tyr His Thr Leu Thr Lys Ile Cys Ala Val Gln
145                 150                 155                 160

Glu Ile Ile Glu Asp Cys Met Lys Lys Gln Pro Ser Leu Pro Leu Ser
                165                 170                 175

Glu Asp Ala His Pro Ser Val Ala Lys Ile Asn Phe Val Met Cys Glu
            180                 185                 190

Val Asn Lys Ala Arg Gly Val Leu Ile Ala Leu Leu Met Gly Val Asn
        195                 200                 205

Asn Asn Glu Thr Cys Arg His Leu Ser Cys Val Leu Ser Gly Leu Ile
    210                 215                 220

Ala Asp Leu Asp Ala Leu Asp Val Cys Gly Arg Thr Glu Ile Arg Asn
225                 230                 235                 240

Tyr Arg Arg Glu Val Val Glu Asp Ile Asn Lys Leu Leu Lys Tyr Leu
                245                 250                 255

Asp Leu Glu Glu Glu Ala Asp Thr Thr Lys Ala Phe Asp Leu Arg Gln
            260                 265                 270
```

```
Asn His Ser Ile Leu Lys Ile Glu Lys Val Leu Lys Arg Met Arg Glu
        275                 280                 285

Ile Lys Asn Glu Leu Leu Gln Ala Gln Asn Pro Ser Glu Leu Tyr Leu
    290                 295                 300

Ser Ser Lys Thr Glu Leu Gln Gly Leu Ile Gly Gln Leu Asp Glu Val
305                 310                 315                 320

Ser Leu Glu Lys Asn Pro Cys Ile Arg Glu Ala Arg Arg Arg Ala Val
                325                 330                 335

Ile Glu Val Gln Thr Leu Ile Thr Tyr Ile Asp Leu Lys Glu Ala Leu
            340                 345                 350

Glu Lys Arg Lys Leu Phe Ala Cys Glu Glu His Pro Ser His Lys Ala
        355                 360                 365

Val Trp Asn Val Leu Gly Asn Leu Ser Glu Ile Gln Gly Glu Val Leu
    370                 375                 380

Ser Phe Asp Gly Asn Arg Thr Asp Lys Asn Tyr Ile Arg Leu Glu Glu
385                 390                 395                 400

Leu Leu Thr Lys Gln Leu Leu Ala Leu Asp Ala Val Asp Pro Gln Gly
                405                 410                 415

Glu Glu Lys Cys Lys Ala Ala Arg Lys Gln Ala Val Arg Leu Ala Gln
            420                 425                 430

Asn Ile Leu Ser Tyr Leu Asp Leu Lys Ser Asp Glu Trp Glu Tyr
        435                 440                 445


<210> 8579
<211> 488
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BAG5; "
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9UL15; "

<220>
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<223> /note="ENSP ID: ENSP00000338814"

<400> 8579

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Met Arg Phe His Trp Leu Pro Thr Leu Ser Glu Pro Phe Asp Arg Asn
1               5                   10                  15


Gln Glu Leu Glu Thr Cys Ile Arg Pro Leu Trp Thr Pro Ser Gly Ser
            20                  25                  30


Ala Cys Glu Thr Glu His Asn Lys Ser Met Asp Met Gly Asn Gln His
        35                  40                  45


Pro Ser Ile Ser Arg Leu Gln Glu Ile Gln Lys Glu Val Lys Ser Val
    50                  55                  60


Glu Gln Gln Val Ile Gly Phe Ser Gly Leu Ser Asp Asp Lys Asn Tyr
65                  70                  75                  80


Lys Lys Leu Glu Arg Ile Leu Thr Lys Gln Leu Phe Glu Ile Asp Ser
                85                  90                  95


Val Asp Thr Glu Gly Lys Gly Asp Ile Gln Gln Ala Arg Lys Arg Ala
            100                 105                 110


Ala Gln Glu Thr Glu Arg Leu Leu Lys Glu Leu Glu Gln Asn Ala Asn
        115                 120                 125


His Pro His Arg Ile Glu Ile Gln Asn Ile Phe Glu Glu Ala Gln Ser
    130                 135                 140


Leu Val Arg Glu Lys Ile Val Pro Phe Tyr Asn Gly Gly Asn Cys Val
145                 150                 155                 160


Thr Asp Glu Phe Glu Glu Gly Ile Gln Asp Ile Ile Leu Arg Leu Thr
                165                 170                 175
```

```
His Val Lys Thr Gly Gly Lys Ile Ser Leu Arg Lys Ala Arg Tyr His
            180                 185                 190

Thr Leu Thr Lys Ile Cys Ala Val Gln Glu Ile Ile Glu Asp Cys Met
        195                 200                 205

Lys Lys Gln Pro Ser Leu Pro Leu Ser Glu Asp Ala His Pro Ser Val
    210                 215                 220

Ala Lys Ile Asn Phe Val Met Cys Glu Val Asn Lys Ala Arg Gly Val
225                 230                 235                 240

Leu Ile Ala Leu Leu Met Gly Val Asn Asn Asn Glu Thr Cys Arg His
                245                 250                 255

Leu Ser Cys Val Leu Ser Gly Leu Ile Ala Asp Leu Asp Ala Leu Asp
            260                 265                 270

Val Cys Gly Arg Thr Glu Ile Arg Asn Tyr Arg Arg Glu Val Val Glu
        275                 280                 285

Asp Ile Asn Lys Leu Leu Lys Tyr Leu Asp Leu Glu Glu Glu Ala Asp
    290                 295                 300

Thr Thr Lys Ala Phe Asp Leu Arg Gln Asn His Ser Ile Leu Lys Ile
305                 310                 315                 320

Glu Lys Val Leu Lys Arg Met Arg Glu Ile Lys Asn Glu Leu Leu Gln
                325                 330                 335

Ala Gln Asn Pro Ser Glu Leu Tyr Leu Ser Ser Lys Thr Glu Leu Gln
            340                 345                 350

Gly Leu Ile Gly Gln Leu Asp Glu Val Ser Leu Glu Lys Asn Pro Cys
        355                 360                 365

Ile Arg Glu Ala Arg Arg Arg Ala Val Ile Glu Val Gln Thr Leu Ile
    370                 375                 380

Thr Tyr Ile Asp Leu Lys Glu Ala Leu Glu Lys Arg Lys Leu Phe Ala
385                 390                 395                 400
```

```
Cys Glu Glu His Pro Ser His Lys Ala Val Trp Asn Val Leu Gly Asn
                405                 410                 415

Leu Ser Glu Ile Gln Gly Glu Val Leu Ser Phe Asp Gly Asn Arg Thr
            420                 425                 430

Asp Lys Asn Tyr Ile Arg Leu Glu Glu Leu Leu Thr Lys Gln Leu Leu
        435                 440                 445

Ala Leu Asp Ala Val Asp Pro Gln Gly Glu Glu Lys Cys Lys Ala Ala
    450                 455                 460

Arg Lys Gln Ala Val Arg Leu Ala Gln Asn Ile Leu Ser Tyr Leu Asp
465                 470                 475                 480

Leu Lys Ser Asp Glu Trp Glu Tyr
                485
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<210> 8580
<211> 447
<212> PRT
<213> Homo sapiens

<220>
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<400> 8580

```
Met Asp Met Gly Asn Gln His Pro Ser Ile Ser Arg Leu Gln Glu Ile
1               5                   10                  15

Gln Lys Glu Val Lys Ser Val Glu Gln Gln Val Ile Gly Phe Ser Gly
```

```
            20                  25                  30

Leu Ser Asp Asp Lys Asn Tyr Lys Lys Leu Glu Arg Ile Leu Thr Lys
        35                  40                  45

Gln Leu Phe Glu Ile Asp Ser Val Asp Thr Glu Gly Lys Gly Asp Ile
    50                  55                  60

Gln Gln Ala Arg Lys Arg Ala Ala Gln Glu Thr Glu Arg Leu Leu Lys
65                  70                  75                  80

Glu Leu Glu Gln Asn Ala Asn His Pro His Arg Ile Glu Ile Gln Asn
                85                  90                  95

Ile Phe Glu Glu Ala Gln Ser Leu Val Arg Glu Lys Ile Val Pro Phe
            100                 105                 110

Tyr Asn Gly Gly Asn Cys Val Thr Asp Glu Phe Glu Glu Gly Ile Gln
        115                 120                 125

Asp Ile Ile Leu Arg Leu Thr His Val Lys Thr Gly Gly Lys Ile Ser
    130                 135                 140

Leu Arg Lys Ala Arg Tyr His Thr Leu Thr Lys Ile Cys Ala Val Gln
145                 150                 155                 160

Glu Ile Ile Glu Asp Cys Met Lys Lys Gln Pro Ser Leu Pro Leu Ser
                165                 170                 175

Glu Asp Ala His Pro Ser Val Ala Lys Ile Asn Phe Val Met Cys Glu
            180                 185                 190

Val Asn Lys Ala Arg Gly Val Leu Ile Ala Leu Leu Met Gly Val Asn
        195                 200                 205

Asn Asn Glu Thr Cys Arg His Leu Ser Cys Val Leu Ser Gly Leu Ile
    210                 215                 220

Ala Asp Leu Asp Ala Leu Asp Val Cys Gly Arg Thr Glu Ile Arg Asn
225                 230                 235                 240

Tyr Arg Arg Glu Val Val Glu Asp Ile Asn Lys Leu Leu Lys Tyr Leu
                245                 250                 255
```

```
Asp Leu Glu Glu Glu Ala Asp Thr Thr Lys Ala Phe Asp Leu Arg Gln
            260                 265                 270

Asn His Ser Ile Leu Lys Ile Glu Lys Val Leu Lys Arg Met Arg Glu
        275                 280                 285

Ile Lys Asn Glu Leu Leu Gln Ala Gln Asn Pro Ser Glu Leu Tyr Leu
    290                 295                 300

Ser Ser Lys Thr Glu Leu Gln Gly Leu Ile Gly Gln Leu Asp Glu Val
305                 310                 315                 320

Ser Leu Glu Lys Asn Pro Cys Ile Arg Glu Ala Arg Arg Arg Ala Val
                325                 330                 335

Ile Glu Val Gln Thr Leu Ile Thr Tyr Ile Asp Leu Lys Glu Ala Leu
            340                 345                 350

Glu Lys Arg Lys Leu Phe Ala Cys Glu Glu His Pro Ser His Lys Ala
        355                 360                 365

Val Trp Asn Val Leu Gly Asn Leu Ser Glu Ile Gln Gly Glu Val Leu
    370                 375                 380

Ser Phe Asp Gly Asn Arg Thr Asp Lys Asn Tyr Ile Arg Leu Glu Glu
385                 390                 395                 400

Leu Leu Thr Lys Gln Leu Leu Ala Leu Asp Ala Val Asp Pro Gln Gly
                405                 410                 415

Glu Glu Lys Cys Lys Ala Ala Arg Lys Gln Ala Val Arg Leu Ala Gln
            420                 425                 430

Asn Ile Leu Ser Tyr Leu Asp Leu Lys Ser Asp Glu Trp Glu Tyr
        435                 440                 445
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<210> 8581
<211> 211
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1782; "

<220>
<221> source
<223> /note="Gene Symbol: BAG5; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450497"

<400> 8581

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Met Asp Met Gly Asn Gln His Pro Ser Ile Ser Arg Leu Gln Glu Ile
1               5                  10                  15

Gln Lys Glu Val Lys Ser Val Glu Gln Gln Val Ile Gly Phe Ser Gly
            20                  25                  30

Leu Ser Asp Asp Lys Asn Tyr Lys Lys Leu Glu Arg Ile Leu Thr Lys
        35                  40                  45

Gln Leu Phe Glu Ile Asp Ser Val Asp Thr Glu Gly Lys Gly Asp Ile
    50                  55                  60

Gln Gln Ala Arg Lys Arg Ala Ala Gln Glu Thr Glu Arg Leu Leu Lys
65                  70                  75                  80

Glu Leu Glu Gln Asn Ala Asn His Pro His Arg Ile Glu Ile Gln Asn
                85                  90                  95

Ile Phe Glu Glu Ala Gln Ser Leu Val Arg Glu Lys Ile Val Pro Phe
            100                 105                 110

Tyr Asn Gly Gly Asn Cys Val Thr Asp Glu Phe Glu Glu Gly Ile Gln
        115                 120                 125

Asp Ile Ile Leu Arg Leu Thr His Val Lys Thr Gly Gly Lys Ile Ser
    130                 135                 140

Leu Arg Lys Ala Arg Tyr His Thr Leu Thr Lys Ile Cys Ala Val Gln
145                 150                 155                 160

Glu Ile Ile Glu Asp Cys Met Lys Lys Gln Pro Ser Leu Pro Leu Ser
```

```
                165                 170                 175

Glu Asp Ala His Pro Ser Val Ala Lys Ile Asn Phe Val Met Cys Glu
            180                 185                 190

Val Asn Lys Ala Arg Gly Val Leu Ile Ala Leu Leu Met Gly Val Asn
        195                 200                 205

Asn Asn Glu
    210


<210> 8582
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<213> Homo sapiens

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      BCL2-associated athanogene 6; "

<220>
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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285
```

```
Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
```

```
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750
```

```
Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975
```

```
Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8583
<211> 1132
<212> PRT
<213> Homo sapiens

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BCL2-associated athanogene 6; "

<220>
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<400> 8583

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
```

```
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285

Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300

Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
305                 310                 315                 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
                325                 330                 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
            340                 345                 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
        355                 360                 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
    370                 375                 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385                 390                 395                 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
                405                 410                 415
```

```
Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
            420                 425                 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
        435                 440                 445

Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
    450                 455                 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465                 470                 475                 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
                485                 490                 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
            500                 505                 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
        515                 520                 525

Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
    530                 535                 540

Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640
```

```
Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
                645                 650                 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
            660                 665                 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
        675                 680                 685

Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
    690                 695                 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705                 710                 715                 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
                725                 730                 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
            740                 745                 750

Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
        755                 760                 765

Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
    770                 775                 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785                 790                 795                 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
                805                 810                 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
            820                 825                 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
        835                 840                 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
    850                 855                 860
```

```
Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865                 870                 875                 880

Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
                885                 890                 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
            900                 905                 910

Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975

Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990

Glu Gly Gly Ser Arg Asp Glu Gln  Asp Gly Ala Ser Ala  Glu Thr
Glu
        995                 1000                1005

Pro Trp  Ala Ala Ala Val Pro  Pro Glu Trp Val Pro  Ile Ile Gln
    1010                1015                1020

Gln Asp  Ile Gln Ser Gln Arg  Lys Val Lys Pro Gln  Pro Pro Leu
    1025                1030                1035

Ser Asp  Ala Tyr Leu Ser Gly  Met Pro Ala Lys Arg  Arg Lys Thr
    1040                1045                1050

Met Gln  Gly Glu Gly Pro Gln  Leu Leu Leu Ser Glu  Ala Val Ser
    1055                1060                1065

Arg Ala  Ala Lys Ala Ala Gly  Ala Arg Pro Leu Thr  Ser Pro Glu
    1070                1075                1080
```

```
Ser Leu  Ser Arg Asp Leu Glu  Ala Pro Glu Val Gln  Glu Ser Tyr
    1085                1090                1095


Arg Gln  Gln Leu Arg Ser Asp  Ile Gln Lys Arg Leu  Gln Glu Asp
    1100                1105                1110


Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn Ala Gln  Arg Ala Phe
    1115                1120                1125


Ala Asp  Asp Pro
    1130


<210> 8584
<211> 1077
<212> PRT
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<220>
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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285
```

```
Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510
```

```
Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
```

740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
885 890 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
900 905 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
915 920 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
930 935 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945 950 955 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
965 970 975

```
Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Leu Arg Ser Asp  Ile Gln Lys
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065

Ala Gln  Arg Ala Phe Ala Asp  Asp Pro
    1070                1075
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<210> 8585
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<212> PRT
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BCL2-associated athanogene 6; "

<220>
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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
180 185 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
195 200 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
210 215 220

```
Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285

Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300

Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
305                 310                 315                 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
                325                 330                 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
            340                 345                 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
        355                 360                 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
    370                 375                 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385                 390                 395                 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
                405                 410                 415

Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
            420                 425                 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
        435                 440                 445

Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
```

```
    450                 455                 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465                 470                 475                 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
                485                 490                 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
            500                 505                 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
        515                 520                 525

Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
    530                 535                 540

Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640

Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
                645                 650                 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
            660                 665                 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
        675                 680                 685
```

```
Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
    690                 695                 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705                 710                 715                 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
                725                 730                 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
            740                 745                 750

Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
        755                 760                 765

Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
    770                 775                 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785                 790                 795                 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
                805                 810                 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
            820                 825                 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
        835                 840                 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
    850                 855                 860

Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865                 870                 875                 880

Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
                885                 890                 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
            900                 905                 910
```

```
Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975

Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990

Glu Gly Gly Ser Arg Asp Glu Gln  Asp Gly Ala Ser Ala  Glu Thr
Glu
        995                 1000                1005

Pro Trp  Ala Ala Ala Val Pro  Pro Glu Trp Val Pro  Ile Ile Gln
    1010                1015                1020

Gln Asp  Ile Gln Ser Gln Arg  Lys Val Lys Pro Gln  Pro Pro Leu
    1025                1030                1035

Ser Asp  Ala Tyr Leu Ser Gly  Met Pro Ala Lys Arg  Arg Lys Thr
    1040                1045                1050

Met Gln  Gly Glu Gly Pro Gln  Leu Leu Leu Ser Glu  Ala Val Ser
    1055                1060                1065

Arg Ala  Ala Lys Ala Ala Gly  Ala Arg Pro Leu Thr  Ser Pro Glu
    1070                1075                1080

Ser Leu  Ser Arg Asp Leu Glu  Ala Pro Glu Val Gln  Glu Ser Tyr
    1085                1090                1095

Arg Gln  Gln Leu Arg Ser Asp  Ile Gln Lys Arg Leu  Gln Glu Asp
    1100                1105                1110

Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn Ala Gln  Arg Ala Phe
    1115                1120                1125
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Ala Asp Asp Pro
    1130

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<220>
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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly

```
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335
```

```
Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560
```

```
Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780
```

```
Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005
```

```
Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8587
<211> 1126
<212> PRT
<213> Homo sapiens

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      BCL2-associated athanogene 6; "

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
195 200 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
210 215 220

```
Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445
```

```
Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
```

675 680 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
690 695 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705 710 715 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
725 730 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
885 890 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
900 905 910

```
Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125
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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100   105   110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
```

```
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575
```

```
Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800
```

```
Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020
```

```
Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8589
<211> 259
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387588"

<400> 8589
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
```

```
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255
```

Pro Glu Thr

<210> 8590
<211> 259
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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BCL2-associated athanogene 6; "

<220>
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<400> 8590
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr
```

<210> 8591
<211> 259
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000388244"

<400> 8591
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100   105   110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115   120   125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130   135   140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145   150   155   160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165   170   175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180   185   190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195   200   205

```
Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr
```

<210> 8592
<211> 197
<212> PRT
<213> Homo sapiens

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BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000388388"

<400> 8592

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
```

```
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro
        195


<210> 8593
<211> 238
<212> PRT
<213> Homo sapiens

<220>
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      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000388541"
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<400> 8593
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1 5 10 15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
20 25 30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
35 40 45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
50 55 60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65 70 75 80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
85 90 95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
100 105 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met
115 120 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
130 135 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145 150 155 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
165 170 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
180 185 190

Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
195 200 205

Gly Ala Gly Gly Pro Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
210 215 220

Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
225 230 235

<210> 8594
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8594
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

```
Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350
```

```
Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
    530                 535                 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545                 550                 555                 560

Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
                565                 570                 575
```

```
Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
            580                 585                 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
        595                 600                 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
    610                 615                 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625                 630                 635                 640

Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly
                645                 650                 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
            660                 665                 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
        675                 680                 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
    690                 695                 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
705                 710                 715                 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
                725                 730                 735

Gly Val Leu Ser Ser Leu
            740


<210> 8595
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="Uniprot ID: P46379; "

<220>
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<400> 8595
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

```
Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400
```

```
Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
```

625 630 635 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
645 650 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
660 665 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
675 680 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
690 695 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705 710 715 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
725 730 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

```
Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080
```

```
Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095


Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110


Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8596
<211> 258
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389355"

<400> 8596
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu
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<210> 8597
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

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<400> 8597

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175
```

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
180 185 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
195 200 205

<210> 8598
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8598
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly

100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145 150 155

<210> 8599
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

<220>
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<400> 8599
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300
```

```
Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
```

530 535 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545 550 555 560

Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
565 570 575

Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
580 585 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
595 600 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
610 615 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625 630 635 640

Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly
645 650 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
660 665 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
675 680 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
690 695 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
705 710 715 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
725 730 735

Gly Val Leu Ser Ser Leu
740

<210> 8600
<211> 258

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8600
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

```
Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu
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<210> 8601
<211> 1132
<212> PRT
<213> Homo sapiens

<220>
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<220>
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BCL2-associated athanogene 6; "

<220>
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<223> /note="Uniprot ID: P46379; "

<220>
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<223> /note="ENSP ID: ENSP00000390966"

<400> 8601
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
180 185 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
195 200 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
210 215 220

```
Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285

Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300

Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
305                 310                 315                 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
                325                 330                 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
            340                 345                 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
        355                 360                 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
    370                 375                 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385                 390                 395                 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
                405                 410                 415

Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
            420                 425                 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
        435                 440                 445
```

```
Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
    450                 455                 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465                 470                 475                 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
                485                 490                 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
            500                 505                 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
        515                 520                 525

Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
    530                 535                 540

Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640

Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
                645                 650                 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
            660                 665                 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
```

675 680 685

Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
690 695 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705 710 715 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
725 730 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
740 745 750

Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
755 760 765

Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
770 775 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785 790 795 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
805 810 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
820 825 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
835 840 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
850 855 860

Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865 870 875 880

Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
885 890 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
900 905 910

```
Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975

Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990

Glu Gly Gly Ser Arg Asp Glu Gln  Asp Gly Ala Ser Ala  Glu Thr
Glu
        995                 1000                1005

Pro Trp  Ala Ala Ala Val Pro  Pro Glu Trp Val Pro  Ile Ile Gln
    1010                1015                1020

Gln Asp  Ile Gln Ser Gln Arg  Lys Val Lys Pro Gln  Pro Pro Leu
    1025                1030                1035

Ser Asp  Ala Tyr Leu Ser Gly  Met Pro Ala Lys Arg  Arg Lys Thr
    1040                1045                1050

Met Gln  Gly Glu Gly Pro Gln  Leu Leu Leu Ser Glu  Ala Val Ser
    1055                1060                1065

Arg Ala  Ala Lys Ala Ala Gly  Ala Arg Pro Leu Thr  Ser Pro Glu
    1070                1075                1080

Ser Leu  Ser Arg Asp Leu Glu  Ala Pro Glu Val Gln  Glu Ser Tyr
    1085                1090                1095

Arg Gln  Gln Leu Arg Ser Asp  Ile Gln Lys Arg Leu  Gln Glu Asp
    1100                1105                1110

Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn Ala Gln  Arg Ala Phe
    1115                1120                1125
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Ala Asp Asp Pro
    1130

<210> 8602
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000391323"

<400> 8602
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100   105   110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145                 150                 155


<210> 8603
<211> 232
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000391355"

<400> 8603
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95
```

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu
225                 230


<210> 8604
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      BCL2-associated athanogene 6; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000391425"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8604

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Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1               5                  10                  15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
            20                  25                  30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
        35                  40                  45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
    50                  55                  60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65                  70                  75                  80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
                85                  90                  95

Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
            100                 105                 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
        115                 120                 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser
    130                 135                 140

His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145                 150                 155                 160

Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175

Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185
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<210> 8605
<211> 243
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391613"

<400> 8605
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro

```
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala
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<210> 8606
<211> 226
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391628"

<220>
<221> MOD_RES
<222> (1)..(1)

<223> Any amino acid

<400> 8606

```
Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1               5                  10                  15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
            20                  25                  30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
        35                  40                  45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
    50                  55                  60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65                  70                  75                  80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
                85                  90                  95

Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
            100                 105                 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
        115                 120                 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
    130                 135                 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145                 150                 155                 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
                165                 170                 175

Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
            180                 185                 190

Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro
        195                 200                 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
    210                 215                 220
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Asp Pro
225

<210> 8607
<211> 197
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

<220>
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<400> 8607
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro
        195


<210> 8608
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<400> 8608
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45
```

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val
    210                 215


<210> 8609
<211> 136
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BAG6; "

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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8609
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1 5 10 15

Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
20 25 30

Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
35 40 45

Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
50 55 60

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65 70 75 80

Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
85 90 95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
100 105 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
115 120 125

Gln Arg Ala Phe Ala Asp Asp Pro
130 135

<210> 8610
<211> 215
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BAG6; "

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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8610

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110


Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125


Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140


Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
```

145 150 155 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
165 170 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
180 185 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
195 200 205

Pro Met Glu Ala Glu Glu Val
210 215

<210> 8611
<211> 232
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000392468"

<400> 8611
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu
225                 230


<210> 8612
<211> 238
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8612
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1 5 10 15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
20 25 30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
35 40 45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
50 55 60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65 70 75 80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
85 90 95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
100 105 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met
115 120 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
130 135 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145 150 155 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
165 170 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
180 185 190

```
Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
        195                 200                 205


Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
    210                 215                 220


Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
225                 230                 235


<210> 8613
<211> 136
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000392630"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8613
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1               5                   10                  15


Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
            20                  25                  30


Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
        35                  40                  45


Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
    50                  55                  60
```

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65 70 75 80

Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
85 90 95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
100 105 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
115 120 125

Gln Arg Ala Phe Ala Asp Asp Pro
130 135

<210> 8614
<211> 244
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAG6; "

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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000393280"

<400> 8614
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
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<210> 8615
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

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<223> /note="ENSP ID: ENSP00000393367"

<400> 8615
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

```
Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260


<210> 8616
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000393729"

<400> 8616
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
```

```
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255
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Pro Glu Thr

<210> 8617
<211> 243
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000393877"

<400> 8617
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala
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<210> 8618
<211> 259
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394111"

<400> 8618
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
195 200 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
210 215 220

```
Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240


Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255


Pro Glu Thr



<210> 8619
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

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<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000394240"

<400> 8619
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
```

```
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
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<210> 8620
<211> 243
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
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<220>

<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394342"

<400> 8620
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
130 135 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145 150 155 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
165 170 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
180 185 190

```
Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala
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<210> 8621
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394608"

<400> 8621

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
```

<210> 8622
<211> 244
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394714"

<400> 8622

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
```

```
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8623
<211> 226
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394801"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8623

```
Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1               5                   10                  15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
```

20 25 30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
35 40 45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
50 55 60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65 70 75 80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
85 90 95

Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
100 105 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
115 120 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
130 135 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145 150 155 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
165 170 175

Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
180 185 190

Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro
195 200 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
210 215 220

Asp Pro
225

<210> 8624
<211> 1126

<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000394839"

<400> 8624
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

```
Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
```

370 375 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385 390 395 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
405 410 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
420 425 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
435 440 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
450 455 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465 470 475 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
485 490 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
500 505 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
515 520 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
530 535 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545 550 555 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
565 570 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
580 585 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
595 600 605

```
Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830
```

```
Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050
```

```
Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125
```

<210> 8625
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394856"

<400> 8625

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
```

50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
130 135 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145 150 155 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
165 170 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
180 185 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
195 200 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
210 215 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225 230 235 240

Thr Asn Ala Pro

<210> 8626
<211> 215
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395063"

<400> 8626

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160
```

```
Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val
    210                 215
```

<210> 8627
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395856"

<400> 8627

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
        195                 200                 205


<210> 8628
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396028"

<400> 8628
```

```
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1               5                  10                  15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
            20                  25                  30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
        35                  40                  45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
    50                  55                  60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65                  70                  75                  80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
                85                  90                  95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
            100                 105                 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met
        115                 120                 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
    130                 135                 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145                 150                 155                 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
                165                 170                 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
            180                 185                 190

Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
        195                 200                 205

Gly Ala Gly Gly Pro Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
    210                 215                 220

Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
```

225 230 235

<210> 8629
<211> 515
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396036"

<400> 8629
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

```
Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350
```

```
Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser
        515


<210> 8630
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396284"

<400> 8630
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1 5 10 15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
20 25 30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
35 40 45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
50 55 60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65 70 75 80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
85 90 95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
100 105 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met
115 120 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
130 135 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145 150 155 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
165 170 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
180 185 190

```
Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
        195                 200                 205

Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
    210                 215                 220

Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
225                 230                 235


<210> 8631
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396503"

<400> 8631
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
```

85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145 150 155

<210> 8632
<211> 245
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8632
Pro Pro Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr
1 5 10 15

Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly
20 25 30

Thr Thr Val Thr Met Thr Gly Pro Ala Pro Pro Pro Ala Thr Ser His
35 40 45

Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met
50 55 60

```
Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly Val Pro
65                  70                  75                  80

Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu
                85                  90                  95

Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile
            100                 105                 110

Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro
        115                 120                 125

Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser
    130                 135                 140

Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro
145                 150                 155                 160

Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro
                165                 170                 175

Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala
            180                 185                 190

Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro
        195                 200                 205

Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly
    210                 215                 220

Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro Thr Ile
225                 230                 235                 240

Thr Val Ala Met Pro
                245


<210> 8633
<211> 245
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 8633

```
Pro Pro Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr
1               5                   10                  15

Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly
            20                  25                  30

Thr Thr Val Thr Met Thr Gly Pro Ala Pro Pro Pro Ala Thr Ser His
        35                  40                  45

Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met
    50                  55                  60

Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly Val Pro
65                  70                  75                  80

Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu
                85                  90                  95

Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile
            100                 105                 110

Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro
        115                 120                 125

Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser
    130                 135                 140

Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro
145                 150                 155                 160

Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro
                165                 170                 175
```

```
Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala
            180                 185                 190

Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro
        195                 200                 205

Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly
    210                 215                 220

Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile
225                 230                 235                 240

Thr Val Ala Met Pro
                245
```

<210> 8634
<211> 244
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

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<223> /note="ENSP ID: ENSP00000397639"

<400> 8634

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45
```

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8635
<211> 185
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<213> Homo sapiens

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<220>
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BCL2-associated athanogene 6; "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8635
Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1 5 10 15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
20 25 30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
35 40 45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
50 55 60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65 70 75 80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
85 90 95

Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
100 105 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
115 120 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser

```
    130                 135                 140

His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145                 150                 155                 160

Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175

Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185


<210> 8636
<211> 1132
<212> PRT
<213> Homo sapiens

<220>
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      BCL2-associated athanogene 6; "

<220>
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<220>
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<400> 8636
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285
```

```
Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300

Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
305                 310                 315                 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
                325                 330                 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
            340                 345                 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
        355                 360                 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
    370                 375                 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385                 390                 395                 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
                405                 410                 415

Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
            420                 425                 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
        435                 440                 445

Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
    450                 455                 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465                 470                 475                 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
                485                 490                 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
            500                 505                 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
```

```
        515                 520                 525

Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
    530                 535                 540

Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640

Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
                645                 650                 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
            660                 665                 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
        675                 680                 685

Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
    690                 695                 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705                 710                 715                 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
                725                 730                 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
            740                 745                 750
```

```
Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
        755                 760                 765

Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
    770                 775                 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785                 790                 795                 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
                805                 810                 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
            820                 825                 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
        835                 840                 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
    850                 855                 860

Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865                 870                 875                 880

Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
                885                 890                 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
            900                 905                 910

Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975
```

```
Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990

Glu Gly Gly Ser Arg Asp Glu Gln  Asp Gly Ala Ser Ala  Glu Thr
Glu
        995                 1000                1005

Pro Trp  Ala Ala Ala Val Pro  Pro Glu Trp Val Pro  Ile Ile Gln
    1010                1015                1020

Gln Asp  Ile Gln Ser Gln Arg  Lys Val Lys Pro Gln  Pro Pro Leu
    1025                1030                1035

Ser Asp  Ala Tyr Leu Ser Gly  Met Pro Ala Lys Arg  Arg Lys Thr
    1040                1045                1050

Met Gln  Gly Glu Gly Pro Gln  Leu Leu Leu Ser Glu  Ala Val Ser
    1055                1060                1065

Arg Ala  Ala Lys Ala Ala Gly  Ala Arg Pro Leu Thr  Ser Pro Glu
    1070                1075                1080

Ser Leu  Ser Arg Asp Leu Glu  Ala Pro Glu Val Gln  Glu Ser Tyr
    1085                1090                1095

Arg Gln  Gln Leu Arg Ser Asp  Ile Gln Lys Arg Leu  Gln Glu Asp
    1100                1105                1110

Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn Ala Gln  Arg Ala Phe
    1115                1120                1125

Ala Asp  Asp Pro
    1130


<210> 8637
<211> 259
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
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<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397909"

<400> 8637

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
```

```
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr
```

<210> 8638
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397978"

<400> 8638

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45
```

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270
```

```
Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
```

```
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
    530                 535                 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545                 550                 555                 560

Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
                565                 570                 575

Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
            580                 585                 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
        595                 600                 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
    610                 615                 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625                 630                 635                 640

Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly
                645                 650                 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
            660                 665                 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
        675                 680                 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
    690                 695                 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
705                 710                 715                 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
                725                 730                 735
```

Gly Val Leu Ser Ser Leu
740

<210> 8639
<211> 245
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398389"

<400> 8639
Pro Pro Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr
1 5 10 15

Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly
20 25 30

Thr Thr Val Thr Met Thr Gly Pro Ala Pro Pro Pro Ala Thr Ser His
35 40 45

Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met
50 55 60

Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly Val Pro
65 70 75 80

Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu
85 90 95

Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile
100 105 110

```
Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro
        115                 120                 125

Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser
    130                 135                 140

Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro
145                 150                 155                 160

Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro
                165                 170                 175

Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala
            180                 185                 190

Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro
        195                 200                 205

Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly
    210                 215                 220

Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro Thr Ile
225                 230                 235                 240

Thr Val Ala Met Pro
                245


<210> 8640
<211> 226
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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<223> /note="ENSP ID: ENSP00000398547"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8640
Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1 5 10 15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
20 25 30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
35 40 45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
50 55 60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65 70 75 80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
85 90 95

Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
100 105 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
115 120 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
130 135 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145 150 155 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
165 170 175

Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
180 185 190

Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro

195 200 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
210 215 220

Asp Pro
225

<210> 8641
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8641
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
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<210> 8642
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8642
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
130 135 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145 150 155 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
165 170 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
180 185 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
195 200 205

<210> 8643
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8643
Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1 5 10 15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
20 25 30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
35 40 45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
50 55 60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65 70 75 80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
85 90 95

```
Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
            100                 105                 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
        115                 120                 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser
    130                 135                 140

His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145                 150                 155                 160

Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175

Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185


<210> 8644
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<400> 8644
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30
```

```
Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
```

```
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495
```

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
500 505 510

Val Ala Ser
515

<210> 8645
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400275"

<400> 8645
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
```

```
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
    530                 535                 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545                 550                 555                 560
```

```
Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
                565                 570                 575

Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
            580                 585                 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
        595                 600                 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
    610                 615                 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625                 630                 635                 640

Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly
                645                 650                 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
            660                 665                 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
        675                 680                 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
    690                 695                 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
705                 710                 715                 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
                725                 730                 735

Gly Val Leu Ser Ser Leu
            740
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<210> 8646
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400353"

<400> 8646

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
```

```
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260


<210> 8647
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400611"

<400> 8647
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30
```

```
Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
        195                 200                 205


<210> 8648
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400641"

<400> 8648
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
130 135 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145 150 155 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
165 170 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
180 185 190

```
Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8649
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400877"

<400> 8649

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145                 150                 155


<210> 8650
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400968"

<400> 8650
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45
```

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145                 150                 155


<210> 8651
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401031"

<400> 8651
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15
```

```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8652
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401218"

<400> 8652
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

```
Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
        195                 200                 205


<210> 8653
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<400> 8653
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
```

```
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
```

<210> 8654
<211> 245

<212> PRT
<213> Homo sapiens

<220>
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<220>
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BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000402429"

<400> 8654

```
Pro Pro Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr
1               5                  10                  15

Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly
            20                  25                  30

Thr Thr Val Thr Met Thr Gly Pro Ala Pro Pro Pro Ala Thr Ser His
        35                  40                  45

Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met
    50                  55                  60

Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly Val Pro
65                  70                  75                  80

Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu
                85                  90                  95

Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile
            100                 105                 110

Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro
        115                 120                 125

Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser
    130                 135                 140
```

```
Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro
145                 150                 155                 160

Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro
                165                 170                 175

Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala
            180                 185                 190

Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro
        195                 200                 205

Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly
    210                 215                 220

Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile
225                 230                 235                 240

Thr Val Ala Met Pro
                245


<210> 8655
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000402441"

<400> 8655
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30
```

```
Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255
```

```
Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480
```

```
Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
    530                 535                 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545                 550                 555                 560

Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
                565                 570                 575

Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
            580                 585                 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
        595                 600                 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
    610                 615                 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625                 630                 635                 640

Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly
                645                 650                 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
            660                 665                 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
        675                 680                 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
    690                 695                 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
```

705 710 715 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
725 730 735

Gly Val Leu Ser Ser Leu
740

<210> 8656
<211> 258
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000402585"

<400> 8656
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu
```

<210> 8657
<211> 903
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="Uniprot ID: P46379; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402856"

<400> 8657

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175
```

```
Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400
```

```
Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
    530                 535                 540

Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545                 550                 555                 560

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
                565                 570                 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
            580                 585                 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
        595                 600                 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
    610                 615                 620
```

```
Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625                 630                 635                 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
                645                 650                 655

Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
            660                 665                 670

Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
        675                 680                 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
    690                 695                 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705                 710                 715                 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
                725                 730                 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
            740                 745                 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
        755                 760                 765

Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
    770                 775                 780

Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785                 790                 795                 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
                805                 810                 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
            820                 825                 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
        835                 840                 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
```

```
    850                 855                 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865                 870                 875                 880

Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
                885                 890                 895

Arg Ala Phe Ala Asp Asp Pro
            900


<210> 8658
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402863"

<400> 8658
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300
```

```
Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser
        515
```

<210> 8659

<211> 244
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403166"

<400> 8659

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140
```

```
Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8660
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403275"

<400> 8660

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
```

```
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255
```

```
Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480
```

```
Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser
        515
```

<210> 8661
<211> 258
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

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BCL2-associated athanogene 6; "

<220>
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<400> 8661

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
```

```
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu
```

<210> 8662
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

<220>
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<400> 8662

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175
```

```
Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
```

405 410 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
420 425 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
435 440 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
450 455 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465 470 475 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
485 490 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
500 505 510

Val Ala Ser
515

<210> 8663
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<220>
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BCL2-associated athanogene 6; "

<220>
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<400> 8663
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240
```

```
Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255


Pro Glu Thr Asn Ala Pro
            260


<210> 8664
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
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      BCL2-associated athanogene 6; "

<220>
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<400> 8664
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110
```

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335
```

```
Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560
```

```
Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
```

785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
885 890 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
900 905 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
915 920 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
930 935 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945 950 955 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
965 970 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
980 985 990

Glu Gln Asp Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala
Val
995 1000 1005

Pro Pro Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln

```
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8665
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000404299"

<400> 8665
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15
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```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240
```

```
Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
```

```
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser
        515


<210> 8666
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000404578"

<400> 8666
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145                 150                 155


<210> 8667
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000404703"

<400> 8667
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
```

```
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val
    210                 215


<210> 8668
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404813"

<400> 8668

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190
```

```
His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260


<210> 8669
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000404971"

<400> 8669
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
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<210> 8670
<211> 197
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405371"

<400> 8670

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
```

145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

His Ser Gln Pro Pro
195

<210> 8671
<211> 243
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405607"

<400> 8671
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala
```

<210> 8672
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000405644"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8672
Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1 5 10 15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
20 25 30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
35 40 45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
50 55 60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65 70 75 80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
85 90 95

Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
100 105 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
115 120 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser
130 135 140

His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145 150 155 160

```
Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175


Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185


<210> 8673
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405731"

<400> 8673
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110
```

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335
```

```
Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
    530                 535                 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545                 550                 555                 560
```

```
Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
                565                 570                 575

Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
            580                 585                 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
        595                 600                 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
    610                 615                 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625                 630                 635                 640

Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly
                645                 650                 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
            660                 665                 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
        675                 680                 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
    690                 695                 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
705                 710                 715                 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
                725                 730                 735

Gly Val Leu Ser Ser Leu
            740


<210> 8674
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405744"

<400> 8674
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

```
Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr
```

<210> 8675
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406001"

<400> 8675

```
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1               5                   10                  15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
            20                  25                  30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
```

```
        35                  40                  45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
    50                  55                  60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65                  70                  75                  80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
                85                  90                  95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
            100                 105                 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met
        115                 120                 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
    130                 135                 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145                 150                 155                 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
                165                 170                 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
            180                 185                 190

Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
        195                 200                 205

Gly Ala Gly Gly Pro Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
    210                 215                 220

Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
225                 230                 235
```

<210> 8676
<211> 244
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406111"

<400> 8676

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160
```

```
Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8677
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406240"

<400> 8677

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45
```

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
```

<210> 8678
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406302"

<400> 8678
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro

```
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
        195                 200                 205


<210> 8679
<211> 243
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406319"

<400> 8679
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala
```

<210> 8680
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406434"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8680
Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1 5 10 15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
20 25 30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
35 40 45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
50 55 60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65 70 75 80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
85 90 95

Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
100 105 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
115 120 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser
130 135 140

```
His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145                 150                 155                 160

Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175

Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185
```

<210> 8681
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406436"

<400> 8681

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95
```

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro
        195


<210> 8682
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000406589"

<400> 8682
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15
```

```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val
    210                 215
```

<210> 8683
<211> 244
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000406766"

<400> 8683

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160
```

```
Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8684
<211> 258
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406914"

<400> 8684

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
```

```
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu
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<210> 8685
<211> 158
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000407060"

<400> 8685
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile
145 150 155

<210> 8686
<211> 232
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407175"

<400> 8686
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu
225                 230


<210> 8687
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000407212"

<400> 8687
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```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
```

225 230 235 240

Thr Asn Ala Pro

<210> 8688
<211> 232
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407297"

<400> 8688
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu
225                 230


<210> 8689
<211> 243
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407500"

<400> 8689
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
```

```
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240
```

Thr Asn Ala

<210> 8690
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407668"

<400> 8690
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro
        195


<210> 8691
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407701"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8691
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1               5                   10                  15
```

```
Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
            20                  25                  30

Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
        35                  40                  45

Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
    50                  55                  60

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65                  70                  75                  80

Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
                85                  90                  95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
            100                 105                 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
        115                 120                 125

Gln Arg Ala Phe Ala Asp Asp Pro
    130                 135


<210> 8692
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000407867"

<400> 8692
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15
```

```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240
```

```
Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460
```

```
Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
```

690 695 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705 710 715 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
725 730 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
885 890 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
900 905 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
915 920 925

```
Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125
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<210> 8693
<211> 197

<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408125"

<400> 8693
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

```
Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro
        195


<210> 8694
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<400> 8694
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val
    210                 215


<210> 8695
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000408554"

<400> 8695

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
```

```
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445
```

```
Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670
```

```
Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895
```

```
Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110
```

```
Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8696
<211> 232
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408565"

<400> 8696
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110


Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125
```

```
Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu
225                 230
```

<210> 8697
<211> 136
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408761"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8697
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1 5 10 15

Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
20 25 30

Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
35 40 45

Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
50 55 60

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65 70 75 80

Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
85 90 95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
100 105 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
115 120 125

Gln Arg Ala Phe Ala Asp Asp Pro
130 135

<210> 8698
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000408946"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8698
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1 5 10 15

Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
20 25 30

Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
35 40 45

Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
50 55 60

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65 70 75 80

Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
85 90 95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
100 105 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
115 120 125

Gln Arg Ala Phe Ala Asp Asp Pro
130 135

<210> 8699
<211> 742
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409057"

<400> 8699

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
```

```
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415
```

```
Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser Ala Ala Ala Gly Gln Gln Val Pro Gly Phe Pro Thr Ala
        515                 520                 525

Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro
    530                 535                 540

Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly
545                 550                 555                 560

Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly
                565                 570                 575

Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met
            580                 585                 590

Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr
        595                 600                 605

Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro
    610                 615                 620

Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu
625                 630                 635                 640
```

```
Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly
                645                 650                 655

Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe
            660                 665                 670

Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro
        675                 680                 685

Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr
    690                 695                 700

Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly
705                 710                 715                 720

Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln
                725                 730                 735

Gly Val Leu Ser Ser Leu
            740


<210> 8700
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409196"

<400> 8700
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
```

```
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255
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Pro Glu Thr Asn Ala Pro
260

<210> 8701
<211> 226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409254"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8701
Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1 5 10 15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
20 25 30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
35 40 45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
50 55 60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65 70 75 80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
85 90 95

```
Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
            100                 105                 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
        115                 120                 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
    130                 135                 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145                 150                 155                 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
                165                 170                 175

Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
            180                 185                 190

Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro
        195                 200                 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
    210                 215                 220

Asp Pro
225
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<210> 8702
<211> 244
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000409846"

<400> 8702

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
```

```
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8703
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

<220>
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<400> 8703

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95
```

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
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<210> 8704
<211> 1126
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<400> 8704

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175
```

```
Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400
```

```
Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620
```

```
Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
```

```
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
```

```
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8705
<211> 215
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000410232"

<400> 8705
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val
    210                 215


<210> 8706
<211> 238
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
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<223> /note="ENSP ID: ENSP00000410280"

<400> 8706

```
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1               5                  10                  15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
            20                  25                  30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
        35                  40                  45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
    50                  55                  60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65                  70                  75                  80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
                85                  90                  95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
            100                 105                 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met
        115                 120                 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
    130                 135                 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145                 150                 155                 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
                165                 170                 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
            180                 185                 190

Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
        195                 200                 205

Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
    210                 215                 220
```

```
Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
225                 230                 235


<210> 8707
<211> 232
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8707
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110
```

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu
225                 230


<210> 8708
<211> 244
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000410343"

<400> 8708
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15
```

```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240
```

Thr Asn Ala Pro

<210> 8709
<211> 238
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410644"

<400> 8709
Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala
1 5 10 15

Thr Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro
20 25 30

Val Val Met Met His Met Asn Ile Gln Gly Pro Leu Ser Leu Ser Pro
35 40 45

Cys Pro Asp Ser Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr
50 55 60

Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val
65 70 75 80

Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr
85 90 95

Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly
100 105 110

Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met

```
        115                 120                 125

Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala
    130                 135                 140

Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser
145                 150                 155                 160

Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro
                165                 170                 175

Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp
            180                 185                 190

Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro
        195                 200                 205

Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met
    210                 215                 220

Pro Gly Val Pro Ala Phe Leu Gln Gly Met Thr Asp Phe Leu
225                 230                 235


<210> 8710
<211> 258
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000411043"

<400> 8710
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15
```

```
Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240
```

```
Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255


Pro Glu



<210> 8711
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000411083"

<400> 8711
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110
```

```
Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335
```

```
Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Ser Thr Leu Ile Gln Leu Pro Ser Leu Pro Pro Glu Phe
                485                 490                 495

Met His Ala Val Ala His Gln Ile Thr His Gln Ala Met Val Ala Ala
            500                 505                 510

Val Ala Ser
        515


<210> 8712
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "
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<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000411412"

<400> 8712
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

```
Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro
        195


<210> 8713
<211> 245
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411460"

<400> 8713
Pro Pro Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr
1               5                  10                  15

Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly
            20                  25                  30

Thr Thr Val Thr Met Thr Gly Pro Ala Pro Pro Pro Ala Thr Ser His
        35                  40                  45

Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met
    50                  55                  60

Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly Val Pro
65                  70                  75                  80

Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu
                85                  90                  95
```

```
Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile
            100                 105                 110

Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro
        115                 120                 125

Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser
    130                 135                 140

Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro
145                 150                 155                 160

Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro
                165                 170                 175

Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala
            180                 185                 190

Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro
        195                 200                 205

Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly
    210                 215                 220

Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro Thr Ile
225                 230                 235                 240

Thr Val Ala Met Pro
                245
```

<210> 8714
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="Uniprot ID: P46379; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412110"

<400> 8714
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100   105   110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115   120   125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130   135   140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145   150   155   160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165   170   175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180   185   190

```
His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415
```

```
Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
```

645 650 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
660 665 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
675 680 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
690 695 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705 710 715 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
725 730 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

```
Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065

Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095
```

```
Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8715
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412274"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8715
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1               5                   10                  15

Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
            20                  25                  30

Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
        35                  40                  45

Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
    50                  55                  60

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65                  70                  75                  80
```

```
Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
                85                  90                  95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
            100                 105                 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
        115                 120                 125

Gln Arg Ala Phe Ala Asp Asp Pro
    130                 135


<210> 8716
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413225"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8716
Xaa Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr
1               5                   10                  15

Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val
            20                  25                  30

Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro
        35                  40                  45
```

```
Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala
    50                  55                  60

Ser Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln
65                  70                  75                  80

Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu
                85                  90                  95

Ser Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys
            100                 105                 110

Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala
        115                 120                 125

Gln Arg Ala Phe Ala Asp Asp Pro
    130                 135


<210> 8717
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413317"

<400> 8717
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30
```

```
Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
        195                 200                 205


<210> 8718
<211> 1132
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "
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<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413327"

<400> 8718
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
180 185 190

```
Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285

Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300

Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
305                 310                 315                 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
                325                 330                 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
            340                 345                 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
        355                 360                 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
    370                 375                 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385                 390                 395                 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
                405                 410                 415
```

```
Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
            420                 425                 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
        435                 440                 445

Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
    450                 455                 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465                 470                 475                 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
                485                 490                 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
            500                 505                 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
        515                 520                 525

Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
    530                 535                 540

Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Pro Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640

Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
```

645 650 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
660 665 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
675 680 685

Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
690 695 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705 710 715 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
725 730 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
740 745 750

Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
755 760 765

Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
770 775 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785 790 795 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
805 810 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
820 825 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
835 840 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
850 855 860

Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865 870 875 880

```
Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
                885                 890                 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
            900                 905                 910

Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975

Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990

Glu Gly Gly Ser Arg Asp Glu Gln  Asp Gly Ala Ser Ala  Glu Thr
Glu
        995                 1000                1005

Pro Trp  Ala Ala Ala Val Pro  Pro Glu Trp Val Pro  Ile Ile Gln
    1010                1015                1020

Gln Asp  Ile Gln Ser Gln Arg  Lys Val Lys Pro Gln  Pro Pro Leu
    1025                1030                1035

Ser Asp  Ala Tyr Leu Ser Gly  Met Pro Ala Lys Arg  Arg Lys Thr
    1040                1045                1050

Met Gln  Gly Glu Gly Pro Gln  Leu Leu Leu Ser Glu  Ala Val Ser
    1055                1060                1065

Arg Ala  Ala Lys Ala Ala Gly  Ala Arg Pro Leu Thr  Ser Pro Glu
    1070                1075                1080

Ser Leu  Ser Arg Asp Leu Glu  Ala Pro Glu Val Gln  Glu Ser Tyr
    1085                1090                1095
```

```
Arg Gln  Gln Leu Arg Ser Asp  Ile Gln Lys Arg Leu  Gln Glu Asp
    1100                1105                1110

Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn Ala Gln  Arg Ala Phe
    1115                1120                1125

Ala Asp  Asp Pro
    1130
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<210> 8719
<211> 1132
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413341"

<400> 8719

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285

Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300

Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
```

305 310 315 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
325 330 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
340 345 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
355 360 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
370 375 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385 390 395 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
405 410 415

Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
420 425 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
435 440 445

Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
450 455 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465 470 475 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
485 490 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
500 505 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
515 520 525

Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
530 535 540

```
Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Pro Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640

Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
                645                 650                 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
            660                 665                 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
        675                 680                 685

Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
    690                 695                 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705                 710                 715                 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
                725                 730                 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
            740                 745                 750

Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
        755                 760                 765
```

```
Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
    770                 775                 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785                 790                 795                 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
                805                 810                 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
            820                 825                 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
        835                 840                 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
    850                 855                 860

Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865                 870                 875                 880

Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
                885                 890                 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
            900                 905                 910

Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975

Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990
```

Glu Gly Gly Ser Arg Asp Glu Gln Asp Gly Ala Ser Ala Glu Thr Glu
995 1000 1005

Pro Trp Ala Ala Ala Val Pro Pro Glu Trp Val Pro Ile Ile Gln
1010 1015 1020

Gln Asp Ile Gln Ser Gln Arg Lys Val Lys Pro Gln Pro Pro Leu
1025 1030 1035

Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys Arg Arg Lys Thr
1040 1045 1050

Met Gln Gly Glu Gly Pro Gln Leu Leu Leu Ser Glu Ala Val Ser
1055 1060 1065

Arg Ala Ala Lys Ala Ala Gly Ala Arg Pro Leu Thr Ser Pro Glu
1070 1075 1080

Ser Leu Ser Arg Asp Leu Glu Ala Pro Glu Val Gln Glu Ser Tyr
1085 1090 1095

Arg Gln Gln Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp
1100 1105 1110

Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe
1115 1120 1125

Ala Asp Asp Pro
1130

<210> 8720
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:

BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413422"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8720

```
Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1               5                  10                  15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
            20                  25                  30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
        35                  40                  45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
    50                  55                  60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65                  70                  75                  80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
                85                  90                  95

Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
            100                 105                 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
        115                 120                 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser
    130                 135                 140

His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145                 150                 155                 160

Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175
```

```
Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185


<210> 8721
<211> 245
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
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<400> 8721
Pro Pro Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr
1               5                  10                  15


Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly
            20                  25                  30


Thr Thr Val Thr Met Thr Gly Pro Ala Pro Pro Pro Ala Thr Ser His
        35                  40                  45


Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met
    50                  55                  60


Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly Val Pro
65                  70                  75                  80


Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln Thr Leu
                85                  90                  95


Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val Val Ile
            100                 105                 110


Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly Gly Pro
        115                 120                 125
```

```
Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn Ala Ser
    130                 135                 140

Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln Pro
145                 150                 155                 160

Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro Ala Pro
                165                 170                 175

Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr Thr Ala
            180                 185                 190

Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro Gln Pro
        195                 200                 205

Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu Leu Gly
    210                 215                 220

Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro Thr Ile
225                 230                 235                 240

Thr Val Ala Met Pro
                245


<210> 8722
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413561"

<400> 8722
```

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
```

```
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260


<210> 8723
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="Uniprot ID:  P46379; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413698"

<400> 8723
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300
```

```
Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
```

```
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765
```

```
Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990
```

```
Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005


Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020


Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035


Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050


Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065


Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080


Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095


Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110


Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125


<210> 8724
<211> 226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000414148"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8724

```
Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1               5                  10                  15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
            20                  25                  30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
        35                  40                  45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
    50                  55                  60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65                  70                  75                  80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
                85                  90                  95

Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
            100                 105                 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
        115                 120                 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
    130                 135                 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145                 150                 155                 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
                165                 170                 175

Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
            180                 185                 190
```

```
Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro
        195                 200                 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
    210                 215                 220

Asp Pro
225
```

<210> 8725
<211> 243
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414697"

<400> 8725

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
```

```
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala
```

<210> 8726
<211> 258
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>

<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414702"

<400> 8726
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

```
His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu
```

<210> 8727
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414815"

<400> 8727

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Glu Pro
    130                 135                 140

Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile Gln Thr
145                 150                 155                 160

Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln His Ser
                165                 170                 175

Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val Ala Leu
            180                 185                 190

Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro Arg Glu
        195                 200                 205

Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln Asn Pro
    210                 215                 220

Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala Pro Glu
225                 230                 235                 240

Thr Asn Ala Pro
```

<210> 8728
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415330"

<400> 8728

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95


Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110


Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125


Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140


Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160


Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
```

```
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400
```

```
Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620
```

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625 630 635 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
645 650 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
660 665 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
675 680 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
690 695 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705 710 715 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
725 730 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

```
His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Thr Met Gln Gly  Glu Gly Pro
    1040                1045                1050

Gln Leu  Leu Leu Ser Glu Ala  Val Ser Arg Ala Ala  Lys Ala Ala
    1055                1060                1065
```

```
Gly Ala  Arg Pro Leu Thr Ser  Pro Glu Ser Leu Ser  Arg Asp Leu
    1070                1075                1080

Glu Ala  Pro Glu Val Gln Glu  Ser Tyr Arg Gln Gln  Leu Arg Ser
    1085                1090                1095

Asp Ile  Gln Lys Arg Leu Gln  Glu Asp Pro Asn Tyr  Ser Pro Gln
    1100                1105                1110

Arg Phe  Pro Asn Ala Gln Arg  Ala Phe Ala Asp Asp  Pro
    1115                1120                1125
```

<210> 8729
<211> 1132
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8729

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Thr Leu Pro Tyr Leu Gln Cys Arg
            180                 185                 190

Gly Gly Pro Gln Pro Gln His Ser Gln Pro Pro Pro Gln Pro Pro Ala
        195                 200                 205

Val Thr Pro Glu Pro Val Ala Leu Ser Ser Gln Thr Ser Glu Pro Val
    210                 215                 220

Glu Ser Glu Ala Pro Pro Arg Glu Pro Met Glu Ala Glu Glu Val Glu
225                 230                 235                 240

Glu Arg Ala Pro Ala Gln Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro
                245                 250                 255

Ala Gly Pro Thr Pro Ala Pro Glu Thr Asn Ala Pro Asn His Pro Ser
            260                 265                 270

Pro Ala Glu Tyr Val Glu Val Leu Gln Glu Leu Gln Arg Leu Glu Ser
        275                 280                 285

Arg Leu Gln Pro Phe Leu Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala
    290                 295                 300
```

```
Ala Thr Thr Asp Tyr Asn Asn Asn His Glu Gly Arg Glu Glu Asp Gln
305                 310                 315                 320

Arg Leu Ile Asn Leu Val Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr
                325                 330                 335

Phe Val Ala Leu Ser Asp Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro
            340                 345                 350

Arg His Leu His Val Val Arg Pro Met Ser His Tyr Thr Thr Pro Met
        355                 360                 365

Val Leu Gln Gln Ala Ala Ile Pro Ile Gln Ile Asn Val Gly Thr Thr
    370                 375                 380

Val Thr Met Thr Gly Asn Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala
385                 390                 395                 400

Glu Ala Pro Pro Pro Gly Pro Gly Gln Ala Ser Ser Val Ala Pro Ser
                405                 410                 415

Ser Thr Asn Val Glu Ser Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro
            420                 425                 430

Ala Pro Pro Pro Ala Thr Ser His Pro Arg Val Ile Arg Ile Ser His
        435                 440                 445

Gln Ser Val Glu Pro Val Val Met Met His Met Asn Ile Gln Asp Ser
    450                 455                 460

Gly Thr Gln Pro Gly Gly Val Pro Ser Ala Pro Thr Gly Pro Leu Gly
465                 470                 475                 480

Pro Pro Gly His Gly Gln Thr Leu Gly Gln Gln Val Pro Gly Phe Pro
                485                 490                 495

Thr Ala Pro Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala
            500                 505                 510

Arg Pro Ser His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly
        515                 520                 525
```

```
Ala Gly Leu Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu
    530                 535                 540

Val Gly Gln Leu Leu Met Gln Pro Val Leu Val Ala Gln Gly Thr Pro
545                 550                 555                 560

Gly Met Ala Pro Pro Pro Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly
                565                 570                 575

Thr Thr Asn Thr Ala Thr Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala
            580                 585                 590

Gln Pro Pro Pro Thr Pro Gln Pro Ser Met Ala Asp Leu Gln Phe Ser
        595                 600                 605

Gln Leu Leu Gly Asn Leu Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly
    610                 615                 620

Pro Gly Val Ala Ser Pro Thr Ile Thr Val Ala Met Pro Gly Val Pro
625                 630                 635                 640

Ala Phe Leu Gln Gly Met Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala
                645                 650                 655

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln
            660                 665                 670

Gln Thr Met Pro Pro Pro Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro
        675                 680                 685

Gly Gly Leu Gly Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val
    690                 695                 700

Val Gln Gly Val Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala
705                 710                 715                 720

Gly Ser Ser Glu Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser
                725                 730                 735

Ser Asn Ile Phe Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly
            740                 745                 750

Ala Leu Leu Ser Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val
```

```
        755                 760                 765

Met Leu Leu His Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln
    770                 775                 780

Leu Arg Ser Phe Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr
785                 790                 795                 800

Pro Ser Asn Ile Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu
                805                 810                 815

Glu Tyr Val Arg Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val
            820                 825                 830

Asp Ile Ile Arg Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser
        835                 840                 845

Ile Ala Ala His Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg
    850                 855                 860

Leu Leu Glu Leu Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn
865                 870                 875                 880

Leu His Cys Leu Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn
                885                 890                 895

Gly Arg Ile Arg Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser
            900                 905                 910

Trp Leu Thr Thr Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His
        915                 920                 925

Met Pro Val Gly Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly
    930                 935                 940

Asp Pro Pro Gln Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala
945                 950                 955                 960

Glu Arg Ala Ser Pro Glu Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro
                965                 970                 975

Gly Thr Thr Ala Glu Glu Ala Met Ser Arg Gly Pro Pro Pro Ala Pro
            980                 985                 990
```

```
Glu Gly Gly Ser Arg Asp Glu Gln  Asp Gly Ala Ser Ala  Glu Thr
Glu
        995                 1000                1005


Pro Trp  Ala Ala Ala Val Pro  Pro Glu Trp Val Pro  Ile Ile Gln
    1010                1015                1020


Gln Asp  Ile Gln Ser Gln Arg  Lys Val Lys Pro Gln  Pro Pro Leu
    1025                1030                1035


Ser Asp  Ala Tyr Leu Ser Gly  Met Pro Ala Lys Arg  Arg Lys Thr
    1040                1045                1050


Met Gln  Gly Glu Gly Pro Gln  Leu Leu Leu Ser Glu  Ala Val Ser
    1055                1060                1065


Arg Ala  Ala Lys Ala Ala Gly  Ala Arg Pro Leu Thr  Ser Pro Glu
    1070                1075                1080


Ser Leu  Ser Arg Asp Leu Glu  Ala Pro Glu Val Gln  Glu Ser Tyr
    1085                1090                1095


Arg Gln  Gln Leu Arg Ser Asp  Ile Gln Lys Arg Leu  Gln Glu Asp
    1100                1105                1110


Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn Ala Gln  Arg Ala Phe
    1115                1120                1125


Ala Asp  Asp Pro
    1130


<210> 8730
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000416326"

<400> 8730
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

```
His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260


<210> 8731
<211> 1126
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416540"

<400> 8731
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285
```

```
Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510
```

```
Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
```

740 745 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
755 760 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
770 775 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785 790 795 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
805 810 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
885 890 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
900 905 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
915 920 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
930 935 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945 950 955 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
965 970 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
980 985 990

Glu Gln Asp Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala
Val
995 1000 1005

Pro Pro Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln
1010 1015 1020

Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
1025 1030 1035

Gly Met Pro Ala Lys Arg Arg Lys Thr Met Gln Gly Glu Gly Pro
1040 1045 1050

Gln Leu Leu Leu Ser Glu Ala Val Ser Arg Ala Ala Lys Ala Ala
1055 1060 1065

Gly Ala Arg Pro Leu Thr Ser Pro Glu Ser Leu Ser Arg Asp Leu
1070 1075 1080

Glu Ala Pro Glu Val Gln Glu Ser Tyr Arg Gln Gln Leu Arg Ser
1085 1090 1095

Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln
1100 1105 1110

Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp Asp Pro
1115 1120 1125

<210> 8732
<211> 226
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>

<221> source
<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8732

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Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1               5                  10                  15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
            20                  25                  30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
        35                  40                  45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
    50                  55                  60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65                  70                  75                  80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
                85                  90                  95

Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
            100                 105                 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
        115                 120                 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
    130                 135                 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145                 150                 155                 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
                165                 170                 175
```

```
Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
            180                 185                 190

Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro
        195                 200                 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
    210                 215                 220

Asp Pro
225
```

<210> 8733
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416652"

<400> 8733

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60
```

```
Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro
            260
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<210> 8734
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<220>
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BCL2-associated athanogene 6; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8734
Xaa Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val Arg Pro Met
1 5 10 15

Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala Ile Pro Ile
20 25 30

Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn Gly Thr Arg
35 40 45

Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly Pro Gly Gln
50 55 60

Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser Ser Ala Glu
65 70 75 80

Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr Ser His Pro
85 90 95

Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val Val Met Met
100 105 110

His Met Asn Ile Gln Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro
115 120 125

Thr Arg Val Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser

```
    130                 135                 140

His Pro Gly Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu
145                 150                 155                 160

Gly Thr Asn Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln
                165                 170                 175

Leu Leu Met Gln Pro Val Leu Val Ala
            180                 185


<210> 8735
<211> 226
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8735
Xaa Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn Gln Gly Leu
1               5                   10                  15

Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly Gln Gln Met
            20                  25                  30

Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met Ser Arg Gly
        35                  40                  45

Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met Gly Leu Arg
```

```
    50                  55                  60

Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp Ala Ile Leu
65                  70                  75                  80

Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu Pro Glu Glu
                85                  90                  95

Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu Pro Gln Arg
            100                 105                 110

Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu Ala Met Ser
        115                 120                 125

Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp Glu Gln Asp
    130                 135                 140

Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala Val Pro Pro Glu
145                 150                 155                 160

Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln Arg Lys Val Lys
                165                 170                 175

Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser Gly Met Pro Ala Lys
            180                 185                 190

Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg Leu Gln Glu Asp Pro
        195                 200                 205

Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln Arg Ala Phe Ala Asp
    210                 215                 220

Asp Pro
225
```

<210> 8736
<211> 1077
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8736

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160
```

```
Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
```

385 390 395 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
405 410 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
420 425 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
435 440 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
450 455 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465 470 475 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
485 490 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
500 505 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
515 520 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
530 535 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545 550 555 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
565 570 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
580 585 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
595 600 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
610 615 620

```
Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845
```

```
His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Leu Arg Ser Asp  Ile Gln Lys
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065
```

Ala Gln Arg Ala Phe Ala Asp Asp Pro
    1070   1075

<210> 8737
<211> 1077
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

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<223> /note="Uniprot ID: P46379; "

<220>
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<223> /note="ENSP ID: ENSP00000447546"

<400> 8737
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly

```
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335
```

```
Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560
```

```
Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780
```

```
Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005
```

```
Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Leu Arg Ser Asp  Ile Gln Lys
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065

Ala Gln  Arg Ala Phe Ala Asp  Asp Pro
    1070                1075
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<210> 8738
<211> 1077
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: P46379; "

<220>
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<400> 8738

```
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45
```

```
Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270
```

```
Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495
```

```
Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Ser Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
```

```
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960
```

```
Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Leu Arg Ser Asp  Ile Gln Lys
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065

Ala Gln  Arg Ala Phe Ala Asp  Asp Pro
    1070                1075


<210> 8739
<211> 1077
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
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<400> 8739
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
195 200 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
210 215 220

```
Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
```

```
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685
```

```
Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910
```

```
Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Leu Arg Ser Asp  Ile Gln Lys
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065

Ala Gln  Arg Ala Phe Ala Asp  Asp Pro
    1070                1075


<210> 8740
<211> 1077
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<223> /note="ENSP ID: ENSP00000449634"

<400> 8740

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
```

```
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415
```

```
Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590

Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640
```

```
Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
            820                 825                 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
        835                 840                 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
    850                 855                 860
```

```
Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865                 870                 875                 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
                885                 890                 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
            900                 905                 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
        915                 920                 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
    930                 935                 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945                 950                 955                 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
                965                 970                 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
            980                 985                 990

Glu Gln Asp Gly Ala Ser Ala Glu  Thr Glu Pro Trp Ala  Ala Ala
Val
        995                 1000                1005

Pro Pro  Glu Trp Val Pro Ile  Ile Gln Gln Asp Ile  Gln Ser Gln
    1010                1015                1020

Arg Lys  Val Lys Pro Gln Pro  Pro Leu Ser Asp Ala  Tyr Leu Ser
    1025                1030                1035

Gly Met  Pro Ala Lys Arg Arg  Lys Leu Arg Ser Asp  Ile Gln Lys
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065

Ala Gln  Arg Ala Phe Ala Asp  Asp Pro
    1070                1075
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<210> 8741
<211> 1077
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
<221> source
<223> /note="Gene Symbol: BAG6; "

<220>
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<223> /note="Gene Name:
BCL2-associated athanogene 6; "

<220>
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<400> 8741
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

```
Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365
```

```
Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gln Gly Ala Gly Leu Gly Thr Asn
        515                 520                 525

Ala Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met
    530                 535                 540

Gln Pro Val Leu Val Ala Gln Gly Thr Pro Gly Met Ala Pro Pro Pro
545                 550                 555                 560

Ala Pro Ala Thr Ala Ser Ala Ser Ala Gly Thr Thr Asn Thr Ala Thr
                565                 570                 575

Thr Ala Gly Pro Ala Pro Gly Gly Pro Ala Gln Pro Pro Pro Thr Pro
            580                 585                 590
```

```
Gln Pro Ser Met Ala Asp Leu Gln Phe Ser Gln Leu Leu Gly Asn Leu
        595                 600                 605

Leu Gly Pro Ala Gly Pro Gly Ala Gly Gly Pro Gly Val Ala Ser Pro
    610                 615                 620

Thr Ile Thr Val Ala Met Pro Gly Val Pro Ala Phe Leu Gln Gly Met
625                 630                 635                 640

Thr Asp Phe Leu Gln Ala Thr Gln Thr Ala Pro Pro Pro Pro Pro Pro
                645                 650                 655

Pro Pro Pro Pro Pro Pro Ala Pro Glu Gln Gln Thr Met Pro Pro Pro
            660                 665                 670

Gly Ser Pro Ser Gly Gly Ala Gly Ser Pro Gly Gly Leu Gly Leu Glu
        675                 680                 685

Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val Leu Ser
    690                 695                 700

Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu Ser Ile
705                 710                 715                 720

Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe Glu Pro
                725                 730                 735

Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser Leu Leu
            740                 745                 750

Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His Gly His
        755                 760                 765

Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe Phe His
    770                 775                 780

Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile Arg Met
785                 790                 795                 800

Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg Glu Ser
                805                 810                 815

Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg Thr Asn
```

820 825 830

Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His Val Leu
835 840 845

His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu Cys Asn
850 855 860

Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu Gly Gly
865 870 875 880

Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg Arg Met
885 890 895

Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr Met Met
900 905 910

Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly Pro Asp
915 920 925

Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln Pro Leu
930 935 940

Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser Pro Glu
945 950 955 960

Pro Gln Arg Glu Asn Ala Ser Pro Ala Pro Gly Thr Thr Ala Glu Glu
965 970 975

Ala Met Ser Arg Gly Pro Pro Pro Ala Pro Glu Gly Gly Ser Arg Asp
980 985 990

Glu Gln Asp Gly Ala Ser Ala Glu Thr Glu Pro Trp Ala Ala Ala
Val
995 1000 1005

Pro Pro Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser Gln
1010 1015 1020

Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
1025 1030 1035

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys

```
    1040                1045                1050

Arg Leu  Gln Glu Asp Pro Asn  Tyr Ser Pro Gln Arg  Phe Pro Asn
    1055                1060                1065

Ala Gln  Arg Ala Phe Ala Asp  Asp Pro
    1070                1075


<210> 8742
<211> 903
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1783; "

<220>
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<220>
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<223> /note="Gene Name:
      BCL2-associated athanogene 6; "

<220>
<221> source
<223> /note="Uniprot ID:  P46379; "

<220>
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<223> /note="ENSP ID: ENSP00000477867"

<400> 8742
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80
```

```
Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300
```

```
Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
```

530 535 540

Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545 550 555 560

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
565 570 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
580 585 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
595 600 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
610 615 620

Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625 630 635 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
645 650 655

Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
660 665 670

Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
675 680 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
690 695 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705 710 715 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
725 730 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
740 745 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
755 760 765

```
Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
    770                 775                 780

Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785                 790                 795                 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
                805                 810                 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
            820                 825                 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
        835                 840                 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
    850                 855                 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865                 870                 875                 880

Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
                885                 890                 895

Arg Ala Phe Ala Asp Asp Pro
            900


<210> 8743
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<212> PRT
<213> Homo sapiens

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<400> 8743

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                  10                  15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
```

```
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430
```

```
Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
    530                 535                 540

Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545                 550                 555                 560

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
                565                 570                 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
            580                 585                 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
        595                 600                 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
    610                 615                 620

Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625                 630                 635                 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
                645                 650                 655
```

```
Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
            660                 665                 670

Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
        675                 680                 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
    690                 695                 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705                 710                 715                 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
                725                 730                 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
            740                 745                 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
        755                 760                 765

Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
    770                 775                 780

Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785                 790                 795                 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
                805                 810                 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
            820                 825                 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
        835                 840                 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
    850                 855                 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865                 870                 875                 880
```

```
Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
                885                 890                 895


Arg Ala Phe Ala Asp Asp Pro
            900


<210> 8744
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<212> PRT
<213> Homo sapiens

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      BCL2-associated athanogene 6; "

<220>
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<400> 8744
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1               5                   10                  15


Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20                  25                  30


Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35                  40                  45


Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50                  55                  60


Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65                  70                  75                  80


Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85                  90                  95
```

```
Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100                 105                 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115                 120                 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130                 135                 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145                 150                 155                 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165                 170                 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180                 185                 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195                 200                 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320
```

```
Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
    530                 535                 540
```

```
Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545                 550                 555                 560

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
                565                 570                 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
            580                 585                 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
        595                 600                 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
    610                 615                 620

Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625                 630                 635                 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
                645                 650                 655

Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
            660                 665                 670

Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
        675                 680                 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
    690                 695                 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705                 710                 715                 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
                725                 730                 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
            740                 745                 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
        755                 760                 765

Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
```

```
    770                 775                 780

Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785                 790                 795                 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
                805                 810                 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
            820                 825                 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
        835                 840                 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
    850                 855                 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865                 870                 875                 880

Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
                885                 890                 895

Arg Ala Phe Ala Asp Asp Pro
            900


<210> 8745
<211> 903
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P46379; "
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<220>
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<400> 8745
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1   5   10   15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
            20   25   30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
        35   40   45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
    50   55   60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65   70   75   80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
                85   90   95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
            100   105   110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
        115   120   125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
    130   135   140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145   150   155   160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
                165   170   175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
            180   185   190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
        195   200   205

```
Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
    210                 215                 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
```

```
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
    530                 535                 540

Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545                 550                 555                 560

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
                565                 570                 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
            580                 585                 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
        595                 600                 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
    610                 615                 620

Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625                 630                 635                 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
                645                 650                 655

Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
            660                 665                 670
```

```
Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
        675                 680                 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
    690                 695                 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705                 710                 715                 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
                725                 730                 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
            740                 745                 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
        755                 760                 765

Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
    770                 775                 780

Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785                 790                 795                 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
                805                 810                 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
            820                 825                 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
        835                 840                 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
    850                 855                 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865                 870                 875                 880

Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
                885                 890                 895
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Arg Ala Phe Ala Asp Asp Pro
900

<210> 8746
<211> 903
<212> PRT
<213> Homo sapiens

<220>
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BCL2-associated athanogene 6; "

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Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly

100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
195 200 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
210 215 220

Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225 230 235 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
245 250 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
260 265 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
275 280 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
290 295 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305 310 315 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
325 330 335

```
Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445

Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
    530                 535                 540

Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545                 550                 555                 560
```

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
565 570 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
580 585 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
595 600 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
610 615 620

Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625 630 635 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
645 650 655

Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
660 665 670

Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
675 680 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
690 695 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705 710 715 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
725 730 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
740 745 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
755 760 765

Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
770 775 780

```
Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785                 790                 795                 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
                805                 810                 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
            820                 825                 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
        835                 840                 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
    850                 855                 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865                 870                 875                 880

Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
                885                 890                 895

Arg Ala Phe Ala Asp Asp Pro
            900


<210> 8747
<211> 903
<212> PRT
<213> Homo sapiens

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<400> 8747
Met Glu Pro Asn Asp Ser Thr Ser Thr Ala Val Glu Glu Pro Asp Ser
1 5 10 15

Leu Glu Val Leu Val Lys Thr Leu Asp Ser Gln Thr Arg Thr Phe Ile
20 25 30

Val Gly Ala Gln Met Asn Val Lys Glu Phe Lys Glu His Ile Ala Ala
35 40 45

Ser Val Ser Ile Pro Ser Glu Lys Gln Arg Leu Ile Tyr Gln Gly Arg
50 55 60

Val Leu Gln Asp Asp Lys Lys Leu Gln Glu Tyr Asn Val Gly Gly Lys
65 70 75 80

Val Ile His Leu Val Glu Arg Ala Pro Pro Gln Thr His Leu Pro Ser
85 90 95

Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Ala Thr His Gly Gly Gly
100 105 110

Ser Pro Pro Gly Thr Arg Gly Pro Gly Ala Ser Val His Asp Arg Asn
115 120 125

Ala Asn Ser Tyr Val Met Val Gly Thr Phe Asn Leu Pro Ser Asp Gly
130 135 140

Ser Ala Val Asp Val His Ile Asn Met Glu Gln Ala Pro Ile Gln Ser
145 150 155 160

Glu Pro Arg Val Arg Leu Val Met Ala Gln His Met Ile Arg Asp Ile
165 170 175

Gln Thr Leu Leu Ser Arg Met Glu Cys Arg Gly Gly Pro Gln Pro Gln
180 185 190

His Ser Gln Pro Pro Pro Gln Pro Pro Ala Val Thr Pro Glu Pro Val
195 200 205

Ala Leu Ser Ser Gln Thr Ser Glu Pro Val Glu Ser Glu Ala Pro Pro
210 215 220

```
Arg Glu Pro Met Glu Ala Glu Glu Val Glu Glu Arg Ala Pro Ala Gln
225                 230                 235                 240

Asn Pro Glu Leu Thr Pro Gly Pro Ala Pro Ala Gly Pro Thr Pro Ala
                245                 250                 255

Pro Glu Thr Asn Ala Pro Asn His Pro Ser Pro Ala Glu Tyr Val Glu
            260                 265                 270

Val Leu Gln Glu Leu Gln Arg Leu Glu Ser Arg Leu Gln Pro Phe Leu
        275                 280                 285

Gln Arg Tyr Tyr Glu Val Leu Gly Ala Ala Ala Thr Thr Asp Tyr Asn
    290                 295                 300

Asn Asn His Glu Gly Arg Glu Glu Asp Gln Arg Leu Ile Asn Leu Val
305                 310                 315                 320

Gly Glu Ser Leu Arg Leu Leu Gly Asn Thr Phe Val Ala Leu Ser Asp
                325                 330                 335

Leu Arg Cys Asn Leu Ala Cys Thr Pro Pro Arg His Leu His Val Val
            340                 345                 350

Arg Pro Met Ser His Tyr Thr Thr Pro Met Val Leu Gln Gln Ala Ala
        355                 360                 365

Ile Pro Ile Gln Ile Asn Val Gly Thr Thr Val Thr Met Thr Gly Asn
    370                 375                 380

Gly Thr Arg Pro Pro Pro Thr Pro Asn Ala Glu Ala Pro Pro Pro Gly
385                 390                 395                 400

Pro Gly Gln Ala Ser Ser Val Ala Pro Ser Ser Thr Asn Val Glu Ser
                405                 410                 415

Ser Ala Glu Gly Ala Pro Pro Pro Gly Pro Ala Pro Pro Pro Ala Thr
            420                 425                 430

Ser His Pro Arg Val Ile Arg Ile Ser His Gln Ser Val Glu Pro Val
        435                 440                 445
```

```
Val Met Met His Met Asn Ile Gln Asp Ser Gly Thr Gln Pro Gly Gly
    450                 455                 460

Val Pro Ser Ala Pro Thr Gly Pro Leu Gly Pro Pro Gly His Gly Gln
465                 470                 475                 480

Thr Leu Gly Gln Gln Val Pro Gly Phe Pro Thr Ala Pro Thr Arg Val
                485                 490                 495

Val Ile Ala Arg Pro Thr Pro Pro Gln Ala Arg Pro Ser His Pro Gly
            500                 505                 510

Gly Pro Pro Val Ser Gly Thr Leu Gly Ala Gly Leu Gly Thr Asn Ala
        515                 520                 525

Ser Leu Ala Gln Met Val Ser Gly Leu Val Gly Gln Leu Leu Met Gln
    530                 535                 540

Pro Val Leu Val Ala Gln Gly Thr Pro Gly Ser Pro Gly Gly Leu Gly
545                 550                 555                 560

Leu Glu Ser Leu Ser Pro Glu Phe Phe Thr Ser Val Val Gln Gly Val
                565                 570                 575

Leu Ser Ser Leu Leu Gly Ser Leu Gly Ala Arg Ala Gly Ser Ser Glu
            580                 585                 590

Ser Ile Ala Ala Phe Ile Gln Arg Leu Ser Gly Ser Ser Asn Ile Phe
        595                 600                 605

Glu Pro Gly Ala Asp Gly Ala Leu Gly Phe Phe Gly Ala Leu Leu Ser
    610                 615                 620

Leu Leu Cys Gln Asn Phe Ser Met Val Asp Val Val Met Leu Leu His
625                 630                 635                 640

Gly His Phe Gln Pro Leu Gln Arg Leu Gln Pro Gln Leu Arg Ser Phe
                645                 650                 655

Phe His Gln His Tyr Leu Gly Gly Gln Glu Pro Thr Pro Ser Asn Ile
            660                 665                 670

Arg Met Ala Thr His Thr Leu Ile Thr Gly Leu Glu Glu Tyr Val Arg
```

675 680 685

Glu Ser Phe Ser Leu Val Gln Val Gln Pro Gly Val Asp Ile Ile Arg
690 695 700

Thr Asn Leu Glu Phe Leu Gln Glu Gln Phe Asn Ser Ile Ala Ala His
705 710 715 720

Val Leu His Cys Thr Asp Ser Gly Phe Gly Ala Arg Leu Leu Glu Leu
725 730 735

Cys Asn Gln Gly Leu Phe Glu Cys Leu Ala Leu Asn Leu His Cys Leu
740 745 750

Gly Gly Gln Gln Met Glu Leu Ala Ala Val Ile Asn Gly Arg Ile Arg
755 760 765

Arg Met Ser Arg Gly Val Asn Pro Ser Leu Val Ser Trp Leu Thr Thr
770 775 780

Met Met Gly Leu Arg Leu Gln Val Val Leu Glu His Met Pro Val Gly
785 790 795 800

Pro Asp Ala Ile Leu Arg Tyr Val Arg Arg Val Gly Asp Pro Pro Gln
805 810 815

Pro Leu Pro Glu Glu Pro Met Glu Val Gln Gly Ala Glu Arg Ala Ser
820 825 830

Pro Glu Pro Gln Glu Trp Val Pro Ile Ile Gln Gln Asp Ile Gln Ser
835 840 845

Gln Arg Lys Val Lys Pro Gln Pro Pro Leu Ser Asp Ala Tyr Leu Ser
850 855 860

Gly Met Pro Ala Lys Arg Arg Lys Leu Arg Ser Asp Ile Gln Lys Arg
865 870 875 880

Leu Gln Glu Asp Pro Asn Tyr Ser Pro Gln Arg Phe Pro Asn Ala Gln
885 890 895

Arg Ala Phe Ala Asp Asp Pro
900

<210> 8748
<211> 869
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1784; "

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<221> source
<223> /note="Gene Symbol: BCLAF1; "

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factor
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<220>
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Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1   5   10   15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20   25   30

Arg Tyr Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser Arg Asp
        35   40   45

Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn Arg Gly
    50   55   60

Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr Tyr Gln
65   70   75   80

Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val Trp Asn
                85   90   95

Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser Arg Ser
            100   105   110

```
Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg Ser Arg
        115                 120                 125

Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser Arg Ser
    130                 135                 140

Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly Ser Gln
145                 150                 155                 160

Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu Ser Pro
                165                 170                 175

Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu His Asp
            180                 185                 190

Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr Ser Gly
        195                 200                 205

Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg Ser Pro
    210                 215                 220

His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser Ser Cys
225                 230                 235                 240

Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn Thr Pro
                245                 250                 255

Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser Gly Ser
            260                 265                 270

Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln Asn Ser
        275                 280                 285

Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr Ile Ala
    290                 295                 300

Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser Phe Tyr
305                 310                 315                 320

Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe Leu Lys
                325                 330                 335
```

```
Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg Gly Asn
            340                 345                 350

Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys Gly Arg
        355                 360                 365

Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe Ser Asp
    370                 375                 380

Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp Asp Thr
385                 390                 395                 400

Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu Ala Asp
                405                 410                 415

Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu Glu Glu
            420                 425                 430

Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg Glu Ser
        435                 440                 445

Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr Gly Tyr
    450                 455                 460

Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu Glu Asp
465                 470                 475                 480

Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser Pro Glu
                485                 490                 495

Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser Pro Pro
            500                 505                 510

Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg Glu Glu
        515                 520                 525

Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg Pro Glu
    530                 535                 540

Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn Arg Pro
545                 550                 555                 560
```

```
Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val His Ser
                565                 570                 575

Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile Lys Leu
            580                 585                 590

Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His Ile Val
        595                 600                 605

Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala Ala Met
    610                 615                 620

Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu Glu His
625                 630                 635                 640

Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp Ile Ser
                645                 650                 655

Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu Arg Val
            660                 665                 670

Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys Asp Ser
        675                 680                 685

Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg Ser Lys
    690                 695                 700

Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser Arg Lys
705                 710                 715                 720

Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr Lys Asp
                725                 730                 735

Asp Ser Lys His Lys Arg Glu Gln Asp His Ser Arg Ser Ser Ser Ser
            740                 745                 750

Ser Ala Ser Pro Ser Ser Pro Ser Ser Arg Glu Glu Lys Glu Ser Lys
        755                 760                 765

Lys Glu Arg Glu Glu Glu Phe Lys Thr His His Glu Met Lys Glu Tyr
    770                 775                 780

Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly Thr Phe His Asp Asp
```

785 790 795 800

Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys Arg Gly Arg Gly Arg Gly
805 810 815

Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn Phe Lys Lys Ser Gly Ser
820 825 830

Ser Pro Lys Trp Thr His Asp Lys Tyr Gln Gly Asp Gly Ile Val Glu
835 840 845

Asp Glu Glu Glu Thr Met Glu Asn Asn Glu Glu Lys Lys Asp Arg Arg
850 855 860

Lys Glu Glu Lys Glu
865

<210> 8749
<211> 869
<212> PRT
<213> Homo sapiens

<220>
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factor
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<220>
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<400> 8749
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1 5 10 15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys

```
            20                  25                  30

Arg Tyr Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser Arg Asp
        35                  40                  45

Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn Arg Gly
    50                  55                  60

Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr Tyr Gln
65                  70                  75                  80

Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val Trp Asn
                85                  90                  95

Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser Arg Ser
            100                 105                 110

Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg Ser Arg
        115                 120                 125

Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser Arg Ser
    130                 135                 140

Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly Ser Gln
145                 150                 155                 160

Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu Ser Pro
                165                 170                 175

Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu His Asp
            180                 185                 190

Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr Ser Gly
        195                 200                 205

Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg Ser Pro
    210                 215                 220

His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser Ser Cys
225                 230                 235                 240

Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn Thr Pro
                245                 250                 255
```

```
Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser Gly Ser
            260                 265                 270

Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln Asn Ser
        275                 280                 285

Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr Ile Ala
    290                 295                 300

Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser Phe Tyr
305                 310                 315                 320

Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe Leu Lys
                325                 330                 335

Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg Gly Asn
            340                 345                 350

Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys Gly Arg
        355                 360                 365

Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe Ser Asp
    370                 375                 380

Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp Asp Thr
385                 390                 395                 400

Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu Ala Asp
                405                 410                 415

Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu Glu Glu
            420                 425                 430

Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg Glu Ser
        435                 440                 445

Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr Gly Tyr
    450                 455                 460

Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu Glu Asp
465                 470                 475                 480
```

Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser Pro Glu
485 490 495

Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser Pro Pro
500 505 510

Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg Glu Glu
515 520 525

Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg Pro Glu
530 535 540

Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn Arg Pro
545 550 555 560

Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val His Ser
565 570 575

Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile Lys Leu
580 585 590

Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His Ile Val
595 600 605

Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala Ala Met
610 615 620

Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu Glu His
625 630 635 640

Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp Ile Ser
645 650 655

Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu Arg Val
660 665 670

Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys Asp Ser
675 680 685

Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg Ser Lys
690 695 700

```
Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser Arg Lys
705                 710                 715                 720

Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr Lys Asp
                725                 730                 735

Asp Ser Lys His Lys Arg Glu Gln Asp His Ser Arg Ser Ser Ser Ser
            740                 745                 750

Ser Ala Ser Pro Ser Ser Pro Ser Ser Arg Glu Glu Lys Glu Ser Lys
        755                 760                 765

Lys Glu Arg Glu Glu Glu Phe Lys Thr His His Glu Met Lys Glu Tyr
    770                 775                 780

Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly Thr Phe His Asp Asp
785                 790                 795                 800

Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys Arg Gly Arg Gly Arg Gly
                805                 810                 815

Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn Phe Lys Lys Ser Gly Ser
            820                 825                 830

Ser Pro Lys Trp Thr His Asp Lys Tyr Gln Gly Asp Gly Ile Val Glu
        835                 840                 845

Asp Glu Glu Glu Thr Met Glu Asn Asn Glu Glu Lys Lys Asp Arg Arg
    850                 855                 860

Lys Glu Glu Lys Glu
865
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<210> 8750
<211> 725
<212> PRT
<213> Homo sapiens

<220>
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<220>
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factor
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<400> 8750

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Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                  10                  15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30

Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
        35                  40                  45

Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
    50                  55                  60

Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65                  70                  75                  80

Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
                85                  90                  95

Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
            100                 105                 110

Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
        115                 120                 125

Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
    130                 135                 140

Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly
145                 150                 155                 160

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
                165                 170                 175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
```

```
            180                 185                 190

His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
        195                 200                 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
    210                 215                 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225                 230                 235                 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
                245                 250                 255

Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
            260                 265                 270

Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
        275                 280                 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
    290                 295                 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305                 310                 315                 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
                325                 330                 335

Leu Lys Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg
            340                 345                 350

Gly Asn Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys
        355                 360                 365

Gly Arg Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe
    370                 375                 380

Ser Asp Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp
385                 390                 395                 400

Asp Thr Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu
                405                 410                 415
```

```
Ala Asp Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu
            420                 425                 430

Glu Glu Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg
        435                 440                 445

Glu Ser Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr
    450                 455                 460

Gly Tyr Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu
465                 470                 475                 480

Glu Asp Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser
                485                 490                 495

Pro Glu Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser
            500                 505                 510

Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg
        515                 520                 525

Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg
    530                 535                 540

Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn
545                 550                 555                 560

Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val
                565                 570                 575

His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile
            580                 585                 590

Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His
        595                 600                 605

Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala
    610                 615                 620

Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu
625                 630                 635                 640
```

```
Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Ile Asp Ile
                645                 650                 655

Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu Arg
            660                 665                 670

Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys Asp
        675                 680                 685

Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg Ser
    690                 695                 700

Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser Arg
705                 710                 715                 720

Lys Gln Glu Lys Thr
                725


<210> 8751
<211> 752
<212> PRT
<213> Homo sapiens

<220>
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<400> 8751
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                  10                  15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30
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Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
        35                  40                  45

Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
    50                  55                  60

Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65                  70                  75                  80

Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
                85                  90                  95

Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
            100                 105                 110

Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
        115                 120                 125

Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
    130                 135                 140

Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly
145                 150                 155                 160

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
                165                 170                 175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
            180                 185                 190

His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
        195                 200                 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
    210                 215                 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225                 230                 235                 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
                245                 250                 255
```

```
Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
            260                 265                 270

Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
        275                 280                 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
    290                 295                 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305                 310                 315                 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
                325                 330                 335

Leu Lys Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg
            340                 345                 350

Gly Asn Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys
        355                 360                 365

Gly Arg Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe
    370                 375                 380

Ser Asp Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp
385                 390                 395                 400

Asp Thr Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu
                405                 410                 415

Ala Asp Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu
            420                 425                 430

Glu Glu Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg
        435                 440                 445

Glu Ser Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr
    450                 455                 460

Gly Tyr Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu
465                 470                 475                 480

Glu Asp Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser
```

485 490 495

Pro Glu Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser
500 505 510

Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg
515 520 525

Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg
530 535 540

Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn
545 550 555 560

Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val
565 570 575

His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile
580 585 590

Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His
595 600 605

Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala
610 615 620

Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu
625 630 635 640

Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp
645 650 655

Ile Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu
660 665 670

Arg Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys
675 680 685

Asp Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg
690 695 700

Ser Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser
705 710 715 720

```
Arg Lys Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr
                725                 730                 735


Lys Asp Asp Ser Lys Asn Val Phe Val Phe Tyr Thr Ala Tyr Gly Gly
            740                 745                 750


<210> 8752
<211> 467
<212> PRT
<213> Homo sapiens

<220>
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<400> 8752
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                   10                  15


Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30


Arg Tyr Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser Arg Asp
        35                  40                  45


Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn Arg Gly
    50                  55                  60


Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr Tyr Gln
65                  70                  75                  80


Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val Trp Asn
                85                  90                  95
```

```
Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser Arg Ser
            100                 105                 110

Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg Ser Arg
        115                 120                 125

Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser Arg Ser
    130                 135                 140

Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly Ser Gln
145                 150                 155                 160

Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu Ser Pro
                165                 170                 175

Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu His Asp
            180                 185                 190

Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr Ser Gly
        195                 200                 205

Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg Ser Pro
    210                 215                 220

His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser Ser Cys
225                 230                 235                 240

Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn Thr Pro
                245                 250                 255

Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser Gly Ser
            260                 265                 270

Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln Asn Ser
        275                 280                 285

Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr Ile Ala
    290                 295                 300

Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser Phe Tyr
305                 310                 315                 320
```

```
Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe Leu Lys
                325                 330                 335

Ser Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe
            340                 345                 350

Arg Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His
        355                 360                 365

Arg Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser
    370                 375                 380

Asn Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu
385                 390                 395                 400

Val His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His
                405                 410                 415

Ile Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln
            420                 425                 430

His Ile Val Ser Leu Val His His Val Lys Gly Pro Gly Ile Cys Phe
        435                 440                 445

Glu Met Ala Lys Ser Met Phe Gln Ser Lys Ile Ala Val Glu Arg Tyr
    450                 455                 460

Arg Gln Ser
465


<210> 8753
<211> 918
<212> PRT
<213> Homo sapiens

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<400> 8753

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Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                  10                  15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30

Arg Tyr Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser Arg Asp
        35                  40                  45

Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn Arg Gly
    50                  55                  60

Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr Tyr Gln
65                  70                  75                  80

Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val Trp Asn
                85                  90                  95

Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser Arg Ser
            100                 105                 110

Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg Ser Arg
        115                 120                 125

Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser Arg Ser
    130                 135                 140

Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly Ser Gln
145                 150                 155                 160

Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu Ser Pro
                165                 170                 175
```

```
Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu His Asp
            180                 185                 190

Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr Ser Gly
        195                 200                 205

Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg Ser Pro
    210                 215                 220

His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser Ser Cys
225                 230                 235                 240

Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn Thr Pro
                245                 250                 255

Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser Gly Ser
            260                 265                 270

Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln Asn Ser
        275                 280                 285

Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr Ile Ala
    290                 295                 300

Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser Phe Tyr
305                 310                 315                 320

Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe Leu Lys
                325                 330                 335

Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg Gly Asn
            340                 345                 350

Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys Gly Arg
        355                 360                 365

Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe Ser Asp
    370                 375                 380

Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp Asp Thr
385                 390                 395                 400

Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu Ala Asp
```

```
                405                 410                 415

Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu Glu Glu
            420                 425                 430

Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg Glu Ser
        435                 440                 445

Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr Gly Tyr
    450                 455                 460

Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu Glu Asp
465                 470                 475                 480

Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser Pro Glu
                485                 490                 495

Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser Pro Pro
            500                 505                 510

Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg Glu Glu
        515                 520                 525

Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg Pro Glu
    530                 535                 540

Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn Arg Pro
545                 550                 555                 560

Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val His Ser
                565                 570                 575

Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile Lys Leu
            580                 585                 590

Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His Ile Val
        595                 600                 605

Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala Ala Met
    610                 615                 620

Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu Glu His
625                 630                 635                 640
```

```
Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp Ile Ser
                645                 650                 655

Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu Arg Val
            660                 665                 670

Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys Asp Ser
        675                 680                 685

Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg Ser Lys
    690                 695                 700

Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser Arg Lys
705                 710                 715                 720

Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr Lys Asp
                725                 730                 735

Asp Ser Lys His Lys Arg Glu Gln Asp His Ser Arg Ser Ser Ser Ser
            740                 745                 750

Ser Ala Ser Pro Ser Ser Pro Ser Ser Arg Glu Glu Lys Glu Ser Lys
        755                 760                 765

Lys Glu Arg Glu Glu Glu Phe Lys Thr His His Glu Met Lys Glu Tyr
    770                 775                 780

Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly Thr Phe Phe Arg Ile
785                 790                 795                 800

Arg Gly Arg Gly Arg Ala Arg Gly Val Phe Ala Gly Thr Asn Thr Gly
                805                 810                 815

Pro Asn Asn Ser Asn Thr Thr Phe Gln Lys Arg Pro Lys Glu Glu Glu
            820                 825                 830

Trp Asp Pro Glu Tyr Thr Pro Lys Ser Lys Lys Tyr Phe Leu His Asp
        835                 840                 845

Asp Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys Arg Gly Arg Gly Arg
    850                 855                 860
```

```
Gly Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn Phe Lys Lys Ser Gly
865                 870                 875                 880

Ser Ser Pro Lys Trp Thr His Asp Lys Tyr Gln Gly Asp Gly Ile Val
                885                 890                 895

Glu Asp Glu Glu Glu Thr Met Glu Asn Asn Glu Glu Lys Lys Asp Arg
            900                 905                 910

Arg Lys Glu Glu Lys Glu
        915


<210> 8754
<211> 920
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8754
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                   10                  15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30

Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
        35                  40                  45
```

```
Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
    50                  55                  60

Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65                  70                  75                  80

Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
                85                  90                  95

Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
            100                 105                 110

Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
        115                 120                 125

Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
    130                 135                 140

Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly
145                 150                 155                 160

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
                165                 170                 175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
            180                 185                 190

His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
        195                 200                 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
    210                 215                 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225                 230                 235                 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
                245                 250                 255

Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
            260                 265                 270
```

```
Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
        275                 280                 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
    290                 295                 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305                 310                 315                 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
                325                 330                 335

Leu Lys Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg
            340                 345                 350

Gly Asn Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys
        355                 360                 365

Gly Arg Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe
    370                 375                 380

Ser Asp Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp
385                 390                 395                 400

Asp Thr Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu
                405                 410                 415

Ala Asp Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu
            420                 425                 430

Glu Glu Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg
        435                 440                 445

Glu Ser Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr
    450                 455                 460

Gly Tyr Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu
465                 470                 475                 480

Glu Asp Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser
                485                 490                 495

Pro Glu Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser
```

```
            500                 505                 510

Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg
        515                 520                 525

Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg
    530                 535                 540

Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn
545                 550                 555                 560

Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val
                565                 570                 575

His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile
            580                 585                 590

Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His
        595                 600                 605

Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala
    610                 615                 620

Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu
625                 630                 635                 640

Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp
                645                 650                 655

Ile Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu
            660                 665                 670

Arg Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys
        675                 680                 685

Asp Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg
    690                 695                 700

Ser Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser
705                 710                 715                 720

Arg Lys Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr
                725                 730                 735
```

Lys Asp Asp Ser Lys His Lys Arg Glu Gln Asp His Ser Arg Ser Ser
740 745 750

Ser Ser Ser Ala Ser Pro Ser Ser Pro Ser Ser Arg Glu Glu Lys Glu
755 760 765

Ser Lys Lys Glu Arg Glu Glu Glu Phe Lys Thr His His Glu Met Lys
770 775 780

Glu Tyr Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly Thr Phe Phe
785 790 795 800

Arg Ile Arg Gly Arg Gly Arg Ala Arg Gly Val Phe Ala Gly Thr Asn
805 810 815

Thr Gly Pro Asn Asn Ser Asn Thr Thr Phe Gln Lys Arg Pro Lys Glu
820 825 830

Glu Glu Trp Asp Pro Glu Tyr Thr Pro Lys Ser Lys Lys Tyr Phe Leu
835 840 845

His Asp Asp Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys Arg Gly Arg
850 855 860

Gly Arg Gly Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn Phe Lys Lys
865 870 875 880

Ser Gly Ser Ser Pro Lys Trp Thr His Asp Lys Tyr Gln Gly Asp Gly
885 890 895

Ile Val Glu Asp Glu Glu Glu Thr Met Glu Asn Asn Glu Glu Lys Lys
900 905 910

Asp Arg Arg Lys Glu Glu Lys Glu
915 920

<210> 8755
<211> 871
<212> PRT
<213> Homo sapiens

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<400> 8755

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Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                  10                  15


Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30


Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
        35                  40                  45


Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
    50                  55                  60


Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65                  70                  75                  80


Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
                85                  90                  95


Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
            100                 105                 110


Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
        115                 120                 125


Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
    130                 135                 140


Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly
145                 150                 155                 160
```

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
165 170 175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
180 185 190

His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
195 200 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
210 215 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225 230 235 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
245 250 255

Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
260 265 270

Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
275 280 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
290 295 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305 310 315 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
325 330 335

Leu Lys Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg
340 345 350

Gly Asn Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys
355 360 365

Gly Arg Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe
370 375 380

```
Ser Asp Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp
385                 390                 395                 400

Asp Thr Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu
                405                 410                 415

Ala Asp Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu
            420                 425                 430

Glu Glu Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg
        435                 440                 445

Glu Ser Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr
    450                 455                 460

Gly Tyr Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu
465                 470                 475                 480

Glu Asp Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser
                485                 490                 495

Pro Glu Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser
            500                 505                 510

Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg
        515                 520                 525

Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg
    530                 535                 540

Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn
545                 550                 555                 560

Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val
                565                 570                 575

His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile
            580                 585                 590

Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His
        595                 600                 605

Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala
```

610 615 620

Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu
625 630 635 640

Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp
645 650 655

Ile Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu
660 665 670

Arg Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys
675 680 685

Asp Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg
690 695 700

Ser Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser
705 710 715 720

Arg Lys Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr
725 730 735

Lys Asp Asp Ser Lys His Lys Arg Glu Gln Asp His Ser Arg Ser Ser
740 745 750

Ser Ser Ser Ala Ser Pro Ser Ser Pro Ser Ser Arg Glu Glu Lys Glu
755 760 765

Ser Lys Lys Glu Arg Glu Glu Glu Phe Lys Thr His His Glu Met Lys
770 775 780

Glu Tyr Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly Thr Phe His
785 790 795 800

Asp Asp Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys Arg Gly Arg Gly
805 810 815

Arg Gly Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn Phe Lys Lys Ser
820 825 830

Gly Ser Ser Pro Lys Trp Thr His Asp Lys Tyr Gln Gly Asp Gly Ile
835 840 845

```
Val Glu Asp Glu Glu Glu Thr Met Glu Asn Asn Glu Glu Lys Lys Asp
    850                 855                 860

Arg Arg Lys Glu Glu Lys Glu
865                 870
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<210> 8756
<211> 750
<212> PRT
<213> Homo sapiens

<220>
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<400> 8756

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Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1               5                   10                  15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20                  25                  30

Arg Tyr Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser Arg Asp
        35                  40                  45

Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn Arg Gly
    50                  55                  60

Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr Tyr Gln
65                  70                  75                  80

Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val Trp Asn
                85                  90                  95
```

```
Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser Arg Ser
            100                 105                 110

Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg Ser Arg
        115                 120                 125

Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser Arg Ser
    130                 135                 140

Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly Ser Gln
145                 150                 155                 160

Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu Ser Pro
                165                 170                 175

Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu His Asp
            180                 185                 190

Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr Ser Gly
        195                 200                 205

Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg Ser Pro
    210                 215                 220

His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser Ser Cys
225                 230                 235                 240

Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn Thr Pro
                245                 250                 255

Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser Gly Ser
            260                 265                 270

Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln Asn Ser
        275                 280                 285

Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr Ile Ala
    290                 295                 300

Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser Phe Tyr
305                 310                 315                 320
```

```
Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe Leu Lys
                325                 330                 335

Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg Gly Asn
            340                 345                 350

Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys Gly Arg
        355                 360                 365

Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe Ser Asp
    370                 375                 380

Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp Asp Thr
385                 390                 395                 400

Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu Ala Asp
                405                 410                 415

Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu Glu Glu
            420                 425                 430

Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg Glu Ser
        435                 440                 445

Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr Gly Tyr
    450                 455                 460

Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu Glu Asp
465                 470                 475                 480

Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser Pro Glu
                485                 490                 495

Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser Pro Pro
            500                 505                 510

Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg Glu Glu
        515                 520                 525

Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg Pro Glu
    530                 535                 540
```

```
Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn Arg Pro
545                 550                 555                 560

Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val His Ser
                565                 570                 575

Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile Lys Leu
            580                 585                 590

Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His Ile Val
        595                 600                 605

Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala Ala Met
    610                 615                 620

Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu Glu His
625                 630                 635                 640

Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp Ile Ser
                645                 650                 655

Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu Arg Val
            660                 665                 670

Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys Asp Ser
        675                 680                 685

Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg Ser Lys
    690                 695                 700

Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser Arg Lys
705                 710                 715                 720

Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr Lys Asp
                725                 730                 735

Asp Ser Lys Asn Val Phe Val Phe Tyr Thr Ala Tyr Gly Gly
            740                 745                 750
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<210> 8757
<211> 752
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1784; "

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factor
1; "

<220>
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<400> 8757
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1 5 10 15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
20 25 30

Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
35 40 45

Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
50 55 60

Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65 70 75 80

Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
85 90 95

Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
100 105 110

Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
115 120 125

Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
130 135 140

Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly

145 150 155 160

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
165 170 175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
180 185 190

His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
195 200 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
210 215 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225 230 235 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
245 250 255

Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
260 265 270

Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
275 280 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
290 295 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305 310 315 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
325 330 335

Leu Lys Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg
340 345 350

Gly Asn Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys
355 360 365

Gly Arg Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe
370 375 380

```
Ser Asp Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp
385                 390                 395                 400

Asp Thr Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu
                405                 410                 415

Ala Asp Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu
            420                 425                 430

Glu Glu Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg
        435                 440                 445

Glu Ser Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr
    450                 455                 460

Gly Tyr Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu
465                 470                 475                 480

Glu Asp Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser
                485                 490                 495

Pro Glu Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser
            500                 505                 510

Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg
        515                 520                 525

Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg
    530                 535                 540

Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn
545                 550                 555                 560

Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val
                565                 570                 575

His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile
            580                 585                 590

Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His
        595                 600                 605
```

```
Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala
    610                 615                 620

Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu
625                 630                 635                 640

Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp
                645                 650                 655

Ile Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu
            660                 665                 670

Arg Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys
        675                 680                 685

Asp Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg
    690                 695                 700

Ser Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser
705                 710                 715                 720

Arg Lys Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr
                725                 730                 735

Lys Asp Asp Ser Lys Asn Val Phe Val Phe Tyr Thr Ala Tyr Gly Gly
            740                 745                 750
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<210> 8758
<211> 747
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1784; "

<220>
<221> source
<223> /note="Gene Symbol: BCLAF1; "

<220>
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<223> /note="Gene Name:
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factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NYF8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436501"

<400> 8758
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1   5   10   15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
            20   25   30

Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
        35   40   45

Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
    50   55   60

Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65   70   75   80

Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
                85   90   95

Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
            100   105   110

Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
        115   120   125

Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
    130   135   140

Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly
145   150   155   160

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
                165   170   175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
            180   185   190

```
His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
        195                 200                 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
    210                 215                 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225                 230                 235                 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
                245                 250                 255

Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
            260                 265                 270

Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
        275                 280                 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
    290                 295                 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305                 310                 315                 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
                325                 330                 335

Leu Lys Ser Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser
            340                 345                 350

Thr Phe Arg Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp
        355                 360                 365

Ser His Arg Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp
    370                 375                 380

Asp Ser Asn Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser
385                 390                 395                 400

Thr Leu Val His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe
                405                 410                 415

Asp His Ile Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe
```

```
            420                 425                 430

Ile Gln His Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe
        435                 440                 445

Lys Ser Ala Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys
    450                 455                 460

Ala Thr Glu Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg
465                 470                 475                 480

Arg Ile Asp Ile Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala
                485                 490                 495

Gly Glu Glu Arg Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys
            500                 505                 510

Leu Arg Cys Asp Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg
        515                 520                 525

Lys Glu Arg Ser Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser
    530                 535                 540

Ser Gly Ser Arg Lys Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr
545                 550                 555                 560

Lys Ser Tyr Lys Asp Asp Ser Lys His Lys Arg Glu Gln Asp His Ser
                565                 570                 575

Arg Ser Ser Ser Ser Ser Ala Ser Pro Ser Ser Pro Ser Ser Arg Glu
            580                 585                 590

Glu Lys Glu Ser Lys Lys Glu Arg Glu Glu Glu Phe Lys Thr His His
        595                 600                 605

Glu Met Lys Glu Tyr Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly
    610                 615                 620

Thr Phe Phe Arg Ile Arg Gly Arg Gly Arg Ala Arg Gly Val Phe Ala
625                 630                 635                 640

Gly Thr Asn Thr Gly Pro Asn Asn Ser Asn Thr Thr Phe Gln Lys Arg
                645                 650                 655
```

```
Pro Lys Glu Glu Glu Trp Asp Pro Glu Tyr Thr Pro Lys Ser Lys Lys
            660                 665                 670

Tyr Phe Leu His Asp Asp Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys
        675                 680                 685

Arg Gly Arg Gly Arg Gly Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn
    690                 695                 700

Phe Lys Lys Ser Gly Ser Ser Pro Lys Trp Thr His Asp Lys Tyr Gln
705                 710                 715                 720

Gly Asp Gly Ile Val Glu Asp Glu Glu Glu Thr Met Glu Asn Asn Glu
                725                 730                 735

Glu Lys Lys Asp Arg Arg Lys Glu Glu Lys Glu
            740                 745


<210> 8759
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1784; "

<220>
<221> source
<223> /note="Gene Symbol: BCLAF1; "

<220>
<221> source
<223> /note="Gene Name:
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      factor
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436913"

<400> 8759
Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser Gly Ser Gly
1               5                   10                  15

Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln Asn Ser Pro
            20                  25                  30
```

```
Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr Ile Ala Pro
        35                  40                  45

Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser Phe Tyr Pro
    50                  55                  60

Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe Leu Lys Arg
65                  70                  75                  80

Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg Val Pro Leu
                85                  90                  95

Tyr Thr Arg Ile Trp Met His Glu Lys Ser Leu Pro Ser Glu Arg Lys
            100                 105                 110

Ala His Leu Gly Ser Lys
        115


<210> 8760
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1784; "

<220>
<221> source
<223> /note="Gene Symbol: BCLAF1; "

<220>
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<223> /note="Gene Name:
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      factor
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437018"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8760
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Xaa Gly Ser Arg Glu Ser Ser Gly Ser Arg Lys Gln Glu Lys Thr Pro
1               5                   10                  15

Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr Lys Asp Asp Ser Ser Arg Glu
            20                  25                  30

Glu Lys Glu Ser Lys Lys Glu Arg Glu Glu Glu Phe Lys Thr His His
        35                  40                  45

Glu Met Lys Glu Tyr Ser Gly Phe Ala Gly Val Ser Arg Pro Arg Gly
    50                  55                  60

Thr Phe Phe Arg Ile Arg Gly Arg Gly Arg Ala Arg Gly Val Phe Ala
65                  70                  75                  80

Gly Thr Asn Thr Gly Pro Asn Asn Ser Asn Thr Thr Phe Gln Lys Arg
                85                  90                  95

Pro Lys Glu Glu Glu Trp Asp Pro Glu Tyr Thr Pro Lys Ser Lys Lys
            100                 105                 110

Tyr Phe Leu His Asp Asp Arg Asp Asp Gly Val Asp Tyr Trp Ala Lys
        115                 120                 125

Arg Gly Arg Gly Arg Gly Thr Phe Gln Arg Gly Arg Gly Arg Phe Asn
    130                 135                 140

Phe Lys Lys Ser Gly Ser Ser Pro Lys Trp Thr His Asp Lys Tyr Gln
145                 150                 155                 160

Gly Asp Gly Ile Val Glu Asp Glu Glu Glu Thr Met Glu Asn Asn Glu
                165                 170                 175

Glu Lys Lys Asp Arg Arg Lys Glu Glu Lys Glu
            180                 185
```

<210> 8761
<211> 126
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1784; "

<220>
<221> source
<223> /note="Gene Symbol: BCLAF1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated transcription
factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437333"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8761
Xaa Asp His Ser Arg Ser Ser Ser Ser Ser Ala Ser Pro Ser Ser Pro
1 5 10 15

Ser Ser Arg Glu Glu Lys Glu Ser Lys Lys Glu Arg Glu Glu Glu Phe
20 25 30

Lys Thr His His Glu Met Lys Glu Tyr Ser Gly Phe Ala Gly Val Ser
35 40 45

Arg Pro Arg Gly Thr Phe His Asp Asp Arg Asp Asp Gly Val Asp Tyr
50 55 60

Trp Ala Lys Arg Gly Arg Gly Arg Gly Thr Phe Gln Arg Gly Arg Gly
65 70 75 80

Arg Phe Asn Phe Lys Lys Ser Gly Ser Ser Pro Lys Trp Thr His Asp
85 90 95

Lys Tyr Gln Gly Asp Gly Ile Val Glu Asp Glu Glu Glu Thr Met Glu
100 105 110

Asn Asn Glu Glu Lys Lys Asp Arg Arg Lys Glu Glu Lys Glu
115 120 125

<210> 8762
<211> 752
<212> PRT

<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: BCLAF1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated transcription
factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487249"

<400> 8762
Met Gly Arg Ser Asn Ser Arg Ser His Ser Ser Arg Ser Lys Ser Arg
1 5 10 15

Ser Gln Ser Ser Ser Arg Ser Arg Ser Arg Ser His Ser Arg Lys Lys
20 25 30

Arg Tyr Ser Ser Arg Ser Arg Ser Arg Thr Tyr Ser Arg Ser Arg Ser
35 40 45

Arg Asp Arg Met Tyr Ser Arg Asp Tyr Arg Arg Asp Tyr Arg Asn Asn
50 55 60

Arg Gly Met Arg Arg Pro Tyr Gly Tyr Arg Gly Arg Gly Arg Gly Tyr
65 70 75 80

Tyr Gln Gly Gly Gly Gly Arg Tyr His Arg Gly Gly Tyr Arg Pro Val
85 90 95

Trp Asn Arg Arg His Ser Arg Ser Pro Arg Arg Gly Arg Ser Arg Ser
100 105 110

Arg Ser Pro Lys Arg Arg Ser Val Ser Ser Gln Arg Ser Arg Ser Arg
115 120 125

Ser Arg Arg Ser Tyr Arg Ser Ser Arg Ser Pro Arg Ser Ser Ser Ser
130 135 140

```
Arg Ser Ser Ser Pro Tyr Ser Lys Ser Pro Val Ser Lys Arg Arg Gly
145                 150                 155                 160

Ser Gln Glu Lys Gln Thr Lys Lys Ala Glu Gly Glu Pro Gln Glu Glu
                165                 170                 175

Ser Pro Leu Lys Ser Lys Ser Gln Glu Glu Pro Lys Asp Thr Phe Glu
            180                 185                 190

His Asp Pro Ser Glu Ser Ile Asp Glu Phe Asn Lys Ser Ser Ala Thr
        195                 200                 205

Ser Gly Asp Ile Trp Pro Gly Leu Ser Ala Tyr Asp Asn Ser Pro Arg
    210                 215                 220

Ser Pro His Ser Pro Ser Pro Ile Ala Thr Pro Pro Ser Gln Ser Ser
225                 230                 235                 240

Ser Cys Ser Asp Ala Pro Met Leu Ser Thr Val His Ser Ala Lys Asn
                245                 250                 255

Thr Pro Ser Gln His Ser His Ser Ile Gln His Ser Pro Glu Arg Ser
            260                 265                 270

Gly Ser Gly Ser Val Gly Asn Gly Ser Ser Arg Tyr Ser Pro Ser Gln
        275                 280                 285

Asn Ser Pro Ile His His Ile Pro Ser Arg Arg Ser Pro Ala Lys Thr
    290                 295                 300

Ile Ala Pro Gln Asn Ala Pro Arg Asp Glu Ser Arg Gly Arg Ser Ser
305                 310                 315                 320

Phe Tyr Pro Asp Gly Gly Asp Gln Glu Thr Ala Lys Thr Gly Lys Phe
                325                 330                 335

Leu Lys Arg Phe Thr Asp Glu Glu Ser Arg Val Phe Leu Leu Asp Arg
            340                 345                 350

Gly Asn Thr Arg Asp Lys Glu Ala Ser Lys Glu Lys Gly Ser Glu Lys
        355                 360                 365
```

```
Gly Arg Ala Glu Gly Glu Trp Glu Asp Gln Glu Ala Leu Asp Tyr Phe
    370                 375                 380

Ser Asp Lys Glu Ser Gly Lys Gln Lys Phe Asn Asp Ser Glu Gly Asp
385                 390                 395                 400

Asp Thr Glu Glu Thr Glu Asp Tyr Arg Gln Phe Arg Lys Ser Val Leu
                405                 410                 415

Ala Asp Gln Gly Lys Ser Phe Ala Thr Ala Ser His Arg Asn Thr Glu
            420                 425                 430

Glu Glu Gly Leu Lys Tyr Lys Ser Lys Val Ser Leu Lys Gly Asn Arg
        435                 440                 445

Glu Ser Asp Gly Phe Arg Glu Glu Lys Asn Tyr Lys Leu Lys Glu Thr
    450                 455                 460

Gly Tyr Val Val Glu Arg Pro Ser Thr Thr Lys Asp Lys His Lys Glu
465                 470                 475                 480

Glu Asp Lys Asn Ser Glu Arg Ile Thr Val Lys Lys Glu Thr Gln Ser
                485                 490                 495

Pro Glu Gln Val Lys Ser Glu Lys Leu Lys Asp Leu Phe Asp Tyr Ser
            500                 505                 510

Pro Pro Leu His Lys Asn Leu Asp Ala Arg Glu Lys Ser Thr Phe Arg
        515                 520                 525

Glu Glu Ser Pro Leu Arg Ile Lys Met Ile Ala Ser Asp Ser His Arg
    530                 535                 540

Pro Glu Val Lys Leu Lys Met Ala Pro Val Pro Leu Asp Asp Ser Asn
545                 550                 555                 560

Arg Pro Ala Ser Leu Thr Lys Asp Arg Leu Leu Ala Ser Thr Leu Val
                565                 570                 575

His Ser Val Lys Lys Glu Gln Glu Phe Arg Ser Ile Phe Asp His Ile
            580                 585                 590

Lys Leu Pro Gln Ala Ser Lys Ser Thr Ser Glu Ser Phe Ile Gln His
```

595 600 605

Ile Val Ser Leu Val His His Val Lys Glu Gln Tyr Phe Lys Ser Ala
610 615 620

Ala Met Thr Leu Asn Glu Arg Phe Thr Ser Tyr Gln Lys Ala Thr Glu
625 630 635 640

Glu His Ser Thr Arg Gln Lys Ser Pro Glu Ile His Arg Arg Ile Asp
645 650 655

Ile Ser Pro Ser Thr Leu Arg Lys His Thr Arg Leu Ala Gly Glu Glu
660 665 670

Arg Val Phe Lys Glu Glu Asn Gln Lys Gly Asp Lys Lys Leu Arg Cys
675 680 685

Asp Ser Ala Asp Leu Arg His Asp Ile Asp Arg Arg Arg Lys Glu Arg
690 695 700

Ser Lys Glu Arg Gly Asp Ser Lys Gly Ser Arg Glu Ser Ser Gly Ser
705 710 715 720

Arg Lys Gln Glu Lys Thr Pro Lys Asp Tyr Lys Glu Tyr Lys Ser Tyr
725 730 735

Lys Asp Asp Ser Lys Asn Val Phe Val Phe Tyr Thr Ala Tyr Gly Gly
740 745 750

<210> 8763
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1785; "

<220>
<221> source
<223> /note="Gene Symbol: BAX; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated X prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q07812; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263262"

<400> 8763
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser
1   5   10   15

Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Gln Gly Phe Ile Gln
            20   25   30

Asp Arg Ala Gly Arg Met Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp
        35   40   45

Pro Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys
    50   55   60

Arg Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile
65   70   75   80

Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala
                85   90   95

Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala
            100   105   110

Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys
        115   120   125

Val Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu
    130   135   140

Arg Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Asp Gly
145   150   155   160

Leu Leu Ser Tyr Phe Gly Thr Pro Thr Trp Gln Thr Val Thr Ile Phe
                165   170   175

Val Ala Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys Lys Met Gly
            180   185   190

<210> 8764
<211> 218
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1785; "

<220>
<221> source
<223> /note="Gene Symbol: BAX; "

<220>
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<223> /note="Gene Name:
BCL2-associated X prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q07812; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000293288"

<400> 8764
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser
1   5   10   15

Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Leu Gln Gly Phe Ile Gln
            20   25   30

Asp Arg Ala Gly Arg Met Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp
        35   40   45

Pro Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys
    50   55   60

Arg Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile
65   70   75   80

Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala
                85   90   95

Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala
            100   105   110

Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys
        115   120   125

```
Val Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu
    130                 135                 140

Arg Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Val Arg
145                 150                 155                 160

Leu Leu Lys Pro Pro His Pro His His Arg Ala Leu Thr Thr Ala Pro
                165                 170                 175

Ala Pro Pro Ser Leu Pro Pro Ala Thr Pro Leu Gly Pro Trp Ala Phe
            180                 185                 190

Trp Ser Arg Ser Gln Trp Cys Pro Leu Pro Ile Phe Arg Ser Ser Asp
        195                 200                 205

Val Val Tyr Asn Ala Phe Ser Leu Arg Val
    210                 215


<210> 8765
<211> 143
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1785; "

<220>
<221> source
<223> /note="Gene Symbol: BAX; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-associated X prt; "

<220>
<221> source
<223> /note="Uniprot ID:  Q07812; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000346461"

<400> 8765
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser
1               5                   10                  15
```

```
Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Leu Gln Gly Met Ile Ala
            20                  25                  30

Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala Ala
        35                  40                  45

Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala Leu
    50                  55                  60

Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys Val
65                  70                  75                  80

Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu Arg
                85                  90                  95

Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Asp Gly Leu
            100                 105                 110

Leu Ser Tyr Phe Gly Thr Pro Thr Trp Gln Thr Val Thr Ile Phe Val
        115                 120                 125

Ala Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys Lys Met Gly
    130                 135                 140


<210> 8766
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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<220>
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<223> /note="Uniprot ID:  Q07812; "

<220>
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<223> /note="ENSP ID: ENSP00000348871"
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<400> 8766
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser
1 5 10 15

Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Leu Gln Gly Phe Ile Gln
20 25 30

Asp Arg Ala Gly Arg Met Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp
35 40 45

Pro Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys
50 55 60

Arg Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile
65 70 75 80

Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala
85 90 95

Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala
100 105 110

Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Gly Val Lys Trp
115 120 125

Arg Asp Leu Gly Ser Leu Gln Pro Leu Pro Pro Gly Phe Lys Arg Phe
130 135 140

Thr Cys Leu Ser Ile Pro Arg Ser Trp Asp Tyr Arg Pro Cys Ala Pro
145 150 155 160

Arg Cys Arg Asn

<210> 8767
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1785; "

<220>
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<223> /note="Gene Symbol: BAX; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-associated X prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000375744"

<400> 8767

```
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Phe His Pro Gly
1               5                  10                  15

Ser Ser Arg Ala Asn Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp Pro
            20                  25                  30

Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys Arg
        35                  40                  45

Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile Ala
    50                  55                  60

Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala Ala
65                  70                  75                  80

Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala Leu
                85                  90                  95

Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys Val
            100                 105                 110

Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu Arg
        115                 120                 125

Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Asp Gly Leu
    130                 135                 140

Leu Ser Tyr Phe Gly Thr Pro Thr Trp Gln Thr Val Thr Ile Phe Val
145                 150                 155                 160

Ala Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys Lys Met Gly
                165                 170                 175
```

<210> 8768

<211> 179
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1785; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
BCL2-associated X prt; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000389971"

<400> 8768

```
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser
1               5                  10                  15


Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Leu Gln Gly Phe Ile Gln
            20                  25                  30


Asp Arg Ala Gly Arg Met Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp
        35                  40                  45


Pro Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys
    50                  55                  60


Arg Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile
65                  70                  75                  80


Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala
                85                  90                  95


Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala
            100                 105                 110


Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys
        115                 120                 125
```

```
Val Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu
    130                 135                 140

Arg Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Thr Val
145                 150                 155                 160

Thr Ile Phe Val Ala Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys
                165                 170                 175

Lys Met Gly
```

<210> 8769
<211> 126
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BAX; "

<220>
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<223> /note="Gene Name:
BCL2-associated X prt; "

<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8769

```
Xaa Gly Arg Val Arg Gly Ala Ala Gln Arg Arg Gly Met Ile Ala Ala
1               5                   10                  15

Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala Ala Asp
            20                  25                  30

Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala Leu Phe
        35                  40                  45
```

```
Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys Val Pro
    50                  55                  60

Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu Arg Glu
65                  70                  75                  80

Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Asp Gly Leu Leu
                85                  90                  95

Ser Tyr Phe Gly Thr Pro Thr Trp Gln Thr Val Thr Ile Phe Val Ala
            100                 105                 110

Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys Lys Met Gly
        115                 120                 125


<210> 8770
<211> 41
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAX; "

<220>
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<223> /note="Gene Name:
      BCL2-associated X prt; "

<220>
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<223> /note="Uniprot ID:  Q07812; "

<220>
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<223> /note="ENSP ID: ENSP00000426328"

<400> 8770
Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Val Ser Ser Arg Ile
1               5                   10                  15

Glu Gln Gly Glu Trp Gly Gly Arg His Pro Ser Trp Pro Trp Thr Arg
            20                  25                  30

Cys Leu Arg Met Arg Pro Pro Arg Ser
```

35 40

<210> 8771
<211> 140
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BAX; "

<220>
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<223> /note="Gene Name:
BCL2-associated X prt; "

<220>
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<223> /note="ENSP ID: ENSP00000441413"

<400> 8771
Met Ile Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg
1 5 10 15

Val Ala Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val
20 25 30

Val Ala Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys
35 40 45

Thr Lys Val Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp
50 55 60

Phe Leu Arg Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp
65 70 75 80

Val Arg Leu Leu Lys Pro Pro His Pro His His Arg Ala Leu Thr Thr
85 90 95

Ala Pro Ala Pro Pro Ser Leu Pro Pro Ala Thr Pro Leu Gly Pro Trp
100 105 110

Ala Phe Trp Ser Arg Ser Gln Trp Cys Pro Leu Pro Ile Phe Arg Ser
115 120 125

Ser Asp Val Val Tyr Asn Ala Phe Ser Leu Arg Val
130 135 140

<210> 8772
<211> 160
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1786; "

<220>
<221> source
<223> /note="Gene Symbol: BIK; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-interacting killer (apoptosis-inducing); "

<220>
<221> source
<223> /note="Uniprot ID: Q13323; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000216115"

<400> 8772
Met Ser Glu Val Arg Pro Leu Ser Arg Asp Ile Leu Met Glu Thr Leu
1 5 10 15

Leu Tyr Glu Gln Leu Leu Glu Pro Pro Thr Met Glu Val Leu Gly Met
20 25 30

Thr Asp Ser Glu Glu Asp Leu Asp Pro Met Glu Asp Phe Asp Ser Leu
35 40 45

Glu Cys Met Glu Gly Ser Asp Ala Leu Ala Leu Arg Leu Ala Cys Ile
50 55 60

Gly Asp Glu Met Asp Val Ser Leu Arg Ala Pro Arg Leu Ala Gln Leu
65 70 75 80

Ser Glu Val Ala Met His Ser Leu Gly Leu Ala Phe Ile Tyr Asp Gln
85 90 95

Thr Glu Asp Ile Arg Asp Val Leu Arg Ser Phe Met Asp Gly Phe Thr

```
            100                 105                 110

Thr Leu Lys Glu Asn Ile Met Arg Phe Trp Arg Ser Pro Asn Pro Gly
        115                 120                 125

Ser Trp Val Ser Cys Glu Gln Val Leu Leu Ala Leu Leu Leu Leu Leu
    130                 135                 140

Ala Leu Leu Leu Pro Leu Leu Ser Gly Gly Leu His Leu Leu Leu Lys
145                 150                 155                 160


<210> 8773
<211> 333
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1787; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2-PABPN1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2L2-PABPN1 readthrough; "

<220>
<221> source
<223> /note="Uniprot ID:  Q92843; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451320"

<400> 8773
Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1               5                   10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
            20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
        35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
    50                  55                  60
```

```
Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
65                  70                  75                  80

Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala
        115                 120                 125

Tyr Leu Glu Thr Gln Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

Glu Leu Glu Ala Ile Lys Ala Arg Val Arg Glu Met Glu Glu Glu Ala
145                 150                 155                 160

Glu Lys Leu Lys Glu Leu Gln Asn Glu Val Glu Lys Gln Met Asn Met
                165                 170                 175

Ser Pro Pro Pro Gly Asn Ala Gly Pro Val Ile Met Ser Ile Glu Glu
            180                 185                 190

Lys Met Glu Ala Asp Ala Arg Ser Ile Tyr Val Gly Asn Val Asp Tyr
        195                 200                 205

Gly Ala Thr Ala Glu Glu Leu Glu Ala His Phe His Gly Cys Gly Ser
    210                 215                 220

Val Asn Arg Val Thr Ile Leu Cys Asp Lys Phe Ser Gly His Pro Lys
225                 230                 235                 240

Gly Phe Ala Tyr Ile Glu Phe Ser Asp Lys Glu Ser Val Arg Thr Ser
                245                 250                 255

Leu Ala Leu Asp Glu Ser Leu Phe Arg Gly Arg Gln Ile Lys Val Ile
            260                 265                 270

Pro Lys Arg Thr Asn Arg Pro Gly Ile Ser Thr Thr Asp Arg Gly Phe
        275                 280                 285
```

```
Pro Arg Ala Arg Tyr Arg Ala Arg Thr Thr Asn Tyr Asn Ser Ser Arg
    290                 295                 300

Ser Arg Phe Tyr Ser Gly Phe Asn Ser Arg Pro Arg Gly Arg Val Tyr
305                 310                 315                 320

Arg Gly Arg Ala Arg Ala Thr Ser Trp Tyr Ser Pro Tyr
                325                 330


<210> 8774
<211> 333
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1787; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2-PABPN1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2L2-PABPN1 readthrough; "

<220>
<221> source
<223> /note="Uniprot ID:  Q92843; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452479"

<400> 8774
Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1               5                   10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
            20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
        35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
    50                  55                  60

Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
65                  70                  75                  80
```

```
Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala
        115                 120                 125

Tyr Leu Glu Thr Gln Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

Glu Leu Glu Ala Ile Lys Ala Arg Val Arg Glu Met Glu Glu Glu Ala
145                 150                 155                 160

Glu Lys Leu Lys Glu Leu Gln Asn Glu Val Glu Lys Gln Met Asn Met
                165                 170                 175

Ser Pro Pro Pro Gly Asn Ala Gly Pro Val Ile Met Ser Ile Glu Glu
            180                 185                 190

Lys Met Glu Ala Asp Ala Arg Ser Ile Tyr Val Gly Asn Val Asp Tyr
        195                 200                 205

Gly Ala Thr Ala Glu Glu Leu Glu Ala His Phe His Gly Cys Gly Ser
    210                 215                 220

Val Asn Arg Val Thr Ile Leu Cys Asp Lys Phe Ser Gly His Pro Lys
225                 230                 235                 240

Gly Phe Ala Tyr Ile Glu Phe Ser Asp Lys Glu Ser Val Arg Thr Ser
                245                 250                 255

Leu Ala Leu Asp Glu Ser Leu Phe Arg Gly Arg Gln Ile Lys Val Ile
            260                 265                 270

Pro Lys Arg Thr Asn Arg Pro Gly Ile Ser Thr Thr Asp Arg Gly Phe
        275                 280                 285

Pro Arg Ala Arg Tyr Arg Ala Arg Thr Thr Asn Tyr Asn Ser Ser Arg
    290                 295                 300
```

```
Ser Arg Phe Tyr Ser Gly Phe Asn Ser Arg Pro Arg Gly Arg Val Tyr
305                 310                 315                 320


Arg Gly Arg Ala Arg Ala Thr Ser Trp Tyr Ser Pro Tyr
                325                 330


<210> 8775
<211> 233
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q07817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000302564"

<400> 8775
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1               5                   10                  15


Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20                  25                  30


Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35                  40                  45


Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50                  55                  60


Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65                  70                  75                  80


Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
```

```
                85                  90                  95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100                 105                 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115                 120                 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130                 135                 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
145                 150                 155                 160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
                165                 170                 175

His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp Asp Thr Phe Val
            180                 185                 190

Glu Leu Tyr Gly Asn Asn Ala Ala Ala Glu Ser Arg Lys Gly Gln Glu
        195                 200                 205

Arg Phe Asn Arg Trp Phe Leu Thr Gly Met Thr Val Ala Gly Val Val
    210                 215                 220

Leu Leu Gly Ser Leu Phe Ser Arg Lys
225                 230


<210> 8776
<211> 170
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 1; "
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<220>
<221> source
<223> /note="Uniprot ID: Q07817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365223"

<400> 8776
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1   5   10   15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20   25   30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35   40   45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50   55   60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65   70   75   80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85   90   95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100   105   110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Asp Thr Phe
        115   120   125

Val Glu Leu Tyr Gly Asn Asn Ala Ala Ala Glu Ser Arg Lys Gly Gln
    130   135   140

Glu Arg Phe Asn Arg Trp Phe Leu Thr Gly Met Thr Val Ala Gly Val
145   150   155   160

Val Leu Leu Gly Ser Leu Phe Ser Arg Lys
                165   170

<210> 8777
<211> 233
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q07817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365230"

<400> 8777

```
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1               5                  10                  15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20                  25                  30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35                  40                  45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50                  55                  60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65                  70                  75                  80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85                  90                  95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100                 105                 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115                 120                 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130                 135                 140
```

```
Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
145                 150                 155                 160


Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
                165                 170                 175


His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp Asp Thr Phe Val
            180                 185                 190


Glu Leu Tyr Gly Asn Asn Ala Ala Ala Glu Ser Arg Lys Gly Gln Glu
        195                 200                 205


Arg Phe Asn Arg Trp Phe Leu Thr Gly Met Thr Val Ala Gly Val Val
    210                 215                 220


Leu Leu Gly Ser Leu Phe Ser Arg Lys
225                 230


<210> 8778
<211> 181
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389688"

<400> 8778
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1               5                   10                  15


Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20                  25                  30
```

```
Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35                  40                  45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50                  55                  60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65                  70                  75                  80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85                  90                  95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100                 105                 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115                 120                 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130                 135                 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
145                 150                 155                 160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
                165                 170                 175

His Leu Glu Pro Trp
            180
```

<210> 8779
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390760"

<400> 8779
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1   5   10   15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20   25   30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35   40   45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50   55   60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65   70   75   80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85   90   95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100   105   110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115   120   125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130   135   140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
145   150   155   160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
                165   170   175

His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp
            180   185

<210> 8780
<211> 188
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395545"

<400> 8780

```
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1               5                  10                  15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20                  25                  30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35                  40                  45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50                  55                  60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65                  70                  75                  80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85                  90                  95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100                 105                 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115                 120                 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130                 135                 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
```

145 150 155 160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
165 170 175

His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp
180 185

<210> 8781
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401173"

<400> 8781
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1 5 10 15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
20 25 30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
35 40 45

<210> 8782
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1788; "

<220>
<221> source

<223> /note="Gene Symbol: BCL2L1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406203"

<400> 8782

```
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1               5                  10                  15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20                  25                  30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35                  40                  45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50                  55                  60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65                  70                  75                  80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85                  90                  95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100                 105                 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115                 120                 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130                 135                 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
145                 150                 155                 160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
                165                 170                 175

His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp Asp Thr Phe Val
```

```
            180                 185                 190

Glu Leu Tyr Gly Asn Asn Ala Ala Ala Glu Ser Arg Lys
        195                 200                 205


<210> 8783
<211> 188
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8783
Met Ser Gln Ser Asn Arg Glu Leu Val Val Asp Phe Leu Ser Tyr Lys
1               5                   10                  15


Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu
            20                  25                  30


Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro
        35                  40                  45


Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala
    50                  55                  60


Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val
65                  70                  75                  80


Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu
                85                  90                  95


Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu
            100                 105                 110
```

```
His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn
        115                 120                 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe
    130                 135                 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln
145                 150                 155                 160

Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp
                165                 170                 175

His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp
            180                 185


<210> 8784
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<213> Homo sapiens

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<220>
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<223> /note="Uniprot ID:  Q9HD36; "

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<400> 8784
Met Val Asp Gln Leu Arg Glu Arg Thr Thr Met Ala Asp Pro Leu Arg
1               5                   10                  15

Glu Arg Thr Glu Leu Leu Leu Ala Asp Tyr Leu Gly Tyr Cys Ala Arg
            20                  25                  30

Glu Pro Gly Thr Pro Glu Pro Ala Pro Ser Thr Pro Glu Ala Ala Val
```

```
        35                  40                  45

Leu Arg Ser Ala Ala Ala Arg Leu Arg Gln Ile His Arg Ser Phe Phe
    50                  55                  60

Ser Ala Tyr Leu Gly Tyr Pro Gly Asn Arg Phe Glu Leu Val Ala Leu
65                  70                  75                  80

Met Ala Asp Ser Val Leu Ser Asp Ser Pro Gly Pro Thr Trp Gly Arg
                85                  90                  95

Val Val Thr Leu Val Thr Phe Ala Gly Thr Leu Leu Glu Arg Gly Pro
            100                 105                 110

Leu Val Thr Ala Arg Trp Lys Lys Trp Gly Phe Gln Pro Arg Leu Lys
        115                 120                 125

Glu Gln Glu Gly Asp Val Ala Arg Asp Cys Gln Arg Leu Val Ala Leu
    130                 135                 140

Leu Ser Ser Arg Leu Met Gly Gln His Arg Ala Trp Leu Gln Ala Gln
145                 150                 155                 160

Gly Gly Trp Asp Gly Phe Cys His Phe Phe Arg Thr Pro Phe Pro Leu
                165                 170                 175

Ala Phe Trp Arg Lys Gln Leu Val Gln Ala Phe Leu Ser Cys Leu Leu
            180                 185                 190

Thr Thr Ala Phe Ile Tyr Leu Trp Thr Arg Leu Leu
        195                 200


<210> 8785
<211> 241
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<400> 8785

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Met Val Asp Gln Leu Arg Glu Arg Thr Thr Met Ala Asp Pro Leu Arg
1               5                  10                  15

Glu Arg Thr Glu Leu Leu Leu Ala Asp Tyr Leu Gly Tyr Cys Ala Arg
            20                  25                  30

Glu Pro Gly Thr Pro Glu Pro Ala Pro Ser Thr Pro Glu Ala Ala Val
        35                  40                  45

Leu Arg Ser Ala Ala Ala Arg Leu Arg Gln Ile His Arg Ser Phe Phe
    50                  55                  60

Ser Ala Tyr Leu Gly Tyr Pro Gly Asn Arg Phe Glu Leu Val Ala Leu
65                  70                  75                  80

Met Ala Asp Ser Val Leu Ser Asp Ser Pro Gly Pro Thr Trp Gly Arg
                85                  90                  95

Val Val Thr Leu Val Thr Phe Ala Gly Thr Leu Leu Glu Arg Gly Pro
            100                 105                 110

Leu Val Thr Ala Arg Trp Lys Lys Trp Gly Phe Gln Pro Arg Leu Lys
        115                 120                 125

Glu Gln Glu Gly Asp Val Ala Arg Asp Cys Gln Arg Leu Val Ala Leu
    130                 135                 140

Leu Ser Ser Arg Leu Met Gly Gln His Arg Ala Trp Leu Gln Ala Gln
145                 150                 155                 160

Gly Gly Trp Val Ser Thr Arg Arg Thr Pro Gly His Gly Ala Gly Arg
                165                 170                 175

Ala Ala Gly Lys Arg Pro Arg Gly Trp His Gly Trp Leu Leu Ser Leu
            180                 185                 190
```

Leu Gln Asp Pro Leu Ser Thr Gly Phe Leu Glu Lys Thr Ala Gly Pro
195 200 205

Gly Phe Ser Val Met Leu Val Asn Asn Ser Leu His Leu Ser Leu Asp
210 215 220

Thr Ile Ile Met Ser Phe Lys Thr Phe Asn Pro Leu Leu Pro Ala Gln
225 230 235 240

Leu

<210> 8786
<211> 138
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Uniprot ID: O43521; "

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<223> /note="ENSP ID: ENSP00000309226"

<400> 8786
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
35 40 45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
50 55 60

```
Asn His Tyr Leu Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala
65                  70                  75                  80

Asp Met Arg Pro Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly
                85                  90                  95

Asp Glu Phe Asn Ala Tyr Tyr Ala Arg Arg Val Phe Leu Asn Asn Tyr
            100                 105                 110

Gln Ala Ala Glu Asp His Pro Arg Met Val Ile Leu Arg Leu Leu Arg
        115                 120                 125

Tyr Ile Val Arg Leu Val Trp Arg Met His
    130                 135


<210> 8787
<211> 112
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<220>
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<400> 8787
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                   10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30
```

```
Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
        35                  40                  45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
    50                  55                  60

Asn His Tyr Leu Ser Ala Met Val Val Ile Leu Glu Asp Ile Gly Asp
65                  70                  75                  80

Leu Ser Leu Cys Phe Gly Phe Ile Phe Thr Gly Leu Asp Leu Tyr Gly
                85                  90                  95

His His His Ser Gln Asp Thr Glu Gln Leu Asn His Lys Asp Phe Ser
            100                 105                 110


<210> 8788
<211> 98
<212> PRT
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<400> 8788
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                   10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
        35                  40                  45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
    50                  55                  60
```

```
Asn His Tyr Leu Ser Ala Met Asp Asp Ser Ala Gly Ser Ser Leu Arg
65                  70                  75                  80

Ile Ala Leu His Arg Glu Val Gln Trp Pro Leu Lys Trp Leu Ala Lys
                85                  90                  95

Ser Ser
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<210> 8789
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<400> 8789

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Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                   10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Val Ser Leu Cys His Pro Gly
        35                  40                  45

Trp Ser Ala Leu Val Arg Ser Trp Leu Thr Ala Thr Ser Asn Ser Gln
    50                  55                  60

Val Gln Ala Val Leu Leu Pro Gln Pro Pro Lys
65                  70                  75
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<210> 8790
<211> 71
<212> PRT
<213> Homo sapiens

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<223> /note="ENSP ID: ENSP00000376941"

<400> 8790
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
35 40 45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
50 55 60

Ala Pro Pro Ala Ser Pro Gly
65 70

<210> 8791
<211> 198
<212> PRT
<213> Homo sapiens

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<400> 8791

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Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                  10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35                  40                  45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50                  55                  60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65                  70                  75                  80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85                  90                  95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100                 105                 110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115                 120                 125

Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala Asp Met Arg Pro
    130                 135                 140

Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly Asp Glu Phe Asn
145                 150                 155                 160

Ala Tyr Tyr Ala Arg Arg Val Phe Leu Asn Asn Tyr Gln Ala Ala Glu
                165                 170                 175
```

```
Asp His Pro Arg Met Val Ile Leu Arg Leu Leu Arg Tyr Ile Val Arg
            180                 185                 190

Leu Val Trp Arg Met His
        195

<210> 8792
<211> 112
<212> PRT
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<220>
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<223> /note="ENSP ID: ENSP00000384641"

<400> 8792
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                   10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
        35                  40                  45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
    50                  55                  60

Asn His Tyr Leu Ser Ala Met Val Val Ile Leu Glu Asp Ile Gly Asp
65                  70                  75                  80

Leu Ser Leu Cys Phe Gly Phe Ile Phe Thr Gly Leu Asp Leu Tyr Gly
                85                  90                  95
```

```
His His His Ser Gln Asp Thr Glu Gln Leu Asn His Lys Asp Phe Ser
            100                 105                 110


<210> 8793
<211> 96
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8793
Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly Arg Gln
1               5                   10                  15


Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala Pro Thr
            20                  25                  30


Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met Ser Cys
        35                  40                  45


Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His
    50                  55                  60


Tyr Leu Ser Ala Met Asp Asp Ser Ala Gly Ser Ser Leu Arg Ile Ala
65                  70                  75                  80


Leu His Arg Glu Val Gln Trp Pro Leu Lys Trp Leu Ala Lys Ser Ser
                85                  90                  95


<210> 8794
<211> 82
<212> PRT
<213> Homo sapiens
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<220>
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<400> 8794
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Ala Ser Met Arg Gln Ala Glu
        35   40   45

Pro Ala Asp Met Arg Pro Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg
    50   55   60

Ile Gly Asp Glu Phe Asn Ala Tyr Tyr Ala Arg Arg Met Pro Leu Pro
65   70   75   80

Pro Asp

<210> 8795
<211> 80
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: O43521; "

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<223> /note="ENSP ID: ENSP00000393781"

<400> 8795
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
        35 40 45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
    50 55 60

Asn His Tyr Leu Ser Ala Met Val Arg Glu Ile Glu Glu Val Val Val
65 70 75 80

<210> 8796
<211> 135
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: O43521; "

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<400> 8796
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35   40   45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50   55   60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65   70   75   80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85   90   95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100   105   110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115   120   125

Ser Ala Met Ala Asn Trp Asp
    130   135

<210> 8797
<211> 109
<212> PRT
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<220>
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<223> /note="ENSP ID: ENSP00000401662"

<400> 8797
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
35 40 45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
50 55 60

Asn His Tyr Leu Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala
65 70 75 80

Asp Met Arg Pro Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly
85 90 95

Asp Glu Phe Asn Ala Tyr Tyr Ala Arg Arg Leu Glu Lys
100 105

<210> 8798
<211> 140
<212> PRT
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<400> 8798
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35   40   45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50   55   60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65   70   75   80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85   90   95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100   105   110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115   120   125

Ser Ala Met Val Arg Glu Ile Glu Glu Val Val Val
    130   135   140

<210> 8799
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<400> 8799
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Ala Ser Met Arg Gln Ala Glu
        35 40 45

Pro Ala Asp Met Arg Pro Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg
    50 55 60

Ile Gly Asp Glu Phe Asn Ala Tyr Tyr Ala Arg Arg Leu Ala Lys Leu
65 70 75 80

Leu Ala Ser Ser Thr
                85

<210> 8800
<211> 122
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<220>
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<400> 8800
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
35 40 45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
50 55 60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65 70 75 80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
85 90 95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
100 105 110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln
115 120

<210> 8801
<211> 172
<212> PRT
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<400> 8801
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35   40   45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50   55   60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65   70   75   80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85   90   95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100   105   110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115   120   125

Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala Asp Met Arg Pro
    130   135   140

Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly Asp Glu Phe Asn
145   150   155   160

Ala Tyr Tyr Ala Arg Arg Met Pro Leu Pro Pro Asp
                165   170

<210> 8802
<211> 109
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<223> /note="Uniprot ID: O43521; "

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Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Asp Arg Ser Pro Ala Pro Met
        35   40   45

Ser Cys Asp Lys Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe
    50   55   60

Asn His Tyr Leu Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala
65   70   75   80

Asp Met Arg Pro Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly
                85   90   95

Asp Glu Phe Asn Ala Tyr Tyr Ala Arg Arg Leu Glu Lys
            100   105

<210> 8803
<211> 135
<212> PRT
<213> Homo sapiens

<220>

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<400> 8803

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Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                  10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35                  40                  45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50                  55                  60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65                  70                  75                  80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85                  90                  95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100                 105                 110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115                 120                 125

Ser Ala Met Ala Asn Trp Asp
    130                 135
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<220>
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Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35   40   45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50   55   60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65   70   75   80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85   90   95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100   105   110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115   120   125

Ser Ala Met Val Arg Glu Ile Glu Glu Val Val Val
130 135 140

<210> 8805
<211> 85
<212> PRT
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<220>
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<223> /note="ENSP ID: ENSP00000481423"

<400> 8805
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1 5 10 15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
20 25 30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Ala Ser Met Arg Gln Ala Glu
35 40 45

Pro Ala Asp Met Arg Pro Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg
50 55 60

Ile Gly Asp Glu Phe Asn Ala Tyr Tyr Ala Arg Arg Leu Ala Lys Leu
65 70 75 80

Leu Ala Ser Ser Thr
85

<210> 8806
<211> 169
<212> PRT
<213> Homo sapiens

<220>
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<400> 8806
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1   5   10   15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20   25   30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35   40   45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50   55   60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65   70   75   80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85   90   95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100   105   110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115   120   125

```
Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala Asp Met Arg Pro
    130                 135                 140

Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly Asp Glu Phe Asn
145                 150                 155                 160

Ala Tyr Tyr Ala Arg Arg Leu Glu Lys
                165
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<210> 8807
<211> 172
<212> PRT
<213> Homo sapiens

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<223> /note="Uniprot ID: O43521; "

<220>
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<223> /note="ENSP ID: ENSP00000482175"

<400> 8807

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Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                   10                  15

Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35                  40                  45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50                  55                  60
```

```
Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65                  70                  75                  80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85                  90                  95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100                 105                 110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115                 120                 125

Ser Ala Met Ala Ser Met Arg Gln Ala Glu Pro Ala Asp Met Arg Pro
    130                 135                 140

Glu Ile Trp Ile Ala Gln Glu Leu Arg Arg Ile Gly Asp Glu Phe Asn
145                 150                 155                 160

Ala Tyr Tyr Ala Arg Arg Met Pro Leu Pro Pro Asp
                165                 170


<210> 8808
<211> 135
<212> PRT
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<220>
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<220>
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<223> /note="Uniprot ID:  O43521; "

<220>
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<223> /note="ENSP ID: ENSP00000484360"

<400> 8808
Met Ala Lys Gln Pro Ser Asp Val Ser Ser Glu Cys Asp Arg Glu Gly
1               5                   10                  15
```

```
Arg Gln Leu Gln Pro Ala Glu Arg Pro Pro Gln Leu Arg Pro Gly Ala
            20                  25                  30

Pro Thr Ser Leu Gln Thr Glu Pro Gln Gly Asn Pro Glu Gly Asn His
        35                  40                  45

Gly Gly Glu Gly Asp Ser Cys Pro His Gly Ser Pro Gln Gly Pro Leu
    50                  55                  60

Ala Pro Pro Ala Ser Pro Gly Pro Phe Ala Thr Arg Ser Pro Leu Phe
65                  70                  75                  80

Ile Phe Met Arg Arg Ser Ser Leu Leu Ser Arg Ser Ser Ser Gly Tyr
                85                  90                  95

Phe Ser Phe Asp Thr Asp Arg Ser Pro Ala Pro Met Ser Cys Asp Lys
            100                 105                 110

Ser Thr Gln Thr Pro Ser Pro Pro Cys Gln Ala Phe Asn His Tyr Leu
        115                 120                 125

Ser Ala Met Gly Ile Phe Glu
    130                 135


<210> 8809
<211> 250
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<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BCL2L12; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000246784"

<400> 8809
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```
Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp Thr Leu Arg Val
1               5                  10                  15

Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly Ser Pro Val Pro
            20                  25                  30

Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr Asp Phe Leu Ser
        35                  40                  45

Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg Gly Ala Ala Pro
    50                  55                  60

Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg Pro Cys Tyr Gly
65                  70                  75                  80

Leu Glu Pro Gly Pro Ala Thr Pro Asp Phe Tyr Ala Leu Val Ala Gln
                85                  90                  95

Arg Leu Glu Gln Leu Val Gln Glu Gln Leu Lys Ser Pro Pro Ser Pro
            100                 105                 110

Glu Leu Gln Gly Pro Pro Ser Thr Glu Lys Glu Ala Ile Leu Arg Arg
        115                 120                 125

Leu Val Ala Leu Leu Glu Glu Glu Ala Glu Val Ile Asn Gln Lys Leu
    130                 135                 140

Ala Ser Asp Pro Ala Leu Arg Ser Lys Leu Val Arg Leu Ser Ser Asp
145                 150                 155                 160

Ser Phe Ala Arg Leu Val Glu Leu Phe Cys Ser Arg Asp Asp Ser Ser
                165                 170                 175

Arg Pro Ser Arg Ala Cys Pro Gly Pro Pro Pro Pro Ser Pro Glu Pro
            180                 185                 190

Leu Ala Arg Leu Ala Leu Ala Met Glu Leu Ser Arg Arg Val Ala Gly
        195                 200                 205

Leu Gly Gly Thr Leu Ala Gly Leu Ser Val Glu His Val His Ser Phe
    210                 215                 220

Thr Pro Trp Ile Gln Ala His Gly Gly Trp Glu Gly Ile Leu Ala Val
```

225 230 235 240

Ser Pro Val Asp Leu Asn Leu Pro Leu Asp
245 250

<210> 8810
<211> 334
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9HB09; "

<220>
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<223> /note="ENSP ID: ENSP00000246785"

<400> 8810
Met Gly Arg Pro Ala Gly Leu Phe Pro Pro Leu Cys Pro Phe Leu Gly
1 5 10 15

Phe Arg Pro Glu Ala Cys Trp Glu Arg His Met Gln Ile Glu Arg Ala
20 25 30

Pro Ser Val Pro Pro Phe Leu Arg Trp Ala Gly Tyr Arg Pro Gly Pro
35 40 45

Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe Val Arg Val Gln
50 55 60

Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg Trp Gly Pro Gly
65 70 75 80

Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp
85 90 95

```
Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly
            100                 105                 110

Ser Pro Val Pro Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr
        115                 120                 125

Asp Phe Leu Ser Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg
    130                 135                 140

Gly Ala Ala Pro Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg
145                 150                 155                 160

Pro Cys Tyr Gly Leu Glu Pro Gly Pro Ala Thr Pro Asp Phe Tyr Ala
                165                 170                 175

Leu Val Ala Gln Arg Leu Glu Gln Leu Val Gln Glu Gln Leu Lys Ser
            180                 185                 190

Pro Pro Ser Pro Glu Leu Gln Gly Pro Pro Ser Thr Glu Lys Glu Ala
        195                 200                 205

Ile Leu Arg Arg Leu Val Ala Leu Leu Glu Glu Glu Ala Glu Val Ile
    210                 215                 220

Asn Gln Lys Leu Ala Ser Asp Pro Ala Leu Arg Ser Lys Leu Val Arg
225                 230                 235                 240

Leu Ser Ser Asp Ser Phe Ala Arg Leu Val Glu Leu Phe Cys Ser Arg
                245                 250                 255

Asp Asp Ser Ser Arg Pro Ser Arg Ala Cys Pro Gly Pro Pro Pro Pro
            260                 265                 270

Ser Pro Glu Pro Leu Ala Arg Leu Ala Leu Ala Met Glu Leu Ser Arg
        275                 280                 285

Arg Val Ala Gly Leu Gly Gly Thr Leu Ala Gly Leu Ser Val Glu His
    290                 295                 300

Val His Ser Phe Thr Pro Trp Ile Gln Ala His Gly Gly Trp Glu Gly
305                 310                 315                 320
```

```
Ile Leu Ala Val Ser Pro Val Asp Leu Asn Leu Pro Leu Asp
                325                 330


<210> 8811
<211> 333
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Uniprot ID:  Q9HB09; "

<220>
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<223> /note="ENSP ID: ENSP00000393803"

<400> 8811
Met Gly Arg Pro Ala Gly Leu Phe Pro Pro Leu Cys Pro Phe Leu Gly
1               5                   10                  15


Phe Arg Pro Glu Ala Cys Trp Glu Arg His Met Gln Ile Glu Arg Ala
            20                  25                  30


Pro Ser Val Pro Pro Phe Leu Arg Trp Ala Gly Tyr Arg Pro Gly Pro
        35                  40                  45


Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe Val Arg Val Gln
    50                  55                  60


Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg Trp Gly Pro Gly
65                  70                  75                  80


Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp
                85                  90                  95


Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly
            100                 105                 110
```

```
Ser Pro Val Pro Thr Pro Pro Ser Pro Ala Gln Glu Glu Pro Thr Asp
        115                 120                 125

Phe Leu Ser Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg Gly
    130                 135                 140

Ala Ala Pro Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg Pro
145                 150                 155                 160

Cys Tyr Gly Leu Glu Pro Gly Pro Ala Thr Pro Asp Phe Tyr Ala Leu
                165                 170                 175

Val Ala Gln Arg Leu Glu Gln Leu Val Gln Glu Gln Leu Lys Ser Pro
            180                 185                 190

Pro Ser Pro Glu Leu Gln Gly Pro Pro Ser Thr Glu Lys Glu Ala Ile
        195                 200                 205

Leu Arg Arg Leu Val Ala Leu Leu Glu Glu Glu Ala Glu Val Ile Asn
    210                 215                 220

Gln Lys Leu Ala Ser Asp Pro Ala Leu Arg Ser Lys Leu Val Arg Leu
225                 230                 235                 240

Ser Ser Asp Ser Phe Ala Arg Leu Val Glu Leu Phe Cys Ser Arg Asp
                245                 250                 255

Asp Ser Ser Arg Pro Ser Arg Ala Cys Pro Gly Pro Pro Pro Pro Ser
            260                 265                 270

Pro Glu Pro Leu Ala Arg Leu Ala Leu Ala Met Glu Leu Ser Arg Arg
        275                 280                 285

Val Ala Gly Leu Gly Gly Thr Leu Ala Gly Leu Ser Val Glu His Val
    290                 295                 300

His Ser Phe Thr Pro Trp Ile Gln Ala His Gly Gly Trp Glu Gly Ile
305                 310                 315                 320

Leu Ala Val Ser Pro Val Asp Leu Asn Leu Pro Leu Asp
                325                 330
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<210> 8812
<211> 92
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: BCL2L12; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 12 (proline rich); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000469216"

<400> 8812
Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp Thr Leu Arg Val
1 5 10 15

Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly Ser Pro Val Pro
20 25 30

Thr Pro Pro Arg Pro Ser Tyr Ser Arg Leu Leu Cys Phe Gly Gly Pro
35 40 45

Ala Ala Gly Thr Ala Gly Pro Arg Ala Ala Glu Ile Ser Ala Gln Pro
50 55 60

Arg Ile Thr Gly Ser Pro Ile Asp Arg Glu Gly Ser His Thr Ala Glu
65 70 75 80

Ala Gly Gly Pro Ala Gly Gly Gly Gly Arg Ser His
85 90

<210> 8813
<211> 138
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1791; "

<220>
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<223> /note="Gene Symbol: BCL2L12; "

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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000470644"

<400> 8813
Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp Thr Leu Arg Val
1 5 10 15

Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly Ser Pro Val Pro
20 25 30

Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr Asp Phe Leu Ser
35 40 45

Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg Gly Ala Ala Pro
50 55 60

Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg Pro Cys Tyr Gly
65 70 75 80

Leu Glu Pro Gly Pro Ala Thr Pro Asp Phe Tyr Ala Leu Val Ala Gln
85 90 95

Arg Leu Glu Gln Leu Val Gln Glu Gln Leu Lys Ser Pro Pro Ser Pro
100 105 110

Gly Gly His Pro Gly Cys Phe Thr Arg Gly Leu Glu Leu Ala Ile Gly
115 120 125

Leu Ser Ser Phe Ser Glu Ala Ala Thr Arg
130 135

<210> 8814
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1791; "

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<223> /note="Gene Symbol: BCL2L12; "

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<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000471919"

<400> 8814
Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp Thr Leu Arg Val
1 5 10 15

Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly Ser Pro Val Pro
20 25 30

Thr Pro Pro Arg Pro Ser Tyr Ser Arg Leu Leu Cys Phe Gly Gly Pro
35 40 45

Ala Ala Gly Thr Ala Gly Pro Arg Ala Ala Glu Ile Ser Ala Gln Pro
50 55 60

Arg Ile Thr Gly Ser Pro Ile Asp Arg Glu Gly Ser His Thr Ala Glu
65 70 75 80

Ala Gly Gly Pro Ala Gly Gly Gly Gly Arg Ser His
85 90

<210> 8815
<211> 92
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1791; "

<220>
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<223> /note="Gene Symbol: BCL2L12; "

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000472214"

<400> 8815
Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp Thr Leu Arg Val
1   5   10   15

Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly Ser Pro Val Pro
            20   25   30

Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr Asp Phe Leu Ser
        35   40   45

Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Val Glu His Val His
    50   55   60

Ser Phe Thr Pro Trp Ile Gln Ala His Gly Gly Trp Glu Gly Ile Leu
65   70   75   80

Ala Val Ser Pro Val Asp Leu Asn Leu Pro Leu Asp
                85   90

<210> 8816
<211> 130
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000478415"

<400> 8816
Met Gly Arg Pro Ala Gly Leu Phe Pro Pro Leu Cys Pro Phe Leu Gly
1   5   10   15

```
Phe Arg Pro Glu Ala Cys Trp Glu Arg His Met Gln Ile Glu Arg Ala
            20                  25                  30

Pro Ser Val Pro Pro Phe Leu Arg Trp Ala Gly Tyr Arg Pro Gly Pro
        35                  40                  45

Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe Val Arg Val Gln
    50                  55                  60

Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg Trp Gly Pro Gly
65                  70                  75                  80

Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp
                85                  90                  95

Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly
            100                 105                 110

Ser Pro Val Pro Thr Pro Pro Arg Arg Ala Ser Trp Leu Phe His Pro
        115                 120                 125

Trp Thr
    130
```

<210> 8817
<211> 193
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BCL2L12; "

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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000482154"

<400> 8817

```
Met Gly Arg Pro Ala Gly Leu Phe Pro Pro Leu Cys Pro Phe Leu Gly
1               5                   10                  15
```

```
Phe Arg Pro Glu Ala Cys Trp Glu Arg His Met Gln Ile Glu Arg Ala
            20                  25                  30

Pro Ser Val Pro Pro Phe Leu Arg Trp Ala Gly Tyr Arg Pro Gly Pro
        35                  40                  45

Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe Val Arg Val Gln
    50                  55                  60

Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg Trp Gly Pro Gly
65                  70                  75                  80

Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp
                85                  90                  95

Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly
            100                 105                 110

Ser Pro Val Pro Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr
        115                 120                 125

Asp Phe Leu Ser Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg
    130                 135                 140

Gly Ala Ala Pro Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg
145                 150                 155                 160

Pro Cys Tyr Gly Leu Glu Pro Gly Gly His Pro Gly Cys Phe Thr Arg
                165                 170                 175

Gly Leu Glu Leu Ala Ile Gly Leu Ser Ser Phe Ser Glu Ala Ala Thr
            180                 185                 190

Arg
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<210> 8818
<211> 334
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1791; "

<220>
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<220>
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BCL2-like 12 (proline rich); "

<220>
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<223> /note="Uniprot ID: Q9HB09; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482218"

<400> 8818

```
Met Gly Arg Pro Ala Gly Leu Phe Pro Pro Leu Cys Pro Phe Leu Gly
1               5                  10                  15

Phe Arg Pro Glu Ala Cys Trp Glu Arg His Met Gln Ile Glu Arg Ala
            20                  25                  30

Pro Ser Val Pro Pro Phe Leu Arg Trp Ala Gly Tyr Arg Pro Gly Pro
        35                  40                  45

Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe Val Arg Val Gln
    50                  55                  60

Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg Trp Gly Pro Gly
65                  70                  75                  80

Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp
                85                  90                  95

Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly
            100                 105                 110

Ser Pro Val Pro Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr
        115                 120                 125

Asp Phe Leu Ser Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg
    130                 135                 140

Gly Ala Ala Pro Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg
```

145 150 155 160

Pro Cys Tyr Gly Leu Glu Pro Gly Pro Ala Thr Pro Asp Phe Tyr Ala
165 170 175

Leu Val Ala Gln Arg Leu Glu Gln Leu Val Gln Glu Gln Leu Lys Ser
180 185 190

Pro Pro Ser Pro Glu Leu Gln Gly Pro Pro Ser Thr Glu Lys Glu Ala
195 200 205

Ile Leu Arg Arg Leu Val Ala Leu Leu Glu Glu Glu Ala Glu Val Ile
210 215 220

Asn Gln Lys Leu Ala Ser Asp Pro Ala Leu Arg Ser Lys Leu Val Arg
225 230 235 240

Leu Ser Ser Asp Ser Phe Ala Arg Leu Val Glu Leu Phe Cys Ser Arg
245 250 255

Asp Asp Ser Ser Arg Pro Ser Arg Ala Cys Pro Gly Pro Pro Pro Pro
260 265 270

Ser Pro Glu Pro Leu Ala Arg Leu Ala Leu Ala Met Glu Leu Ser Arg
275 280 285

Arg Val Ala Gly Leu Gly Gly Thr Leu Ala Gly Leu Ser Val Glu His
290 295 300

Val His Ser Phe Thr Pro Trp Ile Gln Ala His Gly Gly Trp Glu Gly
305 310 315 320

Ile Leu Ala Val Ser Pro Val Asp Leu Asn Leu Pro Leu Asp
325 330

<210> 8819
<211> 269
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1791; "

<220>

<221> source
<223> /note="Gene Symbol: BCL2L12; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 12 (proline rich); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483272"

<400> 8819

```
Met Gly Arg Pro Ala Gly Leu Phe Pro Pro Leu Cys Pro Phe Leu Gly
1               5                  10                  15

Phe Arg Pro Glu Ala Cys Trp Glu Arg His Met Gln Ile Glu Arg Ala
            20                  25                  30

Pro Ser Val Pro Pro Phe Leu Arg Trp Ala Gly Tyr Arg Pro Gly Pro
        35                  40                  45

Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe Val Arg Val Gln
    50                  55                  60

Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg Trp Gly Pro Gly
65                  70                  75                  80

Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly Leu Arg Glu Asp
                85                  90                  95

Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly Glu Ala Ala Gly
            100                 105                 110

Ser Pro Val Pro Thr Pro Pro Arg Ser Pro Ala Gln Glu Glu Pro Thr
        115                 120                 125

Asp Phe Leu Ser Arg Leu Arg Arg Cys Leu Pro Cys Ser Leu Gly Arg
    130                 135                 140

Gly Ala Ala Pro Ser Glu Ser Pro Arg Pro Cys Ser Leu Pro Ile Arg
145                 150                 155                 160

Pro Cys Tyr Gly Leu Glu Pro Gly Pro Ala Thr Pro Asp Phe Tyr Ala
                165                 170                 175
```

```
Leu Val Ala Gln Arg Leu Glu Gln Leu Val Gln Glu Gln Leu Lys Ser
            180                 185                 190

Pro Pro Ser Pro Glu Leu Gln Gly Pro Pro Ser Thr Glu Lys Glu Ala
        195                 200                 205

Ile Leu Arg Arg Leu Val Ala Leu Leu Glu Glu Glu Ala Glu Val Ile
    210                 215                 220

Asn Gln Lys Val Met Gly Ile Cys Pro Thr Pro Trp Gln Gly Gln Glu
225                 230                 235                 240

Leu Arg Asn Gly Gly His Pro Gly Cys Phe Thr Arg Gly Leu Glu Leu
                245                 250                 255

Ala Ile Gly Leu Ser Ser Phe Ser Glu Ala Ala Thr Arg
            260                 265
```

<210> 8820
<211> 485
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXK5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318883"

<400> 8820

```
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1               5                   10                  15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
            20                  25                  30
```

```
Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
        35                  40                  45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
    50                  55                  60

Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Ala Phe Thr Ser
65                  70                  75                  80

Thr Gly Phe Asp Arg His Thr Ser Pro Val Phe Ser Pro Ala Asn Pro
                85                  90                  95

Glu Ser Ser Met Glu Asp Cys Leu Ala His Leu Gly Glu Lys Val Ser
            100                 105                 110

Gln Glu Leu Lys Glu Pro Leu His Lys Ala Leu Gln Met Leu Leu Ser
        115                 120                 125

Gln Pro Val Thr Tyr Gln Ala Phe Arg Glu Cys Thr Leu Glu Thr Thr
    130                 135                 140

Val His Ala Ser Gly Trp Asn Lys Ile Leu Val Pro Leu Val Leu Leu
145                 150                 155                 160

Arg Gln Met Leu Leu Glu Leu Thr Arg Arg Gly Gln Glu Pro Leu Ser
                165                 170                 175

Ala Leu Leu Gln Phe Gly Val Thr Tyr Leu Glu Asp Tyr Ser Ala Glu
            180                 185                 190

Tyr Ile Ile Gln Gln Gly Gly Trp Gly Thr Val Phe Ser Leu Glu Ser
        195                 200                 205

Glu Glu Glu Glu Tyr Pro Gly Ile Thr Ala Glu Asp Ser Asn Asp Ile
    210                 215                 220

Tyr Ile Leu Pro Ser Asp Asn Ser Gly Gln Val Ser Pro Pro Glu Ser
225                 230                 235                 240

Pro Thr Val Thr Thr Ser Trp Gln Ser Glu Ser Leu Pro Val Ser Leu
                245                 250                 255
```

```
Ser Ala Ser Gln Ser Trp His Thr Glu Ser Leu Pro Val Ser Leu Gly
            260                 265                 270

Pro Glu Ser Trp Gln Gln Ile Ala Met Asp Pro Glu Glu Val Lys Ser
        275                 280                 285

Leu Asp Ser Asn Gly Ala Gly Glu Lys Ser Glu Asn Asn Ser Ser Asn
    290                 295                 300

Ser Asp Ile Val His Val Glu Lys Glu Glu Val Pro Glu Gly Met Glu
305                 310                 315                 320

Glu Ala Ala Val Ala Ser Val Val Leu Pro Ala Arg Glu Leu Gln Glu
                325                 330                 335

Ala Leu Pro Glu Ala Pro Ala Pro Leu Leu Pro His Ile Thr Ala Thr
            340                 345                 350

Ser Leu Leu Gly Thr Arg Glu Pro Asp Thr Glu Val Ile Thr Val Glu
        355                 360                 365

Lys Ser Ser Pro Ala Thr Ser Leu Phe Val Glu Leu Asp Glu Glu Glu
    370                 375                 380

Val Lys Ala Ala Thr Thr Glu Pro Thr Glu Val Glu Glu Val Val Pro
385                 390                 395                 400

Ala Leu Glu Pro Thr Glu Thr Leu Leu Ser Glu Lys Glu Ile Asn Ala
                405                 410                 415

Arg Glu Glu Ser Leu Val Glu Glu Leu Ser Pro Ala Ser Glu Lys Lys
            420                 425                 430

Pro Val Pro Pro Ser Glu Gly Lys Ser Arg Leu Ser Pro Ala Gly Glu
        435                 440                 445

Met Lys Pro Met Pro Leu Ser Glu Gly Lys Ser Ile Leu Leu Phe Gly
    450                 455                 460

Gly Ala Ala Ala Val Ala Ile Leu Ala Val Ala Ile Gly Val Ala Leu
465                 470                 475                 480
```

Ala Leu Arg Lys Lys
485

<210> 8821
<211> 128
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338932"

<400> 8821
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1 5 10 15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
20 25 30

Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
35 40 45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
50 55 60

Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Asp Phe Gly Ala
65 70 75 80

Ser Gly Phe Ala Thr Thr Asn Ala Phe Gly Ile Asp Lys Thr Trp Ser
85 90 95

Arg Thr Phe Glu Arg Thr Ala Ala Val Trp Arg Asp Ile Pro Gly Gly
100 105 110

Leu Phe Gly Arg Val His His Ser Ala Arg Trp Leu Gly His Cys Val
115 120 125

<210> 8822
<211> 171
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347133"

<400> 8822
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1 5 10 15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
20 25 30

Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
35 40 45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
50 55 60

Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Ala Phe Thr Ser
65 70 75 80

Thr Gly Phe Asp Arg His Thr Ser Pro Val Phe Ser Pro Ala Asn Pro
85 90 95

Glu Ser Ser Met Glu Asp Cys Leu Ala His Leu Gly Glu Lys Val Ser
100 105 110

Gln Glu Leu Lys Glu Pro Leu His Lys Ala Leu Gln Met Leu Leu Ser
115 120 125

```
Gln Ala Leu Cys Leu Val Leu Ser Gln Arg Arg Arg Asn Thr Leu Glu
    130                 135                 140

Ser Leu Gln Lys Ile Ala Met Thr Phe Thr Ser Cys Pro Ala Thr Thr
145                 150                 155                 160

Leu Asp Lys Ser Val Pro Gln Ser Leu Gln Leu
                165                 170
```

<210> 8823
<211> 38
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382677"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8823

```
Xaa Leu Gly Glu Lys Val Ser Gln Glu Leu Lys Glu Pro Leu His Lys
1               5                   10                  15

Ala Leu Gln Met Leu Leu Ser Gln Phe Trp Cys Leu Trp Phe Cys Tyr
            20                  25                  30

Asp Lys Cys Phe Trp Asn
        35
```

<210> 8824
<211> 201
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXK5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382682"

<400> 8824
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1   5   10   15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
            20   25   30

Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
        35   40   45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
    50   55   60

Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Ala Phe Thr Ser
65   70   75   80

Thr Gly Phe Asp Arg His Thr Ser Pro Val Phe Ser Pro Ala Asn Pro
                85   90   95

Glu Ser Ser Met Glu Asp Cys Leu Ala His Leu Gly Glu Lys Val Ser
            100   105   110

Gln Glu Leu Lys Glu Pro Leu His Lys Ala Leu Gln Met Leu Leu Ser
        115   120   125

Gln Pro Val Thr Tyr Gln Ala Phe Arg Glu Cys Thr Leu Glu Thr Thr
    130   135   140

```
Val His Ala Ser Gly Trp Asn Lys Ile Leu Val Pro Leu Val Leu Leu
145                 150                 155                 160


Arg Gln Met Leu Leu Glu Leu Thr Arg Arg Gly Gln Glu Pro Leu Ser
                165                 170                 175


Ala Leu Leu Gln Phe Gly Val Thr Tyr Leu Glu Asp Tyr Ser Ala Glu
            180                 185                 190


Tyr Ile Ile Gln Gln Gly Gly Trp Val
        195                 200


<210> 8825
<211> 323
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BXK5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410019"

<400> 8825
Met Leu Leu Glu Leu Thr Arg Arg Gly Gln Glu Pro Leu Ser Ala Leu
1               5                   10                  15


Leu Gln Phe Gly Val Thr Tyr Leu Glu Asp Tyr Ser Ala Glu Tyr Ile
            20                  25                  30


Ile Gln Gln Gly Gly Trp Gly Thr Val Phe Ser Leu Glu Ser Glu Glu
        35                  40                  45
```

```
Glu Glu Tyr Pro Gly Ile Thr Ala Glu Asp Ser Asn Asp Ile Tyr Ile
    50                  55                  60

Leu Pro Ser Asp Asn Ser Gly Gln Val Ser Pro Pro Glu Ser Pro Thr
65                  70                  75                  80

Val Thr Thr Ser Trp Gln Ser Glu Ser Leu Pro Val Ser Leu Ser Ala
                85                  90                  95

Ser Gln Ser Trp His Thr Glu Ser Leu Pro Val Ser Leu Gly Pro Glu
            100                 105                 110

Ser Trp Gln Gln Ile Ala Met Asp Pro Glu Glu Val Lys Ser Leu Asp
        115                 120                 125

Ser Asn Gly Ala Gly Glu Lys Ser Glu Asn Asn Ser Ser Asn Ser Asp
    130                 135                 140

Ile Val His Val Glu Lys Glu Glu Val Pro Glu Gly Met Glu Glu Ala
145                 150                 155                 160

Ala Val Ala Ser Val Val Leu Pro Ala Arg Glu Leu Gln Glu Ala Leu
                165                 170                 175

Pro Glu Ala Pro Ala Pro Leu Leu Pro His Ile Thr Ala Thr Ser Leu
            180                 185                 190

Leu Gly Thr Arg Glu Pro Asp Thr Glu Val Ile Thr Val Glu Lys Ser
        195                 200                 205

Ser Pro Ala Thr Ser Leu Phe Val Glu Leu Asp Glu Glu Glu Val Lys
    210                 215                 220

Ala Ala Thr Thr Glu Pro Thr Glu Val Glu Glu Val Val Pro Ala Leu
225                 230                 235                 240

Glu Pro Thr Glu Thr Leu Leu Ser Glu Lys Glu Ile Asn Ala Arg Glu
                245                 250                 255

Glu Ser Leu Val Glu Glu Leu Ser Pro Ala Ser Glu Lys Lys Pro Val
            260                 265                 270

Pro Pro Ser Glu Gly Lys Ser Arg Leu Ser Pro Ala Gly Glu Met Lys
```

275 280 285

Pro Met Pro Leu Ser Glu Gly Lys Ser Ile Leu Leu Phe Gly Gly Ala
290 295 300

Ala Ala Val Ala Ile Leu Ala Val Ala Ile Gly Val Ala Leu Ala Leu
305 310 315 320

Arg Lys Lys

<210> 8826
<211> 201
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXK5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434764"

<400> 8826
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1 5 10 15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
20 25 30

Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
35 40 45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
50 55 60

```
Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Ala Phe Thr Ser
65                  70                  75                  80

Thr Gly Phe Asp Arg His Thr Ser Pro Val Phe Ser Pro Ala Asn Pro
                85                  90                  95

Glu Ser Ser Met Glu Asp Cys Leu Ala His Leu Gly Glu Lys Val Ser
            100                 105                 110

Gln Glu Leu Lys Glu Pro Leu His Lys Ala Leu Gln Met Leu Leu Ser
        115                 120                 125

Gln Pro Val Thr Tyr Gln Ala Phe Arg Glu Cys Thr Leu Glu Thr Thr
    130                 135                 140

Val His Ala Ser Gly Trp Asn Lys Ile Leu Val Pro Leu Val Leu Leu
145                 150                 155                 160

Arg Gln Met Leu Leu Glu Leu Thr Arg Arg Gly Gln Glu Pro Leu Ser
                165                 170                 175

Ala Leu Leu Gln Phe Gly Val Thr Tyr Leu Glu Asp Tyr Ser Ala Glu
            180                 185                 190

Tyr Ile Ile Gln Gln Gly Gly Trp Val
        195                 200


<210> 8827
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000436321"

<400> 8827
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1   5   10   15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
            20   25   30

Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
        35   40   45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
    50   55   60

Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Gly Gln
65   70   75

<210> 8828
<211> 323
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXK5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437667"

<400> 8828
Met Leu Leu Glu Leu Thr Arg Arg Gly Gln Glu Pro Leu Ser Ala Leu
1   5   10   15

Leu Gln Phe Gly Val Thr Tyr Leu Glu Asp Tyr Ser Ala Glu Tyr Ile
            20   25   30

```
Ile Gln Gln Gly Gly Trp Gly Thr Val Phe Ser Leu Glu Ser Glu Glu
        35                  40                  45

Glu Glu Tyr Pro Gly Ile Thr Ala Glu Asp Ser Asn Asp Ile Tyr Ile
    50                  55                  60

Leu Pro Ser Asp Asn Ser Gly Gln Val Ser Pro Pro Glu Ser Pro Thr
65                  70                  75                  80

Val Thr Thr Ser Trp Gln Ser Glu Ser Leu Pro Val Ser Leu Ser Ala
                85                  90                  95

Ser Gln Ser Trp His Thr Glu Ser Leu Pro Val Ser Leu Gly Pro Glu
            100                 105                 110

Ser Trp Gln Gln Ile Ala Met Asp Pro Glu Glu Val Lys Ser Leu Asp
        115                 120                 125

Ser Asn Gly Ala Gly Glu Lys Ser Glu Asn Asn Ser Ser Asn Ser Asp
    130                 135                 140

Ile Val His Val Glu Lys Glu Glu Val Pro Glu Gly Met Glu Glu Ala
145                 150                 155                 160

Ala Val Ala Ser Val Val Leu Pro Ala Arg Glu Leu Gln Glu Ala Leu
                165                 170                 175

Pro Glu Ala Pro Ala Pro Leu Leu Pro His Ile Thr Ala Thr Ser Leu
            180                 185                 190

Leu Gly Thr Arg Glu Pro Asp Thr Glu Val Ile Thr Val Glu Lys Ser
        195                 200                 205

Ser Pro Ala Thr Ser Leu Phe Val Glu Leu Asp Glu Glu Glu Val Lys
    210                 215                 220

Ala Ala Thr Thr Glu Pro Thr Glu Val Glu Glu Val Val Pro Ala Leu
225                 230                 235                 240

Glu Pro Thr Glu Thr Leu Leu Ser Glu Lys Glu Ile Asn Ala Arg Glu
                245                 250                 255
```

```
Glu Ser Leu Val Glu Glu Leu Ser Pro Ala Ser Glu Lys Lys Pro Val
            260                 265                 270

Pro Pro Ser Glu Gly Lys Ser Arg Leu Ser Pro Ala Gly Glu Met Lys
        275                 280                 285

Pro Met Pro Leu Ser Glu Gly Lys Ser Ile Leu Leu Phe Gly Gly Ala
    290                 295                 300

Ala Ala Val Ala Ile Leu Ala Val Ala Ile Gly Val Ala Leu Ala Leu
305                 310                 315                 320

Arg Lys Lys



<210> 8829
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441344"

<400> 8829
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1               5                   10                  15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
            20                  25                  30

Glu Gln His Leu Ser Ser Pro Gln Asp Phe Gly Ala Ser Gly Phe Ala
        35                  40                  45

Thr Thr Asn Ala Phe Gly Ile Asp Lys Thr Trp Ser Arg Thr Phe Glu
    50                  55                  60
```

```
Arg Thr Ala Ala Val Trp Arg Asp Ile Pro Gly Gly Leu Phe Gly Arg
65                  70                  75                  80


Val His His Ser Ala Arg Trp Leu Gly His Cys Val
                85                  90


<210> 8830
<211> 461
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477967"

<400> 8830
Met Ser Gly Ser Ser Gly Pro Ala Pro Thr Pro Ala Val Thr Lys Ala
1               5                  10                  15


Arg Arg Gly Asp Leu Thr Leu Gln His Gly Gly Gly Gly Arg Leu Gly
            20                  25                  30


Pro Arg Val Gly Ala Leu Thr Ala Ala Gly Gly Pro Cys Arg Lys Gln
        35                  40                  45


Leu Pro Pro Pro Pro Leu Ser Ser Leu Leu Gly Gln Gly Pro Gly Pro
    50                  55                  60


Gly Val Gln Leu Asp Ile Ala Ser Gln Ser Leu Asp Gln Glu Ile Leu
65                  70                  75                  80


Leu Lys Val Lys Thr Glu Ile Glu Glu Glu Leu Lys Ser Leu Asp Lys
                85                  90                  95
```

```
Glu Ile Ser Glu Ala Phe Thr Ser Thr Gly Phe Asp Arg His Thr Ser
            100                 105                 110

Pro Val Phe Ser Pro Ala Asn Pro Glu Ser Ser Met Glu Asp Cys Leu
        115                 120                 125

Ala His Leu Gly Glu Lys Val Ser Gln Glu Leu Lys Glu Pro Leu His
    130                 135                 140

Lys Ala Leu Gln Met Leu Leu Ser Gln Pro Val Thr Tyr Gln Ala Phe
145                 150                 155                 160

Arg Glu Cys Thr Leu Glu Thr Thr Val His Ala Ser Gly Trp Asn Lys
                165                 170                 175

Gly Thr Val Phe Ser Leu Glu Ser Glu Glu Glu Glu Tyr Pro Gly Ile
            180                 185                 190

Thr Ala Glu Asp Ser Asn Asp Ile Tyr Ile Leu Pro Ser Asp Asn Ser
        195                 200                 205

Gly Gln Val Ser Pro Pro Glu Ser Pro Thr Val Thr Thr Ser Trp Gln
    210                 215                 220

Ser Glu Ser Leu Pro Val Ser Leu Ser Ala Ser Gln Ser Trp His Thr
225                 230                 235                 240

Glu Ser Leu Pro Val Ser Leu Gly Pro Glu Ser Trp Gln Gln Ile Ala
                245                 250                 255

Met Asp Pro Glu Glu Val Lys Ser Leu Asp Ser Asn Gly Ala Gly Glu
            260                 265                 270

Lys Ser Glu Asn Asn Ser Ser Asn Ser Asp Ile Val His Val Glu Lys
        275                 280                 285

Glu Glu Val Pro Glu Gly Met Glu Glu Ala Ala Val Ala Ser Val Val
    290                 295                 300

Leu Pro Ala Arg Glu Leu Gln Glu Ala Leu Pro Glu Ala Pro Ala Pro
305                 310                 315                 320

Leu Leu Pro His Ile Thr Ala Thr Ser Leu Leu Gly Thr Arg Glu Pro
```

```
                325                 330                 335

Asp Thr Glu Val Ile Thr Val Glu Lys Ser Ser Pro Ala Thr Ser Leu
            340                 345                 350

Phe Val Glu Leu Asp Glu Glu Glu Val Lys Ala Ala Thr Thr Glu Pro
        355                 360                 365

Thr Glu Val Glu Glu Val Val Pro Ala Leu Glu Pro Thr Glu Thr Leu
    370                 375                 380

Leu Ser Glu Lys Glu Ile Asn Ala Arg Glu Glu Ser Leu Val Glu Glu
385                 390                 395                 400

Leu Ser Pro Ala Ser Glu Lys Lys Pro Val Pro Pro Ser Glu Gly Lys
                405                 410                 415

Ser Arg Leu Ser Pro Ala Gly Glu Met Lys Pro Met Pro Leu Ser Glu
            420                 425                 430

Gly Lys Ser Ile Leu Leu Phe Gly Gly Ala Ala Ala Val Ala Ile Leu
        435                 440                 445

Ala Val Ala Ile Gly Val Ala Leu Ala Leu Arg Lys Lys
    450                 455                 460


<210> 8831
<211> 80
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 13 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480014"
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<400> 8831
Met Ala Ser Ser Ser Thr Val Pro Leu Gly Phe His Tyr Glu Thr Lys
1 5 10 15

Tyr Val Val Leu Ser Tyr Leu Gly Leu Leu Ser Gln Glu Lys Leu Gln
20 25 30

Glu Gln His Leu Ser Ser Pro Gln Gly Val Gln Leu Asp Ile Ala Ser
35 40 45

Gln Ser Leu Asp Gln Glu Ile Leu Leu Lys Val Lys Thr Glu Ile Glu
50 55 60

Glu Glu Leu Lys Ser Leu Asp Lys Glu Ile Ser Glu Gly His Cys Val
65 70 75 80

<210> 8832
<211> 509
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1792; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L13; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 13 (apoptosis facilitator); "

<220>
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<400> 8832
Met Ser Gly Ser Ser Gly Pro Ala Pro Thr Pro Ala Val Thr Lys Ala
1 5 10 15

Arg Arg Gly Asp Leu Thr Leu Gln His Gly Gly Gly Gly Arg Leu Gly
20 25 30

Pro Arg Val Gly Ala Leu Thr Ala Ala Gly Gly Pro Cys Arg Lys Gln
35 40 45

Leu Pro Pro Pro Pro Leu Ser Ser Leu Leu Gly Gln Gly Pro Gly Pro

```
    50                  55                  60

Gly Val Gln Leu Asp Ile Ala Ser Gln Ser Leu Asp Gln Glu Ile Leu
65                  70                  75                  80

Leu Lys Val Lys Thr Glu Ile Glu Glu Glu Leu Lys Ser Leu Asp Lys
                85                  90                  95

Glu Ile Ser Glu Ala Phe Thr Ser Thr Gly Phe Asp Arg His Thr Ser
            100                 105                 110

Pro Val Phe Ser Pro Ala Asn Pro Glu Ser Ser Met Glu Asp Cys Leu
        115                 120                 125

Ala His Leu Gly Glu Lys Val Ser Gln Glu Leu Lys Glu Pro Leu His
    130                 135                 140

Lys Ala Leu Gln Met Leu Leu Ser Gln Pro Val Thr Tyr Gln Ala Phe
145                 150                 155                 160

Arg Glu Cys Thr Leu Glu Thr Thr Val His Ala Ser Gly Trp Asn Lys
                165                 170                 175

Ile Leu Val Pro Leu Val Leu Leu Arg Gln Met Leu Leu Glu Leu Thr
            180                 185                 190

Arg Arg Gly Gln Glu Pro Leu Ser Ala Leu Leu Gln Phe Gly Val Thr
        195                 200                 205

Tyr Leu Glu Asp Tyr Ser Ala Glu Tyr Ile Ile Gln Gln Gly Gly Trp
    210                 215                 220

Gly Thr Val Phe Ser Leu Glu Ser Glu Glu Glu Glu Tyr Pro Gly Ile
225                 230                 235                 240

Thr Ala Glu Asp Ser Asn Asp Ile Tyr Ile Leu Pro Ser Asp Asn Ser
                245                 250                 255

Gly Gln Val Ser Pro Pro Glu Ser Pro Thr Val Thr Thr Ser Trp Gln
            260                 265                 270

Ser Glu Ser Leu Pro Val Ser Leu Ser Ala Ser Gln Ser Trp His Thr
        275                 280                 285
```

```
Glu Ser Leu Pro Val Ser Leu Gly Pro Glu Ser Trp Gln Gln Ile Ala
    290                 295                 300

Met Asp Pro Glu Glu Val Lys Ser Leu Asp Ser Asn Gly Ala Gly Glu
305                 310                 315                 320

Lys Ser Glu Asn Asn Ser Ser Asn Ser Asp Ile Val His Val Glu Lys
                325                 330                 335

Glu Glu Val Pro Glu Gly Met Glu Glu Ala Ala Val Ala Ser Val Val
            340                 345                 350

Leu Pro Ala Arg Glu Leu Gln Glu Ala Leu Pro Glu Ala Pro Ala Pro
        355                 360                 365

Leu Leu Pro His Ile Thr Ala Thr Ser Leu Leu Gly Thr Arg Glu Pro
    370                 375                 380

Asp Thr Glu Val Ile Thr Val Glu Lys Ser Ser Pro Ala Thr Ser Leu
385                 390                 395                 400

Phe Val Glu Leu Asp Glu Glu Glu Val Lys Ala Ala Thr Thr Glu Pro
                405                 410                 415

Thr Glu Val Glu Glu Val Val Pro Ala Leu Glu Pro Thr Glu Thr Leu
            420                 425                 430

Leu Ser Glu Lys Glu Ile Asn Ala Arg Glu Glu Ser Leu Val Glu Glu
        435                 440                 445

Leu Ser Pro Ala Ser Glu Lys Lys Pro Val Pro Pro Ser Glu Gly Lys
    450                 455                 460

Ser Arg Leu Ser Pro Ala Gly Glu Met Lys Pro Met Pro Leu Ser Glu
465                 470                 475                 480

Gly Lys Ser Ile Leu Leu Phe Gly Gly Ala Ala Ala Val Ala Ile Leu
                485                 490                 495

Ala Val Ala Ile Gly Val Ala Leu Ala Leu Arg Lys Lys
            500                 505
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<210> 8833
<211> 252
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BCL2L14; "

<220>
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<223> /note="Gene Name:
BCL2-like 14 (apoptosis facilitator); "

<220>
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<223> /note="Uniprot ID: Q9BZR8; "

<220>
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<223> /note="ENSP ID: ENSP00000266434"

<400> 8833
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1   5   10   15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20   25   30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35   40   45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50   55   60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65   70   75   80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85   90   95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100   105   110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln

```
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Asp Thr Ala Phe Ile Pro Ile Pro Leu Val Asp Thr Ser Ile
225                 230                 235                 240

Gln Gly Phe Pro Gln Asp Gly Leu Met Ala Cys Ile
                245                 250


<210> 8834
<211> 276
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BCL2L14; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q9BZR8; "
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<220>
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<223> /note="ENSP ID: ENSP00000298566"

<400> 8834
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1   5   10   15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20   25   30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35   40   45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50   55   60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65   70   75   80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85   90   95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100   105   110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115   120   125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130   135   140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145   150   155   160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165   170   175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180   185   190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195   200   205

```
Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Glu Lys Glu Trp Glu Glu Ser Ala Lys Thr Lys Ile Lys Met
225                 230                 235                 240

Ala Leu Leu Trp Arg Ser Ser Gly Gly Gly Pro Arg Val Leu Ser Ile
                245                 250                 255

Pro Glu Ala Phe Met Lys Asn Ser Phe Thr Leu Thr Pro Pro Gly Phe
            260                 265                 270

Ser Glu His Asn
        275


<210> 8835
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

<220>
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<220>
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<223> /note="Gene Name:
      BCL2-like 14 (apoptosis facilitator); "

<220>
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<223> /note="Uniprot ID:  Q9BZR8; "

<220>
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<223> /note="ENSP ID: ENSP00000309132"

<400> 8835
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1               5                   10                  15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20                  25                  30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35                  40                  45
```

```
Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50                  55                  60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65                  70                  75                  80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85                  90                  95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100                 105                 110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp Gly
225                 230                 235                 240

Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met Gly
                245                 250                 255

Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys Ala
            260                 265                 270
```

```
Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn His
        275                 280                 285

Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu Asn
    290                 295                 300

Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu Gly
305                 310                 315                 320

Ile Ser His Glu Glu Val Asp
                325
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<210> 8836
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

<220>
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<223> /note="Gene Name:
BCL2-like 14 (apoptosis facilitator); "

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<223> /note="Uniprot ID: Q9BZR8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379653"

<400> 8836

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Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1               5                   10                  15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20                  25                  30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35                  40                  45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
```

```
    50                  55                  60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65                  70                  75                  80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85                  90                  95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100                 105                 110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp Gly
225                 230                 235                 240

Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met Gly
                245                 250                 255

Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys Ala
            260                 265                 270

Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn His
        275                 280                 285
```

Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu Asn
290 295 300

Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu Gly
305 310 315 320

Ile Ser His Glu Glu Val Asp
325

<210> 8837
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

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<223> /note="Gene Symbol: BCL2L14; "

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<223> /note="Gene Name:
BCL2-like 14 (apoptosis facilitator); "

<220>
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<223> /note="ENSP ID: ENSP00000417223"

<400> 8837
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1 5 10 15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
20 25 30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
35 40 45

Arg Thr Arg Ser Leu Ser Gln Arg Gly
50 55

<210> 8838
<211> 125
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1793; "

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BCL2-like 14 (apoptosis facilitator); "

<220>
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<223> /note="ENSP ID: ENSP00000419617"

<400> 8838
Met Pro Asn Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro
1 5 10 15

Leu Asp Asp Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr
20 25 30

Tyr Thr Arg His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro
35 40 45

Lys Leu Leu Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys
50 55 60

Ser Ala Asn Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser
65 70 75 80

Gln Ser Ser Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp
85 90 95

Lys Ala Phe Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro
100 105 110

Ala Lys Val Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr
115 120 125

<210> 8839
<211> 176
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="Payload ID: 1793; "

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<223> /note="Gene Symbol: BCL2L14; "

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<223> /note="Gene Name:
BCL2-like 14 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465663"

<400> 8839

Met	Cys	Ser	Thr	Ser	Gly	Cys	Asp	Leu	Glu	Glu	Ile	Pro	Leu	Asp	Asp
1				5				10					15		
Asp	Asp	Leu	Asn	Thr	Ile	Glu	Phe	Lys	Ile	Leu	Ala	Tyr	Tyr	Thr	Arg
			20				25					30			
His	His	Val	Phe	Lys	Ser	Thr	Pro	Ala	Leu	Phe	Ser	Pro	Lys	Leu	Leu
		35				40					45				
Arg	Thr	Arg	Ser	Leu	Ser	Gln	Arg	Gly	Leu	Gly	Asn	Cys	Ser	Ala	Asn
	50				55					60					
Glu	Ser	Trp	Thr	Glu	Val	Ser	Trp	Pro	Cys	Arg	Asn	Ser	Gln	Ser	Ser
65				70					75						80
Glu	Lys	Ala	Ile	Asn	Leu	Gly	Lys	Lys	Lys	Ser	Ser	Trp	Lys	Ala	Phe
			85					90					95		
Phe	Gly	Val	Val	Glu	Lys	Glu	Asp	Ser	Gln	Ser	Thr	Pro	Ala	Lys	Val
		100					105					110			
Ser	Ala	Gln	Gly	Gln	Arg	Thr	Leu	Glu	Tyr	Gln	Asp	Ser	His	Ser	Gln
	115					120					125				
Gln	Trp	Ser	Arg	Cys	Leu	Ser	Asn	Val	Glu	Gln	Cys	Leu	Glu	His	Glu
	130				135					140					
Ala	Val	Asp	Pro	Lys	Val	Ile	Ser	Ile	Ala	Asn	Arg	Val	Ala	Glu	Ile
145				150					155						160

```
Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175


<210> 8840
<211> 360
<212> PRT
<213> Homo sapiens

<220>
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      BCL2-like 14 (apoptosis facilitator); "

<220>
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<223> /note="ENSP ID: ENSP00000466693"

<400> 8840
Met Gly Leu Ser Pro Cys Cys Pro Gly Trp Phe Gln Thr Pro Gly His
1               5                   10                  15


Ser Leu Ser Ser Cys Leu Ser Leu Pro Lys Arg Trp Asp Cys Arg Pro
            20                  25                  30


Asn Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp
        35                  40                  45


Asp Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr
    50                  55                  60


Arg His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu
65                  70                  75                  80


Leu Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala
                85                  90                  95


Asn Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser
            100                 105                 110


Ser Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala
        115                 120                 125
```

```
Phe Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys
    130                 135                 140

Val Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser
145                 150                 155                 160

Gln Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His
                165                 170                 175

Glu Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu
            180                 185                 190

Ile Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe
        195                 200                 205

Lys Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln
    210                 215                 220

Gly His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln
225                 230                 235                 240

Ile Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu
                245                 250                 255

Glu Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp
            260                 265                 270

Gly Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met
        275                 280                 285

Gly Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys
    290                 295                 300

Ala Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn
305                 310                 315                 320

His Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu
                325                 330                 335

Asn Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu
            340                 345                 350
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Gly Ile Ser His Glu Glu Val Asp
355 360

<210> 8841
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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BCL2-like 14 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID: Q9BZR8; "

<220>
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<223> /note="ENSP ID: ENSP00000467086"

<400> 8841
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1 5 10 15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
20 25 30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
35 40 45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
50 55 60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65 70 75 80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
85 90 95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val

```
            100                 105                 110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp Gly
225                 230                 235                 240

Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met Gly
                245                 250                 255

Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys Ala
            260                 265                 270

Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn His
        275                 280                 285

Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu Asn
    290                 295                 300

Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu Gly
305                 310                 315                 320

Ile Ser His Glu Glu Val Asp
                325
```

<210> 8842
<211> 276
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1793; "

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<223> /note="Gene Symbol: BCL2L14; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9BZR8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485980"

<400> 8842
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1   5   10   15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20   25   30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35   40   45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50   55   60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65   70   75   80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85   90   95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100   105   110

```
Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Glu Lys Glu Trp Glu Glu Ser Ala Lys Thr Lys Ile Lys Met
225                 230                 235                 240

Ala Leu Leu Trp Arg Ser Ser Gly Gly Gly Pro Arg Val Leu Ser Ile
                245                 250                 255

Pro Glu Ala Phe Met Lys Asn Ser Phe Thr Leu Thr Pro Pro Gly Phe
            260                 265                 270

Ser Glu His Asn
        275


<210> 8843
<211> 327
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q9BZR8; "

<220>
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<223> /note="ENSP ID: ENSP00000486050"

<400> 8843

Met	Cys	Ser	Thr	Ser	Gly	Cys	Asp	Leu	Glu	Glu	Ile	Pro	Leu	Asp	Asp
1				5				10					15		
Asp	Asp	Leu	Asn	Thr	Ile	Glu	Phe	Lys	Ile	Leu	Ala	Tyr	Tyr	Thr	Arg
			20					25					30		
His	His	Val	Phe	Lys	Ser	Thr	Pro	Ala	Leu	Phe	Ser	Pro	Lys	Leu	Leu
		35					40					45			
Arg	Thr	Arg	Ser	Leu	Ser	Gln	Arg	Gly	Leu	Gly	Asn	Cys	Ser	Ala	Asn
	50					55					60				
Glu	Ser	Trp	Thr	Glu	Val	Ser	Trp	Pro	Cys	Arg	Asn	Ser	Gln	Ser	Ser
65					70					75					80
Glu	Lys	Ala	Ile	Asn	Leu	Gly	Lys	Lys	Lys	Ser	Ser	Trp	Lys	Ala	Phe
				85					90					95	
Phe	Gly	Val	Val	Glu	Lys	Glu	Asp	Ser	Gln	Ser	Thr	Pro	Ala	Lys	Val
			100					105					110		
Ser	Ala	Gln	Gly	Gln	Arg	Thr	Leu	Glu	Tyr	Gln	Asp	Ser	His	Ser	Gln
		115					120					125			
Gln	Trp	Ser	Arg	Cys	Leu	Ser	Asn	Val	Glu	Gln	Cys	Leu	Glu	His	Glu
	130					135					140				
Ala	Val	Asp	Pro	Lys	Val	Ile	Ser	Ile	Ala	Asn	Arg	Val	Ala	Glu	Ile
145					150					155					160
Val	Tyr	Ser	Trp	Pro	Pro	Pro	Gln	Ala	Thr	Gln	Ala	Gly	Gly	Phe	Lys
				165					170					175	

```
Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp Gly
225                 230                 235                 240

Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met Gly
                245                 250                 255

Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys Ala
            260                 265                 270

Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn His
        275                 280                 285

Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu Asn
    290                 295                 300

Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu Gly
305                 310                 315                 320

Ile Ser His Glu Glu Val Asp
                325
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<210> 8844
<211> 176
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:

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<220>
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<400> 8844
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1 5 10 15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
20 25 30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
35 40 45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
50 55 60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65 70 75 80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
85 90 95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
100 105 110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
115 120 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
130 135 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145 150 155 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
165 170 175

<210> 8845
<211> 252
<212> PRT
<213> Homo sapiens

<220>

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<220>
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BCL2-like 14 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID: Q9BZR8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486560"

<400> 8845
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1   5   10   15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20   25   30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35   40   45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50   55   60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65   70   75   80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85   90   95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100   105   110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115   120   125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130   135   140

```
Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160


Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175


Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190


His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205


Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220


Arg Lys Asp Thr Ala Phe Ile Pro Ile Pro Leu Val Asp Thr Ser Ile
225                 230                 235                 240


Gln Gly Phe Pro Gln Asp Gly Leu Met Ala Cys Ile
                245                 250


<210> 8846
<211> 360
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1793; "

<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000486791"

<400> 8846
Met Gly Leu Ser Pro Cys Cys Pro Gly Trp Phe Gln Thr Pro Gly His
1               5                   10                  15


Ser Leu Ser Ser Cys Leu Ser Leu Pro Lys Arg Trp Asp Cys Arg Pro
            20                  25                  30
```

```
Asn Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp
        35                  40                  45

Asp Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr
    50                  55                  60

Arg His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu
65                  70                  75                  80

Leu Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala
                85                  90                  95

Asn Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser
            100                 105                 110

Ser Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala
        115                 120                 125

Phe Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys
    130                 135                 140

Val Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser
145                 150                 155                 160

Gln Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His
                165                 170                 175

Glu Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu
            180                 185                 190

Ile Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe
        195                 200                 205

Lys Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln
    210                 215                 220

Gly His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln
225                 230                 235                 240

Ile Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu
                245                 250                 255
```

```
Glu Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp
            260                 265                 270

Gly Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met
        275                 280                 285

Gly Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys
    290                 295                 300

Ala Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn
305                 310                 315                 320

His Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu
                325                 330                 335

Asn Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu
            340                 345                 350

Gly Ile Ser His Glu Glu Val Asp
        355                 360


<210> 8847
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

<220>
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<223> /note="Gene Symbol: BCL2L14; "

<220>
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<223> /note="Gene Name:
      BCL2-like 14 (apoptosis facilitator); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BZR8; "

<220>
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<223> /note="ENSP ID: ENSP00000486796"

<400> 8847
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
```

```
1               5                   10                  15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20                  25                  30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35                  40                  45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50                  55                  60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65                  70                  75                  80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85                  90                  95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100                 105                 110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp Gly
225                 230                 235                 240
```

```
Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met Gly
                245                 250                 255

Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys Ala
            260                 265                 270

Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn His
        275                 280                 285

Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu Asn
    290                 295                 300

Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu Gly
305                 310                 315                 320

Ile Ser His Glu Glu Val Asp
                325


<210> 8848
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

<220>
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<223> /note="Gene Symbol: BCL2L14; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-like 14 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486862"

<400> 8848
Met Pro Asn Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro
1               5                   10                  15

Leu Asp Asp Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr
            20                  25                  30
```

```
Tyr Thr Arg His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro
        35                  40                  45

Lys Leu Leu Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys
    50                  55                  60

Ser Ala Asn Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser
65                  70                  75                  80

Gln Ser Ser Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp
                85                  90                  95

Lys Ala Phe Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro
            100                 105                 110

Ala Lys Val Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr
        115                 120                 125


<210> 8849
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L14; "

<220>
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<223> /note="Gene Name:
      BCL2-like 14 (apoptosis facilitator); "

<220>
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<223> /note="Uniprot ID:  Q9BZR8; "

<220>
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<223> /note="ENSP ID: ENSP00000487330"

<400> 8849
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1               5                   10                  15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20                  25                  30
```

```
His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35                  40                  45

Arg Thr Arg Ser Leu Ser Gln Arg Gly Leu Gly Asn Cys Ser Ala Asn
    50                  55                  60

Glu Ser Trp Thr Glu Val Ser Trp Pro Cys Arg Asn Ser Gln Ser Ser
65                  70                  75                  80

Glu Lys Ala Ile Asn Leu Gly Lys Lys Lys Ser Ser Trp Lys Ala Phe
                85                  90                  95

Phe Gly Val Val Glu Lys Glu Asp Ser Gln Ser Thr Pro Ala Lys Val
            100                 105                 110

Ser Ala Gln Gly Gln Arg Thr Leu Glu Tyr Gln Asp Ser His Ser Gln
        115                 120                 125

Gln Trp Ser Arg Cys Leu Ser Asn Val Glu Gln Cys Leu Glu His Glu
    130                 135                 140

Ala Val Asp Pro Lys Val Ile Ser Ile Ala Asn Arg Val Ala Glu Ile
145                 150                 155                 160

Val Tyr Ser Trp Pro Pro Pro Gln Ala Thr Gln Ala Gly Gly Phe Lys
                165                 170                 175

Ser Lys Glu Ile Phe Val Thr Glu Gly Leu Ser Phe Gln Leu Gln Gly
            180                 185                 190

His Val Pro Val Ala Ser Ser Ser Lys Lys Asp Glu Glu Glu Gln Ile
        195                 200                 205

Leu Ala Lys Ile Val Glu Leu Leu Lys Tyr Ser Gly Asp Gln Leu Glu
    210                 215                 220

Arg Lys Leu Lys Lys Asp Lys Ala Leu Met Gly His Phe Gln Asp Gly
225                 230                 235                 240

Leu Ser Tyr Ser Val Phe Lys Thr Ile Thr Asp Gln Val Leu Met Gly
                245                 250                 255
```

```
Val Asp Pro Arg Gly Glu Ser Glu Val Lys Ala Gln Gly Phe Lys Ala
            260                 265                 270

Ala Leu Val Ile Asp Val Thr Ala Lys Leu Thr Ala Ile Asp Asn His
        275                 280                 285

Pro Met Asn Arg Val Leu Gly Phe Gly Thr Lys Tyr Leu Lys Glu Asn
    290                 295                 300

Phe Ser Pro Trp Ile Gln Gln His Gly Gly Trp Glu Lys Ile Leu Gly
305                 310                 315                 320

Ile Ser His Glu Glu Val Asp
                325
```

<210> 8850
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1793; "

<220>
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<223> /note="Gene Symbol: BCL2L14; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 14 (apoptosis facilitator); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487566"

<400> 8850

```
Met Cys Ser Thr Ser Gly Cys Asp Leu Glu Glu Ile Pro Leu Asp Asp
1               5                   10                  15

Asp Asp Leu Asn Thr Ile Glu Phe Lys Ile Leu Ala Tyr Tyr Thr Arg
            20                  25                  30

His His Val Phe Lys Ser Thr Pro Ala Leu Phe Ser Pro Lys Leu Leu
        35                  40                  45

Arg Thr Arg Ser Leu Ser Gln Arg Gly
```

50 55

<210> 8851
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1794; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L15; "

<220>
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<223> /note="Gene Name:
BCL2-like 15; "

<220>
<221> source
<223> /note="Uniprot ID: Q5TBC7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376992"

<400> 8851
Met Lys Ser Ser Gln Thr Phe Glu Glu Gln Thr Glu Cys Ile Val Asn
1 5 10 15

Thr Leu Leu Met Asp Phe Leu Ser Pro Thr Leu Gln Val Ala Ser Arg
20 25 30

Asn Leu Cys Cys Val Asp Glu Val Asp Ser Gly Glu Pro Cys Ser Phe
35 40 45

Asp Val Ala Ile Ile Ala Gly Arg Leu Arg Met Leu Gly Asp Gln Phe
50 55 60

Asn Gly Glu Leu Glu Ala Ser Ala Lys Asn Val Ile Ala Glu Thr Ile
65 70 75 80

Lys Gly Gln Thr Gly Ala Ile Leu Gln Asp Thr Val Glu Ser Leu Ser
85 90 95

Lys Thr Trp Cys Ala Gln Asp Ser Ser Leu Ala Tyr Glu Arg Ala Phe
100 105 110

Leu Ala Val Ser Val Lys Leu Leu Glu Tyr Met Ala His Ile Ala Pro
        115   120   125

Glu Val Val Gly Gln Val Ala Ile Pro Met Thr Gly Met Ile Asn Gly
    130   135   140

Asn Gln Ala Ile Arg Glu Phe Ile Gln Gly Gln Gly Gly Trp Glu Asn
145   150   155   160

Leu Glu Ser

<210> 8852
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1794; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L15; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q5TBC7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376995"

<400> 8852
Met Lys Ser Ser Gln Thr Phe Glu Glu Gln Thr Glu Cys Ile Val Asn
1   5   10   15

Thr Leu Leu Met Asp Phe Leu Ser Pro Thr Leu Gln Val Ala Ser Arg
            20   25   30

Asn Leu Cys Cys Val Asp Glu Val Asp Ser Gly Lys Ser Gly Glu Leu
        35   40   45

Lys Ser Trp Ser Tyr Ser Arg Asp

50 55

<210> 8853
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1794; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L15; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417458"

<400> 8853
Met Lys Ser Ser Gln Thr Phe Glu Glu Gln Thr Glu Cys Ile Val Asn
1 5 10 15

Thr Leu Leu Met Asp Phe Leu Ser Pro Thr Leu Gln Val Ala Ser Arg
20 25 30

Asn Leu Cys Cys Val Asp Glu Val Asp Ser Gly Glu Pro Cys Ser Phe
35 40 45

Asp Val Ala Ile Ile Ala Gly Arg Leu Arg Met Leu Gly Asp Gln Phe
50 55 60

Asn Gly Glu Leu Glu Ala Ser Ala Lys Asn Val Ile Ala Glu Thr Ile
65 70 75 80

Lys Gly Gln Glu Asn Leu Glu Ser
85

<210> 8854
<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1795; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q92843; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000250405"

<400> 8854

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Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1               5                  10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
            20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
        35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
    50                  55                  60

Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
65                  70                  75                  80

Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala
        115                 120                 125

Tyr Leu Glu Thr Gln Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140

Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg
```

145 150 155 160

Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly
165 170 175

Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser
180 185 190

Lys

<210> 8855
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1795; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451148"

<400> 8855
Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1 5 10 15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
20 25 30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
35 40 45

Ala Gly Asp
50

<210> 8856
<211> 167
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1795; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451197"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8856
Xaa Arg Thr Phe Ser Asp Leu Ala Ala Gln Leu His Val Thr Pro Gly
1 5 10 15

Ser Ala Gln Gln Arg Phe Thr Gln Val Ser Asp Glu Leu Phe Gln Gly
20 25 30

Gly Pro Asn Trp Gly Arg Leu Val Ala Phe Phe Val Phe Gly Ala Ala
35 40 45

Leu Cys Ala Glu Ser Val Asn Lys Glu Met Glu Pro Leu Val Gly Gln
50 55 60

Val Gln Glu Trp Met Val Ala Tyr Leu Glu Thr Gln Leu Ala Asp Trp
65 70 75 80

Ile His Ser Ser Gly Gly Trp Ala Glu Phe Thr Ala Leu Tyr Gly Asp
85 90 95

Gly Ala Leu Glu Glu Ala Arg Arg Leu Arg Glu Gly Asn Trp Ala Ser
100 105 110

Val Arg Thr Val Leu Thr Gly Ala Val Ala Leu Gly Ala Leu Val Trp
115 120 125

```
Ser Thr Leu Phe Thr Leu Pro Ser Thr Thr Gly His Ile Ser Leu Leu
    130                 135                 140

Ala Phe Pro Gly Thr Phe Ser Gln Glu Glu Leu Gln Gly Pro Trp Pro
145                 150                 155                 160

Gly Tyr Gln Asn Ala Leu Leu
                165
```

<210> 8857
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1795; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451234"

<400> 8857

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Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1               5                   10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
            20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
        35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
    50                  55                  60

Ala Ala Gln Leu His Val Thr
65                  70
```

<210> 8858

<211> 149
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1795; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451701"

<400> 8858

```
Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1               5                  10                  15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
            20                  25                  30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
        35                  40                  45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
    50                  55                  60

Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
65                  70                  75                  80

Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
                85                  90                  95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
            100                 105                 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala
        115                 120                 125

Tyr Leu Glu Thr Gln Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
    130                 135                 140
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Ala Glu Phe Thr Ala
145

<210> 8859
<211> 144
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1795; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2L2; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452265"

<400> 8859
Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp
1 5 10 15

Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly
20 25 30

Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala
35 40 45

Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu
50 55 60

Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr
65 70 75 80

Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu
85 90 95

Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn
100 105 110

Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala

115 120 125

Tyr Leu Glu Thr Gln Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp
130 135 140

<210> 8860
<211> 212
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1796; "

<220>
<221> source
<223> /note="Gene Symbol: BOK; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-related ovarian killer; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UMX3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000314132"

<400> 8860
Met Glu Val Leu Arg Arg Ser Ser Val Phe Ala Ala Glu Ile Met Asp
1 5 10 15

Ala Phe Asp Arg Ser Pro Thr Asp Lys Glu Leu Val Ala Gln Ala Lys
20 25 30

Ala Leu Gly Arg Glu Tyr Val His Ala Arg Leu Leu Arg Ala Gly Leu
35 40 45

Ser Trp Ser Ala Pro Glu Arg Ala Ala Pro Val Pro Gly Arg Leu Ala
50 55 60

Glu Val Cys Ala Val Leu Leu Arg Leu Gly Asp Glu Leu Glu Met Ile
65 70 75 80

Arg Pro Ser Val Tyr Arg Asn Val Ala Arg Gln Leu His Ile Ser Leu
85 90 95

```
Gln Ser Glu Pro Val Val Thr Asp Ala Phe Leu Ala Val Ala Gly His
            100                 105                 110

Ile Phe Ser Ala Gly Ile Thr Trp Gly Lys Val Val Ser Leu Tyr Ala
        115                 120                 125

Val Ala Ala Gly Leu Ala Val Asp Cys Val Arg Gln Ala Gln Pro Ala
    130                 135                 140

Met Val His Ala Leu Val Asp Cys Leu Gly Glu Phe Val Arg Lys Thr
145                 150                 155                 160

Leu Ala Thr Trp Leu Arg Arg Arg Gly Gly Trp Thr Asp Val Leu Lys
                165                 170                 175

Cys Val Val Ser Thr Asp Pro Gly Leu Arg Ser His Trp Leu Val Ala
            180                 185                 190

Ala Leu Cys Ser Phe Gly Arg Phe Leu Lys Ala Ala Phe Phe Val Leu
        195                 200                 205

Leu Pro Glu Arg
    210


<210> 8861
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1797; "

<220>
<221> source
<223> /note="Gene Symbol: BCL2A1; "

<220>
<221> source
<223> /note="Gene Name:
      BCL2-related prt A1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q16548; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000267953"

<400> 8861
Met Thr Asp Cys Glu Phe Gly Tyr Ile Tyr Arg Leu Ala Gln Asp Tyr
1 5 10 15

Leu Gln Cys Val Leu Gln Ile Pro Gln Pro Gly Ser Gly Pro Ser Lys
20 25 30

Thr Ser Arg Val Leu Gln Asn Val Ala Phe Ser Val Gln Lys Glu Val
35 40 45

Glu Lys Asn Leu Lys Ser Cys Leu Asp Asn Val Asn Val Val Ser Val
50 55 60

Asp Thr Ala Arg Thr Leu Phe Asn Gln Val Met Glu Lys Glu Phe Glu
65 70 75 80

Asp Gly Ile Ile Asn Trp Gly Arg Ile Val Thr Ile Phe Ala Phe Glu
85 90 95

Gly Ile Leu Ile Lys Lys Leu Leu Arg Gln Gln Ile Ala Pro Asp Val
100 105 110

Asp Thr Tyr Lys Glu Ile Ser Tyr Phe Val Ala Glu Phe Ile Met Asn
115 120 125

Asn Thr Gly Glu Trp Ile Arg Gln Asn Gly Gly Trp Glu Asn Gly Phe
130 135 140

Val Lys Lys Phe Glu Pro Lys Ser Gly Trp Met Thr Phe Leu Glu Val
145 150 155 160

Thr Gly Lys Ile Cys Glu Met Leu Ser Leu Leu Lys Gln Tyr Cys
165 170 175

<210> 8862
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1797; "

<220>

<221> source
<223> /note="Gene Symbol: BCL2A1; "

<220>
<221> source
<223> /note="Gene Name:
BCL2-related prt A1; "

<220>
<221> source
<223> /note="Uniprot ID: Q16548; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335250"

<400> 8862

```
Met Thr Asp Cys Glu Phe Gly Tyr Ile Tyr Arg Leu Ala Gln Asp Tyr
1               5                  10                  15


Leu Gln Cys Val Leu Gln Ile Pro Gln Pro Gly Ser Gly Pro Ser Lys
            20                  25                  30


Thr Ser Arg Val Leu Gln Asn Val Ala Phe Ser Val Gln Lys Glu Val
        35                  40                  45


Glu Lys Asn Leu Lys Ser Cys Leu Asp Asn Val Asn Val Val Ser Val
    50                  55                  60


Asp Thr Ala Arg Thr Leu Phe Asn Gln Val Met Glu Lys Glu Phe Glu
65                  70                  75                  80


Asp Gly Ile Ile Asn Trp Gly Arg Ile Val Thr Ile Phe Ala Phe Glu
                85                  90                  95


Gly Ile Leu Ile Lys Lys Leu Leu Arg Gln Gln Ile Ala Pro Asp Val
            100                 105                 110


Asp Thr Tyr Lys Glu Ile Ser Tyr Phe Val Ala Glu Phe Ile Met Asn
        115                 120                 125


Asn Thr Gly Glu Trp Ile Arg Gln Asn Gly Gly Trp Gly Lys Trp His
    130                 135                 140


Asn His Thr Pro Met Leu Val Glu Ser Val Ala His Lys Lys Arg Lys
145                 150                 155                 160
```

Met Ala Leu

<210> 8863
<211> 1721
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1798; "

<220>
<221> source
<223> /note="Gene Symbol: BCOR; "

<220>
<221> source
<223> /note="Gene Name:
BCL6 corepressor; "

<220>
<221> source
<223> /note="Uniprot ID: Q6W2J9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000345923"

<400> 8863

```
Met Leu Ser Ala Thr Pro Leu Tyr Gly Asn Val His Ser Trp Met Asn
1               5                  10                  15

Ser Glu Arg Val Arg Met Cys Gly Ala Ser Glu Asp Arg Lys Ile Leu
            20                  25                  30

Val Asn Asp Gly Asp Ala Ser Lys Ala Arg Leu Glu Leu Arg Glu Glu
        35                  40                  45

Asn Pro Leu Asn His Asn Val Val Asp Ala Ser Thr Ala His Arg Ile
    50                  55                  60

Asp Gly Leu Ala Ala Leu Ser Met Asp Arg Thr Gly Leu Ile Arg Glu
65                  70                  75                  80

Gly Leu Arg Val Pro Gly Asn Ile Val Tyr Ser Ser Leu Cys Gly Leu
                85                  90                  95

Gly Ser Glu Lys Gly Arg Glu Ala Ala Thr Ser Thr Leu Gly Gly Leu
            100                 105                 110
```

```
Gly Phe Ser Ser Glu Arg Asn Pro Glu Met Gln Phe Lys Pro Asn Thr
        115                 120                 125

Pro Glu Thr Val Glu Ala Ser Ala Val Ser Gly Lys Pro Pro Asn Gly
    130                 135                 140

Phe Ser Ala Ile Tyr Lys Thr Pro Pro Gly Ile Gln Lys Ser Ala Val
145                 150                 155                 160

Ala Thr Ala Glu Ala Leu Gly Leu Asp Arg Pro Ala Ser Asp Lys Gln
                165                 170                 175

Ser Pro Leu Asn Ile Asn Gly Ala Ser Tyr Leu Arg Leu Pro Trp Val
            180                 185                 190

Asn Pro Tyr Met Glu Gly Ala Thr Pro Ala Ile Tyr Pro Phe Leu Asp
        195                 200                 205

Ser Pro Asn Lys Tyr Ser Leu Asn Met Tyr Lys Ala Leu Leu Pro Gln
    210                 215                 220

Gln Ser Tyr Ser Leu Ala Gln Pro Leu Tyr Ser Pro Val Cys Thr Asn
225                 230                 235                 240

Gly Glu Arg Phe Leu Tyr Leu Pro Pro Pro His Tyr Val Gly Pro His
                245                 250                 255

Ile Pro Ser Ser Leu Ala Ser Pro Met Arg Leu Ser Thr Pro Ser Ala
            260                 265                 270

Ser Pro Ala Ile Pro Pro Leu Val His Cys Ala Asp Lys Ser Leu Pro
        275                 280                 285

Trp Lys Met Gly Val Ser Pro Gly Asn Pro Val Asp Ser His Ala Tyr
    290                 295                 300

Pro His Ile Gln Asn Ser Lys Gln Pro Arg Val Pro Ser Ala Lys Ala
305                 310                 315                 320

Val Thr Ser Gly Leu Pro Gly Asp Thr Ala Leu Leu Leu Pro Pro Ser
                325                 330                 335
```

```
Pro Arg Pro Ser Pro Arg Val His Leu Pro Thr Gln Pro Ala Ala Asp
            340                 345                 350

Thr Tyr Ser Glu Phe His Lys His Tyr Ala Arg Ile Ser Thr Ser Pro
        355                 360                 365

Ser Val Ala Leu Ser Lys Pro Tyr Met Thr Val Ser Ser Glu Phe Pro
    370                 375                 380

Ala Ala Arg Leu Ser Asn Gly Lys Tyr Pro Lys Ala Pro Glu Gly Gly
385                 390                 395                 400

Glu Gly Ala Gln Pro Val Pro Gly His Ala Arg Lys Thr Ala Val Gln
                405                 410                 415

Asp Arg Lys Asp Gly Ser Ser Pro Pro Leu Leu Glu Lys Gln Thr Val
            420                 425                 430

Thr Lys Asp Val Thr Asp Lys Pro Leu Asp Leu Ser Ser Lys Val Val
        435                 440                 445

Asp Val Asp Ala Ser Lys Ala Asp His Met Lys Lys Met Ala Pro Thr
    450                 455                 460

Val Leu Val His Ser Arg Ala Gly Ser Gly Leu Val Leu Ser Gly Ser
465                 470                 475                 480

Glu Ile Pro Lys Glu Thr Leu Ser Pro Pro Gly Asn Gly Cys Ala Ile
                485                 490                 495

Tyr Arg Ser Glu Ile Ile Ser Thr Ala Pro Ser Ser Trp Val Val Pro
            500                 505                 510

Gly Pro Ser Pro Asn Glu Glu Asn Asn Gly Lys Ser Met Ser Leu Lys
        515                 520                 525

Asn Lys Ala Leu Asp Trp Ala Ile Pro Gln Gln Arg Ser Ser Ser Cys
    530                 535                 540

Pro Arg Met Gly Gly Thr Asp Ala Val Ile Thr Asn Val Ser Gly Ser
545                 550                 555                 560
```

```
Val Ser Ser Ala Gly Arg Pro Ala Ser Ala Ser Pro Ala Pro Asn Ala
                565                 570                 575

Asn Ala Asp Gly Thr Lys Thr Ser Arg Ser Ser Val Glu Thr Thr Pro
            580                 585                 590

Ser Val Ile Gln His Val Gly Gln Pro Pro Ala Thr Pro Ala Lys His
        595                 600                 605

Ser Ser Ser Thr Ser Ser Lys Gly Ala Lys Ala Ser Asn Pro Glu Pro
    610                 615                 620

Ser Phe Lys Ala Asn Glu Asn Gly Leu Pro Pro Ser Ser Ile Phe Leu
625                 630                 635                 640

Ser Pro Asn Glu Ala Phe Arg Ser Pro Pro Ile Pro Tyr Pro Arg Ser
                645                 650                 655

Tyr Leu Pro Tyr Pro Ala Pro Glu Gly Ile Ala Val Ser Pro Leu Ser
            660                 665                 670

Leu His Gly Lys Gly Pro Val Tyr Pro His Pro Val Leu Leu Pro Asn
        675                 680                 685

Gly Ser Leu Phe Pro Gly His Leu Ala Pro Lys Pro Gly Leu Pro Tyr
    690                 695                 700

Gly Leu Pro Thr Gly Arg Pro Glu Phe Val Thr Tyr Gln Asp Ala Leu
705                 710                 715                 720

Gly Leu Gly Met Val His Pro Met Leu Ile Pro His Thr Pro Ile Glu
                725                 730                 735

Ile Thr Lys Glu Glu Lys Pro Glu Arg Arg Ser Arg Ser His Glu Arg
            740                 745                 750

Ala Arg Tyr Glu Asp Pro Thr Leu Arg Asn Arg Phe Ser Glu Ile Leu
        755                 760                 765

Glu Thr Ser Ser Thr Lys Leu His Pro Asp Val Pro Thr Asp Lys Asn
    770                 775                 780

Leu Lys Pro Asn Pro Asn Trp Asn Gln Gly Lys Thr Val Val Lys Ser
```

785 790 795 800

Asp Lys Leu Val Tyr Val Asp Leu Leu Arg Glu Glu Pro Asp Ala Lys
805 810 815

Thr Asp Thr Asn Val Ser Lys Pro Ser Phe Ala Ala Glu Ser Val Gly
820 825 830

Gln Ser Ala Glu Pro Pro Lys Pro Ser Val Glu Pro Ala Leu Gln Gln
835 840 845

His Arg Asp Phe Ile Ala Leu Arg Glu Glu Leu Gly Arg Ile Ser Asp
850 855 860

Phe His Glu Thr Tyr Thr Phe Lys Gln Pro Val Phe Thr Val Ser Lys
865 870 875 880

Asp Ser Val Leu Ala Gly Thr Asn Lys Glu Asn Leu Gly Leu Pro Val
885 890 895

Ser Thr Pro Phe Leu Glu Pro Pro Leu Gly Ser Asp Gly Pro Ala Val
900 905 910

Thr Phe Gly Lys Thr Gln Glu Asp Pro Lys Pro Phe Cys Val Gly Ser
915 920 925

Ala Pro Pro Ser Val Asp Val Thr Pro Thr Tyr Thr Lys Asp Gly Ala
930 935 940

Asp Glu Ala Glu Ser Asn Asp Gly Lys Val Leu Lys Pro Lys Pro Ser
945 950 955 960

Lys Leu Ala Lys Arg Ile Ala Asn Ser Ala Gly Tyr Val Gly Asp Arg
965 970 975

Phe Lys Cys Val Thr Thr Glu Leu Tyr Ala Asp Ser Ser Gln Leu Ser
980 985 990

Arg Glu Gln Arg Ala Leu Gln Met Glu Gly Leu Gln Glu Asp Ser
Ile
995 1000 1005

Leu Cys Leu Pro Ala Ala Tyr Cys Glu Arg Ala Met Met Arg Phe

1010 1015 1020

Ser Glu Leu Glu Met Lys Glu Arg Glu Gly Gly His Pro Ala Thr
1025 1030 1035

Lys Asp Ser Glu Met Cys Lys Phe Ser Pro Ala Asp Trp Glu Arg
1040 1045 1050

Leu Lys Gly Asn Gln Asp Lys Lys Pro Lys Ser Val Thr Leu Glu
1055 1060 1065

Glu Ala Ile Ala Glu Gln Asn Glu Ser Glu Arg Cys Glu Tyr Ser
1070 1075 1080

Val Gly Asn Lys His Arg Asp Pro Phe Glu Ala Pro Glu Asp Lys
1085 1090 1095

Asp Leu Pro Val Glu Lys Tyr Phe Val Glu Arg Gln Pro Val Ser
1100 1105 1110

Glu Pro Pro Ala Asp Gln Val Ala Ser Asp Met Pro His Ser Pro
1115 1120 1125

Thr Leu Arg Val Asp Arg Lys Arg Lys Val Ser Gly Asp Ser Ser
1130 1135 1140

His Thr Glu Thr Thr Ala Glu Glu Val Pro Glu Asp Pro Leu Leu
1145 1150 1155

Lys Ala Lys Arg Arg Arg Val Ser Lys Gly Leu His Pro Lys Lys
1160 1165 1170

Gln Arg His Leu Leu His Leu Arg Glu Arg Trp Glu Gln Gln Val
1175 1180 1185

Ser Ala Ala Asp Gly Lys Pro Gly Arg Gln Ser Arg Lys Glu Val
1190 1195 1200

Thr Gln Ala Thr Gln Pro Glu Ala Ile Pro Gln Gly Thr Asn Ile
1205 1210 1215

Thr Glu Glu Lys Pro Gly Arg Lys Arg Ala Glu Ala Lys Gly Asn
1220 1225 1230

```
Arg Ser  Trp Ser Glu Glu Ser  Leu Lys Pro Ser Asp  Asn Glu Gln
    1235                1240                1245

Gly Leu  Pro Val Phe Ser Gly  Ser Pro Pro Met Lys  Ser Leu Ser
    1250                1255                1260

Ser Thr  Ser Ala Gly Gly Lys  Lys Gln Ala Gln Pro  Ser Cys Ala
    1265                1270                1275

Pro Ala  Ser Arg Pro Pro Ala  Lys Gln Gln Lys Ile  Lys Glu Asn
    1280                1285                1290

Gln Lys  Thr Asp Val Leu Cys  Ala Asp Glu Glu Glu  Asp Cys Gln
    1295                1300                1305

Ala Ala  Ser Leu Leu Gln Lys  Tyr Thr Asp Asn Ser  Glu Lys Pro
    1310                1315                1320

Ser Gly  Lys Arg Leu Cys Lys  Thr Lys His Leu Ile  Pro Gln Glu
    1325                1330                1335

Ser Arg  Arg Gly Leu Pro Leu  Thr Gly Glu Tyr Tyr  Val Glu Asn
    1340                1345                1350

Ala Asp  Gly Lys Val Thr Val  Arg Arg Phe Arg Lys  Arg Pro Glu
    1355                1360                1365

Pro Ser  Ser Asp Tyr Asp Leu  Ser Pro Ala Lys Gln  Glu Pro Lys
    1370                1375                1380

Pro Phe  Asp Arg Leu Gln Gln  Leu Leu Pro Ala Ser  Gln Ser Thr
    1385                1390                1395

Gln Leu  Pro Cys Ser Ser Ser  Pro Gln Glu Thr Thr  Gln Ser Arg
    1400                1405                1410

Pro Met  Pro Pro Glu Ala Arg  Arg Leu Ile Val Asn  Lys Asn Ala
    1415                1420                1425

Gly Glu  Thr Leu Leu Gln Arg  Ala Ala Arg Leu Gly  Tyr Glu Glu
    1430                1435                1440
```

```
Val Val  Leu Tyr Cys Leu Glu  Asn Lys Ile Cys Asp  Val Asn His
    1445                1450                1455

Arg Asp  Asn Ala Gly Tyr Cys  Ala Leu His Glu Ala  Cys Ala Arg
    1460                1465                1470

Gly Trp  Leu Asn Ile Val Arg  His Leu Leu Glu Tyr  Gly Ala Asp
    1475                1480                1485

Val Asn  Cys Ser Ala Gln Asp  Gly Thr Arg Pro Leu  His Asp Ala
    1490                1495                1500

Val Glu  Asn Asp His Leu Glu  Ile Val Arg Leu Leu  Leu Ser Tyr
    1505                1510                1515

Gly Ala  Asp Pro Thr Leu Ala  Thr Tyr Ser Gly Arg  Thr Ile Met
    1520                1525                1530

Lys Met  Thr His Ser Glu Leu  Met Glu Lys Phe Leu  Thr Asp Tyr
    1535                1540                1545

Leu Asn  Asp Leu Gln Gly Arg  Asn Asp Asp Asp Ala  Ser Gly Thr
    1550                1555                1560

Trp Asp  Phe Tyr Gly Ser Ser  Val Cys Glu Pro Asp  Asp Glu Ser
    1565                1570                1575

Gly Tyr  Asp Val Leu Ala Asn  Pro Pro Gly Pro Glu  Asp Gln Asp
    1580                1585                1590

Asp Asp  Asp Asp Ala Tyr Ser  Asp Val Phe Glu Phe  Glu Phe Ser
    1595                1600                1605

Glu Thr  Pro Leu Leu Pro Cys  Tyr Asn Ile Gln Val  Ser Val Ala
    1610                1615                1620

Gln Gly  Pro Arg Asn Trp Leu  Leu Leu Ser Asp Val  Leu Lys Lys
    1625                1630                1635

Leu Lys  Met Ser Ser Arg Ile  Phe Arg Cys Asn Phe  Pro Asn Val
    1640                1645                1650
```

```
Glu Ile  Val Thr Ile Ala Glu  Ala Glu Phe Tyr Arg  Gln Val Ser
    1655                 1660                 1665


Ala Ser  Leu Leu Phe Ser Cys  Ser Lys Asp Leu Glu  Ala Phe Asn
    1670                 1675                 1680


Pro Glu  Ser Lys Glu Leu Leu  Asp Leu Val Glu Phe  Thr Asn Glu
    1685                 1690                 1695


Ile Gln  Thr Leu Leu Gly Ser  Ser Val Glu Trp Leu  His Pro Ser
    1700                 1705                 1710


Asp Leu  Ala Ser Asp Asn Tyr  Trp
    1715                 1720


<210> 8864
<211> 1755
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1798; "

<220>
<221> source
<223> /note="Gene Symbol: BCOR; "

<220>
<221> source
<223> /note="Gene Name:
      BCL6 corepressor; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6W2J9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000367705"

<400> 8864
Met Leu Ser Ala Thr Pro Leu Tyr Gly Asn Val His Ser Trp Met Asn
1               5                  10                  15


Ser Glu Arg Val Arg Met Cys Gly Ala Ser Glu Asp Arg Lys Ile Leu
            20                  25                  30


Val Asn Asp Gly Asp Ala Ser Lys Ala Arg Leu Glu Leu Arg Glu Glu
        35                  40                  45
```

```
Asn Pro Leu Asn His Asn Val Val Asp Ala Ser Thr Ala His Arg Ile
    50                  55                  60

Asp Gly Leu Ala Ala Leu Ser Met Asp Arg Thr Gly Leu Ile Arg Glu
65                  70                  75                  80

Gly Leu Arg Val Pro Gly Asn Ile Val Tyr Ser Ser Leu Cys Gly Leu
                85                  90                  95

Gly Ser Glu Lys Gly Arg Glu Ala Ala Thr Ser Thr Leu Gly Gly Leu
            100                 105                 110

Gly Phe Ser Ser Glu Arg Asn Pro Glu Met Gln Phe Lys Pro Asn Thr
        115                 120                 125

Pro Glu Thr Val Glu Ala Ser Ala Val Ser Gly Lys Pro Pro Asn Gly
    130                 135                 140

Phe Ser Ala Ile Tyr Lys Thr Pro Pro Gly Ile Gln Lys Ser Ala Val
145                 150                 155                 160

Ala Thr Ala Glu Ala Leu Gly Leu Asp Arg Pro Ala Ser Asp Lys Gln
                165                 170                 175

Ser Pro Leu Asn Ile Asn Gly Ala Ser Tyr Leu Arg Leu Pro Trp Val
            180                 185                 190

Asn Pro Tyr Met Glu Gly Ala Thr Pro Ala Ile Tyr Pro Phe Leu Asp
        195                 200                 205

Ser Pro Asn Lys Tyr Ser Leu Asn Met Tyr Lys Ala Leu Leu Pro Gln
    210                 215                 220

Gln Ser Tyr Ser Leu Ala Gln Pro Leu Tyr Ser Pro Val Cys Thr Asn
225                 230                 235                 240

Gly Glu Arg Phe Leu Tyr Leu Pro Pro Pro His Tyr Val Gly Pro His
                245                 250                 255

Ile Pro Ser Ser Leu Ala Ser Pro Met Arg Leu Ser Thr Pro Ser Ala
            260                 265                 270
```

```
Ser Pro Ala Ile Pro Pro Leu Val His Cys Ala Asp Lys Ser Leu Pro
        275                 280                 285

Trp Lys Met Gly Val Ser Pro Gly Asn Pro Val Asp Ser His Ala Tyr
    290                 295                 300

Pro His Ile Gln Asn Ser Lys Gln Pro Arg Val Pro Ser Ala Lys Ala
305                 310                 315                 320

Val Thr Ser Gly Leu Pro Gly Asp Thr Ala Leu Leu Leu Pro Pro Ser
                325                 330                 335

Pro Arg Pro Ser Pro Arg Val His Leu Pro Thr Gln Pro Ala Ala Asp
            340                 345                 350

Thr Tyr Ser Glu Phe His Lys His Tyr Ala Arg Ile Ser Thr Ser Pro
        355                 360                 365

Ser Val Ala Leu Ser Lys Pro Tyr Met Thr Val Ser Ser Glu Phe Pro
    370                 375                 380

Ala Ala Arg Leu Ser Asn Gly Lys Tyr Pro Lys Ala Pro Glu Gly Gly
385                 390                 395                 400

Glu Gly Ala Gln Pro Val Pro Gly His Ala Arg Lys Thr Ala Val Gln
                405                 410                 415

Asp Arg Lys Asp Gly Ser Ser Pro Pro Leu Leu Glu Lys Gln Thr Val
            420                 425                 430

Thr Lys Asp Val Thr Asp Lys Pro Leu Asp Leu Ser Ser Lys Val Val
        435                 440                 445

Asp Val Asp Ala Ser Lys Ala Asp His Met Lys Lys Met Ala Pro Thr
    450                 455                 460

Val Leu Val His Ser Arg Ala Gly Ser Gly Leu Val Leu Ser Gly Ser
465                 470                 475                 480

Glu Ile Pro Lys Glu Thr Leu Ser Pro Pro Gly Asn Gly Cys Ala Ile
                485                 490                 495
```

```
Tyr Arg Ser Glu Ile Ile Ser Thr Ala Pro Ser Ser Trp Val Val Pro
            500                 505                 510

Gly Pro Ser Pro Asn Glu Glu Asn Asn Gly Lys Ser Met Ser Leu Lys
        515                 520                 525

Asn Lys Ala Leu Asp Trp Ala Ile Pro Gln Gln Arg Ser Ser Ser Cys
    530                 535                 540

Pro Arg Met Gly Gly Thr Asp Ala Val Ile Thr Asn Val Ser Gly Ser
545                 550                 555                 560

Val Ser Ser Ala Gly Arg Pro Ala Ser Ala Ser Pro Ala Pro Asn Ala
                565                 570                 575

Asn Ala Asp Gly Thr Lys Thr Ser Arg Ser Ser Val Glu Thr Thr Pro
            580                 585                 590

Ser Val Ile Gln His Val Gly Gln Pro Pro Ala Thr Pro Ala Lys His
        595                 600                 605

Ser Ser Ser Thr Ser Ser Lys Gly Ala Lys Ala Ser Asn Pro Glu Pro
    610                 615                 620

Ser Phe Lys Ala Asn Glu Asn Gly Leu Pro Pro Ser Ser Ile Phe Leu
625                 630                 635                 640

Ser Pro Asn Glu Ala Phe Arg Ser Pro Pro Ile Pro Tyr Pro Arg Ser
                645                 650                 655

Tyr Leu Pro Tyr Pro Ala Pro Glu Gly Ile Ala Val Ser Pro Leu Ser
            660                 665                 670

Leu His Gly Lys Gly Pro Val Tyr Pro His Pro Val Leu Leu Pro Asn
        675                 680                 685

Gly Ser Leu Phe Pro Gly His Leu Ala Pro Lys Pro Gly Leu Pro Tyr
    690                 695                 700

Gly Leu Pro Thr Gly Arg Pro Glu Phe Val Thr Tyr Gln Asp Ala Leu
705                 710                 715                 720

Gly Leu Gly Met Val His Pro Met Leu Ile Pro His Thr Pro Ile Glu
```

```
                725                 730                 735

Ile Thr Lys Glu Glu Lys Pro Glu Arg Arg Ser Arg Ser His Glu Arg
            740                 745                 750

Ala Arg Tyr Glu Asp Pro Thr Leu Arg Asn Arg Phe Ser Glu Ile Leu
        755                 760                 765

Glu Thr Ser Ser Thr Lys Leu His Pro Asp Val Pro Thr Asp Lys Asn
    770                 775                 780

Leu Lys Pro Asn Pro Asn Trp Asn Gln Gly Lys Thr Val Val Lys Ser
785                 790                 795                 800

Asp Lys Leu Val Tyr Val Asp Leu Leu Arg Glu Glu Pro Asp Ala Lys
                805                 810                 815

Thr Asp Thr Asn Val Ser Lys Pro Ser Phe Ala Ala Glu Ser Val Gly
            820                 825                 830

Gln Ser Ala Glu Pro Pro Lys Pro Ser Val Glu Pro Ala Leu Gln Gln
        835                 840                 845

His Arg Asp Phe Ile Ala Leu Arg Glu Glu Leu Gly Arg Ile Ser Asp
    850                 855                 860

Phe His Glu Thr Tyr Thr Phe Lys Gln Pro Val Phe Thr Val Ser Lys
865                 870                 875                 880

Asp Ser Val Leu Ala Gly Thr Asn Lys Glu Asn Leu Gly Leu Pro Val
                885                 890                 895

Ser Thr Pro Phe Leu Glu Pro Pro Leu Gly Ser Asp Gly Pro Ala Val
            900                 905                 910

Thr Phe Gly Lys Thr Gln Glu Asp Pro Lys Pro Phe Cys Val Gly Ser
        915                 920                 925

Ala Pro Pro Ser Val Asp Val Thr Pro Thr Tyr Thr Lys Asp Gly Ala
    930                 935                 940

Asp Glu Ala Glu Ser Asn Asp Gly Lys Val Leu Lys Pro Lys Pro Ser
945                 950                 955                 960
```

```
Lys Leu Ala Lys Arg Ile Ala Asn Ser Ala Gly Tyr Val Gly Asp Arg
               965                 970                 975

Phe Lys Cys Val Thr Thr Glu Leu Tyr Ala Asp Ser Ser Gln Leu Ser
            980                 985                 990

Arg Glu Gln Arg Ala Leu Gln Met  Glu Gly Leu Gln Glu  Asp Ser
Ile
        995                 1000                1005

Leu Cys  Leu Pro Ala Ala Tyr  Cys Glu Arg Ala Met  Met Arg Phe
    1010                1015                1020

Ser Glu  Leu Glu Met Lys Glu  Arg Glu Gly Gly His  Pro Ala Thr
    1025                1030                1035

Lys Asp  Ser Glu Met Cys Lys  Phe Ser Pro Ala Asp  Trp Glu Arg
    1040                1045                1050

Leu Lys  Gly Asn Gln Asp Lys  Lys Pro Lys Ser Val  Thr Leu Glu
    1055                1060                1065

Glu Ala  Ile Ala Glu Gln Asn  Glu Ser Glu Arg Cys  Glu Tyr Ser
    1070                1075                1080

Val Gly  Asn Lys His Arg Asp  Pro Phe Glu Ala Pro  Glu Asp Lys
    1085                1090                1095

Asp Leu  Pro Val Glu Lys Tyr  Phe Val Glu Arg Gln  Pro Val Ser
    1100                1105                1110

Glu Pro  Pro Ala Asp Gln Val  Ala Ser Asp Met Pro  His Ser Pro
    1115                1120                1125

Thr Leu  Arg Val Asp Arg Lys  Arg Lys Val Ser Gly  Asp Ser Ser
    1130                1135                1140

His Thr  Glu Thr Thr Ala Glu  Glu Val Pro Glu Asp  Pro Leu Leu
    1145                1150                1155

Lys Ala  Lys Arg Arg Arg Val  Ser Lys Asp Asp Trp  Pro Glu Arg
    1160                1165                1170
```

```
Glu Met  Thr Asn Ser Ser Ser  Asn His Leu Glu Asp  Pro His Tyr
    1175                1180                1185

Ser Glu  Leu Thr Asn Leu Lys  Val Cys Ile Glu Leu  Thr Gly Leu
    1190                1195                1200

His Pro  Lys Lys Gln Arg His  Leu Leu His Leu Arg  Glu Arg Trp
    1205                1210                1215

Glu Gln  Gln Val Ser Ala Ala  Asp Gly Lys Pro Gly  Arg Gln Ser
    1220                1225                1230

Arg Lys  Glu Val Thr Gln Ala  Thr Gln Pro Glu Ala  Ile Pro Gln
    1235                1240                1245

Gly Thr  Asn Ile Thr Glu Glu  Lys Pro Gly Arg Lys  Arg Ala Glu
    1250                1255                1260

Ala Lys  Gly Asn Arg Ser Trp  Ser Glu Glu Ser Leu  Lys Pro Ser
    1265                1270                1275

Asp Asn  Glu Gln Gly Leu Pro  Val Phe Ser Gly Ser  Pro Pro Met
    1280                1285                1290

Lys Ser  Leu Ser Ser Thr Ser  Ala Gly Gly Lys Lys  Gln Ala Gln
    1295                1300                1305

Pro Ser  Cys Ala Pro Ala Ser  Arg Pro Pro Ala Lys  Gln Gln Lys
    1310                1315                1320

Ile Lys  Glu Asn Gln Lys Thr  Asp Val Leu Cys Ala  Asp Glu Glu
    1325                1330                1335

Glu Asp  Cys Gln Ala Ala Ser  Leu Leu Gln Lys Tyr  Thr Asp Asn
    1340                1345                1350

Ser Glu  Lys Pro Ser Gly Lys  Arg Leu Cys Lys Thr  Lys His Leu
    1355                1360                1365

Ile Pro  Gln Glu Ser Arg Arg  Gly Leu Pro Leu Thr  Gly Glu Tyr
    1370                1375                1380
```

```
Tyr Val  Glu Asn Ala Asp Gly  Lys Val Thr Val Arg  Arg Phe Arg
    1385                1390                1395

Lys Arg  Pro Glu Pro Ser Ser  Asp Tyr Asp Leu Ser  Pro Ala Lys
    1400                1405                1410

Gln Glu  Pro Lys Pro Phe Asp  Arg Leu Gln Gln Leu  Leu Pro Ala
    1415                1420                1425

Ser Gln  Ser Thr Gln Leu Pro  Cys Ser Ser Ser Pro  Gln Glu Thr
    1430                1435                1440

Thr Gln  Ser Arg Pro Met Pro  Pro Glu Ala Arg Arg  Leu Ile Val
    1445                1450                1455

Asn Lys  Asn Ala Gly Glu Thr  Leu Leu Gln Arg Ala  Ala Arg Leu
    1460                1465                1470

Gly Tyr  Glu Glu Val Val Leu  Tyr Cys Leu Glu Asn  Lys Ile Cys
    1475                1480                1485

Asp Val  Asn His Arg Asp Asn  Ala Gly Tyr Cys Ala  Leu His Glu
    1490                1495                1500

Ala Cys  Ala Arg Gly Trp Leu  Asn Ile Val Arg His  Leu Leu Glu
    1505                1510                1515

Tyr Gly  Ala Asp Val Asn Cys  Ser Ala Gln Asp Gly  Thr Arg Pro
    1520                1525                1530

Leu His  Asp Ala Val Glu Asn  Asp His Leu Glu Ile  Val Arg Leu
    1535                1540                1545

Leu Leu  Ser Tyr Gly Ala Asp  Pro Thr Leu Ala Thr  Tyr Ser Gly
    1550                1555                1560

Arg Thr  Ile Met Lys Met Thr  His Ser Glu Leu Met  Glu Lys Phe
    1565                1570                1575

Leu Thr  Asp Tyr Leu Asn Asp  Leu Gln Gly Arg Asn  Asp Asp Asp
    1580                1585                1590
```

```
Ala Ser  Gly Thr Trp Asp Phe  Tyr Gly Ser Ser Val  Cys Glu Pro
    1595                1600                1605

Asp Asp  Glu Ser Gly Tyr Asp  Val Leu Ala Asn Pro  Pro Gly Pro
    1610                1615                1620

Glu Asp  Gln Asp Asp Asp Asp  Asp Ala Tyr Ser Asp  Val Phe Glu
    1625                1630                1635

Phe Glu  Phe Ser Glu Thr Pro  Leu Leu Pro Cys Tyr  Asn Ile Gln
    1640                1645                1650

Val Ser  Val Ala Gln Gly Pro  Arg Asn Trp Leu Leu  Leu Ser Asp
    1655                1660                1665

Val Leu  Lys Lys Leu Lys Met  Ser Ser Arg Ile Phe  Arg Cys Asn
    1670                1675                1680

Phe Pro  Asn Val Glu Ile Val  Thr Ile Ala Glu Ala  Glu Phe Tyr
    1685                1690                1695

Arg Gln  Val Ser Ala Ser Leu  Leu Phe Ser Cys Ser  Lys Asp Leu
    1700                1705                1710

Glu Ala  Phe Asn Pro Glu Ser  Lys Glu Leu Leu Asp  Leu Val Glu
    1715                1720                1725

Phe Thr  Asn Glu Ile Gln Thr  Leu Leu Gly Ser Ser  Val Glu Trp
    1730                1735                1740

Leu His  Pro Ser Asp Leu Ala  Ser Asp Asn Tyr Trp
    1745                1750                1755


<210> 8865
<211> 1703
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000367716"

<400> 8865

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Met Leu Ser Ala Thr Pro Leu Tyr Gly Asn Val His Ser Trp Met Asn
1               5                  10                  15

Ser Glu Arg Val Arg Met Cys Gly Ala Ser Glu Asp Arg Lys Ile Leu
            20                  25                  30

Val Asn Asp Gly Asp Ala Ser Lys Ala Arg Leu Glu Leu Arg Glu Glu
        35                  40                  45

Asn Pro Leu Asn His Asn Val Val Asp Ala Ser Thr Ala His Arg Ile
    50                  55                  60

Asp Gly Leu Ala Ala Leu Ser Met Asp Arg Thr Gly Leu Ile Arg Glu
65                  70                  75                  80

Gly Leu Arg Val Pro Gly Asn Ile Val Tyr Ser Ser Leu Cys Gly Leu
                85                  90                  95

Gly Ser Glu Lys Gly Arg Glu Ala Ala Thr Ser Thr Leu Gly Gly Leu
            100                 105                 110

Gly Phe Ser Ser Glu Arg Asn Pro Glu Met Gln Phe Lys Pro Asn Thr
        115                 120                 125

Pro Glu Thr Val Glu Ala Ser Ala Val Ser Gly Lys Pro Pro Asn Gly
    130                 135                 140

Phe Ser Ala Ile Tyr Lys Thr Pro Pro Gly Ile Gln Lys Ser Ala Val
145                 150                 155                 160

Ala Thr Ala Glu Ala Leu Gly Leu Asp Arg Pro Ala Ser Asp Lys Gln
                165                 170                 175
```

```
Ser Pro Leu Asn Ile Asn Gly Ala Ser Tyr Leu Arg Leu Pro Trp Val
            180                 185                 190

Asn Pro Tyr Met Glu Gly Ala Thr Pro Ala Ile Tyr Pro Phe Leu Asp
        195                 200                 205

Ser Pro Asn Lys Tyr Ser Leu Asn Met Tyr Lys Ala Leu Leu Pro Gln
    210                 215                 220

Gln Ser Tyr Ser Leu Ala Gln Pro Leu Tyr Ser Pro Val Cys Thr Asn
225                 230                 235                 240

Gly Glu Arg Phe Leu Tyr Leu Pro Pro Pro His Tyr Val Gly Pro His
                245                 250                 255

Ile Pro Ser Ser Leu Ala Ser Pro Met Arg Leu Ser Thr Pro Ser Ala
            260                 265                 270

Ser Pro Ala Ile Pro Pro Leu Val His Cys Ala Asp Lys Ser Leu Pro
        275                 280                 285

Trp Lys Met Gly Val Ser Pro Gly Asn Pro Val Asp Ser His Ala Tyr
    290                 295                 300

Pro His Ile Gln Asn Ser Lys Gln Pro Arg Val Pro Ser Ala Lys Ala
305                 310                 315                 320

Val Thr Ser Gly Leu Pro Gly Asp Thr Ala Leu Leu Leu Pro Pro Ser
                325                 330                 335

Pro Arg Pro Ser Pro Arg Val His Leu Pro Thr Gln Pro Ala Ala Asp
            340                 345                 350

Thr Tyr Ser Glu Phe His Lys His Tyr Ala Arg Ile Ser Thr Ser Pro
        355                 360                 365

Ser Val Ala Leu Ser Lys Pro Tyr Met Thr Val Ser Ser Glu Phe Pro
    370                 375                 380

Ala Ala Arg Leu Ser Asn Gly Lys Tyr Pro Lys Ala Pro Glu Gly Gly
385                 390                 395                 400
```

```
Glu Gly Ala Gln Pro Val Pro Gly His Ala Arg Lys Thr Ala Val Gln
                405                 410                 415

Asp Arg Lys Asp Gly Ser Ser Pro Pro Leu Leu Glu Lys Gln Thr Val
            420                 425                 430

Thr Lys Asp Val Thr Asp Lys Pro Leu Asp Leu Ser Ser Lys Val Val
        435                 440                 445

Asp Val Asp Ala Ser Lys Ala Asp His Met Lys Lys Met Ala Pro Thr
    450                 455                 460

Val Leu Val His Ser Arg Ala Gly Ser Gly Leu Val Leu Ser Gly Ser
465                 470                 475                 480

Glu Ile Pro Lys Glu Thr Leu Ser Pro Pro Gly Asn Gly Cys Ala Ile
                485                 490                 495

Tyr Arg Ser Glu Ile Ile Ser Thr Ala Pro Ser Ser Trp Val Val Pro
            500                 505                 510

Gly Pro Ser Pro Asn Glu Glu Asn Asn Gly Lys Ser Met Ser Leu Lys
        515                 520                 525

Asn Lys Ala Leu Asp Trp Ala Ile Pro Gln Gln Arg Ser Ser Ser Cys
    530                 535                 540

Pro Arg Met Gly Gly Thr Asp Ala Val Ile Thr Asn Val Ser Gly Ser
545                 550                 555                 560

Val Ser Ser Ala Gly Arg Pro Ala Ser Ala Ser Pro Ala Pro Asn Ala
                565                 570                 575

Asn Ala Asp Gly Thr Lys Thr Ser Arg Ser Ser Val Glu Thr Thr Pro
            580                 585                 590

Ser Val Ile Gln His Val Gly Gln Pro Pro Ala Thr Pro Ala Lys His
        595                 600                 605

Ser Ser Ser Thr Ser Ser Lys Gly Ala Lys Ala Ser Asn Pro Glu Pro
    610                 615                 620

Ser Phe Lys Ala Asn Glu Asn Gly Leu Pro Pro Ser Ser Ile Phe Leu
```

625 630 635 640

Ser Pro Asn Glu Ala Phe Arg Ser Pro Pro Ile Pro Tyr Pro Arg Ser
645 650 655

Tyr Leu Pro Tyr Pro Ala Pro Glu Gly Ile Ala Val Ser Pro Leu Ser
660 665 670

Leu His Gly Lys Gly Pro Val Tyr Pro His Pro Val Leu Leu Pro Asn
675 680 685

Gly Ser Leu Phe Pro Gly His Leu Ala Pro Lys Pro Gly Leu Pro Tyr
690 695 700

Gly Leu Pro Thr Gly Arg Pro Glu Phe Val Thr Tyr Gln Asp Ala Leu
705 710 715 720

Gly Leu Gly Met Val His Pro Met Leu Ile Pro His Thr Pro Ile Glu
725 730 735

Ile Thr Lys Glu Glu Lys Pro Glu Arg Arg Ser Arg Ser His Glu Arg
740 745 750

Ala Arg Tyr Glu Asp Pro Thr Leu Arg Asn Arg Phe Ser Glu Ile Leu
755 760 765

Glu Thr Ser Ser Thr Lys Leu His Pro Asp Val Pro Thr Asp Lys Asn
770 775 780

Leu Lys Pro Asn Pro Asn Trp Asn Gln Gly Lys Thr Val Val Lys Ser
785 790 795 800

Asp Lys Leu Val Tyr Val Asp Leu Leu Arg Glu Glu Pro Asp Ala Lys
805 810 815

Thr Asp Thr Asn Val Ser Lys Pro Ser Phe Ala Ala Glu Ser Val Gly
820 825 830

Gln Ser Ala Glu Pro Pro Lys Pro Ser Val Glu Pro Ala Leu Gln Gln
835 840 845

His Arg Asp Phe Ile Ala Leu Arg Glu Glu Leu Gly Arg Ile Ser Asp
850 855 860

```
Phe His Glu Thr Tyr Thr Phe Lys Gln Pro Val Phe Thr Val Ser Lys
865                 870                 875                 880

Asp Ser Val Leu Ala Gly Thr Asn Lys Glu Asn Leu Gly Leu Pro Val
                885                 890                 895

Ser Thr Pro Phe Leu Glu Pro Pro Leu Gly Ser Asp Gly Pro Ala Val
            900                 905                 910

Thr Phe Gly Lys Thr Gln Glu Asp Pro Lys Pro Phe Cys Val Gly Ser
        915                 920                 925

Ala Pro Pro Ser Val Asp Val Thr Pro Thr Tyr Thr Lys Asp Gly Ala
    930                 935                 940

Asp Glu Ala Glu Ser Asn Asp Gly Lys Val Leu Lys Pro Lys Pro Ser
945                 950                 955                 960

Lys Leu Ala Lys Arg Ile Ala Asn Ser Ala Gly Tyr Val Gly Asp Arg
                965                 970                 975

Phe Lys Cys Val Thr Thr Glu Leu Tyr Ala Asp Ser Ser Gln Leu Ser
            980                 985                 990

Arg Glu Gln Arg Ala Leu Gln Arg  Ala Met Met Arg Phe  Ser Glu
Leu
        995                 1000                1005

Glu Met  Lys Glu Arg Glu Gly  Gly His Pro Ala Thr  Lys Asp Ser
    1010                1015                1020

Glu Met  Cys Lys Phe Ser Pro  Ala Asp Trp Glu Arg  Leu Lys Gly
    1025                1030                1035

Asn Gln  Asp Lys Lys Pro Lys  Ser Val Thr Leu Glu  Glu Ala Ile
    1040                1045                1050

Ala Glu  Gln Asn Glu Ser Glu  Arg Cys Glu Tyr Ser  Val Gly Asn
    1055                1060                1065

Lys His  Arg Asp Pro Phe Glu  Ala Pro Glu Asp Lys  Asp Leu Pro
    1070                1075                1080
```

```
Val Glu  Lys Tyr Phe Val Glu  Arg Gln Pro Val Ser  Glu Pro Pro
    1085                1090                1095

Ala Asp  Gln Val Ala Ser Asp  Met Pro His Ser Pro  Thr Leu Arg
    1100                1105                1110

Val Asp  Arg Lys Arg Lys Val  Ser Gly Asp Ser Ser  His Thr Glu
    1115                1120                1125

Thr Thr  Ala Glu Glu Val Pro  Glu Asp Pro Leu Leu  Lys Ala Lys
    1130                1135                1140

Arg Arg  Arg Val Ser Lys Gly  Leu His Pro Lys Lys  Gln Arg His
    1145                1150                1155

Leu Leu  His Leu Arg Glu Arg  Trp Glu Gln Gln Val  Ser Ala Ala
    1160                1165                1170

Asp Gly  Lys Pro Gly Arg Gln  Ser Arg Lys Glu Val  Thr Gln Ala
    1175                1180                1185

Thr Gln  Pro Glu Ala Ile Pro  Gln Gly Thr Asn Ile  Thr Glu Glu
    1190                1195                1200

Lys Pro  Gly Arg Lys Arg Ala  Glu Ala Lys Gly Asn  Arg Ser Trp
    1205                1210                1215

Ser Glu  Glu Ser Leu Lys Pro  Ser Asp Asn Glu Gln  Gly Leu Pro
    1220                1225                1230

Val Phe  Ser Gly Ser Pro Pro  Met Lys Ser Leu Ser  Ser Thr Ser
    1235                1240                1245

Ala Gly  Gly Lys Lys Gln Ala  Gln Pro Ser Cys Ala  Pro Ala Ser
    1250                1255                1260

Arg Pro  Pro Ala Lys Gln Gln  Lys Ile Lys Glu Asn  Gln Lys Thr
    1265                1270                1275

Asp Val  Leu Cys Ala Asp Glu  Glu Glu Asp Cys Gln  Ala Ala Ser
    1280                1285                1290
```

```
Leu Leu  Gln Lys Tyr Thr Asp  Asn Ser Glu Lys Pro  Ser Gly Lys
    1295                1300                1305

Arg Leu  Cys Lys Thr Lys His  Leu Ile Pro Gln Glu  Ser Arg Arg
    1310                1315                1320

Gly Leu  Pro Leu Thr Gly Glu  Tyr Tyr Val Glu Asn  Ala Asp Gly
    1325                1330                1335

Lys Val  Thr Val Arg Arg Phe  Arg Lys Arg Pro Glu  Pro Ser Ser
    1340                1345                1350

Asp Tyr  Asp Leu Ser Pro Ala  Lys Gln Glu Pro Lys  Pro Phe Asp
    1355                1360                1365

Arg Leu  Gln Gln Leu Leu Pro  Ala Ser Gln Ser Thr  Gln Leu Pro
    1370                1375                1380

Cys Ser  Ser Ser Pro Gln Glu  Thr Thr Gln Ser Arg  Pro Met Pro
    1385                1390                1395

Pro Glu  Ala Arg Arg Leu Ile  Val Asn Lys Asn Ala  Gly Glu Thr
    1400                1405                1410

Leu Leu  Gln Arg Ala Ala Arg  Leu Gly Tyr Glu Glu  Val Val Leu
    1415                1420                1425

Tyr Cys  Leu Glu Asn Lys Ile  Cys Asp Val Asn His  Arg Asp Asn
    1430                1435                1440

Ala Gly  Tyr Cys Ala Leu His  Glu Ala Cys Ala Arg  Gly Trp Leu
    1445                1450                1455

Asn Ile  Val Arg His Leu Leu  Glu Tyr Gly Ala Asp  Val Asn Cys
    1460                1465                1470

Ser Ala  Gln Asp Gly Thr Arg  Pro Leu His Asp Ala  Val Glu Asn
    1475                1480                1485

Asp His  Leu Glu Ile Val Arg  Leu Leu Leu Ser Tyr  Gly Ala Asp
    1490                1495                1500
```

Pro Thr Leu Ala Thr Tyr Ser Gly Arg Thr Ile Met Lys Met Thr
1505 1510 1515

His Ser Glu Leu Met Glu Lys Phe Leu Thr Asp Tyr Leu Asn Asp
1520 1525 1530

Leu Gln Gly Arg Asn Asp Asp Asp Ala Ser Gly Thr Trp Asp Phe
1535 1540 1545

Tyr Gly Ser Ser Val Cys Glu Pro Asp Asp Glu Ser Gly Tyr Asp
1550 1555 1560

Val Leu Ala Asn Pro Pro Gly Pro Glu Asp Gln Asp Asp Asp Asp
1565 1570 1575

Asp Ala Tyr Ser Asp Val Phe Glu Phe Glu Phe Ser Glu Thr Pro
1580 1585 1590

Leu Leu Pro Cys Tyr Asn Ile Gln Val Ser Val Ala Gln Gly Pro
1595 1600 1605

Arg Asn Trp Leu Leu Leu Ser Asp Val Leu Lys Lys Leu Lys Met
1610 1615 1620

Ser Ser Arg Ile Phe Arg Cys Asn Phe Pro Asn Val Glu Ile Val
1625 1630 1635

Thr Ile Ala Glu Ala Glu Phe Tyr Arg Gln Val Ser Ala Ser Leu
1640 1645 1650

Leu Phe Ser Cys Ser Lys Asp Leu Glu Ala Phe Asn Pro Glu Ser
1655 1660 1665

Lys Glu Leu Leu Asp Leu Val Glu Phe Thr Asn Glu Ile Gln Thr
1670 1675 1680

Leu Leu Gly Ser Ser Val Glu Trp Leu His Pro Ser Asp Leu Ala
1685 1690 1695

Ser Asp Asn Tyr Trp
1700

<210> 8866

<211> 622
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<220>
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<223> /note="ENSP ID: ENSP00000367724"

<400> 8866

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Met Pro His Ser Pro Thr Leu Arg Val Asp Arg Lys Arg Lys Val Ser
1               5                  10                  15

Gly Asp Ser Ser His Thr Glu Thr Thr Ala Glu Glu Val Pro Glu Asp
            20                  25                  30

Pro Leu Leu Lys Ala Lys Arg Arg Arg Val Ser Lys Gly Leu His Pro
        35                  40                  45

Lys Lys Gln Arg His Leu Leu His Leu Arg Glu Arg Trp Glu Gln Gln
    50                  55                  60

Val Ser Ala Ala Asp Gly Lys Pro Gly Arg Gln Ser Arg Lys Glu Val
65                  70                  75                  80

Thr Gln Ala Thr Gln Pro Glu Ala Ile Pro Gln Gly Thr Asn Ile Thr
                85                  90                  95

Glu Glu Lys Pro Gly Arg Lys Arg Ala Glu Ala Lys Gly Asn Arg Ser
            100                 105                 110

Trp Ser Glu Glu Ser Leu Lys Pro Ser Asp Asn Glu Gln Gly Leu Pro
        115                 120                 125

Val Phe Ser Gly Ser Pro Pro Met Lys Ser Leu Ser Ser Thr Ser Ala
    130                 135                 140
```

```
Gly Gly Lys Lys Gln Ala Gln Pro Ser Cys Ala Pro Ala Ser Arg Pro
145                 150                 155                 160

Pro Ala Lys Gln Gln Lys Ile Lys Glu Asn Gln Lys Thr Asp Val Leu
                165                 170                 175

Cys Ala Asp Glu Glu Glu Asp Cys Gln Ala Ala Ser Leu Leu Gln Lys
            180                 185                 190

Tyr Thr Asp Asn Ser Glu Lys Pro Ser Gly Lys Arg Leu Cys Lys Thr
        195                 200                 205

Lys His Leu Ile Pro Gln Glu Ser Arg Arg Gly Leu Pro Leu Thr Gly
    210                 215                 220

Glu Tyr Tyr Val Glu Asn Ala Asp Gly Lys Val Thr Val Arg Arg Phe
225                 230                 235                 240

Arg Lys Arg Pro Glu Pro Ser Ser Asp Tyr Asp Leu Ser Pro Ala Lys
                245                 250                 255

Gln Glu Pro Lys Pro Phe Asp Arg Leu Gln Gln Leu Leu Pro Ala Ser
            260                 265                 270

Gln Ser Thr Gln Leu Pro Cys Ser Ser Ser Pro Gln Glu Thr Thr Gln
        275                 280                 285

Ser Arg Pro Met Pro Pro Glu Ala Arg Arg Leu Ile Val Asn Lys Asn
    290                 295                 300

Ala Gly Glu Thr Leu Leu Gln Arg Ala Ala Arg Leu Gly Tyr Glu Glu
305                 310                 315                 320

Val Val Leu Tyr Cys Leu Glu Asn Lys Ile Cys Asp Val Asn His Arg
                325                 330                 335

Asp Asn Ala Gly Tyr Cys Ala Leu His Glu Ala Cys Ala Arg Gly Trp
            340                 345                 350

Leu Asn Ile Val Arg His Leu Leu Glu Tyr Gly Ala Asp Val Asn Cys
        355                 360                 365
```

```
Ser Ala Gln Asp Gly Thr Arg Pro Leu His Asp Ala Val Glu Asn Asp
    370                 375                 380

His Leu Glu Ile Val Arg Leu Leu Leu Ser Tyr Gly Ala Asp Pro Thr
385                 390                 395                 400

Leu Ala Thr Tyr Ser Gly Arg Thr Ile Met Lys Met Thr His Ser Glu
                405                 410                 415

Leu Met Glu Lys Phe Leu Thr Asp Tyr Leu Asn Asp Leu Gln Gly Arg
            420                 425                 430

Asn Asp Asp Asp Ala Ser Gly Thr Trp Asp Phe Tyr Gly Ser Ser Val
        435                 440                 445

Cys Glu Pro Asp Asp Glu Ser Gly Tyr Asp Val Leu Ala Asn Pro Pro
    450                 455                 460

Gly Pro Glu Asp Gln Asp Asp Asp Asp Asp Ala Tyr Ser Asp Val Phe
465                 470                 475                 480

Glu Phe Glu Phe Ser Glu Thr Pro Leu Leu Pro Cys Tyr Asn Ile Gln
                485                 490                 495

Val Ser Val Ala Gln Gly Pro Arg Asn Trp Leu Leu Leu Ser Asp Val
            500                 505                 510

Leu Lys Lys Leu Lys Met Ser Ser Arg Ile Phe Arg Cys Asn Phe Pro
        515                 520                 525

Asn Val Glu Ile Val Thr Ile Ala Glu Ala Glu Phe Tyr Arg Gln Val
    530                 535                 540

Ser Ala Ser Leu Leu Phe Ser Cys Ser Lys Asp Leu Glu Ala Phe Asn
545                 550                 555                 560

Pro Glu Ser Lys Glu Leu Leu Asp Leu Val Glu Phe Thr Asn Glu Ile
                565                 570                 575

Gln Thr Leu Leu Gly Ser Ser Val Glu Trp Leu His Pro Ser Asp Leu
            580                 585                 590

Ala Ser Asp Asn Tyr Trp Lys Ser Pro Gln Ile Ala Arg Gly Ser Val
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595 600 605

Glu Gly Lys Lys Thr Asp Asp Lys Thr Ser Lys Thr Asp Leu
610 615 620

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<211> 1721
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000380512"

<400> 8867
Met Leu Ser Ala Thr Pro Leu Tyr Gly Asn Val His Ser Trp Met Asn
1 5 10 15

Ser Glu Arg Val Arg Met Cys Gly Ala Ser Glu Asp Arg Lys Ile Leu
20 25 30

Val Asn Asp Gly Asp Ala Ser Lys Ala Arg Leu Glu Leu Arg Glu Glu
35 40 45

Asn Pro Leu Asn His Asn Val Val Asp Ala Ser Thr Ala His Arg Ile
50 55 60

Asp Gly Leu Ala Ala Leu Ser Met Asp Arg Thr Gly Leu Ile Arg Glu
65 70 75 80

Gly Leu Arg Val Pro Gly Asn Ile Val Tyr Ser Ser Leu Cys Gly Leu
85 90 95

```
Gly Ser Glu Lys Gly Arg Glu Ala Ala Thr Ser Thr Leu Gly Gly Leu
            100                 105                 110

Gly Phe Ser Ser Glu Arg Asn Pro Glu Met Gln Phe Lys Pro Asn Thr
        115                 120                 125

Pro Glu Thr Val Glu Ala Ser Ala Val Ser Gly Lys Pro Pro Asn Gly
    130                 135                 140

Phe Ser Ala Ile Tyr Lys Thr Pro Pro Gly Ile Gln Lys Ser Ala Val
145                 150                 155                 160

Ala Thr Ala Glu Ala Leu Gly Leu Asp Arg Pro Ala Ser Asp Lys Gln
                165                 170                 175

Ser Pro Leu Asn Ile Asn Gly Ala Ser Tyr Leu Arg Leu Pro Trp Val
            180                 185                 190

Asn Pro Tyr Met Glu Gly Ala Thr Pro Ala Ile Tyr Pro Phe Leu Asp
        195                 200                 205

Ser Pro Asn Lys Tyr Ser Leu Asn Met Tyr Lys Ala Leu Leu Pro Gln
    210                 215                 220

Gln Ser Tyr Ser Leu Ala Gln Pro Leu Tyr Ser Pro Val Cys Thr Asn
225                 230                 235                 240

Gly Glu Arg Phe Leu Tyr Leu Pro Pro Pro His Tyr Val Gly Pro His
                245                 250                 255

Ile Pro Ser Ser Leu Ala Ser Pro Met Arg Leu Ser Thr Pro Ser Ala
            260                 265                 270

Ser Pro Ala Ile Pro Pro Leu Val His Cys Ala Asp Lys Ser Leu Pro
        275                 280                 285

Trp Lys Met Gly Val Ser Pro Gly Asn Pro Val Asp Ser His Ala Tyr
    290                 295                 300

Pro His Ile Gln Asn Ser Lys Gln Pro Arg Val Pro Ser Ala Lys Ala
305                 310                 315                 320
```

```
Val Thr Ser Gly Leu Pro Gly Asp Thr Ala Leu Leu Leu Pro Pro Ser
                325                 330                 335

Pro Arg Pro Ser Pro Arg Val His Leu Pro Thr Gln Pro Ala Ala Asp
            340                 345                 350

Thr Tyr Ser Glu Phe His Lys His Tyr Ala Arg Ile Ser Thr Ser Pro
        355                 360                 365

Ser Val Ala Leu Ser Lys Pro Tyr Met Thr Val Ser Ser Glu Phe Pro
    370                 375                 380

Ala Ala Arg Leu Ser Asn Gly Lys Tyr Pro Lys Ala Pro Glu Gly Gly
385                 390                 395                 400

Glu Gly Ala Gln Pro Val Pro Gly His Ala Arg Lys Thr Ala Val Gln
                405                 410                 415

Asp Arg Lys Asp Gly Ser Ser Pro Pro Leu Leu Glu Lys Gln Thr Val
            420                 425                 430

Thr Lys Asp Val Thr Asp Lys Pro Leu Asp Leu Ser Ser Lys Val Val
        435                 440                 445

Asp Val Asp Ala Ser Lys Ala Asp His Met Lys Lys Met Ala Pro Thr
    450                 455                 460

Val Leu Val His Ser Arg Ala Gly Ser Gly Leu Val Leu Ser Gly Ser
465                 470                 475                 480

Glu Ile Pro Lys Glu Thr Leu Ser Pro Pro Gly Asn Gly Cys Ala Ile
                485                 490                 495

Tyr Arg Ser Glu Ile Ile Ser Thr Ala Pro Ser Ser Trp Val Val Pro
            500                 505                 510

Gly Pro Ser Pro Asn Glu Glu Asn Asn Gly Lys Ser Met Ser Leu Lys
        515                 520                 525

Asn Lys Ala Leu Asp Trp Ala Ile Pro Gln Gln Arg Ser Ser Ser Cys
    530                 535                 540

Pro Arg Met Gly Gly Thr Asp Ala Val Ile Thr Asn Val Ser Gly Ser
```

545 550 555 560

Val Ser Ser Ala Gly Arg Pro Ala Ser Ala Ser Pro Ala Pro Asn Ala
565 570 575

Asn Ala Asp Gly Thr Lys Thr Ser Arg Ser Ser Val Glu Thr Thr Pro
580 585 590

Ser Val Ile Gln His Val Gly Gln Pro Pro Ala Thr Pro Ala Lys His
595 600 605

Ser Ser Ser Thr Ser Ser Lys Gly Ala Lys Ala Ser Asn Pro Glu Pro
610 615 620

Ser Phe Lys Ala Asn Glu Asn Gly Leu Pro Pro Ser Ser Ile Phe Leu
625 630 635 640

Ser Pro Asn Glu Ala Phe Arg Ser Pro Pro Ile Pro Tyr Pro Arg Ser
645 650 655

Tyr Leu Pro Tyr Pro Ala Pro Glu Gly Ile Ala Val Ser Pro Leu Ser
660 665 670

Leu His Gly Lys Gly Pro Val Tyr Pro His Pro Val Leu Leu Pro Asn
675 680 685

Gly Ser Leu Phe Pro Gly His Leu Ala Pro Lys Pro Gly Leu Pro Tyr
690 695 700

Gly Leu Pro Thr Gly Arg Pro Glu Phe Val Thr Tyr Gln Asp Ala Leu
705 710 715 720

Gly Leu Gly Met Val His Pro Met Leu Ile Pro His Thr Pro Ile Glu
725 730 735

Ile Thr Lys Glu Glu Lys Pro Glu Arg Arg Ser Arg Ser His Glu Arg
740 745 750

Ala Arg Tyr Glu Asp Pro Thr Leu Arg Asn Arg Phe Ser Glu Ile Leu
755 760 765

Glu Thr Ser Ser Thr Lys Leu His Pro Asp Val Pro Thr Asp Lys Asn
770 775 780

```
Leu Lys Pro Asn Pro Asn Trp Asn Gln Gly Lys Thr Val Val Lys Ser
785                 790                 795                 800

Asp Lys Leu Val Tyr Val Asp Leu Leu Arg Glu Glu Pro Asp Ala Lys
                805                 810                 815

Thr Asp Thr Asn Val Ser Lys Pro Ser Phe Ala Ala Glu Ser Val Gly
            820                 825                 830

Gln Ser Ala Glu Pro Pro Lys Pro Ser Val Glu Pro Ala Leu Gln Gln
        835                 840                 845

His Arg Asp Phe Ile Ala Leu Arg Glu Glu Leu Gly Arg Ile Ser Asp
    850                 855                 860

Phe His Glu Thr Tyr Thr Phe Lys Gln Pro Val Phe Thr Val Ser Lys
865                 870                 875                 880

Asp Ser Val Leu Ala Gly Thr Asn Lys Glu Asn Leu Gly Leu Pro Val
                885                 890                 895

Ser Thr Pro Phe Leu Glu Pro Pro Leu Gly Ser Asp Gly Pro Ala Val
            900                 905                 910

Thr Phe Gly Lys Thr Gln Glu Asp Pro Lys Pro Phe Cys Val Gly Ser
        915                 920                 925

Ala Pro Pro Ser Val Asp Val Thr Pro Thr Tyr Thr Lys Asp Gly Ala
    930                 935                 940

Asp Glu Ala Glu Ser Asn Asp Gly Lys Val Leu Lys Pro Lys Pro Ser
945                 950                 955                 960

Lys Leu Ala Lys Arg Ile Ala Asn Ser Ala Gly Tyr Val Gly Asp Arg
                965                 970                 975

Phe Lys Cys Val Thr Thr Glu Leu Tyr Ala Asp Ser Ser Gln Leu Ser
            980                 985                 990

Arg Glu Gln Arg Ala Leu Gln Met  Glu Gly Leu Gln Glu  Asp Ser
Ile
        995                 1000                1005
```

```
Leu Cys  Leu Pro Ala Ala Tyr  Cys Glu Arg Ala Met  Met Arg Phe
    1010                1015                1020

Ser Glu  Leu Glu Met Lys Glu  Arg Glu Gly Gly His  Pro Ala Thr
    1025                1030                1035

Lys Asp  Ser Glu Met Cys Lys  Phe Ser Pro Ala Asp  Trp Glu Arg
    1040                1045                1050

Leu Lys  Gly Asn Gln Asp Lys  Lys Pro Lys Ser Val  Thr Leu Glu
    1055                1060                1065

Glu Ala  Ile Ala Glu Gln Asn  Glu Ser Glu Arg Cys  Glu Tyr Ser
    1070                1075                1080

Val Gly  Asn Lys His Arg Asp  Pro Phe Glu Ala Pro  Glu Asp Lys
    1085                1090                1095

Asp Leu  Pro Val Glu Lys Tyr  Phe Val Glu Arg Gln  Pro Val Ser
    1100                1105                1110

Glu Pro  Pro Ala Asp Gln Val  Ala Ser Asp Met Pro  His Ser Pro
    1115                1120                1125

Thr Leu  Arg Val Asp Arg Lys  Arg Lys Val Ser Gly  Asp Ser Ser
    1130                1135                1140

His Thr  Glu Thr Thr Ala Glu  Glu Val Pro Glu Asp  Pro Leu Leu
    1145                1150                1155

Lys Ala  Lys Arg Arg Arg Val  Ser Lys Gly Leu His  Pro Lys Lys
    1160                1165                1170

Gln Arg  His Leu Leu His Leu  Arg Glu Arg Trp Glu  Gln Gln Val
    1175                1180                1185

Ser Ala  Ala Asp Gly Lys Pro  Gly Arg Gln Ser Arg  Lys Glu Val
    1190                1195                1200

Thr Gln  Ala Thr Gln Pro Glu  Ala Ile Pro Gln Gly  Thr Asn Ile
    1205                1210                1215
```

```
Thr Glu  Glu Lys Pro Gly Arg  Lys Arg Ala Glu Ala  Lys Gly Asn
    1220                 1225                 1230

Arg Ser  Trp Ser Glu Glu Ser  Leu Lys Pro Ser Asp  Asn Glu Gln
    1235                 1240                 1245

Gly Leu  Pro Val Phe Ser Gly  Ser Pro Pro Met Lys  Ser Leu Ser
    1250                 1255                 1260

Ser Thr  Ser Ala Gly Gly Lys  Lys Gln Ala Gln Pro  Ser Cys Ala
    1265                 1270                 1275

Pro Ala  Ser Arg Pro Pro Ala  Lys Gln Gln Lys Ile  Lys Glu Asn
    1280                 1285                 1290

Gln Lys  Thr Asp Val Leu Cys  Ala Asp Glu Glu Glu  Asp Cys Gln
    1295                 1300                 1305

Ala Ala  Ser Leu Leu Gln Lys  Tyr Thr Asp Asn Ser  Glu Lys Pro
    1310                 1315                 1320

Ser Gly  Lys Arg Leu Cys Lys  Thr Lys His Leu Ile  Pro Gln Glu
    1325                 1330                 1335

Ser Arg  Arg Gly Leu Pro Leu  Thr Gly Glu Tyr Tyr  Val Glu Asn
    1340                 1345                 1350

Ala Asp  Gly Lys Val Thr Val  Arg Arg Phe Arg Lys  Arg Pro Glu
    1355                 1360                 1365

Pro Ser  Ser Asp Tyr Asp Leu  Ser Pro Ala Lys Gln  Glu Pro Lys
    1370                 1375                 1380

Pro Phe  Asp Arg Leu Gln Gln  Leu Leu Pro Ala Ser  Gln Ser Thr
    1385                 1390                 1395

Gln Leu  Pro Cys Ser Ser Ser  Pro Gln Glu Thr Thr  Gln Ser Arg
    1400                 1405                 1410

Pro Met  Pro Pro Glu Ala Arg  Arg Leu Ile Val Asn  Lys Asn Ala
    1415                 1420                 1425
```

```
Gly Glu  Thr Leu Leu Gln Arg  Ala Ala Arg Leu Gly  Tyr Glu Glu
    1430                 1435                 1440

Val Val  Leu Tyr Cys Leu Glu  Asn Lys Ile Cys Asp  Val Asn His
    1445                 1450                 1455

Arg Asp  Asn Ala Gly Tyr Cys  Ala Leu His Glu Ala  Cys Ala Arg
    1460                 1465                 1470

Gly Trp  Leu Asn Ile Val Arg  His Leu Leu Glu Tyr  Gly Ala Asp
    1475                 1480                 1485

Val Asn  Cys Ser Ala Gln Asp  Gly Thr Arg Pro Leu  His Asp Ala
    1490                 1495                 1500

Val Glu  Asn Asp His Leu Glu  Ile Val Arg Leu Leu  Leu Ser Tyr
    1505                 1510                 1515

Gly Ala  Asp Pro Thr Leu Ala  Thr Tyr Ser Gly Arg  Thr Ile Met
    1520                 1525                 1530

Lys Met  Thr His Ser Glu Leu  Met Glu Lys Phe Leu  Thr Asp Tyr
    1535                 1540                 1545

Leu Asn  Asp Leu Gln Gly Arg  Asn Asp Asp Asp Ala  Ser Gly Thr
    1550                 1555                 1560

Trp Asp  Phe Tyr Gly Ser Ser  Val Cys Glu Pro Asp  Asp Glu Ser
    1565                 1570                 1575

Gly Tyr  Asp Val Leu Ala Asn  Pro Pro Gly Pro Glu  Asp Gln Asp
    1580                 1585                 1590

Asp Asp  Asp Asp Ala Tyr Ser  Asp Val Phe Glu Phe  Glu Phe Ser
    1595                 1600                 1605

Glu Thr  Pro Leu Leu Pro Cys  Tyr Asn Ile Gln Val  Ser Val Ala
    1610                 1615                 1620

Gln Gly  Pro Arg Asn Trp Leu  Leu Leu Ser Asp Val  Leu Lys Lys
    1625                 1630                 1635

Leu Lys  Met Ser Ser Arg Ile  Phe Arg Cys Asn Phe  Pro Asn Val
```

```
    1640                1645                1650

Glu Ile  Val Thr Ile Ala Glu  Ala Glu Phe Tyr Arg  Gln Val Ser
    1655                1660                1665

Ala Ser  Leu Leu Phe Ser Cys  Ser Lys Asp Leu Glu  Ala Phe Asn
    1670                1675                1680

Pro Glu  Ser Lys Glu Leu Leu  Asp Leu Val Glu Phe  Thr Asn Glu
    1685                1690                1695

Ile Gln  Thr Leu Leu Gly Ser  Ser Val Glu Trp Leu  His Pro Ser
    1700                1705                1710

Asp Leu  Ala Ser Asp Asn Tyr  Trp
    1715                1720


<210> 8868
<211> 1287
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1798; "

<220>
<221> source
<223> /note="Gene Symbol: BCOR; "

<220>
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<223> /note="Gene Name:
      BCL6 corepressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384485"

<400> 8868
Met Leu Ser Ala Thr Pro Leu Tyr Gly Asn Val His Ser Trp Met Asn
1               5                  10                  15

Ser Glu Arg Val Arg Met Cys Gly Ala Ser Glu Asp Arg Lys Ile Leu
            20                  25                  30

Val Asn Asp Gly Asp Ala Ser Lys Ala Arg Leu Glu Leu Arg Glu Glu
        35                  40                  45
```

```
Asn Pro Leu Asn His Asn Val Val Asp Ala Ser Thr Ala His Arg Ile
    50                  55                  60

Asp Gly Leu Ala Ala Leu Ser Met Asp Arg Thr Gly Leu Ile Arg Glu
65                  70                  75                  80

Gly Leu Arg Val Pro Gly Asn Ile Val Tyr Ser Ser Leu Cys Gly Leu
                85                  90                  95

Gly Ser Glu Lys Gly Arg Glu Ala Ala Thr Ser Thr Leu Gly Gly Leu
            100                 105                 110

Gly Phe Ser Ser Glu Arg Asn Pro Glu Met Gln Phe Lys Pro Asn Thr
        115                 120                 125

Pro Glu Thr Val Glu Ala Ser Ala Val Ser Gly Lys Pro Pro Asn Gly
    130                 135                 140

Phe Ser Ala Ile Tyr Lys Thr Pro Pro Gly Ile Gln Lys Ser Ala Val
145                 150                 155                 160

Ala Thr Ala Glu Ala Leu Gly Leu Asp Arg Pro Ala Ser Asp Lys Gln
                165                 170                 175

Ser Pro Leu Asn Ile Asn Gly Ala Ser Tyr Leu Arg Leu Pro Trp Val
            180                 185                 190

Asn Pro Tyr Met Glu Gly Ala Thr Pro Ala Ile Tyr Pro Phe Leu Asp
        195                 200                 205

Ser Pro Asn Lys Tyr Ser Leu Asn Met Tyr Lys Ala Leu Leu Pro Gln
    210                 215                 220

Gln Ser Tyr Ser Leu Ala Gln Pro Leu Tyr Ser Pro Val Cys Thr Asn
225                 230                 235                 240

Gly Glu Arg Phe Leu Tyr Leu Pro Pro Pro His Tyr Val Gly Pro His
                245                 250                 255

Ile Pro Ser Ser Leu Ala Ser Pro Met Arg Leu Ser Thr Pro Ser Ala
            260                 265                 270
```

```
Ser Pro Ala Ile Pro Pro Leu Val His Cys Ala Asp Lys Ser Leu Pro
        275                 280                 285

Trp Lys Met Gly Val Ser Pro Gly Asn Pro Val Asp Ser His Ala Tyr
    290                 295                 300

Pro His Ile Gln Asn Ser Lys Gln Pro Arg Val Pro Ser Ala Lys Ala
305                 310                 315                 320

Val Thr Ser Gly Leu Pro Gly Asp Thr Ala Leu Leu Leu Pro Pro Ser
                325                 330                 335

Pro Arg Pro Ser Pro Arg Val His Leu Pro Thr Gln Pro Ala Ala Asp
            340                 345                 350

Thr Tyr Ser Glu Phe His Lys His Tyr Ala Arg Ile Ser Thr Ser Pro
        355                 360                 365

Ser Val Ala Leu Ser Lys Pro Tyr Met Thr Val Ser Ser Glu Phe Pro
    370                 375                 380

Ala Ala Arg Leu Ser Asn Gly Lys Tyr Pro Lys Ala Pro Glu Gly Gly
385                 390                 395                 400

Glu Gly Ala Gln Pro Val Pro Gly His Ala Arg Lys Thr Ala Val Gln
                405                 410                 415

Asp Arg Lys Asp Gly Ser Ser Pro Pro Leu Leu Glu Lys Gln Thr Val
            420                 425                 430

Thr Lys Asp Val Thr Asp Lys Pro Leu Asp Leu Ser Ser Lys Val Val
        435                 440                 445

Asp Val Asp Ala Ser Lys Ala Asp His Met Lys Lys Met Ala Pro Thr
    450                 455                 460

Val Leu Val His Ser Arg Ala Gly Ser Gly Leu Val Leu Ser Gly Ser
465                 470                 475                 480

Glu Ile Pro Lys Glu Thr Leu Ser Pro Pro Gly Asn Gly Cys Ala Ile
                485                 490                 495

Tyr Arg Ser Glu Ile Ile Ser Thr Ala Pro Ser Ser Trp Val Val Pro
```

```
            500                 505                 510

Gly Pro Ser Pro Asn Glu Glu Asn Asn Gly Lys Ser Met Ser Leu Lys
        515                 520                 525

Asn Lys Ala Leu Asp Trp Ala Ile Pro Gln Gln Arg Ser Ser Ser Cys
    530                 535                 540

Pro Arg Met Gly Gly Thr Asp Ala Val Ile Thr Asn Val Ser Gly Ser
545                 550                 555                 560

Val Ser Ser Ala Gly Arg Pro Ala Ser Ala Ser Pro Ala Pro Asn Ala
                565                 570                 575

Asn Ala Asp Gly Thr Lys Thr Ser Arg Ser Ser Val Glu Thr Thr Pro
            580                 585                 590

Ser Val Ile Gln His Val Gly Gln Pro Pro Ala Thr Pro Ala Lys His
        595                 600                 605

Ser Ser Ser Thr Ser Ser Lys Gly Ala Lys Ala Ser Asn Pro Glu Pro
    610                 615                 620

Ser Phe Lys Ala Asn Glu Asn Gly Leu Pro Pro Ser Ser Ile Phe Leu
625                 630                 635                 640

Ser Pro Asn Glu Ala Phe Arg Ser Pro Pro Ile Pro Tyr Pro Arg Ser
                645                 650                 655

Tyr Leu Pro Tyr Pro Ala Pro Glu Gly Ile Ala Val Ser Pro Leu Ser
            660                 665                 670

Leu His Gly Lys Gly Pro Val Tyr Pro His Pro Val Leu Leu Pro Asn
        675                 680                 685

Gly Ser Leu Phe Pro Gly His Leu Ala Pro Lys Pro Gly Leu Pro Tyr
    690                 695                 700

Gly Leu Pro Thr Gly Arg Pro Glu Phe Val Thr Tyr Gln Asp Ala Leu
705                 710                 715                 720

Gly Leu Gly Met Val His Pro Met Leu Ile Pro His Thr Pro Ile Glu
                725                 730                 735
```

```
Ile Thr Lys Glu Glu Lys Pro Glu Arg Arg Ser Arg Ser His Glu Arg
            740                 745                 750

Ala Arg Tyr Glu Asp Pro Thr Leu Arg Asn Arg Phe Ser Glu Ile Leu
        755                 760                 765

Glu Thr Ser Ser Thr Lys Leu His Pro Asp Val Pro Thr Asp Lys Asn
    770                 775                 780

Leu Lys Pro Asn Pro Asn Trp Asn Gln Gly Lys Thr Val Val Lys Ser
785                 790                 795                 800

Asp Lys Leu Val Tyr Val Asp Leu Leu Arg Glu Glu Pro Asp Ala Lys
                805                 810                 815

Thr Asp Thr Asn Val Ser Lys Pro Ser Phe Ala Ala Glu Ser Val Gly
            820                 825                 830

Gln Ser Ala Glu Pro Pro Lys Pro Ser Val Glu Pro Ala Leu Gln Gln
        835                 840                 845

His Arg Asp Phe Ile Ala Leu Arg Glu Glu Leu Gly Arg Ile Ser Asp
    850                 855                 860

Phe His Glu Thr Tyr Thr Phe Lys Gln Pro Val Phe Thr Val Ser Lys
865                 870                 875                 880

Asp Ser Val Leu Ala Gly Thr Asn Lys Glu Asn Leu Gly Leu Pro Val
                885                 890                 895

Ser Thr Pro Phe Leu Glu Pro Pro Leu Gly Ser Asp Gly Pro Ala Val
            900                 905                 910

Thr Phe Gly Lys Thr Gln Glu Asp Pro Lys Pro Phe Cys Val Gly Ser
        915                 920                 925

Ala Pro Pro Ser Val Asp Val Thr Pro Thr Tyr Thr Lys Asp Gly Ala
    930                 935                 940

Asp Glu Ala Glu Ser Asn Asp Gly Lys Val Leu Lys Pro Lys Pro Ser
945                 950                 955                 960
```

```
Lys Leu Ala Lys Arg Ile Ala Asn Ser Ala Gly Tyr Val Gly Asp Arg
                965                 970                 975

Phe Lys Cys Val Thr Thr Glu Leu Tyr Ala Asp Ser Ser Gln Leu Ser
            980                 985                 990

Arg Glu Gln Arg Ala Leu Gln Met  Glu Gly Leu Gln Glu  Asp Ser
Ile
        995                 1000                1005

Leu Cys  Leu Pro Ala Ala Tyr  Cys Glu Arg Ala Met  Met Arg Phe
    1010                1015                1020

Ser Glu  Leu Glu Met Lys Glu  Arg Glu Gly Gly His  Pro Ala Thr
    1025                1030                1035

Lys Asp  Ser Glu Met Cys Lys  Phe Ser Pro Ala Asp  Trp Glu Arg
    1040                1045                1050

Leu Lys  Gly Asn Gln Asp Lys  Lys Pro Lys Ser Val  Thr Leu Glu
    1055                1060                1065

Glu Ala  Ile Ala Glu Gln Asn  Glu Ser Glu Arg Cys  Glu Tyr Ser
    1070                1075                1080

Val Gly  Asn Lys His Arg Asp  Pro Phe Glu Ala Pro  Glu Asp Lys
    1085                1090                1095

Asp Leu  Pro Val Glu Lys Tyr  Phe Val Glu Arg Gln  Pro Val Ser
    1100                1105                1110

Glu Pro  Pro Ala Asp Gln Val  Ala Ser Asp Met Pro  His Ser Pro
    1115                1120                1125

Thr Leu  Arg Val Asp Arg Lys  Arg Lys Val Ser Gly  Asp Ser Ser
    1130                1135                1140

His Thr  Glu Thr Thr Ala Glu  Glu Val Pro Glu Asp  Pro Leu Leu
    1145                1150                1155

Lys Ala  Lys Arg Arg Arg Val  Ser Lys Gly Leu His  Pro Lys Lys
    1160                1165                1170
```

```
Gln Arg  His Leu Leu His Leu  Arg Glu Arg Trp Glu  Gln Gln Val
    1175                1180                1185

Ser Ala  Ala Asp Gly Lys Pro  Gly Arg Gln Ser Arg  Lys Glu Val
    1190                1195                1200

Thr Gln  Ala Thr Gln Pro Glu  Ala Ile Pro Gln Gly  Thr Asn Ile
    1205                1210                1215

Thr Glu  Glu Lys Pro Gly Arg  Lys Arg Ala Glu Ala  Lys Gly Asn
    1220                1225                1230

Arg Ser  Trp Ser Glu Glu Ser  Leu Lys Pro Ser Asp  Asn Glu Gln
    1235                1240                1245

Gly Leu  Pro Val Phe Ser Gly  Ser Pro Pro Met Lys  Ser Leu Ser
    1250                1255                1260

Ser Thr  Ser Ala Gly Gly Lys  Lys Gln Ala Gln Pro  Ser Cys Ala
    1265                1270                1275

Pro Ala  Ser Arg Pro Pro Ala  Lys Gln
    1280                1285


<210> 8869
<211> 332
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1798; "

<220>
<221> source
<223> /note="Gene Symbol: BCOR; "

<220>
<221> source
<223> /note="Gene Name:
      BCL6 corepressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387552"

<400> 8869
Gln Lys Thr Asp Val Leu Cys Ala Asp Glu Glu Glu Asp Cys Gln Ala
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```
1               5                   10                  15

Ala Ser Leu Leu Gln Lys Tyr Thr Asp Asn Ser Glu Lys Pro Ser Gly
            20                  25                  30

Lys Arg Leu Cys Lys Thr Lys His Leu Ile Pro Gln Glu Ser Arg Arg
        35                  40                  45

Gly Leu Pro Leu Thr Gly Glu Tyr Tyr Val Glu Asn Ala Asp Gly Lys
    50                  55                  60

Val Thr Val Arg Arg Phe Arg Lys Arg Pro Glu Pro Ser Ser Asp Tyr
65                  70                  75                  80

Asp Leu Ser Pro Ala Lys Gln Glu Pro Lys Pro Phe Asp Arg Leu Gln
                85                  90                  95

Gln Leu Leu Pro Ala Ser Gln Ser Thr Gln Leu Pro Cys Ser Ser Ser
            100                 105                 110

Pro Gln Glu Thr Thr Gln Ser Arg Pro Met Pro Pro Glu Ala Arg Arg
        115                 120                 125

Leu Ile Val Asn Lys Asn Ala Gly Glu Thr Leu Leu Gln Arg Ala Ala
    130                 135                 140

Arg Leu Gly Tyr Glu Glu Val Val Leu Tyr Cys Leu Glu Asn Lys Ile
145                 150                 155                 160

Cys Asp Val Asn His Arg Asp Asn Ala Gly Tyr Cys Ala Leu His Glu
                165                 170                 175

Ala Cys Ala Arg Gly Trp Leu Asn Ile Val Arg His Leu Leu Glu Tyr
            180                 185                 190

Gly Ala Asp Val Asn Cys Ser Ala Gln Asp Gly Thr Arg Pro Leu His
        195                 200                 205

Asp Ala Val Glu Asn Asp His Leu Glu Ile Val Arg Leu Leu Leu Ser
    210                 215                 220

Tyr Gly Ala Asp Pro Thr Leu Ala Thr Tyr Ser Gly Arg Thr Ile Met
225                 230                 235                 240
```

```
Lys Met Thr His Ser Glu Leu Met Glu Lys Phe Leu Thr Asp Tyr Leu
                245                 250                 255

Asn Asp Leu Gln Gly Arg Asn Asp Asp Asp Ala Ser Gly Thr Trp Asp
            260                 265                 270

Phe Tyr Gly Ser Ser Val Cys Glu Pro Asp Asp Glu Ser Gly Tyr Asp
        275                 280                 285

Val Leu Ala Asn Pro Pro Gly Pro Glu Asp Gln Asp Asp Asp Asp Asp
    290                 295                 300

Ala Tyr Ser Asp Val Phe Glu Phe Glu Phe Ser Glu Thr Pro Leu Leu
305                 310                 315                 320

Pro Cys Tyr Asn Ile Gln Val Ser Val Ala Gln Gly
                325                 330


<210> 8870
<211> 28
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      BCL6 corepressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390273"

<400> 8870
Met Leu Ser Ala Thr Pro Leu Tyr Gly Asn Val His Ser Trp Met Asn
1               5                   10                  15

Ser Glu Arg Val Arg Met Cys Gly Ala Ser Glu Asp
            20                  25
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<210> 8871
<211> 289
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1798; "

<220>
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<223> /note="Gene Symbol: BCOR; "

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BCL6 corepressor; "

<220>
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<223> /note="ENSP ID: ENSP00000403823"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8871
Xaa Ala Gln Pro Ser Cys Ala Pro Ala Ser Arg Pro Pro Ala Lys Gln
1 5 10 15

Gln Lys Ile Lys Glu Asn Gln Lys Thr Asp Val Leu Cys Ala Asp Glu
20 25 30

Glu Glu Asp Cys Gln Ala Ala Ser Leu Leu Gln Lys Tyr Thr Asp Asn
35 40 45

Ser Glu Lys Pro Ser Gly Lys Arg Leu Cys Lys Thr Lys His Leu Ile
50 55 60

Pro Gln Glu Ser Arg Arg Gly Leu Pro Leu Thr Gly Glu Tyr Tyr Val
65 70 75 80

Glu Asn Ala Asp Gly Lys Val Thr Val Arg Arg Phe Arg Lys Arg Pro
85 90 95

Glu Pro Ser Ser Asp Tyr Asp Leu Ser Pro Ala Lys Gln Glu Pro Lys
100 105 110

```
Pro Phe Asp Arg Leu Gln Gln Leu Leu Pro Ala Ser Gln Ser Thr Gln
        115                 120                 125

Leu Pro Cys Ser Ser Ser Pro Gln Glu Thr Thr Gln Ser Arg Pro Met
    130                 135                 140

Pro Pro Glu Ala Arg Arg Leu Ile Val Asn Lys Asn Ala Gly Glu Thr
145                 150                 155                 160

Leu Leu Gln Arg Ala Ala Arg Leu Gly Tyr Glu Glu Val Val Leu Tyr
                165                 170                 175

Cys Leu Glu Asn Lys Ile Cys Asp Val Asn His Arg Asp Asn Ala Gly
            180                 185                 190

Tyr Cys Ala Leu His Glu Ala Cys Ala Arg Gly Trp Leu Asn Ile Val
        195                 200                 205

Arg His Leu Leu Glu Tyr Gly Ala Asp Val Asn Cys Ser Ala Gln Asp
    210                 215                 220

Gly Thr Arg Pro Leu His Asp Ala Val Glu Asn Asp His Leu Glu Ile
225                 230                 235                 240

Val Arg Leu Leu Leu Ser Tyr Gly Ala Asp Pro Thr Leu Ala Thr Tyr
                245                 250                 255

Ser Gly Arg Thr Ile Met Lys Met Thr His Ser Glu Leu Met Glu Lys
            260                 265                 270

Phe Leu Thr Gly His Glu Thr Gly Tyr Cys Phe Arg Met Ser Leu Arg
        275                 280                 285

Asn
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<210> 8872
<211> 594
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
BCL6 corepressor; "

<220>
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<223> /note="ENSP ID: ENSP00000408006"

<400> 8872
Asp Lys Asp Leu Pro Val Glu Lys Tyr Phe Val Glu Arg Gln Pro Val
1 5 10 15

Ser Glu Pro Pro Ala Asp Gln Val Ala Ser Asp Met Pro His Ser Pro
20 25 30

Thr Leu Arg Val Asp Arg Lys Arg Lys Val Ser Gly Asp Ser Ser His
35 40 45

Thr Glu Thr Thr Ala Glu Glu Val Pro Glu Asp Pro Leu Leu Lys Ala
50 55 60

Lys Arg Arg Arg Val Ser Lys Gly Leu His Pro Lys Lys Gln Arg His
65 70 75 80

Leu Leu His Leu Arg Glu Arg Trp Glu Gln Gln Val Ser Ala Ala Asp
85 90 95

Gly Lys Pro Gly Arg Gln Ser Arg Lys Glu Val Thr Gln Ala Thr Gln
100 105 110

Pro Glu Ala Ile Pro Gln Gly Thr Asn Ile Thr Glu Glu Lys Pro Gly
115 120 125

Arg Lys Arg Ala Glu Ala Lys Gly Asn Arg Ser Trp Ser Glu Glu Ser
130 135 140

Leu Lys Pro Ser Asp Asn Glu Gln Gly Leu Pro Val Phe Ser Gly Ser
145 150 155 160

Pro Pro Met Lys Ser Leu Ser Ser Thr Ser Ala Gly Gly Lys Lys Gln
165 170 175

```
Ala Gln Pro Ser Cys Ala Pro Ala Ser Arg Pro Pro Ala Lys Gln Gln
            180                 185                 190

Lys Ile Lys Glu Asn Gln Lys Thr Asp Val Leu Cys Ala Asp Glu Glu
        195                 200                 205

Glu Asp Cys Gln Ala Ala Ser Leu Leu Gln Lys Tyr Thr Asp Asn Ser
    210                 215                 220

Glu Lys Pro Ser Gly Lys Arg Leu Cys Lys Thr Lys His Leu Ile Pro
225                 230                 235                 240

Gln Glu Ser Arg Arg Gly Leu Pro Leu Thr Gly Glu Tyr Tyr Val Glu
                245                 250                 255

Asn Ala Asp Gly Lys Val Thr Val Arg Arg Phe Arg Lys Arg Pro Glu
            260                 265                 270

Pro Ser Ser Asp Tyr Asp Leu Ser Pro Ala Lys Gln Glu Pro Lys Pro
        275                 280                 285

Phe Asp Arg Leu Gln Gln Leu Leu Pro Ala Ser Gln Ser Thr Gln Leu
    290                 295                 300

Pro Cys Ser Ser Ser Pro Gln Glu Thr Thr Gln Ser Arg Pro Met Pro
305                 310                 315                 320

Pro Glu Ala Arg Arg Leu Ile Val Asn Lys Asn Ala Gly Glu Thr Leu
                325                 330                 335

Leu Gln Arg Ala Ala Arg Leu Gly Tyr Glu Glu Val Val Leu Tyr Cys
            340                 345                 350

Leu Glu Asn Lys Ile Cys Asp Val Asn His Arg Asp Asn Ala Gly Tyr
        355                 360                 365

Cys Ala Leu His Glu Ala Cys Ala Arg Gly Trp Leu Asn Ile Val Arg
    370                 375                 380

His Leu Leu Glu Tyr Gly Ala Asp Val Asn Cys Ser Ala Gln Asp Gly
385                 390                 395                 400
```

```
Thr Arg Pro Leu His Asp Ala Val Glu Asn Asp His Leu Glu Ile Val
                405                 410                 415

Arg Leu Leu Leu Ser Tyr Gly Ala Asp Pro Thr Leu Ala Thr Tyr Ser
            420                 425                 430

Gly Arg Thr Ile Met Lys Met Thr His Ser Glu Leu Met Glu Lys Phe
        435                 440                 445

Leu Thr Asp Tyr Leu Asn Asp Leu Gln Gly Arg Asn Asp Asp Asp Ala
    450                 455                 460

Ser Gly Thr Trp Asp Phe Tyr Gly Ser Ser Val Cys Glu Pro Asp Asp
465                 470                 475                 480

Glu Ser Gly Tyr Asp Val Leu Ala Asn Pro Pro Gly Pro Glu Asp Gln
                485                 490                 495

Asp Asp Asp Asp Asp Ala Tyr Ser Asp Val Phe Glu Phe Glu Phe Ser
            500                 505                 510

Glu Thr Pro Leu Leu Pro Cys Tyr Asn Ile Gln Val Ser Val Ala Gln
        515                 520                 525

Gly Pro Arg Asn Trp Leu Leu Leu Ser Asp Val Leu Lys Lys Leu Lys
    530                 535                 540

Met Ser Ser Arg Ile Phe Arg Cys Asn Phe Pro Asn Val Glu Ile Val
545                 550                 555                 560

Thr Ile Ala Glu Ala Glu Phe Tyr Arg Gln Val Ser Ala Ser Leu Leu
                565                 570                 575

Phe Ser Cys Ser Lys Asp Leu Glu Ala Phe Asn Pro Glu Arg Ser Pro
            580                 585                 590

Leu Lys
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<210> 8873
<211> 411
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1798; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
BCL6 corepressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483217"

<400> 8873
Met Thr Arg Pro Ala Phe Gln Pro Pro Ala Thr Pro Ala Lys His Ser
1 5 10 15

Ser Ser Thr Ser Ser Lys Gly Ala Lys Ala Ser Asn Pro Glu Pro Ser
20 25 30

Phe Lys Ala Asn Glu Asn Gly Leu Pro Pro Ser Ser Ile Phe Leu Ser
35 40 45

Pro Asn Glu Ala Phe Arg Ser Pro Pro Ile Pro Tyr Pro Arg Ser Tyr
50 55 60

Leu Pro Tyr Pro Ala Pro Glu Gly Ile Ala Val Ser Pro Leu Ser Leu
65 70 75 80

His Gly Lys Gly Pro Val Tyr Pro His Pro Val Leu Leu Pro Asn Gly
85 90 95

Ser Leu Phe Pro Gly His Leu Ala Pro Lys Pro Gly Leu Pro Tyr Gly
100 105 110

Leu Pro Thr Gly Arg Pro Glu Phe Val Thr Tyr Gln Asp Ala Leu Gly
115 120 125

Leu Gly Met Val His Pro Met Leu Ile Pro His Thr Pro Ile Glu Ile
130 135 140

Thr Lys Glu Glu Lys Pro Glu Arg Arg Ser Arg Ser His Glu Arg Ala
145 150 155 160

```
Arg Tyr Glu Asp Pro Thr Leu Arg Asn Arg Phe Ser Glu Ile Leu Glu
                165                 170                 175

Thr Ser Ser Thr Lys Leu His Pro Asp Val Pro Thr Asp Lys Asn Leu
            180                 185                 190

Lys Pro Asn Pro Asn Trp Asn Gln Gly Lys Thr Val Val Lys Ser Asp
        195                 200                 205

Lys Leu Val Tyr Val Asp Leu Leu Arg Glu Glu Pro Asp Ala Lys Thr
    210                 215                 220

Asp Thr Asn Val Ser Lys Pro Ser Phe Ala Ala Glu Ser Val Gly Gln
225                 230                 235                 240

Ser Ala Glu Pro Pro Lys Pro Ser Val Glu Pro Ala Leu Gln Gln His
                245                 250                 255

Arg Asp Phe Ile Ala Leu Arg Glu Glu Leu Gly Arg Ile Ser Asp Phe
            260                 265                 270

His Glu Thr Tyr Thr Phe Lys Gln Pro Val Phe Thr Val Ser Lys Asp
        275                 280                 285

Ser Val Leu Ala Gly Thr Asn Lys Glu Asn Leu Gly Leu Pro Val Ser
    290                 295                 300

Thr Pro Phe Leu Glu Pro Pro Leu Gly Ser Asp Gly Pro Ala Val Thr
305                 310                 315                 320

Phe Gly Lys Thr Gln Glu Asp Pro Lys Pro Phe Cys Val Gly Ser Ala
                325                 330                 335

Pro Pro Ser Val Asp Val Thr Pro Thr Tyr Thr Lys Asp Gly Ala Asp
            340                 345                 350

Glu Ala Glu Ser Asn Asp Gly Lys Val Leu Lys Pro Lys Pro Ser Lys
        355                 360                 365

Leu Ala Lys Arg Ile Ala Asn Ser Ala Gly Tyr Val Gly Asp Arg Phe
    370                 375                 380
```

```
Lys Cys Val Thr Thr Glu Leu Tyr Ala Asp Ser Ser Gln Leu Ser Arg
385                 390                 395                 400


Glu Gln Arg Ala Leu Gln Val Ser Pro Pro Thr
                405                 410


<210> 8874
<211> 1711
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8874
Met Ile Ser Thr Ala Pro Leu Tyr Ser Gly Val His Asn Trp Thr Ser
1               5                   10                  15


Ser Asp Arg Ile Arg Met Cys Gly Ile Asn Glu Glu Arg Arg Ala Pro
            20                  25                  30


Leu Ser Asp Glu Glu Ser Thr Thr Gly Asp Cys Gln His Phe Gly Ser
        35                  40                  45


Gln Glu Phe Cys Val Ser Ser Ser Phe Ser Lys Val Glu Leu Thr Ala
    50                  55                  60


Val Gly Ser Gly Ser Asn Ala Arg Gly Ala Asp Pro Asp Gly Ser Ala
65                  70                  75                  80


Thr Glu Lys Leu Gly His Lys Ser Glu Asp Lys Pro Asp Asp Pro Gln
                85                  90                  95
```

```
Pro Lys Met Asp Tyr Ala Gly Asn Val Ala Glu Ala Glu Gly Leu Leu
            100                 105                 110

Val Pro Leu Ser Ser Pro Gly Asp Gly Leu Lys Leu Pro Ala Ser Asp
        115                 120                 125

Ser Ala Glu Ala Ser Asn Ser Arg Ala Asp Cys Ser Trp Thr Pro Leu
    130                 135                 140

Asn Thr Gln Met Ser Lys Gln Val Asp Cys Ser Pro Ala Gly Val Lys
145                 150                 155                 160

Ala Leu Asp Ser Arg Gln Gly Val Gly Glu Lys Asn Thr Phe Ile Leu
                165                 170                 175

Ala Thr Leu Gly Thr Gly Val Pro Val Glu Gly Thr Leu Pro Leu Val
            180                 185                 190

Thr Thr Asn Phe Ser Pro Leu Pro Ala Pro Ile Cys Pro Pro Ala Pro
        195                 200                 205

Gly Ser Ala Ser Val Pro His Ser Val Pro Asp Ala Phe Gln Val Pro
    210                 215                 220

Leu Ser Val Pro Ala Pro Val Pro His Ser Gly Leu Val Pro Val Gln
225                 230                 235                 240

Val Ala Thr Ser Val Pro Ala Pro Ser Pro Pro Leu Ala Pro Val Pro
                245                 250                 255

Ala Leu Ala Pro Ala Pro Pro Ser Val Pro Thr Leu Ile Ser Asp Ser
            260                 265                 270

Asn Pro Leu Ser Val Ser Ala Ser Val Leu Val Pro Val Pro Ala Ser
        275                 280                 285

Ala Pro Pro Ser Gly Pro Val Pro Leu Ser Ala Pro Ala Pro Ala Pro
    290                 295                 300

Leu Ser Val Pro Val Ser Ala Pro Pro Leu Ala Leu Ile Gln Ala Pro
305                 310                 315                 320
```

Val Pro Pro Ser Ala Pro Thr Leu Val Leu Ala Pro Val Pro Thr Pro
325 330 335

Val Leu Ala Pro Met Pro Ala Ser Thr Pro Pro Ala Ala Pro Ala Pro
340 345 350

Pro Ser Val Pro Met Pro Thr Pro Thr Pro Ser Ser Gly Pro Pro Ser
355 360 365

Thr Pro Thr Leu Ile Pro Ala Phe Ala Pro Thr Pro Val Pro Ala Pro
370 375 380

Thr Pro Ala Pro Ile Phe Thr Pro Ala Pro Thr Pro Met Pro Ala Ala
385 390 395 400

Thr Pro Ala Ala Ile Pro Thr Ser Ala Pro Ile Pro Ala Ser Phe Ser
405 410 415

Leu Ser Arg Val Cys Phe Pro Ala Ala Gln Ala Pro Ala Met Gln Lys
420 425 430

Val Pro Leu Ser Phe Gln Pro Gly Thr Val Leu Thr Pro Ser Gln Pro
435 440 445

Leu Val Tyr Ile Pro Pro Pro Ser Cys Gly Gln Pro Leu Ser Val Ala
450 455 460

Thr Leu Pro Thr Thr Leu Gly Val Ser Ser Thr Leu Thr Leu Pro Val
465 470 475 480

Leu Pro Ser Tyr Leu Gln Asp Arg Cys Leu Pro Gly Val Leu Ala Ser
485 490 495

Pro Glu Leu Arg Ser Tyr Pro Tyr Ala Phe Ser Val Ala Arg Pro Leu
500 505 510

Thr Ser Asp Ser Lys Leu Val Ser Leu Glu Val Asn Arg Leu Pro Cys
515 520 525

Thr Ser Pro Ser Gly Ser Thr Thr Thr Gln Pro Ala Pro Asp Gly Val
530 535 540

```
Pro Gly Pro Leu Ala Asp Thr Ser Leu Val Thr Ala Ser Ala Lys Val
545                 550                 555                 560

Leu Pro Thr Pro Gln Pro Leu Leu Pro Ala Pro Ser Gly Ser Ser Ala
                565                 570                 575

Pro Pro His Pro Ala Lys Met Pro Ser Gly Thr Glu Gln Gln Thr Glu
            580                 585                 590

Gly Thr Ser Val Thr Phe Ser Pro Leu Lys Ser Pro Pro Gln Leu Glu
        595                 600                 605

Arg Glu Met Ala Ser Pro Pro Glu Cys Ser Glu Met Pro Leu Asp Leu
    610                 615                 620

Ser Ser Lys Ser Asn Arg Gln Lys Leu Pro Leu Pro Asn Gln Arg Lys
625                 630                 635                 640

Thr Pro Pro Met Pro Val Leu Thr Pro Val His Thr Ser Ser Lys Ala
                645                 650                 655

Leu Leu Ser Thr Val Leu Ser Arg Ser Gln Arg Thr Thr Gln Ala Ala
            660                 665                 670

Gly Gly Asn Val Thr Ser Cys Leu Gly Ser Thr Ser Ser Pro Phe Val
        675                 680                 685

Ile Phe Pro Glu Ile Val Arg Asn Gly Asp Pro Ser Thr Trp Val Lys
    690                 695                 700

Asn Ser Thr Ala Leu Ile Ser Thr Ile Pro Gly Thr Tyr Val Gly Val
705                 710                 715                 720

Ala Asn Pro Val Pro Ala Ser Leu Leu Leu Asn Lys Asp Pro Asn Leu
                725                 730                 735

Gly Leu Asn Arg Asp Pro Arg His Leu Pro Lys Gln Glu Pro Ile Ser
            740                 745                 750

Ile Ile Asp Gln Gly Glu Pro Lys Gly Thr Gly Ala Thr Cys Gly Lys
        755                 760                 765

Lys Gly Ser Gln Ala Gly Ala Glu Gly Gln Pro Ser Thr Val Lys Arg
```

770 775 780

Tyr Thr Pro Ala Arg Ile Ala Pro Gly Leu Pro Gly Cys Gln Thr Lys
785 790 795 800

Glu Leu Ser Leu Trp Lys Pro Thr Gly Pro Ala Asn Ile Tyr Pro Arg
805 810 815

Cys Ser Val Asn Gly Lys Pro Thr Ser Thr Gln Val Leu Pro Val Gly
820 825 830

Trp Ser Pro Tyr His Gln Ala Ser Leu Leu Ser Ile Gly Ile Ser Ser
835 840 845

Ala Gly Gln Leu Thr Pro Ser Gln Gly Ala Pro Ile Arg Pro Thr Ser
850 855 860

Val Val Ser Glu Phe Ser Gly Val Pro Ser Leu Ser Ser Ser Glu Ala
865 870 875 880

Val His Gly Leu Pro Glu Gly Gln Pro Arg Pro Gly Gly Ser Phe Val
885 890 895

Pro Glu Gln Asp Pro Val Thr Lys Asn Lys Thr Cys Arg Ile Ala Ala
900 905 910

Lys Pro Tyr Glu Glu Gln Val Asn Pro Val Leu Leu Thr Leu Ser Pro
915 920 925

Gln Thr Gly Thr Leu Ala Leu Ser Val Gln Pro Ser Gly Gly Asp Ile
930 935 940

Arg Met Asn Gln Gly Pro Glu Glu Ser Glu Ser His Leu Cys Ser Asp
945 950 955 960

Ser Thr Pro Lys Met Glu Gly Pro Gln Gly Ala Cys Gly Leu Lys Leu
965 970 975

Ala Gly Asp Thr Lys Pro Lys Asn Gln Val Leu Ala Thr Tyr Met Ser
980 985 990

His Glu Leu Val Leu Ala Thr Pro Gln Asn Leu Pro Lys Met Pro
Glu

995 1000 1005

Leu Pro Leu Leu Pro His Asp Ser His Pro Lys Glu Leu Ile Leu
1010 1015 1020

Asp Val Val Pro Ser Ser Arg Arg Gly Ser Ser Thr Glu Arg Pro
1025 1030 1035

Gln Leu Gly Ser Gln Val Asp Leu Gly Arg Val Lys Met Glu Lys
1040 1045 1050

Val Asp Gly Asp Val Val Phe Asn Leu Ala Thr Cys Phe Arg Ala
1055 1060 1065

Asp Gly Leu Pro Val Ala Pro Gln Arg Gly Gln Ala Glu Val Arg
1070 1075 1080

Ala Lys Ala Gly Gln Ala Arg Val Lys Gln Glu Ser Val Gly Val
1085 1090 1095

Phe Ala Cys Lys Asn Lys Trp Gln Pro Asp Asp Val Thr Glu Ser
1100 1105 1110

Leu Pro Pro Lys Lys Met Lys Cys Gly Lys Glu Lys Asp Ser Glu
1115 1120 1125

Glu Gln Gln Leu Gln Pro Gln Ala Lys Ala Val Val Arg Ser Ser
1130 1135 1140

His Arg Pro Lys Cys Arg Lys Leu Pro Ser Asp Pro Gln Glu Ser
1145 1150 1155

Thr Lys Lys Ser Pro Arg Gly Ala Ser Asp Ser Gly Lys Glu His
1160 1165 1170

Asn Gly Val Arg Gly Lys His Lys His Arg Lys Pro Thr Lys Pro
1175 1180 1185

Glu Ser Gln Ser Pro Gly Lys Arg Ala Asp Ser His Glu Glu Gly
1190 1195 1200

Ser Leu Glu Lys Lys Ala Lys Ser Ser Phe Arg Asp Phe Ile Pro
1205 1210 1215

```
Val Val  Leu Ser Thr Arg Thr  Arg Ser Gln Ser Gly  Ser Ile Cys
    1220                1225                1230

Ser Ser  Phe Ala Gly Met Ala  Asp Ser Asp Met Gly  Ser Gln Glu
    1235                1240                1245

Val Phe  Pro Thr Glu Glu Glu  Glu Glu Val Thr Pro  Thr Pro Ala
    1250                1255                1260

Lys Arg  Arg Lys Val Arg Lys  Thr Gln Arg Asp Thr  Gln Tyr Arg
    1265                1270                1275

Ser His  His Ala Gln Asp Lys  Ser Leu Leu Ser Gln  Gly Arg Arg
    1280                1285                1290

His Leu  Trp Arg Ala Arg Glu  Met Pro Trp Arg Thr  Glu Ala Ala
    1295                1300                1305

Arg Gln  Met Trp Asp Thr Asn  Glu Glu Glu Glu Glu  Glu Glu Glu
    1310                1315                1320

Glu Gly  Leu Leu Lys Arg Lys  Lys Arg Arg Arg Gln  Lys Ser Arg
    1325                1330                1335

Lys Tyr  Gln Thr Gly Glu Tyr  Leu Thr Glu Gln Glu  Asp Glu Gln
    1340                1345                1350

Arg Arg  Lys Gly Arg Ala Asp  Leu Lys Ala Arg Lys  Gln Lys Thr
    1355                1360                1365

Ser Ser  Ser Gln Ser Leu Glu  His Arg Leu Arg Asn  Arg Asn Leu
    1370                1375                1380

Leu Leu  Pro Asn Lys Val Gln  Gly Ile Ser Asp Ser  Pro Asn Gly
    1385                1390                1395

Phe Leu  Pro Asn Asn Leu Glu  Glu Pro Ala Cys Leu  Glu Asn Ser
    1400                1405                1410

Glu Lys  Pro Ser Gly Lys Arg  Lys Cys Lys Thr Lys  His Met Ala
    1415                1420                1425
```

```
Thr Val  Ser Glu Glu Ala Lys  Asp Val Val Leu Tyr  Cys Leu Gln
    1430                1435                1440

Lys Asp  Ser Glu Asp Val Asn  His Arg Asp Asn Ala  Gly Tyr Thr
    1445                1450                1455

Ala Leu  His Glu Ala Cys Ser  Arg Gly Trp Thr Asp  Ile Leu Asn
    1460                1465                1470

Ile Leu  Leu Glu His Gly Ala  Asn Val Asn Cys Ser  Ala Gln Asp
    1475                1480                1485

Gly Thr  Arg Pro Val His Asp  Ala Val Val Asn Asp  Asn Leu Glu
    1490                1495                1500

Thr Ile  Trp Leu Leu Leu Ser  Tyr Gly Ala Asp Pro  Thr Leu Ala
    1505                1510                1515

Thr Tyr  Ser Gly Gln Thr Ala  Met Lys Leu Ala Ser  Ser Asp Thr
    1520                1525                1530

Met Lys  Arg Phe Leu Ser Asp  His Leu Ser Asp Leu  Gln Gly Arg
    1535                1540                1545

Ala Glu  Gly Asp Pro Gly Val  Ser Trp Asp Phe Tyr  Ser Ser Ser
    1550                1555                1560

Val Leu  Glu Glu Lys Asp Gly  Phe Ala Cys Asp Leu  Leu His Asn
    1565                1570                1575

Pro Pro  Gly Ser Ser Asp Gln  Glu Gly Asp Asp Pro  Met Glu Glu
    1580                1585                1590

Asp Asp  Phe Met Phe Glu Leu  Ser Asp Lys Pro Leu  Leu Pro Cys
    1595                1600                1605

Tyr Asn  Leu Gln Val Ser Val  Ser Arg Gly Pro Cys  Asn Trp Phe
    1610                1615                1620

Leu Phe  Ser Asp Val Leu Lys  Arg Leu Lys Leu Ser  Ser Arg Ile
    1625                1630                1635
```

```
Phe Gln  Ala Arg Phe Pro His  Phe Glu Ile Thr Thr  Met Pro Lys
    1640                1645                1650


Ala Glu  Phe Tyr Arg Gln Val  Ala Ser Ser Gln Leu  Leu Thr Pro
    1655                1660                1665


Ala Glu  Arg Pro Gly Gly Leu  Asp Asp Arg Ser Pro  Pro Gly Ser
    1670                1675                1680


Ser Glu  Thr Val Glu Leu Val  Arg Tyr Glu Pro Asp  Leu Leu Arg
    1685                1690                1695


Leu Leu  Gly Ser Glu Val Glu  Phe Gln Ser Cys Asn  Ser
    1700                1705                1710


<210> 8875
<211> 1385
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8875
Thr Pro Ala Ala Ile Pro Thr Ser Ala Pro Ile Pro Ala Ser Phe Ser
1               5                  10                  15


Leu Ser Arg Val Cys Phe Pro Ala Ala Gln Ala Pro Ala Met Gln Lys
            20                  25                  30


Val Pro Leu Ser Phe Gln Pro Gly Thr Val Leu Thr Pro Ser Gln Pro
        35                  40                  45


Leu Val Tyr Ile Pro Pro Pro Ser Cys Gly Gln Pro Leu Ser Val Ala
    50                  55                  60
```

```
Thr Leu Pro Thr Thr Leu Gly Val Ser Ser Thr Leu Thr Leu Pro Val
65                  70                  75                  80

Leu Pro Ser Tyr Leu Gln Asp Arg Cys Leu Pro Gly Val Leu Ala Ser
                85                  90                  95

Pro Glu Leu Arg Ser Tyr Pro Tyr Ala Phe Ser Val Ala Arg Pro Leu
            100                 105                 110

Thr Ser Asp Ser Lys Leu Val Ser Leu Glu Val Asn Arg Leu Pro Cys
        115                 120                 125

Thr Ser Pro Ser Gly Ser Thr Thr Thr Gln Pro Ala Pro Asp Gly Val
    130                 135                 140

Pro Gly Pro Leu Ala Asp Thr Ser Leu Val Thr Ala Ser Ala Lys Val
145                 150                 155                 160

Leu Pro Thr Pro Gln Pro Leu Leu Pro Ala Pro Ser Gly Ser Ser Ala
                165                 170                 175

Pro Pro His Pro Ala Lys Met Pro Ser Gly Thr Glu Gln Gln Thr Glu
            180                 185                 190

Gly Thr Ser Val Thr Phe Ser Pro Leu Lys Ser Pro Pro Gln Leu Glu
        195                 200                 205

Arg Glu Met Ala Ser Pro Pro Glu Cys Ser Glu Met Pro Leu Asp Leu
    210                 215                 220

Ser Ser Lys Ser Asn Arg Gln Lys Leu Pro Leu Pro Asn Gln Arg Lys
225                 230                 235                 240

Thr Pro Pro Met Pro Val Leu Thr Pro Val His Thr Ser Ser Lys Ala
                245                 250                 255

Leu Leu Ser Thr Val Leu Ser Arg Ser Gln Arg Thr Thr Gln Ala Ala
            260                 265                 270

Gly Gly Asn Val Thr Ser Cys Leu Gly Ser Thr Ser Ser Pro Phe Val
        275                 280                 285
```

```
Ile Phe Pro Glu Ile Val Arg Asn Gly Asp Pro Ser Thr Trp Val Lys
    290                 295                 300

Asn Ser Thr Ala Leu Ile Ser Thr Ile Pro Gly Thr Tyr Val Gly Val
305                 310                 315                 320

Ala Asn Pro Val Pro Ala Ser Leu Leu Leu Asn Lys Asp Pro Asn Leu
                325                 330                 335

Gly Leu Asn Arg Asp Pro Arg His Leu Pro Lys Gln Glu Pro Ile Ser
            340                 345                 350

Ile Ile Asp Gln Gly Glu Pro Lys Gly Thr Gly Ala Thr Cys Gly Lys
        355                 360                 365

Lys Gly Ser Gln Ala Gly Ala Glu Gly Gln Pro Ser Thr Val Lys Arg
    370                 375                 380

Tyr Thr Pro Ala Arg Ile Ala Pro Gly Leu Pro Gly Cys Gln Thr Lys
385                 390                 395                 400

Glu Leu Ser Leu Trp Lys Pro Thr Gly Pro Ala Asn Ile Tyr Pro Arg
                405                 410                 415

Cys Ser Val Asn Gly Lys Pro Thr Ser Thr Gln Val Leu Pro Val Gly
            420                 425                 430

Trp Ser Pro Tyr His Gln Ala Ser Leu Leu Ser Ile Gly Ile Ser Ser
        435                 440                 445

Ala Gly Gln Leu Thr Pro Ser Gln Gly Ala Pro Ile Arg Pro Thr Ser
    450                 455                 460

Val Val Ser Glu Phe Ser Gly Val Pro Ser Leu Ser Ser Ser Glu Ala
465                 470                 475                 480

Val His Gly Leu Pro Glu Gly Gln Pro Arg Pro Gly Gly Ser Phe Val
                485                 490                 495

Pro Glu Gln Asp Pro Val Thr Lys Asn Lys Thr Cys Arg Ile Ala Ala
            500                 505                 510
```

```
Lys Pro Tyr Glu Glu Gln Val Asn Pro Val Leu Leu Thr Leu Ser Pro
        515                 520                 525

Gln Thr Gly Thr Leu Ala Leu Ser Val Gln Pro Ser Gly Gly Asp Ile
    530                 535                 540

Arg Met Asn Gln Gly Pro Glu Glu Ser Glu Ser His Leu Cys Ser Asp
545                 550                 555                 560

Ser Thr Pro Lys Met Glu Gly Pro Gln Gly Ala Cys Gly Leu Lys Leu
                565                 570                 575

Ala Gly Asp Thr Lys Pro Lys Asn Gln Val Leu Ala Thr Tyr Met Ser
            580                 585                 590

His Glu Leu Val Leu Ala Thr Pro Gln Asn Leu Pro Lys Met Pro Glu
        595                 600                 605

Leu Pro Leu Leu Pro His Asp Ser His Pro Lys Glu Leu Ile Leu Asp
    610                 615                 620

Val Val Pro Ser Ser Arg Arg Gly Ser Ser Thr Glu Arg Pro Gln Leu
625                 630                 635                 640

Gly Ser Gln Val Asp Leu Gly Arg Val Lys Met Glu Lys Val Asp Gly
                645                 650                 655

Asp Val Val Phe Asn Leu Ala Thr Cys Phe Arg Ala Asp Gly Leu Pro
            660                 665                 670

Val Ala Pro Gln Arg Gly Gln Ala Glu Val Arg Ala Lys Ala Gly Gln
        675                 680                 685

Ala Arg Val Lys Gln Glu Ser Val Gly Val Phe Ala Cys Lys Asn Lys
    690                 695                 700

Trp Gln Pro Asp Asp Val Thr Glu Ser Leu Pro Pro Lys Lys Met Lys
705                 710                 715                 720

Cys Gly Lys Glu Lys Asp Ser Glu Glu Gln Gln Leu Gln Pro Gln Ala
                725                 730                 735

Lys Ala Val Val Arg Ser Ser His Arg Pro Lys Cys Arg Lys Leu Pro
```

740 745 750

Ser Asp Pro Gln Glu Ser Thr Lys Lys Ser Pro Arg Gly Ala Ser Asp
755 760 765

Ser Gly Lys Glu His Asn Gly Val Arg Gly Lys His Lys His Arg Lys
770 775 780

Pro Thr Lys Pro Glu Ser Gln Ser Pro Gly Lys Arg Ala Asp Ser His
785 790 795 800

Glu Glu Gly Ser Leu Glu Lys Lys Ala Lys Ser Ser Phe Arg Asp Phe
805 810 815

Ile Pro Val Val Leu Ser Thr Arg Thr Arg Ser Gln Ser Gly Ser Ile
820 825 830

Cys Ser Ser Phe Ala Gly Met Ala Asp Ser Asp Met Gly Ser Gln Glu
835 840 845

Val Phe Pro Thr Glu Glu Glu Glu Glu Val Thr Pro Thr Pro Ala Lys
850 855 860

Arg Arg Lys Val Arg Lys Thr Gln Arg Asp Thr Gln Tyr Arg Ser His
865 870 875 880

His Ala Gln Asp Lys Ser Leu Leu Ser Gln Gly Arg Arg His Leu Trp
885 890 895

Arg Ala Arg Glu Met Pro Trp Arg Thr Glu Ala Ala Arg Gln Met Trp
900 905 910

Asp Thr Asn Glu Glu Glu Glu Glu Glu Glu Glu Glu Gly Leu Leu Lys
915 920 925

Arg Lys Lys Arg Arg Arg Gln Lys Ser Arg Lys Tyr Gln Thr Gly Glu
930 935 940

Tyr Leu Thr Glu Gln Glu Asp Glu Gln Arg Arg Lys Gly Arg Ala Asp
945 950 955 960

Leu Lys Ala Arg Lys Gln Lys Thr Ser Ser Ser Gln Ser Leu Glu His
965 970 975

```
Arg Leu Arg Asn Arg Asn Leu Leu Leu Pro Asn Lys Val Gln Gly Ile
            980                 985                 990

Ser Asp Ser Pro Asn Gly Phe Leu  Pro Asn Asn Leu Glu  Glu Pro
Ala
        995                 1000                1005

Cys Leu  Glu Asn Ser Glu Lys  Pro Ser Gly Lys Arg  Lys Cys Lys
    1010                1015                1020

Thr Lys  His Met Ala Thr Val  Ser Glu Glu Ala Lys  Gly Lys Gly
    1025                1030                1035

Arg Trp  Ser Gln Gln Lys Thr  Arg Ser Pro Lys Ser  Pro Thr Pro
    1040                1045                1050

Val Lys  Pro Thr Glu Pro Cys  Thr Pro Ser Lys Ser  Arg Ser Ala
    1055                1060                1065

Ser Ser  Glu Glu Ala Ser Glu  Ser Pro Thr Ala Arg  Gln Ile Pro
    1070                1075                1080

Pro Glu  Ala Arg Arg Leu Ile  Val Asn Lys Asn Ala  Gly Glu Thr
    1085                1090                1095

Leu Leu  Gln Arg Ala Ala Arg  Leu Gly Tyr Lys Asp  Val Val Leu
    1100                1105                1110

Tyr Cys  Leu Gln Lys Asp Ser  Glu Asp Val Asn His  Arg Asp Asn
    1115                1120                1125

Ala Gly  Tyr Thr Ala Leu His  Glu Ala Cys Ser Arg  Gly Trp Thr
    1130                1135                1140

Asp Ile  Leu Asn Ile Leu Leu  Glu His Gly Ala Asn  Val Asn Cys
    1145                1150                1155

Ser Ala  Gln Asp Gly Thr Arg  Pro Val His Asp Ala  Val Val Asn
    1160                1165                1170

Asp Asn  Leu Glu Thr Ile Trp  Leu Leu Leu Ser Tyr  Gly Ala Asp
    1175                1180                1185
```

```
Pro Thr  Leu Ala Thr Tyr Ser  Gly Gln Thr Ala Met  Lys Leu Ala
    1190                1195                1200

Ser Ser  Asp Thr Met Lys Arg  Phe Leu Ser Asp His  Leu Ser Asp
    1205                1210                1215

Leu Gln  Gly Arg Ala Glu Gly  Asp Pro Gly Val Ser  Trp Asp Phe
    1220                1225                1230

Tyr Ser  Ser Ser Val Leu Glu  Glu Lys Asp Gly Phe  Ala Cys Asp
    1235                1240                1245

Leu Leu  His Asn Pro Pro Gly  Ser Ser Asp Gln Glu  Gly Asp Asp
    1250                1255                1260

Pro Met  Glu Glu Asp Asp Phe  Met Phe Glu Leu Ser  Asp Lys Pro
    1265                1270                1275

Leu Leu  Pro Cys Tyr Asn Leu  Gln Val Ser Val Ser  Arg Gly Pro
    1280                1285                1290

Cys Asn  Trp Phe Leu Phe Ser  Asp Val Leu Lys Arg  Leu Lys Leu
    1295                1300                1305

Ser Ser  Arg Ile Phe Gln Ala  Arg Phe Pro His Phe  Glu Ile Thr
    1310                1315                1320

Thr Met  Pro Lys Ala Glu Phe  Tyr Arg Gln Val Ala  Ser Ser Gln
    1325                1330                1335

Leu Leu  Thr Pro Ala Glu Arg  Pro Gly Gly Leu Asp  Asp Arg Ser
    1340                1345                1350

Pro Pro  Gly Ser Ser Glu Thr  Val Glu Leu Val Arg  Tyr Glu Pro
    1355                1360                1365

Asp Leu  Leu Arg Leu Leu Gly  Ser Glu Val Glu Phe  Gln Ser Cys
    1370                1375                1380

Asn Ser
    1385
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<210> 8876
<211> 741
<212> PRT
<213> Homo sapiens

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BCL6 corepressor-like 1; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8876
Xaa Pro Leu Leu Pro Ala Pro Ser Gly Ser Ser Ala Pro Pro His Pro
1 5 10 15

Ala Lys Met Pro Ser Gly Thr Glu Gln Gln Thr Glu Gly Thr Ser Val
20 25 30

Thr Phe Ser Pro Leu Lys Ser Pro Pro Gln Leu Glu Arg Glu Met Ala
35 40 45

Ser Pro Pro Glu Cys Ser Glu Met Pro Leu Asp Leu Ser Ser Lys Ser
50 55 60

Asn Arg Gln Lys Leu Pro Leu Pro Asn Gln Arg Lys Thr Pro Pro Met
65 70 75 80

Pro Val Leu Thr Pro Val His Thr Ser Ser Lys Ala Leu Leu Ser Thr
85 90 95

Val Leu Ser Arg Ser Gln Arg Thr Thr Gln Ala Ala Gly Gly Asn Val
100 105 110

```
Thr Ser Cys Leu Gly Ser Thr Ser Ser Pro Phe Val Ile Phe Pro Glu
        115                 120                 125

Ile Val Arg Asn Gly Asp Pro Ser Thr Trp Val Lys Asn Ser Thr Ala
    130                 135                 140

Leu Ile Ser Thr Ile Pro Gly Thr Tyr Val Gly Val Ala Asn Pro Val
145                 150                 155                 160

Pro Ala Ser Leu Leu Leu Asn Lys Asp Pro Asn Leu Gly Leu Asn Arg
                165                 170                 175

Asp Pro Arg His Leu Pro Lys Gln Glu Pro Ile Ser Ile Ile Asp Gln
            180                 185                 190

Gly Glu Pro Lys Gly Thr Gly Ala Thr Cys Gly Lys Lys Gly Ser Gln
        195                 200                 205

Ala Gly Ala Glu Gly Gln Pro Ser Thr Val Lys Arg Tyr Thr Pro Ala
    210                 215                 220

Arg Ile Ala Pro Gly Leu Pro Gly Cys Gln Thr Lys Glu Leu Ser Leu
225                 230                 235                 240

Trp Lys Pro Thr Gly Pro Ala Asn Ile Tyr Pro Arg Cys Ser Val Asn
                245                 250                 255

Gly Lys Pro Thr Ser Thr Gln Val Leu Pro Val Gly Trp Ser Pro Tyr
            260                 265                 270

His Gln Ala Ser Leu Leu Ser Ile Gly Ile Ser Ser Ala Gly Gln Leu
        275                 280                 285

Thr Pro Ser Gln Gly Ala Pro Ile Arg Pro Thr Ser Val Val Ser Glu
    290                 295                 300

Phe Ser Gly Val Pro Ser Leu Ser Ser Ser Glu Ala Val His Gly Leu
305                 310                 315                 320

Pro Glu Gly Gln Pro Arg Pro Gly Gly Ser Phe Val Pro Glu Gln Asp
                325                 330                 335
```

```
Pro Val Thr Lys Asn Lys Thr Cys Arg Ile Ala Ala Lys Pro Tyr Glu
            340                 345                 350

Glu Gln Val Asn Pro Val Leu Leu Thr Leu Ser Pro Gln Thr Gly Thr
        355                 360                 365

Leu Ala Leu Ser Val Gln Pro Ser Gly Gly Asp Ile Arg Met Asn Gln
    370                 375                 380

Gly Pro Glu Glu Ser Glu Ser His Leu Cys Ser Asp Ser Thr Pro Lys
385                 390                 395                 400

Met Glu Gly Pro Gln Gly Ala Cys Gly Leu Lys Leu Ala Gly Asp Thr
                405                 410                 415

Lys Pro Lys Asn Gln Val Leu Ala Thr Tyr Met Ser His Glu Leu Val
            420                 425                 430

Leu Ala Thr Pro Gln Asn Leu Pro Lys Met Pro Glu Leu Pro Leu Leu
        435                 440                 445

Pro His Asp Ser His Pro Lys Glu Leu Ile Leu Asp Val Val Pro Ser
    450                 455                 460

Ser Arg Arg Gly Ser Ser Thr Glu Arg Pro Gln Leu Gly Ser Gln Val
465                 470                 475                 480

Asp Leu Gly Arg Val Lys Met Glu Lys Val Asp Gly Asp Val Val Phe
                485                 490                 495

Asn Leu Ala Thr Cys Phe Arg Ala Asp Gly Leu Pro Val Ala Pro Gln
            500                 505                 510

Arg Gly Gln Ala Glu Val Arg Ala Lys Ala Gly Gln Ala Arg Val Lys
        515                 520                 525

Gln Glu Ser Val Gly Val Phe Ala Cys Lys Asn Lys Trp Gln Pro Asp
    530                 535                 540

Asp Val Thr Glu Ser Leu Pro Pro Lys Lys Met Lys Cys Gly Lys Glu
545                 550                 555                 560

Lys Asp Ser Glu Glu Gln Gln Leu Gln Pro Gln Ala Lys Ala Val Val
```

565 570 575

Arg Ser Ser His Arg Pro Lys Cys Arg Lys Leu Pro Ser Asp Pro Gln
580 585 590

Glu Ser Thr Lys Lys Ser Pro Arg Gly Ala Ser Asp Ser Gly Lys Glu
595 600 605

His Asn Gly Val Arg Gly Lys His Lys His Arg Lys Pro Thr Lys Pro
610 615 620

Glu Ser Gln Ser Pro Gly Lys Arg Ala Asp Ser His Glu Glu Gly Ser
625 630 635 640

Leu Glu Lys Lys Ala Lys Ser Ser Phe Arg Asp Phe Ile Pro Val Val
645 650 655

Leu Ser Thr Arg Thr Arg Ser Gln Ser Asp Leu Lys Ala Arg Lys Gln
660 665 670

Lys Thr Ser Ser Ser Gln Ser Leu Glu His Arg Leu Arg Asn Arg Asn
675 680 685

Leu Leu Leu Pro Asn Lys Val Gln Gly Ile Ser Asp Ser Pro Asn Gly
690 695 700

Phe Leu Pro Asn Asn Leu Glu Glu Pro Ala Cys Leu Glu Asn Ser Glu
705 710 715 720

Lys Pro Ser Gly Lys Arg Lys Cys Lys Thr Lys His Met Ala Thr Val
725 730 735

Ser Glu Glu Ala Lys
740

<210> 8877
<211> 1711
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1799; "

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<223> /note="Gene Name:
BCL6 corepressor-like 1; "

<220>
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<223> /note="Uniprot ID: Q5H9F3; "

<220>
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<223> /note="ENSP ID: ENSP00000437775"

<400> 8877

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Met Ile Ser Thr Ala Pro Leu Tyr Ser Gly Val His Asn Trp Thr Ser
1               5                  10                  15

Ser Asp Arg Ile Arg Met Cys Gly Ile Asn Glu Glu Arg Arg Ala Pro
            20                  25                  30

Leu Ser Asp Glu Glu Ser Thr Thr Gly Asp Cys Gln His Phe Gly Ser
        35                  40                  45

Gln Glu Phe Cys Val Ser Ser Ser Phe Ser Lys Val Glu Leu Thr Ala
    50                  55                  60

Val Gly Ser Gly Ser Asn Ala Arg Gly Ala Asp Pro Asp Gly Ser Ala
65                  70                  75                  80

Thr Glu Lys Leu Gly His Lys Ser Glu Asp Lys Pro Asp Asp Pro Gln
                85                  90                  95

Pro Lys Met Asp Tyr Ala Gly Asn Val Ala Glu Ala Glu Gly Leu Leu
            100                 105                 110

Val Pro Leu Ser Ser Pro Gly Asp Gly Leu Lys Leu Pro Ala Ser Asp
        115                 120                 125

Ser Ala Glu Ala Ser Asn Ser Arg Ala Asp Cys Ser Trp Thr Pro Leu
    130                 135                 140

Asn Thr Gln Met Ser Lys Gln Val Asp Cys Ser Pro Ala Gly Val Lys
145                 150                 155                 160
```

```
Ala Leu Asp Ser Arg Gln Gly Val Gly Glu Lys Asn Thr Phe Ile Leu
                165                 170                 175

Ala Thr Leu Gly Thr Gly Val Pro Val Glu Gly Thr Leu Pro Leu Val
            180                 185                 190

Thr Thr Asn Phe Ser Pro Leu Pro Ala Pro Ile Cys Pro Pro Ala Pro
        195                 200                 205

Gly Ser Ala Ser Val Pro His Ser Val Pro Asp Ala Phe Gln Val Pro
    210                 215                 220

Leu Ser Val Pro Ala Pro Val Pro His Ser Gly Leu Val Pro Val Gln
225                 230                 235                 240

Val Ala Thr Ser Val Pro Ala Pro Ser Pro Pro Leu Ala Pro Val Pro
                245                 250                 255

Ala Leu Ala Pro Ala Pro Pro Ser Val Pro Thr Leu Ile Ser Asp Ser
            260                 265                 270

Asn Pro Leu Ser Val Ser Ala Ser Val Leu Val Pro Val Pro Ala Ser
        275                 280                 285

Ala Pro Pro Ser Gly Pro Val Pro Leu Ser Ala Pro Ala Pro Ala Pro
    290                 295                 300

Leu Ser Val Pro Val Ser Ala Pro Pro Leu Ala Leu Ile Gln Ala Pro
305                 310                 315                 320

Val Pro Pro Ser Ala Pro Thr Leu Val Leu Ala Pro Val Pro Thr Pro
                325                 330                 335

Val Leu Ala Pro Met Pro Ala Ser Thr Pro Pro Ala Ala Pro Ala Pro
            340                 345                 350

Pro Ser Val Pro Met Pro Thr Pro Thr Pro Ser Ser Gly Pro Pro Ser
        355                 360                 365

Thr Pro Thr Leu Ile Pro Ala Phe Ala Pro Thr Pro Val Pro Ala Pro
    370                 375                 380

Thr Pro Ala Pro Ile Phe Thr Pro Ala Pro Thr Pro Met Pro Ala Ala
```

385 390 395 400

Thr Pro Ala Ala Ile Pro Thr Ser Ala Pro Ile Pro Ala Ser Phe Ser
405 410 415

Leu Ser Arg Val Cys Phe Pro Ala Ala Gln Ala Pro Ala Met Gln Lys
420 425 430

Val Pro Leu Ser Phe Gln Pro Gly Thr Val Leu Thr Pro Ser Gln Pro
435 440 445

Leu Val Tyr Ile Pro Pro Pro Ser Cys Gly Gln Pro Leu Ser Val Ala
450 455 460

Thr Leu Pro Thr Thr Leu Gly Val Ser Ser Thr Leu Thr Leu Pro Val
465 470 475 480

Leu Pro Ser Tyr Leu Gln Asp Arg Cys Leu Pro Gly Val Leu Ala Ser
485 490 495

Pro Glu Leu Arg Ser Tyr Pro Tyr Ala Phe Ser Val Ala Arg Pro Leu
500 505 510

Thr Ser Asp Ser Lys Leu Val Ser Leu Glu Val Asn Arg Leu Pro Cys
515 520 525

Thr Ser Pro Ser Gly Ser Thr Thr Thr Gln Pro Ala Pro Asp Gly Val
530 535 540

Pro Gly Pro Leu Ala Asp Thr Ser Leu Val Thr Ala Ser Ala Lys Val
545 550 555 560

Leu Pro Thr Pro Gln Pro Leu Leu Pro Ala Pro Ser Gly Ser Ser Ala
565 570 575

Pro Pro His Pro Ala Lys Met Pro Ser Gly Thr Glu Gln Gln Thr Glu
580 585 590

Gly Thr Ser Val Thr Phe Ser Pro Leu Lys Ser Pro Pro Gln Leu Glu
595 600 605

Arg Glu Met Ala Ser Pro Pro Glu Cys Ser Glu Met Pro Leu Asp Leu
610 615 620

Ser Ser Lys Ser Asn Arg Gln Lys Leu Pro Leu Pro Asn Gln Arg Lys
625 630 635 640

Thr Pro Pro Met Pro Val Leu Thr Pro Val His Thr Ser Ser Lys Ala
645 650 655

Leu Leu Ser Thr Val Leu Ser Arg Ser Gln Arg Thr Thr Gln Ala Ala
660 665 670

Gly Gly Asn Val Thr Ser Cys Leu Gly Ser Thr Ser Ser Pro Phe Val
675 680 685

Ile Phe Pro Glu Ile Val Arg Asn Gly Asp Pro Ser Thr Trp Val Lys
690 695 700

Asn Ser Thr Ala Leu Ile Ser Thr Ile Pro Gly Thr Tyr Val Gly Val
705 710 715 720

Ala Asn Pro Val Pro Ala Ser Leu Leu Leu Asn Lys Asp Pro Asn Leu
725 730 735

Gly Leu Asn Arg Asp Pro Arg His Leu Pro Lys Gln Glu Pro Ile Ser
740 745 750

Ile Ile Asp Gln Gly Glu Pro Lys Gly Thr Gly Ala Thr Cys Gly Lys
755 760 765

Lys Gly Ser Gln Ala Gly Ala Glu Gly Gln Pro Ser Thr Val Lys Arg
770 775 780

Tyr Thr Pro Ala Arg Ile Ala Pro Gly Leu Pro Gly Cys Gln Thr Lys
785 790 795 800

Glu Leu Ser Leu Trp Lys Pro Thr Gly Pro Ala Asn Ile Tyr Pro Arg
805 810 815

Cys Ser Val Asn Gly Lys Pro Thr Ser Thr Gln Val Leu Pro Val Gly
820 825 830

Trp Ser Pro Tyr His Gln Ala Ser Leu Leu Ser Ile Gly Ile Ser Ser
835 840 845

```
Ala Gly Gln Leu Thr Pro Ser Gln Gly Ala Pro Ile Arg Pro Thr Ser
    850                 855                 860

Val Val Ser Glu Phe Ser Gly Val Pro Ser Leu Ser Ser Ser Glu Ala
865                 870                 875                 880

Val His Gly Leu Pro Glu Gly Gln Pro Arg Pro Gly Gly Ser Phe Val
                885                 890                 895

Pro Glu Gln Asp Pro Val Thr Lys Asn Lys Thr Cys Arg Ile Ala Ala
            900                 905                 910

Lys Pro Tyr Glu Glu Gln Val Asn Pro Val Leu Leu Thr Leu Ser Pro
        915                 920                 925

Gln Thr Gly Thr Leu Ala Leu Ser Val Gln Pro Ser Gly Gly Asp Ile
    930                 935                 940

Arg Met Asn Gln Gly Pro Glu Glu Ser Glu Ser His Leu Cys Ser Asp
945                 950                 955                 960

Ser Thr Pro Lys Met Glu Gly Pro Gln Gly Ala Cys Gly Leu Lys Leu
                965                 970                 975

Ala Gly Asp Thr Lys Pro Lys Asn Gln Val Leu Ala Thr Tyr Met Ser
            980                 985                 990

His Glu Leu Val Leu Ala Thr Pro  Gln Asn Leu Pro Lys  Met Pro
Glu
        995                 1000                1005

Leu Pro  Leu Leu Pro His Asp  Ser His Pro Lys Glu  Leu Ile Leu
    1010                1015                1020

Asp Val  Val Pro Ser Ser Arg  Arg Gly Ser Ser Thr  Glu Arg Pro
    1025                1030                1035

Gln Leu  Gly Ser Gln Val Asp  Leu Gly Arg Val Lys  Met Glu Lys
    1040                1045                1050

Val Asp  Gly Asp Val Val Phe  Asn Leu Ala Thr Cys  Phe Arg Ala
    1055                1060                1065
```

```
Asp Gly  Leu Pro Val Ala Pro  Gln Arg Gly Gln Ala  Glu Val Arg
    1070                1075                1080

Ala Lys  Ala Gly Gln Ala Arg  Val Lys Gln Glu Ser  Val Gly Val
    1085                1090                1095

Phe Ala  Cys Lys Asn Lys Trp  Gln Pro Asp Asp Val  Thr Glu Ser
    1100                1105                1110

Leu Pro  Pro Lys Lys Met Lys  Cys Gly Lys Glu Lys  Asp Ser Glu
    1115                1120                1125

Glu Gln  Gln Leu Gln Pro Gln  Ala Lys Ala Val Val  Arg Ser Ser
    1130                1135                1140

His Arg  Pro Lys Cys Arg Lys  Leu Pro Ser Asp Pro  Gln Glu Ser
    1145                1150                1155

Thr Lys  Lys Ser Pro Arg Gly  Ala Ser Asp Ser Gly  Lys Glu His
    1160                1165                1170

Asn Gly  Val Arg Gly Lys His  Lys His Arg Lys Pro  Thr Lys Pro
    1175                1180                1185

Glu Ser  Gln Ser Pro Gly Lys  Arg Ala Asp Ser His  Glu Glu Gly
    1190                1195                1200

Ser Leu  Glu Lys Lys Ala Lys  Ser Ser Phe Arg Asp  Phe Ile Pro
    1205                1210                1215

Val Val  Leu Ser Thr Arg Thr  Arg Ser Gln Ser Gly  Ser Ile Cys
    1220                1225                1230

Ser Ser  Phe Ala Gly Met Ala  Asp Ser Asp Met Gly  Ser Gln Glu
    1235                1240                1245

Val Phe  Pro Thr Glu Glu Glu  Glu Glu Val Thr Pro  Thr Pro Ala
    1250                1255                1260

Lys Arg  Arg Lys Val Arg Lys  Thr Gln Arg Asp Thr  Gln Tyr Arg
    1265                1270                1275
```

```
Ser His  His Ala Gln Asp Lys  Ser Leu Leu Ser Gln  Gly Arg Arg
    1280                1285                1290

His Leu  Trp Arg Ala Arg Glu  Met Pro Trp Arg Thr  Glu Ala Ala
    1295                1300                1305

Arg Gln  Met Trp Asp Thr Asn  Glu Glu Glu Glu Glu  Glu Glu Glu
    1310                1315                1320

Glu Gly  Leu Leu Lys Arg Lys  Lys Arg Arg Arg Gln  Lys Ser Arg
    1325                1330                1335

Lys Tyr  Gln Thr Gly Glu Tyr  Leu Thr Glu Gln Glu  Asp Glu Gln
    1340                1345                1350

Arg Arg  Lys Gly Arg Ala Asp  Leu Lys Ala Arg Lys  Gln Lys Thr
    1355                1360                1365

Ser Ser  Ser Gln Ser Leu Glu  His Arg Leu Arg Asn  Arg Asn Leu
    1370                1375                1380

Leu Leu  Pro Asn Lys Val Gln  Gly Ile Ser Asp Ser  Pro Asn Gly
    1385                1390                1395

Phe Leu  Pro Asn Asn Leu Glu  Glu Pro Ala Cys Leu  Glu Asn Ser
    1400                1405                1410

Glu Lys  Pro Ser Gly Lys Arg  Lys Cys Lys Thr Lys  His Met Ala
    1415                1420                1425

Thr Val  Ser Glu Glu Ala Lys  Asp Val Val Leu Tyr  Cys Leu Gln
    1430                1435                1440

Lys Asp  Ser Glu Asp Val Asn  His Arg Asp Asn Ala  Gly Tyr Thr
    1445                1450                1455

Ala Leu  His Glu Ala Cys Ser  Arg Gly Trp Thr Asp  Ile Leu Asn
    1460                1465                1470

Ile Leu  Leu Glu His Gly Ala  Asn Val Asn Cys Ser  Ala Gln Asp
    1475                1480                1485

Gly Thr  Arg Pro Val His Asp  Ala Val Val Asn Asp  Asn Leu Glu
```

1490 1495 1500

Thr Ile Trp Leu Leu Leu Ser Tyr Gly Ala Asp Pro Thr Leu Ala
1505 1510 1515

Thr Tyr Ser Gly Gln Thr Ala Met Lys Leu Ala Ser Ser Asp Thr
1520 1525 1530

Met Lys Arg Phe Leu Ser Asp His Leu Ser Asp Leu Gln Gly Arg
1535 1540 1545

Ala Glu Gly Asp Pro Gly Val Ser Trp Asp Phe Tyr Ser Ser Ser
1550 1555 1560

Val Leu Glu Glu Lys Asp Gly Phe Ala Cys Asp Leu Leu His Asn
1565 1570 1575

Pro Pro Gly Ser Ser Asp Gln Glu Gly Asp Asp Pro Met Glu Glu
1580 1585 1590

Asp Asp Phe Met Phe Glu Leu Ser Asp Lys Pro Leu Leu Pro Cys
1595 1600 1605

Tyr Asn Leu Gln Val Ser Val Ser Arg Gly Pro Cys Asn Trp Phe
1610 1615 1620

Leu Phe Ser Asp Val Leu Lys Arg Leu Lys Leu Ser Ser Arg Ile
1625 1630 1635

Phe Gln Ala Arg Phe Pro His Phe Glu Ile Thr Thr Met Pro Lys
1640 1645 1650

Ala Glu Phe Tyr Arg Gln Val Ala Ser Ser Gln Leu Leu Thr Pro
1655 1660 1665

Ala Glu Arg Pro Gly Gly Leu Asp Asp Arg Ser Pro Pro Gly Ser
1670 1675 1680

Ser Glu Thr Val Glu Leu Val Arg Tyr Glu Pro Asp Leu Leu Arg
1685 1690 1695

Leu Leu Gly Ser Glu Val Glu Phe Gln Ser Cys Asn Ser
1700 1705 1710

<210> 8878
<211> 45
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
BCL6 corepressor-like 1; "

<220>
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<223> /note="ENSP ID: ENSP00000476643"

<400> 8878
Met Ile Ser Thr Ala Pro Leu Tyr Ser Gly Val His Asn Trp Thr Ser
1 5 10 15

Ser Asp Arg Ile Arg Met Cys Gly Ile Asn Glu Glu Ser His Phe Gln
20 25 30

Gln Trp Ser Pro Pro Thr Ser Ala Ser Pro Thr Ala Phe
35 40 45

<210> 8879
<211> 28
<212> PRT
<213> Homo sapiens

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BCL6 corepressor-like 1; "

<220>
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<223> /note="ENSP ID: ENSP00000484149"

<400> 8879
Met Ile Ser Thr Ala Pro Leu Tyr Ser Gly Val His Asn Trp Thr Ser
1   5   10   15

Ser Asp Arg Ile Arg Met Cys Gly Ile Asn Glu Glu
            20   25

<210> 8880
<211> 540
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BFSP1; "

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<223> /note="Gene Name:
beaded filament structural prt 1, filensin; "

<220>
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<223> /note="Uniprot ID: Q12934; "

<220>
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<223> /note="ENSP ID: ENSP00000367099"

<400> 8880
Met Tyr Glu Asn Glu Cys Glu Cys Gln Leu Leu Leu Lys Glu Met Leu
1   5   10   15

Glu Arg Leu Asn Lys Glu Ala Asp Glu Ala Leu Leu His Asn Leu Arg
            20   25   30

Leu Gln Leu Glu Ala Gln Phe Leu Gln Asp Asp Ile Ser Ala Ala Lys
        35   40   45

Asp Arg His Lys Lys Asn Leu Leu Glu Val Gln Thr Tyr Ile Ser Ile
    50   55   60

Leu Gln Gln Ile Ile His Thr Thr Pro Pro Ala Ser Ile Val Thr Ser
65   70   75   80

```
Gly Met Arg Glu Glu Lys Leu Leu Thr Glu Arg Glu Val Ala Ala Leu
                85                  90                  95

Arg Ser Gln Leu Glu Glu Gly Arg Glu Val Leu Ser His Leu Gln Ala
            100                 105                 110

Gln Arg Val Glu Leu Gln Ala Gln Thr Thr Thr Leu Glu Gln Ala Ile
        115                 120                 125

Lys Ser Ala His Glu Cys Tyr Asp Asp Glu Ile Gln Leu Tyr Asn Glu
    130                 135                 140

Gln Ile Glu Thr Leu Arg Lys Glu Ile Glu Glu Thr Glu Arg Val Leu
145                 150                 155                 160

Glu Lys Ser Ser Tyr Asp Cys Arg Gln Leu Ala Val Ala Gln Gln Thr
                165                 170                 175

Leu Lys Asn Glu Leu Asp Arg Tyr His Arg Ile Ile Glu Ile Glu Gly
            180                 185                 190

Asn Arg Leu Thr Ser Ala Phe Ile Glu Thr Pro Ile Pro Leu Phe Thr
        195                 200                 205

Gln Ser His Gly Val Ser Leu Ser Thr Gly Ser Gly Gly Lys Asp Leu
    210                 215                 220

Thr Arg Ala Leu Gln Asp Ile Thr Ala Ala Lys Pro Arg Gln Lys Ala
225                 230                 235                 240

Leu Pro Lys Asn Val Pro Arg Arg Lys Glu Ile Ile Thr Lys Asp Lys
                245                 250                 255

Thr Asn Gly Ala Leu Glu Asp Ala Pro Leu Lys Gly Leu Glu Asp Thr
            260                 265                 270

Lys Leu Val Gln Val Val Leu Lys Glu Glu Ser Glu Ser Lys Phe Glu
        275                 280                 285

Ser Glu Ser Lys Glu Val Ser Pro Leu Thr Gln Glu Gly Ala Pro Glu
    290                 295                 300
```

```
Asp Val Pro Asp Gly Gly Gln Ile Ser Lys Gly Phe Gly Lys Leu Tyr
305                 310                 315                 320

Arg Lys Val Lys Glu Lys Val Arg Ser Pro Lys Glu Pro Glu Thr Pro
                325                 330                 335

Thr Glu Leu Tyr Thr Lys Glu Arg His Val Leu Val Thr Gly Asp Ala
            340                 345                 350

Asn Tyr Val Asp Pro Arg Phe Tyr Val Ser Ser Ile Thr Ala Lys Gly
        355                 360                 365

Gly Val Ala Val Ser Val Ala Glu Asp Ser Val Leu Tyr Asp Gly Gln
    370                 375                 380

Val Glu Pro Ser Pro Glu Ser Pro Lys Pro Pro Leu Glu Asn Gly Gln
385                 390                 395                 400

Val Gly Leu Gln Glu Lys Glu Asp Gly Gln Pro Ile Asp Gln Gln Pro
                405                 410                 415

Ile Asp Lys Glu Ile Glu Pro Asp Gly Ala Glu Leu Glu Gly Pro Glu
            420                 425                 430

Glu Lys Arg Glu Gly Glu Glu Arg Asp Glu Glu Ser Arg Arg Pro Cys
        435                 440                 445

Ala Met Val Thr Pro Gly Ala Glu Glu Pro Ser Ile Pro Glu Pro Pro
    450                 455                 460

Lys Pro Ala Ala Asp Gln Asp Gly Ala Glu Val Leu Gly Thr Arg Ser
465                 470                 475                 480

Arg Ser Leu Pro Glu Lys Gly Pro Pro Lys Ala Leu Ala Tyr Lys Thr
                485                 490                 495

Val Glu Val Val Glu Ser Ile Glu Lys Ile Ser Thr Glu Ser Ile Gln
            500                 505                 510

Thr Tyr Glu Glu Thr Ala Val Ile Val Glu Thr Met Ile Gly Lys Thr
        515                 520                 525

Lys Ser Asp Lys Lys Lys Ser Gly Glu Lys Ser Ser
```

530 535 540

<210> 8881
<211> 665
<212> PRT
<213> Homo sapiens

<220>
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beaded filament structural prt 1, filensin; "

<220>
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<223> /note="Uniprot ID: Q12934; "

<220>
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<400> 8881
Met Tyr Arg Arg Ser Tyr Val Phe Gln Thr Arg Lys Glu Gln Tyr Glu
1 5 10 15

His Ala Asp Glu Ala Ser Arg Ala Ala Glu Pro Glu Arg Pro Ala Asp
20 25 30

Glu Gly Trp Ala Gly Ala Thr Ser Leu Ala Ala Leu Gln Gly Leu Gly
35 40 45

Glu Arg Val Ala Ala His Val Gln Arg Ala Arg Ala Leu Glu Gln Arg
50 55 60

His Ala Gly Leu Arg Arg Gln Leu Asp Ala Phe Gln Arg Leu Gly Glu
65 70 75 80

Leu Ala Gly Pro Glu Asp Ala Leu Ala Arg Gln Val Glu Ser Asn Arg
85 90 95

Gln Arg Val Arg Asp Leu Glu Ala Glu Arg Ala Arg Leu Glu Arg Gln
100 105 110

```
Gly Thr Glu Ala Gln Arg Ala Leu Asp Glu Phe Arg Ser Lys Tyr Glu
        115                 120                 125

Asn Glu Cys Glu Cys Gln Leu Leu Leu Lys Glu Met Leu Glu Arg Leu
    130                 135                 140

Asn Lys Glu Ala Asp Glu Ala Leu Leu His Asn Leu Arg Leu Gln Leu
145                 150                 155                 160

Glu Ala Gln Phe Leu Gln Asp Asp Ile Ser Ala Ala Lys Asp Arg His
                165                 170                 175

Lys Lys Asn Leu Leu Glu Val Gln Thr Tyr Ile Ser Ile Leu Gln Gln
            180                 185                 190

Ile Ile His Thr Thr Pro Pro Ala Ser Ile Val Thr Ser Gly Met Arg
        195                 200                 205

Glu Glu Lys Leu Leu Thr Glu Arg Glu Val Ala Ala Leu Arg Ser Gln
    210                 215                 220

Leu Glu Glu Gly Arg Glu Val Leu Ser His Leu Gln Ala Gln Arg Val
225                 230                 235                 240

Glu Leu Gln Ala Gln Thr Thr Thr Leu Glu Gln Ala Ile Lys Ser Ala
                245                 250                 255

His Glu Cys Tyr Asp Asp Glu Ile Gln Leu Tyr Asn Glu Gln Ile Glu
            260                 265                 270

Thr Leu Arg Lys Glu Ile Glu Glu Thr Glu Arg Val Leu Glu Lys Ser
        275                 280                 285

Ser Tyr Asp Cys Arg Gln Leu Ala Val Ala Gln Gln Thr Leu Lys Asn
    290                 295                 300

Glu Leu Asp Arg Tyr His Arg Ile Ile Glu Ile Glu Gly Asn Arg Leu
305                 310                 315                 320

Thr Ser Ala Phe Ile Glu Thr Pro Ile Pro Leu Phe Thr Gln Ser His
                325                 330                 335
```

```
Gly Val Ser Leu Ser Thr Gly Ser Gly Gly Lys Asp Leu Thr Arg Ala
            340                 345                 350

Leu Gln Asp Ile Thr Ala Ala Lys Pro Arg Gln Lys Ala Leu Pro Lys
        355                 360                 365

Asn Val Pro Arg Arg Lys Glu Ile Ile Thr Lys Asp Lys Thr Asn Gly
    370                 375                 380

Ala Leu Glu Asp Ala Pro Leu Lys Gly Leu Glu Asp Thr Lys Leu Val
385                 390                 395                 400

Gln Val Val Leu Lys Glu Glu Ser Glu Ser Lys Phe Glu Ser Glu Ser
                405                 410                 415

Lys Glu Val Ser Pro Leu Thr Gln Glu Gly Ala Pro Glu Asp Val Pro
            420                 425                 430

Asp Gly Gly Gln Ile Ser Lys Gly Phe Gly Lys Leu Tyr Arg Lys Val
        435                 440                 445

Lys Glu Lys Val Arg Ser Pro Lys Glu Pro Glu Thr Pro Thr Glu Leu
    450                 455                 460

Tyr Thr Lys Glu Arg His Val Leu Val Thr Gly Asp Ala Asn Tyr Val
465                 470                 475                 480

Asp Pro Arg Phe Tyr Val Ser Ser Ile Thr Ala Lys Gly Gly Val Ala
                485                 490                 495

Val Ser Val Ala Glu Asp Ser Val Leu Tyr Asp Gly Gln Val Glu Pro
            500                 505                 510

Ser Pro Glu Ser Pro Lys Pro Pro Leu Glu Asn Gly Gln Val Gly Leu
        515                 520                 525

Gln Glu Lys Glu Asp Gly Gln Pro Ile Asp Gln Gln Pro Ile Asp Lys
    530                 535                 540

Glu Ile Glu Pro Asp Gly Ala Glu Leu Glu Gly Pro Glu Glu Lys Arg
545                 550                 555                 560

Glu Gly Glu Glu Arg Asp Glu Glu Ser Arg Arg Pro Cys Ala Met Val
```

```
                565                 570                 575

Thr Pro Gly Ala Glu Glu Pro Ser Ile Pro Glu Pro Pro Lys Pro Ala
            580                 585                 590

Ala Asp Gln Asp Gly Ala Glu Val Leu Gly Thr Arg Ser Arg Ser Leu
        595                 600                 605

Pro Glu Lys Gly Pro Pro Lys Ala Leu Ala Tyr Lys Thr Val Glu Val
    610                 615                 620

Val Glu Ser Ile Glu Lys Ile Ser Thr Glu Ser Ile Gln Thr Tyr Glu
625                 630                 635                 640

Glu Thr Ala Val Ile Val Glu Thr Met Ile Gly Lys Thr Lys Ser Asp
                645                 650                 655

Lys Lys Lys Ser Gly Glu Lys Ser Ser
            660                 665


<210> 8882
<211> 526
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1800; "

<220>
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<223> /note="Gene Symbol: BFSP1; "

<220>
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<223> /note="Gene Name:
      beaded filament structural prt 1, filensin; "

<220>
<221> source
<223> /note="Uniprot ID:  Q12934; "

<220>
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<223> /note="ENSP ID: ENSP00000442522"

<400> 8882
Met Leu Glu Arg Leu Asn Lys Glu Ala Asp Glu Ala Leu Leu His Asn
1               5                   10                  15
```

```
Leu Arg Leu Gln Leu Glu Ala Gln Phe Leu Gln Asp Asp Ile Ser Ala
            20                  25                  30

Ala Lys Asp Arg His Lys Lys Asn Leu Leu Glu Val Gln Thr Tyr Ile
        35                  40                  45

Ser Ile Leu Gln Gln Ile Ile His Thr Thr Pro Pro Ala Ser Ile Val
    50                  55                  60

Thr Ser Gly Met Arg Glu Glu Lys Leu Leu Thr Glu Arg Glu Val Ala
65                  70                  75                  80

Ala Leu Arg Ser Gln Leu Glu Glu Gly Arg Glu Val Leu Ser His Leu
                85                  90                  95

Gln Ala Gln Arg Val Glu Leu Gln Ala Gln Thr Thr Thr Leu Glu Gln
            100                 105                 110

Ala Ile Lys Ser Ala His Glu Cys Tyr Asp Asp Glu Ile Gln Leu Tyr
        115                 120                 125

Asn Glu Gln Ile Glu Thr Leu Arg Lys Glu Ile Glu Glu Thr Glu Arg
    130                 135                 140

Val Leu Glu Lys Ser Ser Tyr Asp Cys Arg Gln Leu Ala Val Ala Gln
145                 150                 155                 160

Gln Thr Leu Lys Asn Glu Leu Asp Arg Tyr His Arg Ile Ile Glu Ile
                165                 170                 175

Glu Gly Asn Arg Leu Thr Ser Ala Phe Ile Glu Thr Pro Ile Pro Leu
            180                 185                 190

Phe Thr Gln Ser His Gly Val Ser Leu Ser Thr Gly Ser Gly Gly Lys
        195                 200                 205

Asp Leu Thr Arg Ala Leu Gln Asp Ile Thr Ala Ala Lys Pro Arg Gln
    210                 215                 220

Lys Ala Leu Pro Lys Asn Val Pro Arg Arg Lys Glu Ile Ile Thr Lys
225                 230                 235                 240
```

```
Asp Lys Thr Asn Gly Ala Leu Glu Asp Ala Pro Leu Lys Gly Leu Glu
                245                 250                 255

Asp Thr Lys Leu Val Gln Val Val Leu Lys Glu Glu Ser Glu Ser Lys
            260                 265                 270

Phe Glu Ser Glu Ser Lys Glu Val Ser Pro Leu Thr Gln Glu Gly Ala
        275                 280                 285

Pro Glu Asp Val Pro Asp Gly Gly Gln Ile Ser Lys Gly Phe Gly Lys
    290                 295                 300

Leu Tyr Arg Lys Val Lys Glu Lys Val Arg Ser Pro Lys Glu Pro Glu
305                 310                 315                 320

Thr Pro Thr Glu Leu Tyr Thr Lys Glu Arg His Val Leu Val Thr Gly
                325                 330                 335

Asp Ala Asn Tyr Val Asp Pro Arg Phe Tyr Val Ser Ser Ile Thr Ala
            340                 345                 350

Lys Gly Gly Val Ala Val Ser Val Ala Glu Asp Ser Val Leu Tyr Asp
        355                 360                 365

Gly Gln Val Glu Pro Ser Pro Glu Ser Pro Lys Pro Pro Leu Glu Asn
    370                 375                 380

Gly Gln Val Gly Leu Gln Glu Lys Glu Asp Gly Gln Pro Ile Asp Gln
385                 390                 395                 400

Gln Pro Ile Asp Lys Glu Ile Glu Pro Asp Gly Ala Glu Leu Glu Gly
                405                 410                 415

Pro Glu Glu Lys Arg Glu Gly Glu Glu Arg Asp Glu Glu Ser Arg Arg
            420                 425                 430

Pro Cys Ala Met Val Thr Pro Gly Ala Glu Glu Pro Ser Ile Pro Glu
        435                 440                 445

Pro Pro Lys Pro Ala Ala Asp Gln Asp Gly Ala Glu Val Leu Gly Thr
    450                 455                 460

Arg Ser Arg Ser Leu Pro Glu Lys Gly Pro Pro Lys Ala Leu Ala Tyr
```

```
465                 470                 475                 480

Lys Thr Val Glu Val Val Glu Ser Ile Glu Lys Ile Ser Thr Glu Ser
                485                 490                 495

Ile Gln Thr Tyr Glu Glu Thr Ala Val Ile Val Glu Thr Met Ile Gly
            500                 505                 510

Lys Thr Lys Ser Asp Lys Lys Lys Ser Gly Glu Lys Ser Ser
        515                 520                 525


<210> 8883
<211> 415
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1801; "

<220>
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<223> /note="Gene Symbol: BFSP2; "

<220>
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<223> /note="Gene Name:
      beaded filament structural prt 2, phakinin; "

<220>
<221> source
<223> /note="Uniprot ID:  Q13515; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000304987"

<400> 8883
Met Ser Glu Arg Arg Val Val Val Asp Leu Pro Thr Ser Ala Ser Ser
1               5                   10                  15

Ser Met Pro Leu Gln Arg Arg Arg Ala Ser Phe Arg Gly Pro Arg Ser
            20                  25                  30

Ser Ser Ser Leu Glu Ser Pro Pro Ala Ser Arg Thr Asn Ala Met Ser
        35                  40                  45

Gly Leu Val Arg Ala Pro Gly Val Tyr Val Gly Thr Ala Pro Ser Gly
    50                  55                  60
```

```
Cys Ile Gly Gly Leu Gly Ala Arg Val Thr Arg Arg Ala Leu Gly Ile
65                  70                  75                  80

Ser Ser Val Phe Leu Gln Gly Leu Arg Ser Ser Gly Leu Ala Thr Val
                85                  90                  95

Pro Ala Pro Gly Leu Glu Arg Asp His Gly Ala Val Glu Asp Leu Gly
            100                 105                 110

Gly Cys Leu Val Glu Tyr Met Ala Lys Val His Ala Leu Glu Gln Val
        115                 120                 125

Ser Gln Glu Leu Glu Thr Gln Leu Arg Met His Leu Glu Ser Lys Ala
    130                 135                 140

Thr Arg Ser Gly Asn Trp Gly Ala Leu Arg Ala Ser Trp Ala Ser Ser
145                 150                 155                 160

Cys Gln Gln Val Gly Glu Ala Val Leu Glu Asn Ala Arg Leu Met Leu
                165                 170                 175

Gln Thr Glu Thr Ile Gln Ala Gly Ala Asp Asp Phe Lys Glu Arg Tyr
            180                 185                 190

Glu Asn Glu Gln Pro Phe Arg Lys Ala Ala Glu Glu Glu Ile Asn Ser
        195                 200                 205

Leu Tyr Lys Val Ile Asp Glu Ala Asn Leu Thr Lys Met Asp Leu Glu
    210                 215                 220

Ser Gln Ile Glu Ser Leu Lys Glu Glu Leu Gly Ser Leu Ser Arg Asn
225                 230                 235                 240

Tyr Glu Glu Asp Val Lys Leu Leu His Lys Gln Leu Ala Gly Cys Glu
                245                 250                 255

Leu Glu Gln Met Asp Ala Pro Ile Gly Thr Gly Leu Asp Asp Ile Leu
            260                 265                 270

Glu Thr Ile Arg Ile Gln Trp Glu Arg Asp Val Glu Lys Asn Arg Val
        275                 280                 285
```

```
Glu Ala Gly Ala Leu Leu Gln Ala Lys Gln Gln Ala Glu Val Ala His
    290                 295                 300

Met Ser Gln Thr Gln Glu Glu Lys Leu Ala Ala Ala Leu Arg Val Glu
305                 310                 315                 320

Leu His Asn Thr Ser Cys Gln Val Gln Ser Leu Gln Ala Glu Thr Glu
                325                 330                 335

Ser Leu Arg Ala Leu Lys Arg Gly Leu Glu Asn Thr Leu His Asp Ala
            340                 345                 350

Lys His Trp His Asp Met Glu Leu Gln Asn Leu Gly Ala Val Val Gly
        355                 360                 365

Arg Leu Glu Ala Glu Leu Arg Glu Ile Arg Ala Glu Ala Glu Gln Gln
    370                 375                 380

Gln Gln Glu Arg Ala His Leu Leu Ala Arg Lys Cys Gln Leu Gln Lys
385                 390                 395                 400

Asp Val Ala Ser Tyr His Ala Leu Leu Asp Arg Glu Glu Ser Gly
                405                 410                 415


<210> 8884
<211> 450
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
      beclin 1, autophagy related; "

<220>
<221> source
<223> /note="Uniprot ID:  Q14457; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355231"
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<400> 8884
Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1 5 10 15

Val Cys Gln Arg Cys Ser Gln Pro Leu Lys Leu Asp Thr Ser Phe Lys
20 25 30

Ile Leu Asp Arg Val Thr Ile Gln Glu Leu Thr Ala Pro Leu Leu Thr
35 40 45

Thr Ala Gln Ala Lys Pro Gly Glu Thr Gln Glu Glu Glu Thr Asn Ser
50 55 60

Gly Glu Glu Pro Phe Ile Glu Thr Pro Arg Gln Asp Gly Val Ser Arg
65 70 75 80

Arg Phe Ile Pro Pro Ala Arg Met Met Ser Thr Glu Ser Ala Asn Ser
85 90 95

Phe Thr Leu Ile Gly Glu Ala Ser Asp Gly Gly Thr Met Glu Asn Leu
100 105 110

Ser Arg Arg Leu Lys Val Thr Gly Asp Leu Phe Asp Ile Met Ser Gly
115 120 125

Gln Thr Asp Val Asp His Pro Leu Cys Glu Glu Cys Thr Asp Thr Leu
130 135 140

Leu Asp Gln Leu Asp Thr Gln Leu Asn Val Thr Glu Asn Glu Cys Gln
145 150 155 160

Asn Tyr Lys Arg Cys Leu Glu Ile Leu Glu Gln Met Asn Glu Asp Asp
165 170 175

Ser Glu Gln Leu Gln Met Glu Leu Lys Glu Leu Ala Leu Glu Glu Glu
180 185 190

Arg Leu Ile Gln Glu Leu Glu Asp Val Glu Lys Asn Arg Lys Ile Val
195 200 205

Ala Glu Asn Leu Glu Lys Val Gln Ala Glu Ala Glu Arg Leu Asp Gln
210 215 220

```
Glu Glu Ala Gln Tyr Gln Arg Glu Tyr Ser Glu Phe Lys Arg Gln Gln
225                 230                 235                 240

Leu Glu Leu Asp Asp Glu Leu Lys Ser Val Glu Asn Gln Met Arg Tyr
                245                 250                 255

Ala Gln Thr Gln Leu Asp Lys Leu Lys Lys Thr Asn Val Phe Asn Ala
            260                 265                 270

Thr Phe His Ile Trp His Ser Gly Gln Phe Gly Thr Ile Asn Asn Phe
        275                 280                 285

Arg Leu Gly Arg Leu Pro Ser Val Pro Val Glu Trp Asn Glu Ile Asn
    290                 295                 300

Ala Ala Trp Gly Gln Thr Val Leu Leu Leu His Ala Leu Ala Asn Lys
305                 310                 315                 320

Met Gly Leu Lys Phe Gln Arg Tyr Arg Leu Val Pro Tyr Gly Asn His
                325                 330                 335

Ser Tyr Leu Glu Ser Leu Thr Asp Lys Ser Lys Glu Leu Pro Leu Tyr
            340                 345                 350

Cys Ser Gly Gly Leu Arg Phe Phe Trp Asp Asn Lys Phe Asp His Ala
        355                 360                 365

Met Val Ala Phe Leu Asp Cys Val Gln Gln Phe Lys Glu Glu Val Glu
    370                 375                 380

Lys Gly Glu Thr Arg Phe Cys Leu Pro Tyr Arg Met Asp Val Glu Lys
385                 390                 395                 400

Gly Lys Ile Glu Asp Thr Gly Gly Ser Gly Gly Ser Tyr Ser Ile Lys
                405                 410                 415

Thr Gln Phe Asn Ser Glu Glu Gln Trp Thr Lys Ala Leu Lys Phe Met
            420                 425                 430

Leu Thr Asn Leu Lys Trp Gly Leu Ala Trp Val Ser Ser Gln Phe Tyr
        435                 440                 445
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Asn Lys
450

<210> 8885
<211> 279
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416173"

<400> 8885
Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1 5 10 15

Val Cys Gln Arg Cys Ser Gln Pro Leu Lys Leu Asp Thr Ser Phe Lys
20 25 30

Ile Leu Asp Arg Val Thr Ile Gln Glu Leu Thr Ala Pro Leu Leu Thr
35 40 45

Thr Ala Gln Ala Lys Pro Gly Glu Thr Gln Glu Glu Glu Thr Asn Ser
50 55 60

Gly Glu Glu Pro Phe Ile Glu Thr Pro Arg Gln Asp Gly Val Ser Arg
65 70 75 80

Arg Phe Ile Pro Pro Ala Arg Arg Cys Leu Glu Ile Leu Glu Gln Met
85 90 95

Asn Glu Asp Asp Ser Glu Gln Leu Gln Met Glu Leu Lys Glu Leu Ala
100 105 110

Leu Glu Glu Glu Arg Leu Ile Gln Glu Leu Glu Asp Val Glu Lys Asn
115 120 125

```
Arg Lys Ile Val Ala Glu Asn Leu Glu Lys Val Gln Ala Glu Ala Glu
    130                 135                 140

Arg Leu Asp Gln Glu Glu Ala Gln Tyr Gln Arg Glu Tyr Ser Glu Phe
145                 150                 155                 160

Lys Arg Gln Gln Leu Glu Leu Asp Asp Glu Leu Lys Ser Val Glu Asn
                165                 170                 175

Gln Met Arg Tyr Ala Gln Thr Gln Leu Asp Lys Leu Lys Lys Thr Asn
            180                 185                 190

Val Phe Asn Ala Thr Phe His Ile Trp His Ser Gly Gln Phe Gly Thr
        195                 200                 205

Ile Asn Asn Phe Arg Leu Gly Arg Leu Pro Ser Val Pro Val Glu Trp
    210                 215                 220

Asn Glu Ile Asn Ala Ala Trp Gly Gln Thr Val Leu Leu Leu His Ala
225                 230                 235                 240

Leu Ala Asn Lys Met Gly Leu Lys Phe Gln Arg Tyr Arg Leu Val Pro
                245                 250                 255

Tyr Gly Asn His Ser Tyr Leu Glu Ser Leu Thr Asp Lys Ser Lys Asp
            260                 265                 270

Gly Cys Gly Glu Arg Gln Asp
        275


<210> 8886
<211> 450
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
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<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="Uniprot ID: Q14457; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465364"

<400> 8886

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Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1               5                  10                  15

Val Cys Gln Arg Cys Ser Gln Pro Leu Lys Leu Asp Thr Ser Phe Lys
            20                  25                  30

Ile Leu Asp Arg Val Thr Ile Gln Glu Leu Thr Ala Pro Leu Leu Thr
        35                  40                  45

Thr Ala Gln Ala Lys Pro Gly Glu Thr Gln Glu Glu Glu Thr Asn Ser
    50                  55                  60

Gly Glu Glu Pro Phe Ile Glu Thr Pro Arg Gln Asp Gly Val Ser Arg
65                  70                  75                  80

Arg Phe Ile Pro Pro Ala Arg Met Met Ser Thr Glu Ser Ala Asn Ser
                85                  90                  95

Phe Thr Leu Ile Gly Glu Ala Ser Asp Gly Gly Thr Met Glu Asn Leu
            100                 105                 110

Ser Arg Arg Leu Lys Val Thr Gly Asp Leu Phe Asp Ile Met Ser Gly
        115                 120                 125

Gln Thr Asp Val Asp His Pro Leu Cys Glu Glu Cys Thr Asp Thr Leu
    130                 135                 140

Leu Asp Gln Leu Asp Thr Gln Leu Asn Val Thr Glu Asn Glu Cys Gln
145                 150                 155                 160

Asn Tyr Lys Arg Cys Leu Glu Ile Leu Glu Gln Met Asn Glu Asp Asp
                165                 170                 175

Ser Glu Gln Leu Gln Met Glu Leu Lys Glu Leu Ala Leu Glu Glu Glu
```

```
            180                 185                 190

Arg Leu Ile Gln Glu Leu Glu Asp Val Glu Lys Asn Arg Lys Ile Val
        195                 200                 205

Ala Glu Asn Leu Glu Lys Val Gln Ala Glu Ala Glu Arg Leu Asp Gln
    210                 215                 220

Glu Glu Ala Gln Tyr Gln Arg Glu Tyr Ser Glu Phe Lys Arg Gln Gln
225                 230                 235                 240

Leu Glu Leu Asp Asp Glu Leu Lys Ser Val Glu Asn Gln Met Arg Tyr
                245                 250                 255

Ala Gln Thr Gln Leu Asp Lys Leu Lys Lys Thr Asn Val Phe Asn Ala
            260                 265                 270

Thr Phe His Ile Trp His Ser Gly Gln Phe Gly Thr Ile Asn Asn Phe
        275                 280                 285

Arg Leu Gly Arg Leu Pro Ser Val Pro Val Glu Trp Asn Glu Ile Asn
    290                 295                 300

Ala Ala Trp Gly Gln Thr Val Leu Leu Leu His Ala Leu Ala Asn Lys
305                 310                 315                 320

Met Gly Leu Lys Phe Gln Arg Tyr Arg Leu Val Pro Tyr Gly Asn His
                325                 330                 335

Ser Tyr Leu Glu Ser Leu Thr Asp Lys Ser Lys Glu Leu Pro Leu Tyr
            340                 345                 350

Cys Ser Gly Gly Leu Arg Phe Phe Trp Asp Asn Lys Phe Asp His Ala
        355                 360                 365

Met Val Ala Phe Leu Asp Cys Val Gln Gln Phe Lys Glu Glu Val Glu
    370                 375                 380

Lys Gly Glu Thr Arg Phe Cys Leu Pro Tyr Arg Met Asp Val Glu Lys
385                 390                 395                 400

Gly Lys Ile Glu Asp Thr Gly Gly Ser Gly Gly Ser Tyr Ser Ile Lys
                405                 410                 415
```

Thr Gln Phe Asn Ser Glu Glu Gln Trp Thr Lys Ala Leu Lys Phe Met
420 425 430

Leu Thr Asn Leu Lys Trp Gly Leu Ala Trp Val Ser Ser Gln Phe Tyr
435 440 445

Asn Lys
450

<210> 8887
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465658"

<400> 8887
Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1 5 10 15

Val Cys Gln Arg Cys Ser Gln Pro Leu Lys Leu Asp Thr Ser Phe Lys
20 25 30

Ile Leu Asp Arg Val Thr Ile Gln Glu Leu Thr Gly Gln Arg Asp Pro
35 40 45

Trp Lys Glu Gly Gly Gln Glu Cys Gly Ser Ser Ile Thr Tyr His Ser
50 55 60

Pro Gly Glu Thr Arg Arg Asp Pro Gly Gly Arg Asp
65 70 75

<210> 8888
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465964"

<400> 8888
Gly Asn His Ser Tyr Leu Glu Ser Leu Thr Asp Lys Ser Lys Ala Glu
1 5 10 15

Val Gln Trp His Asp Leu Gly Leu Leu Gln Pro Pro Pro Pro Gly Phe
20 25 30

Lys Gln Phe Pro Cys Leu Ser Leu Leu Ser Ile Trp Asp Tyr Arg His
35 40 45

Ala Pro Pro Arg Pro Ala Asn
50 55

<210> 8889
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466281"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8889
Xaa Gly Gln Thr Asp Val Asp His Pro Leu Cys Glu Glu Cys Thr Asp
1 5 10 15

Thr Leu Leu Asp Gln Leu Asp Thr Gln Leu Asn Val Thr Glu Asn Glu
20 25 30

Cys Gln Asn Tyr Lys Arg Cys Leu Glu Ile Leu Glu Gln Met Asn Glu
35 40 45

Asp Asp Ser Glu Gln Leu Gln Met Glu Leu Lys Glu Leu Ala Leu Glu
50 55 60

Glu Glu Arg Leu Ile Gln Glu Leu Glu Asp Val Glu Lys Asn Arg Lys
65 70 75 80

Ile Val Ala Glu Asn Leu Glu Lys Val Gln Ala Glu Ala Glu Arg Leu
85 90 95

Asp Gln Glu Glu Ala Gln Tyr Gln Arg Glu Tyr Ser Glu Phe Lys Arg
100 105 110

Gln Gln Leu Glu Leu Asp Asp Glu Leu Lys Ser Val Glu Asn Gln Met
115 120 125

Arg Tyr Ala Gln Thr Gln Leu Asp Lys Leu Lys Lys Thr Asn Val Phe
130 135 140

Asn Ala Thr Phe His Ile Trp His Ser Gly Gln Phe Gly Thr Ile Asn
145 150 155 160

Asn Phe Arg Leu Gly Arg Leu Pro Ser Val Pro Val Glu Trp Asn Glu
165 170 175

Ile Asn Ala Ala Trp Gly Gln Thr Val Leu Leu Leu His Ala Leu Ala
180 185 190

```
Asn Lys Met Gly Leu Lys Phe Gln Arg Tyr Arg Leu Val Pro Tyr Gly
        195                 200                 205


Asn His Ser Tyr Leu Glu Ser Leu Thr Asp Lys Ser Lys Asp Gly Cys
    210                 215                 220


Gly Glu Arg Gln Asp
225


<210> 8890
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
      beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466419"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8890
Xaa His Ser Gly Gln Phe Gly Thr Ile Asn Asn Phe Arg Leu Gly Arg
1               5                   10                  15


Leu Pro Ser Val Pro Val Glu Trp Asn Glu Ile Asn Ala Ala Trp Gly
            20                  25                  30


Gln Thr Val Leu Leu Leu His Ala Leu Ala Asn Lys Met Gly Leu Lys
        35                  40                  45


Phe Gln Arg Met Asp Val Glu Lys Gly Lys Ile Glu Asp Thr Gly Gly
    50                  55                  60
```

```
Ser Gly Gly Ser Tyr Ser Ile Lys Thr Gln Phe Asn Ser Glu Glu Gln
65                  70                  75                  80


Trp Thr Lys Ala Leu Lys Phe Met Leu Thr Asn Leu Lys Trp Gly Leu
                85                  90                  95


Ala Trp Val Ser Ser Gln Phe Tyr Asn Lys
            100                 105


<210> 8891
<211> 176
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
      beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466766"

<400> 8891
Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1               5                   10                  15


Val Cys Gln Arg Cys Ser Gln Pro Leu Lys Leu Asp Thr Ser Phe Lys
            20                  25                  30


Ile Leu Asp Arg Val Thr Ile Gln Glu Leu Thr Ala Pro Leu Leu Thr
        35                  40                  45


Thr Ala Gln Ala Lys Pro Gly Glu Thr Gln Glu Glu Glu Thr Asn Ser
    50                  55                  60


Gly Glu Glu Pro Phe Ile Glu Thr Pro Arg Gln Asp Gly Val Ser Arg
65                  70                  75                  80
```

```
Arg Phe Ile Pro Pro Ala Arg Arg Cys Leu Glu Ile Leu Glu Gln Met
                85                  90                  95

Asn Glu Asp Asp Ser Glu Gln Leu Gln Met Glu Leu Lys Glu Leu Ala
            100                 105                 110

Leu Glu Glu Glu Arg Leu Ile Gln Glu Leu Glu Asp Val Glu Lys Asn
        115                 120                 125

Arg Lys Ile Val Ala Glu Asn Leu Glu Lys Val Gln Ala Glu Ala Glu
    130                 135                 140

Arg Leu Asp Gln Glu Glu Ala Gln His Ser Gly Gln Phe Gly Thr Ile
145                 150                 155                 160

Asn Asn Phe Arg Leu Gly Arg Leu Pro Ser Val Pro Val Glu Trp Asn
                165                 170                 175


<210> 8892
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
      beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467937"

<400> 8892
Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1               5                   10                  15

Val Cys Gln Arg Cys Ser Gln Pro Leu Lys Leu Asp Thr Ser Phe Lys
            20                  25                  30

Ile Leu Asp Arg Val Thr Ile Gln Glu Leu Thr Ala Pro Leu Leu Thr
        35                  40                  45
```

```
Thr Ala Gln Ala Lys Pro Gly Glu Thr Gln Glu
    50                  55


<210> 8893
<211> 132
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
      beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468104"

<400> 8893
Leu Asn Val Thr Glu Asn Glu Cys Gln Asn Tyr Lys Arg Cys Leu Glu
1               5                   10                  15


Ile Leu Glu Gln Met Asn Glu Asp Asp Ser Glu Gln Leu Gln Met Glu
            20                  25                  30


Leu Lys Glu Leu Ala Leu Glu Glu Glu Arg Leu Ile Gln Glu Leu Glu
        35                  40                  45


Asp Val Glu Lys Asn Arg Lys Ile Val Ala Glu Asn Leu Glu Lys Val
    50                  55                  60


Gln Ala Glu Ala Glu Arg Leu Asp Gln Glu Glu Ala Gln Met Asp Val
65                  70                  75                  80


Glu Lys Gly Lys Ile Glu Asp Thr Gly Gly Ser Gly Gly Ser Tyr Ser
                85                  90                  95


Ile Lys Thr Gln Phe Asn Ser Glu Glu Gln Trp Thr Lys Ala Leu Lys
            100                 105                 110
```

```
Phe Met Leu Thr Asn Leu Lys Trp Gly Leu Ala Trp Val Ser Ser Gln
        115                 120                 125


Phe Tyr Asn Lys
    130


<210> 8894
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
      beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468461"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8894
Xaa Ala Gln Thr Gln Leu Asp Lys Leu Lys Lys Thr Asn Val Phe Asn
1               5                   10                  15


Ala Thr Phe His Ile Trp His Ser Gly Gln Phe Gly Thr Ile Asn Asn
            20                  25                  30


Phe Arg Leu Gly Arg Leu Pro Ser Val Pro Val Glu Trp Asn Glu Ile
        35                  40                  45


Asn Ala Ala Trp Gly Gln Thr Val Leu Leu Leu His Ala Leu Ala Asn
    50                  55                  60


Lys Met Gly Leu Lys Phe Gln Arg
65                  70
```

<210> 8895
<211> 109
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468597"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8895
Xaa Ala Ala Trp Gly Gln Thr Val Leu Leu Leu His Ala Leu Ala Asn
1 5 10 15

Lys Met Gly Leu Lys Phe Gln Arg Ser Cys Arg Tyr Thr Val Leu Gly
20 25 30

Gly Cys Gly Phe Ser Gly Thr Thr Ser Leu Thr Met Gln Trp Trp Leu
35 40 45

Ser Trp Thr Val Cys Ser Ser Ser Lys Lys Arg Leu Arg Lys Ala Arg
50 55 60

His Val Phe Val Phe Pro Thr Gly Trp Met Trp Arg Lys Ala Arg Leu
65 70 75 80

Lys Thr Gln Glu Ala Val Ala Ala Pro Ile Pro Ser Lys Pro Ser Leu
85 90 95

Thr Leu Arg Ser Ser Gly Gln Lys Leu Ser Ser Ser Cys
100 105

<210> 8896
<211> 20
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1802; "

<220>
<221> source
<223> /note="Gene Symbol: BECN1; "

<220>
<221> source
<223> /note="Gene Name:
beclin 1, autophagy related; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479791"

<400> 8896
Met Glu Gly Ser Lys Thr Ser Asn Asn Ser Thr Met Gln Val Ser Phe
1 5 10 15

Val Cys Gln Arg
20

<210> 8897
<211> 431
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1803; "

<220>
<221> source
<223> /note="Gene Symbol: BECN2; "

<220>
<221> source
<223> /note="Gene Name:
beclin 2; "

<220>
<221> source
<223> /note="Uniprot ID: A8MW95; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488361"

<400> 8897
Met Ser Ser Ile Arg Phe Leu Cys Gln Arg Cys His Gln Ala Leu Lys
1 5 10 15

Leu Ser Gly Ser Ser Glu Ser Arg Ser Leu Pro Ala Ala Pro Ala Pro
20 25 30

Thr Ser Gly Gln Ala Glu Pro Gly Asp Thr Arg Glu Pro Gly Val Thr
35 40 45

Thr Arg Glu Val Thr Asp Ala Glu Glu Gln Gln Asp Gly Ala Ser Ser
50 55 60

Arg Ser Pro Pro Gly Asp Gly Ser Val Ser Lys Gly His Ala Asn Ile
65 70 75 80

Phe Thr Leu Leu Gly Glu Leu Gly Ala Met His Met Leu Ser Ser Ile
85 90 95

Gln Lys Ala Ala Gly Asp Ile Phe Asp Ile Val Ser Gly Gln Ala Val
100 105 110

Val Asp His Pro Leu Cys Glu Glu Cys Thr Asp Ser Leu Leu Glu Gln
115 120 125

Leu Asp Ile Gln Leu Ala Leu Thr Glu Ala Asp Ser Gln Asn Tyr Gln
130 135 140

Arg Cys Leu Glu Thr Gly Glu Leu Ala Thr Ser Glu Asp Glu Ala Ala
145 150 155 160

Ala Leu Arg Ala Glu Leu Arg Asp Leu Glu Leu Glu Glu Ala Arg Leu
165 170 175

Val Gln Glu Leu Glu Asp Val Asp Arg Asn Asn Ala Arg Ala Ala Ala
180 185 190

Asp Leu Gln Ala Ala Gln Ala Glu Ala Ala Glu Leu Asp Gln Gln Glu
195 200 205

Arg Gln His Tyr Arg Asp Tyr Ser Ala Leu Lys Arg Gln Gln Leu Glu
210 215 220

```
Leu Leu Asp Gln Leu Gly Asn Val Glu Asn Gln Leu Gln Tyr Ala Arg
225                 230                 235                 240

Val Gln Arg Asp Arg Leu Lys Glu Ile Asn Cys Phe Thr Ala Thr Phe
                245                 250                 255

Glu Ile Trp Val Glu Gly Pro Leu Gly Val Ile Asn Asn Phe Arg Leu
            260                 265                 270

Gly Arg Leu Pro Thr Val Arg Val Gly Trp Asn Glu Ile Asn Thr Ala
        275                 280                 285

Trp Gly Gln Ala Ala Leu Leu Leu Leu Thr Leu Ala Asn Thr Ile Gly
    290                 295                 300

Leu Gln Phe Gln Arg Tyr Arg Leu Ile Pro Cys Gly Asn His Ser Tyr
305                 310                 315                 320

Leu Lys Ser Leu Thr Asp Asp Arg Thr Glu Leu Pro Leu Phe Cys Tyr
                325                 330                 335

Gly Gly Gln Asp Val Phe Leu Asn Asn Lys Tyr Asp Arg Ala Met Val
            340                 345                 350

Ala Phe Leu Asp Cys Met Gln Gln Phe Lys Glu Glu Ala Glu Lys Gly
        355                 360                 365

Glu Leu Gly Leu Ser Leu Pro Tyr Gly Ile Gln Val Glu Thr Gly Leu
    370                 375                 380

Met Glu Asp Val Gly Gly Arg Gly Glu Cys Tyr Ser Ile Arg Thr His
385                 390                 395                 400

Leu Asn Thr Gln Glu Leu Trp Thr Lys Ala Leu Lys Phe Met Leu Ile
                405                 410                 415

Asn Phe Lys Trp Ser Leu Ile Trp Val Ala Ser Arg Tyr Gln Lys
            420                 425                 430
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<210> 8898
<211> 645
<212> PRT
<213> Homo sapiens

<220>
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BEN
domain containing 2; "

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<220>
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Met Ser Glu Arg Thr Gln Glu Gln Asp Phe Val Ile Ile Thr Val Asp
1   5   10   15

Asp Ser Asp Asp Asn Asn Asp Cys Ser Ile Glu Met Val Glu Val Ser
            20   25   30

Glu Thr Ala Asp Asn Ser Thr Asn Asp Ile Ala Asp Asp Ser Thr Tyr
        35   40   45

Val Thr Ala Asp Asn Pro Thr Asp Asp Thr Ala Thr Gln Pro Asn Phe
    50   55   60

Pro Gly Gly Asn Asp Gly His His Arg Pro Leu Gln Met Ser Tyr Gly
65   70   75   80

Ser Gly Ser Val Thr Gln Ala Gly Val Gln Trp His Asp His Ser Ser
                85   90   95

Leu Gln Pro Gln Pro Leu Gly Leu Lys Gln Phe Phe His Leu Ser Leu
            100   105   110

Pro Ser Ser Trp Asp Asp Arg Arg Thr Pro Pro Cys Pro Val Ala His
        115   120   125

Gly Asp Gln Ile Val Ser Gln Ile Asn His Pro Val His Leu Arg Arg
    130   135   140

```
Tyr Ser Tyr Asn Ser Glu Glu Val Asp Phe Pro Lys Arg Gly Arg Phe
145                 150                 155                 160

Tyr Thr Pro Glu Val Gln Ser Ser Ile Ser Pro Pro Ala Glu Arg Gln
                165                 170                 175

Glu Thr His Ala Trp Ala Ser Pro Ala Val Thr Ser Leu Glu Ser Ala
            180                 185                 190

Ala Cys His Glu Leu Gln Glu Ala Asp Leu Ser Glu Ser Leu Ser Tyr
        195                 200                 205

Pro Arg Ile Val Ser Ser Ser Ser Leu Gln Gln Tyr Val Ala Gln Gly
    210                 215                 220

Gly Ser Phe Pro Cys Phe Gly Met Pro Trp Asn Phe Ile Ser Gly Gly
225                 230                 235                 240

Ala Glu Ser Thr Asn Ala Val Ile Ser Phe Ala Asn Ala Thr Thr Ala
                245                 250                 255

Val Pro Met Ala Val Leu Ser Arg Arg Glu Ser Ser Leu Ala Asn Asn
            260                 265                 270

Pro Gly Val Val Asn Tyr Ser Ala Leu Pro Glu Asn Glu Asn Val Gly
        275                 280                 285

Pro Gly Arg Ala Leu Ser Ser Phe Cys Phe His Pro Asn Leu Glu Ser
    290                 295                 300

Gly Pro Gln Met Ser Tyr Gly Thr Met Ser Tyr Ser Thr Glu Met Lys
305                 310                 315                 320

Asn Asn Cys Asp Gln Asp Asp Ala Ser Ala Ser Ala Cys Leu Thr Pro
                325                 330                 335

Asp Phe Ala Leu Leu Pro Leu Asn Ile Leu Val Lys Val Asp Thr Asn
            340                 345                 350

Thr Glu Asn Ser Val Asn Thr Met Asn Arg Ser Thr Leu Leu Asp Ser
        355                 360                 365
```

```
Asp Ser Gly Gln Asp Ser Ser Ser Ser Ser Val Cys Ile Pro Pro Lys
    370                 375                 380

Tyr Gly Tyr Leu Gly Asp Pro Lys Arg Asn Val Arg Val Leu Lys Ile
385                 390                 395                 400

His Leu Leu Ala Val Gln Asn Met Ala Lys Pro Lys Gln Ala Ala Cys
                405                 410                 415

Tyr Leu Val Arg Ile Leu Phe Ser Lys Glu Ile Leu Ile Ser Ser Ser
            420                 425                 430

Val Asp Ile His Leu Lys Asp Ser Gln Ser Leu Asp Pro Asn Lys Met
        435                 440                 445

Ala Ala Leu Arg Glu Tyr Leu Ala Thr Thr Phe Pro Thr Cys Asp Leu
    450                 455                 460

His Glu His Gly Lys Asp Trp Gln Asp Cys Ile Ser Gly Ile Asn Ser
465                 470                 475                 480

Met Ile Tyr Cys Leu Cys Ser Glu Gly Lys Ser Thr Pro Lys Thr Val
                485                 490                 495

Arg Lys Asn Lys Lys Arg Thr Asn Arg Val Ala Ser Ala Ser Ala Asp
            500                 505                 510

Arg Asn Asp Gln Arg Gly Arg Asp Gly Gly Glu Gly Cys Ser Trp Met
        515                 520                 525

Phe Gln Pro Met Asn Asn Ser Lys Met Arg Glu Lys Arg Asn Leu Gln
    530                 535                 540

Pro Asn Ser Asn Ala Ile Pro Glu Gly Met Arg Glu Pro Ser Thr Asp
545                 550                 555                 560

Asn Pro Glu Glu Pro Gly Glu Ala Trp Ser Tyr Phe Gly Arg Pro Trp
                565                 570                 575

Arg Asn Ile Arg Met Pro Cys Ser Val Leu Thr Leu Ala Lys Thr Lys
            580                 585                 590
```

Ser Cys Ala Ser Leu Ser Ala Arg Tyr Leu Ile Gln Lys Leu Phe Thr
595 600 605

Lys Asp Val Leu Val Gln Ser Asn Val Tyr Gly Asn Leu Lys His Gly
610 615 620

Leu Cys Ala Leu Asp Pro Asn Lys Ile Ser Ala Leu Arg Gly Leu Leu
625 630 635 640

His Ile Glu Tyr Val
645

<210> 8899
<211> 799
<212> PRT
<213> Homo sapiens

<220>
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BEN
domain containing 2; "

<220>
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<220>
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Met Ser Glu Arg Thr Gln Glu Gln Asp Phe Val Ile Ile Thr Val Asp
1 5 10 15

Asp Ser Asp Asp Asn Asn Asp Cys Ser Ile Glu Met Val Glu Val Ser
20 25 30

Glu Thr Ala Asp Asn Ser Thr Asn Asp Ile Ala Asp Asp Ser Thr Tyr
35 40 45

Val Thr Ala Asp Asn Pro Thr Asp Asp Thr Ala Thr Gln Pro Asn Phe

50 55 60

Pro Gly Gly Asn Asp Gly His His Arg Pro Leu Gln Met Ser Tyr Gly
65 70 75 80

Ser Gly Ser Val Thr Gln Ala Gly Val Gln Trp His Asp His Ser Ser
85 90 95

Leu Gln Pro Gln Pro Leu Gly Leu Lys Gln Phe Phe His Leu Ser Leu
100 105 110

Pro Ser Ser Trp Asp Asp Arg Arg Thr Pro Pro Cys Pro Val Ala His
115 120 125

Gly Asp Gln Ile Val Ser Gln Ile Asn His Pro Val His Leu Arg Arg
130 135 140

Tyr Ser Tyr Asn Ser Glu Glu Val Asp Phe Pro Lys Arg Gly Arg Phe
145 150 155 160

Tyr Thr Pro Glu Val Gln Ser Ser Ile Ser Pro Pro Ala Glu Arg Gln
165 170 175

Glu Thr His Ala Trp Ala Ser Pro Ala Val Thr Ser Leu Glu Ser Ala
180 185 190

Ala Cys His Glu Leu Gln Glu Ala Asp Leu Ser Glu Ser Leu Ser Tyr
195 200 205

Pro Arg Ile Val Ser Ser Ser Ser Leu Gln Gln Tyr Val Ala Gln Gly
210 215 220

Gly Ser Phe Pro Cys Phe Gly Met Pro Trp Asn Phe Ile Ser Gly Gly
225 230 235 240

Ala Glu Ser Thr Asn Ala Val Ile Ser Phe Ala Asn Ala Thr Thr Ala
245 250 255

Val Pro Met Ala Val Leu Ser Arg Arg Glu Ser Ser Leu Ala Asn Asn
260 265 270

Pro Gly Val Val Asn Tyr Ser Ala Leu Pro Glu Asn Glu Asn Val Gly
275 280 285

```
Pro Gly Arg Ala Leu Ser Ser Phe Cys Phe His Pro Asn Leu Glu Met
    290                 295                 300

Pro Glu Arg Pro Ala Asn Ser Ser Lys Asn Ser Thr Glu Thr Ala Asn
305                 310                 315                 320

Tyr Pro Thr Leu Met Gly Asn Tyr Asn Gly Gln Asn Thr Ala Ser Leu
                325                 330                 335

Ser Val Phe Ile Pro Pro Tyr Phe Ala Glu Lys Ile Ile Leu Thr Glu
            340                 345                 350

Met Pro Gly Thr Thr Glu Thr Asn Val Glu Asn Asn Ser Gln Thr Val
        355                 360                 365

Tyr Tyr Pro Ala Leu Ser Gly Asn Thr Ser Ala Pro Tyr Pro Ala Ser
    370                 375                 380

Ser Tyr Leu Pro Ile Thr Ser Asn Phe Glu Ser Gly Pro Gln Met Ser
385                 390                 395                 400

Tyr Gly Thr Met Ser Tyr Ser Thr Glu Met Lys Asn Asn Cys Asp Gln
                405                 410                 415

Asp Asp Ala Ser Ala Ser Ala Cys Leu Thr Pro Asp Phe Ala Leu Leu
            420                 425                 430

Pro Leu Asn Ile Leu Val Lys Val Asp Thr Asn Thr Glu Asn Ser Val
        435                 440                 445

Asn Thr Met Asn Arg Ser Thr Leu Leu Asp Ser Asp Ser Gly Gln Asp
    450                 455                 460

Ser Ser Ser Ser Ser Val Cys Ile Pro Pro Lys Tyr Gly Tyr Leu Gly
465                 470                 475                 480

Asp Pro Lys Arg Asn Val Arg Val Leu Lys Ile His Leu Leu Ala Val
                485                 490                 495

Gln Asn Met Ala Lys Pro Lys Gln Ala Ala Cys Tyr Leu Val Arg Ile
            500                 505                 510
```

```
Leu Phe Ser Lys Glu Ile Leu Ile Ser Ser Ser Val Asp Ile His Leu
        515                 520                 525

Lys Asp Ser Gln Ser Leu Asp Pro Asn Lys Met Ala Ala Leu Arg Glu
    530                 535                 540

Tyr Leu Ala Thr Thr Phe Pro Thr Cys Asp Leu His Glu His Gly Lys
545                 550                 555                 560

Asp Trp Gln Asp Cys Ile Ser Gly Ile Asn Ser Met Ile Tyr Cys Leu
                565                 570                 575

Cys Ser Glu Gly Lys Ser Thr Pro Lys Thr Val Arg Lys Asn Lys Lys
            580                 585                 590

Arg Thr Asn Arg Val Ala Ser Ala Ser Ala Asp Arg Asn Asp Gln Arg
        595                 600                 605

Gly Arg Asp Gly Gly Glu Gly Cys Ser Trp Met Phe Gln Pro Met Asn
    610                 615                 620

Asn Ser Lys Met Arg Glu Lys Arg Asn Leu Gln Pro Asn Ser Asn Ala
625                 630                 635                 640

Ile Pro Glu Gly Met Arg Glu Pro Ser Thr Asp Asn Pro Glu Glu Pro
                645                 650                 655

Gly Glu Ala Trp Ser Tyr Phe Gly Arg Pro Trp Arg Asn Ile Arg Met
            660                 665                 670

Pro Cys Ser Val Leu Thr Leu Ala Lys Thr Lys Ser Cys Ala Ser Leu
        675                 680                 685

Ser Ala Arg Tyr Leu Ile Gln Lys Leu Phe Thr Lys Asp Val Leu Val
    690                 695                 700

Gln Ser Asn Val Tyr Gly Asn Leu Lys His Gly Leu Cys Ala Leu Asp
705                 710                 715                 720

Pro Asn Lys Ile Ser Ala Leu Arg Glu Phe Leu Gln Glu Asn Tyr Pro
                725                 730                 735
```

```
Ile Cys Asp Leu Ser Glu Asn Gly Arg Asp Trp Lys Ser Cys Val Thr
            740                 745                 750

Ser Ile Asn Ser Gly Ile Arg Ser Leu Arg His Asp Val Arg Arg Ala
        755                 760                 765

Glu Ala Arg Ser Gln Ser Leu Pro Ala Val Thr Pro Pro Glu Leu Glu
    770                 775                 780

Gln Glu Ser Lys Pro Gly Asp Pro Asp Ala Thr Asp Pro Ser Thr
785                 790                 795


<210> 8900
<211> 828
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BEND3; "

<220>
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<223> /note="Gene Name:
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      domain containing 3; "

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<223> /note="Uniprot ID:  Q5T5X7; "

<220>
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<223> /note="ENSP ID: ENSP00000358038"

<400> 8900
Met Asn Ser Thr Glu Phe Thr Glu Asp Val Glu Glu Val Leu Lys Ser
1               5                  10                  15

Ile Thr Val Lys Val Glu Thr Glu Ala Glu Asp Ala Ala Leu Asp Cys
            20                  25                  30

Ser Val Asn Ser Arg Thr Ser Glu Lys His Ser Val Asp Ser Val Leu
        35                  40                  45

Thr Ala Leu Gln Asp Ser Ser Lys Arg Lys Gln Leu Val Ser Asp Gly
```

```
    50                  55                  60

Leu Leu Asp Ser Val Pro Gly Val Lys Arg Arg Arg Leu Ile Pro Glu
65                  70                  75                  80

Ala Leu Leu Ala Gly Met Arg Asn Arg Glu Asn Ser Ser Pro Cys Gln
                85                  90                  95

Gly Asn Gly Glu Gln Ala Gly Arg Gly Arg Ser Leu Gly Asn Val Trp
            100                 105                 110

Pro Gly Glu Glu Glu Pro Cys Asn Asp Ala Thr Thr Pro Ser Tyr Lys
        115                 120                 125

Lys Pro Leu Tyr Gly Ile Ser His Lys Ile Met Glu Lys Lys Asn Pro
    130                 135                 140

Pro Ser Gly Asp Leu Leu Asn Val Tyr Glu Leu Phe Glu Lys Ala Asn
145                 150                 155                 160

Ala Ser Asn Ser Pro Ser Ser Leu Arg Leu Leu Asn Glu Pro Gln Lys
                165                 170                 175

Arg Asp Cys Gly Ser Thr Gly Ala Gly Thr Asp Asn Asp Pro Asn Ile
            180                 185                 190

Tyr Phe Leu Ile Gln Lys Met Phe Tyr Met Leu Asn Thr Leu Thr Ser
        195                 200                 205

Asn Met Ser Gln Leu His Ser Lys Val Asp Leu Leu Ser Leu Glu Val
    210                 215                 220

Ser Arg Ile Lys Lys Gln Val Ser Pro Thr Glu Met Val Ala Lys Phe
225                 230                 235                 240

Gln Pro Pro Pro Glu Tyr Gln Leu Thr Ala Ala Glu Leu Lys Gln Ile
                245                 250                 255

Val Asp Gln Ser Leu Ser Gly Gly Asp Leu Ala Cys Arg Leu Leu Val
            260                 265                 270

Gln Leu Phe Pro Glu Leu Phe Ser Asp Val Asp Phe Ser Arg Gly Cys
        275                 280                 285
```

```
Ser Ala Cys Gly Phe Ala Ala Lys Arg Lys Leu Glu Ser Leu His Leu
    290                 295                 300

Gln Leu Ile Arg Asn Tyr Val Glu Val Tyr Tyr Pro Ser Val Lys Asp
305                 310                 315                 320

Thr Ala Val Trp Gln Ala Glu Cys Leu Pro Gln Leu Asn Asp Phe Phe
                325                 330                 335

Ser Arg Phe Trp Ala Gln Arg Glu Met Glu Asp Ser Gln Pro Ser Gly
            340                 345                 350

Gln Val Ala Ser Phe Phe Glu Ala Glu Gln Val Asp Pro Gly His Phe
        355                 360                 365

Leu Asp Asn Lys Asp Gln Glu Glu Ala Leu Ser Leu Asp Arg Ser Ser
    370                 375                 380

Thr Ile Ala Ser Asp His Val Val Asp Thr Gln Asp Leu Thr Glu Phe
385                 390                 395                 400

Leu Asp Glu Ala Ser Ser Pro Gly Glu Phe Ala Val Phe Leu Leu His
                405                 410                 415

Arg Leu Phe Pro Glu Leu Phe Asp His Arg Lys Leu Gly Glu Gln Tyr
            420                 425                 430

Ser Cys Tyr Gly Asp Gly Gly Lys Gln Glu Leu Asp Pro Gln Arg Leu
        435                 440                 445

Gln Ile Ile Arg Asn Tyr Thr Glu Ile Tyr Phe Pro Asp Met Gln Glu
    450                 455                 460

Glu Glu Ala Trp Leu Gln Gln Cys Ala Gln Arg Ile Asn Asp Glu Leu
465                 470                 475                 480

Glu Gly Leu Gly Leu Asp Ala Gly Ser Glu Gly Asp Pro Pro Arg Asp
                485                 490                 495

Asp Cys Tyr Asp Ser Ser Ser Leu Pro Asp Asp Ile Ser Val Val Lys
            500                 505                 510
```

```
Val Glu Asp Ser Phe Glu Gly Glu Arg Pro Gly Arg Arg Ser Lys Lys
        515                 520                 525

Ile Trp Leu Val Pro Ile Asp Phe Asp Lys Leu Glu Ile Pro Gln Pro
    530                 535                 540

Asp Phe Glu Val Pro Gly Ala Asp Cys Leu Leu Ser Lys Glu Gln Leu
545                 550                 555                 560

Arg Ser Ile Tyr Glu Ser Ser Leu Ser Ile Gly Asn Phe Ala Ser Arg
                565                 570                 575

Leu Leu Val His Leu Phe Pro Glu Leu Phe Thr His Glu Asn Leu Arg
            580                 585                 590

Lys Gln Tyr Asn Cys Ser Gly Ser Leu Gly Lys Lys Gln Leu Asp Pro
        595                 600                 605

Ser Arg Ile Lys Leu Ile Arg His Tyr Val Gln Leu Leu Tyr Pro Arg
    610                 615                 620

Ala Lys Asn Asp Arg Val Trp Thr Leu Glu Phe Val Gly Lys Leu Asp
625                 630                 635                 640

Glu Arg Cys Arg Arg Arg Asp Thr Glu Gln Arg Arg Ser Tyr Gln Gln
                645                 650                 655

Gln Arg Lys Val His Val Pro Gly Pro Glu Cys Arg Asp Leu Thr Ser
            660                 665                 670

Tyr Ala Ile Asn Pro Glu Arg Phe Arg Glu Glu Phe Glu Gly Pro Pro
        675                 680                 685

Leu Pro Pro Glu Arg Ser Ser Lys Asp Phe Cys Lys Ile Pro Leu Asp
    690                 695                 700

Glu Leu Val Val Pro Ser Pro Asp Phe Pro Val Pro Ser Pro Tyr Leu
705                 710                 715                 720

Leu Ser Asp Lys Glu Val Arg Glu Ile Val Gln Gln Ser Leu Ser Val
                725                 730                 735
```

```
Gly Asn Phe Ala Ala Arg Leu Leu Val Arg Leu Phe Pro Glu Leu Phe
            740                 745                 750

Thr Ala Glu Asn Leu Arg Leu Gln Tyr Asn His Ser Gly Ala Cys Asn
        755                 760                 765

Lys Lys Gln Leu Asp Pro Thr Arg Leu Arg Leu Ile Arg His Tyr Val
    770                 775                 780

Glu Ala Val Tyr Pro Val Glu Lys Met Glu Glu Val Trp His Tyr Glu
785                 790                 795                 800

Cys Ile Pro Ser Ile Asp Glu Arg Cys Arg Arg Pro Asn Arg Lys Lys
                805                 810                 815

Cys Asp Ile Leu Lys Lys Ala Lys Lys Val Glu Lys
            820                 825


<210> 8901
<211> 828
<212> PRT
<213> Homo sapiens

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      domain containing 3; "

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<220>
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Met Asn Ser Thr Glu Phe Thr Glu Asp Val Glu Glu Val Leu Lys Ser
1               5                   10                  15

Ile Thr Val Lys Val Glu Thr Glu Ala Glu Asp Ala Ala Leu Asp Cys
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20 25 30

Ser Val Asn Ser Arg Thr Ser Glu Lys His Ser Val Asp Ser Val Leu
35 40 45

Thr Ala Leu Gln Asp Ser Ser Lys Arg Lys Gln Leu Val Ser Asp Gly
50 55 60

Leu Leu Asp Ser Val Pro Gly Val Lys Arg Arg Arg Leu Ile Pro Glu
65 70 75 80

Ala Leu Leu Ala Gly Met Arg Asn Arg Glu Asn Ser Ser Pro Cys Gln
85 90 95

Gly Asn Gly Glu Gln Ala Gly Arg Gly Arg Ser Leu Gly Asn Val Trp
100 105 110

Pro Gly Glu Glu Glu Pro Cys Asn Asp Ala Thr Thr Pro Ser Tyr Lys
115 120 125

Lys Pro Leu Tyr Gly Ile Ser His Lys Ile Met Glu Lys Lys Asn Pro
130 135 140

Pro Ser Gly Asp Leu Leu Asn Val Tyr Glu Leu Phe Glu Lys Ala Asn
145 150 155 160

Ala Ser Asn Ser Pro Ser Ser Leu Arg Leu Leu Asn Glu Pro Gln Lys
165 170 175

Arg Asp Cys Gly Ser Thr Gly Ala Gly Thr Asp Asn Asp Pro Asn Ile
180 185 190

Tyr Phe Leu Ile Gln Lys Met Phe Tyr Met Leu Asn Thr Leu Thr Ser
195 200 205

Asn Met Ser Gln Leu His Ser Lys Val Asp Leu Leu Ser Leu Glu Val
210 215 220

Ser Arg Ile Lys Lys Gln Val Ser Pro Thr Glu Met Val Ala Lys Phe
225 230 235 240

Gln Pro Pro Pro Glu Tyr Gln Leu Thr Ala Ala Glu Leu Lys Gln Ile
245 250 255

```
Val Asp Gln Ser Leu Ser Gly Gly Asp Leu Ala Cys Arg Leu Leu Val
            260                 265                 270

Gln Leu Phe Pro Glu Leu Phe Ser Asp Val Asp Phe Ser Arg Gly Cys
        275                 280                 285

Ser Ala Cys Gly Phe Ala Ala Lys Arg Lys Leu Glu Ser Leu His Leu
    290                 295                 300

Gln Leu Ile Arg Asn Tyr Val Glu Val Tyr Tyr Pro Ser Val Lys Asp
305                 310                 315                 320

Thr Ala Val Trp Gln Ala Glu Cys Leu Pro Gln Leu Asn Asp Phe Phe
                325                 330                 335

Ser Arg Phe Trp Ala Gln Arg Glu Met Glu Asp Ser Gln Pro Ser Gly
            340                 345                 350

Gln Val Ala Ser Phe Phe Glu Ala Glu Gln Val Asp Pro Gly His Phe
        355                 360                 365

Leu Asp Asn Lys Asp Gln Glu Glu Ala Leu Ser Leu Asp Arg Ser Ser
    370                 375                 380

Thr Ile Ala Ser Asp His Val Val Asp Thr Gln Asp Leu Thr Glu Phe
385                 390                 395                 400

Leu Asp Glu Ala Ser Ser Pro Gly Glu Phe Ala Val Phe Leu Leu His
                405                 410                 415

Arg Leu Phe Pro Glu Leu Phe Asp His Arg Lys Leu Gly Glu Gln Tyr
            420                 425                 430

Ser Cys Tyr Gly Asp Gly Gly Lys Gln Glu Leu Asp Pro Gln Arg Leu
        435                 440                 445

Gln Ile Ile Arg Asn Tyr Thr Glu Ile Tyr Phe Pro Asp Met Gln Glu
    450                 455                 460

Glu Glu Ala Trp Leu Gln Gln Cys Ala Gln Arg Ile Asn Asp Glu Leu
465                 470                 475                 480
```

```
Glu Gly Leu Gly Leu Asp Ala Gly Ser Glu Gly Asp Pro Pro Arg Asp
                485                 490                 495

Asp Cys Tyr Asp Ser Ser Ser Leu Pro Asp Asp Ile Ser Val Val Lys
            500                 505                 510

Val Glu Asp Ser Phe Glu Gly Glu Arg Pro Gly Arg Arg Ser Lys Lys
        515                 520                 525

Ile Trp Leu Val Pro Ile Asp Phe Asp Lys Leu Glu Ile Pro Gln Pro
    530                 535                 540

Asp Phe Glu Val Pro Gly Ala Asp Cys Leu Leu Ser Lys Glu Gln Leu
545                 550                 555                 560

Arg Ser Ile Tyr Glu Ser Ser Leu Ser Ile Gly Asn Phe Ala Ser Arg
                565                 570                 575

Leu Leu Val His Leu Phe Pro Glu Leu Phe Thr His Glu Asn Leu Arg
            580                 585                 590

Lys Gln Tyr Asn Cys Ser Gly Ser Leu Gly Lys Lys Gln Leu Asp Pro
        595                 600                 605

Ser Arg Ile Lys Leu Ile Arg His Tyr Val Gln Leu Leu Tyr Pro Arg
    610                 615                 620

Ala Lys Asn Asp Arg Val Trp Thr Leu Glu Phe Val Gly Lys Leu Asp
625                 630                 635                 640

Glu Arg Cys Arg Arg Arg Asp Thr Glu Gln Arg Arg Ser Tyr Gln Gln
                645                 650                 655

Gln Arg Lys Val His Val Pro Gly Pro Glu Cys Arg Asp Leu Thr Ser
            660                 665                 670

Tyr Ala Ile Asn Pro Glu Arg Phe Arg Glu Glu Phe Glu Gly Pro Pro
        675                 680                 685

Leu Pro Pro Glu Arg Ser Ser Lys Asp Phe Cys Lys Ile Pro Leu Asp
    690                 695                 700
```

```
Glu Leu Val Val Pro Ser Pro Asp Phe Pro Val Pro Ser Pro Tyr Leu
705                 710                 715                 720

Leu Ser Asp Lys Glu Val Arg Glu Ile Val Gln Gln Ser Leu Ser Val
                725                 730                 735

Gly Asn Phe Ala Ala Arg Leu Leu Val Arg Leu Phe Pro Glu Leu Phe
            740                 745                 750

Thr Ala Glu Asn Leu Arg Leu Gln Tyr Asn His Ser Gly Ala Cys Asn
        755                 760                 765

Lys Lys Gln Leu Asp Pro Thr Arg Leu Arg Leu Ile Arg His Tyr Val
    770                 775                 780

Glu Ala Val Tyr Pro Val Glu Lys Met Glu Glu Val Trp His Tyr Glu
785                 790                 795                 800

Cys Ile Pro Ser Ile Asp Glu Arg Cys Arg Arg Pro Asn Arg Lys Lys
                805                 810                 815

Cys Asp Ile Leu Lys Lys Ala Lys Lys Val Glu Lys
            820                 825


<210> 8902
<211> 437
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Symbol: BEND4; "

<220>
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<223> /note="Gene Name:
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      domain containing 4; "

<220>
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<223> /note="ENSP ID: ENSP00000421160"

<400> 8902
Met Gln Pro Ala Glu Glu Gly Pro Ser Val Pro Lys Ile Tyr Lys Gln
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1               5                   10                  15

Arg Ser Pro Tyr Ser Val Leu Lys Thr Phe Pro Ser Lys Arg Pro Ala
            20                  25                  30

Leu Ala Lys Arg Tyr Glu Arg Pro Thr Leu Val Glu Leu Pro His Val
        35                  40                  45

Arg Ala Pro Pro Pro Pro Pro Pro Pro Phe Ala Pro His Ala Ala Val
    50                  55                  60

Ser Ile Ser Ser Ser Glu Pro Pro Pro Gln Gln Phe Gln Ala Gln Ser
65                  70                  75                  80

Ser Tyr Pro Pro Gly Pro Gly Arg Ala Ala Ala Ala Ala Ser Ser Ser
                85                  90                  95

Ser Pro Ser Cys Thr Pro Ala Thr Ser Gln Gly His Leu Arg Thr Pro
            100                 105                 110

Ala Gln Pro Pro Pro Ala Ser Pro Ala Ala Ser Ser Ser Ser Ser Phe
        115                 120                 125

Ala Ala Val Val Arg Tyr Gly Pro Gly Ala Ala Ala Ala Ala Gly Thr
    130                 135                 140

Gly Gly Thr Gly Ser Asp Ser Ala Ser Leu Glu Leu Ser Ala Glu Ser
145                 150                 155                 160

Arg Met Ile Leu Asp Ala Phe Ala Gln Gln Cys Ser Arg Val Leu Ser
                165                 170                 175

Leu Leu Asn Cys Gly Gly Lys Leu Leu Asp Ser Asn His Ser Gln Ser
            180                 185                 190

Met Ile Ser Cys Val Lys Gln Glu Gly Ser Ser Tyr Asn Glu Arg Gln
        195                 200                 205

Glu His Cys His Ile Gly Lys Gly Val His Ser Gln Thr Ser Asp Asn
    210                 215                 220

Val Asp Ile Glu Met Gln Tyr Met Gln Arg Lys Gln Gln Thr Ser Ala
225                 230                 235                 240
```

```
Phe Leu Arg Val Phe Thr Asp Ser Leu Gln Asn Tyr Leu Leu Ser Gly
                245                 250                 255

Ser Phe Pro Thr Pro Asn Pro Ser Ser Ala Ser Glu Tyr Gly His Leu
            260                 265                 270

Ala Asp Val Asp Pro Leu Ser Thr Ser Pro Val His Thr Leu Gly Gly
        275                 280                 285

Trp Thr Ser Pro Ala Thr Ser Glu Ser His Gly His Pro Ser Ser Ser
    290                 295                 300

Thr Leu Pro Glu Glu Glu Glu Glu Glu Asp Glu Glu Gly Tyr Cys Pro
305                 310                 315                 320

Arg Cys Gln Glu Leu Glu Gln Glu Val Ile Ser Leu Gln Gln Glu Asn
                325                 330                 335

Glu Glu Leu Arg Arg Lys Leu Glu Ser Ile Pro Val Pro Cys Gln Thr
            340                 345                 350

Val Leu Asp Tyr Leu Lys Met Val Leu Gln His His Asn Gln Leu Leu
        355                 360                 365

Ile Pro Gln Pro Ala Asp Gln Pro Thr Glu Gly Ser Lys Gln Leu Leu
    370                 375                 380

Asn Asn Tyr Pro Val Tyr Ile Thr Ser Lys Gln Trp Asp Glu Ala Val
385                 390                 395                 400

Asn Ser Ser Lys Lys Asp Gly Arg Arg Leu Leu Arg Tyr Leu Ile Arg
                405                 410                 415

Phe Val Phe Thr Thr Asp Glu Leu Lys Tyr Ser Cys Gly Leu Gly Lys
            420                 425                 430

Arg Lys Arg Ile His
        435
```

<210> 8903
<211> 534
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1806; "

<220>
<221> source
<223> /note="Gene Symbol: BEND4; "

<220>
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<223> /note="Gene Name:
BEN
domain containing 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZU67; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421169"

<400> 8903

```
Met Glu Glu Glu Met Gln Pro Ala Glu Glu Gly Pro Ser Val Pro Lys
1               5                  10                  15


Ile Tyr Lys Gln Arg Ser Pro Tyr Ser Val Leu Lys Thr Phe Pro Ser
            20                  25                  30


Lys Arg Pro Ala Leu Ala Lys Arg Tyr Glu Arg Pro Thr Leu Val Glu
        35                  40                  45


Leu Pro His Val Arg Ala Pro Pro Pro Pro Pro Pro Pro Phe Ala Pro
    50                  55                  60


His Ala Ala Val Ser Ile Ser Ser Ser Glu Pro Pro Pro Gln Gln Phe
65                  70                  75                  80


Gln Ala Gln Ser Ser Tyr Pro Pro Gly Pro Gly Arg Ala Ala Ala Ala
                85                  90                  95


Ala Ser Ser Ser Ser Pro Ser Cys Thr Pro Ala Thr Ser Gln Gly His
            100                 105                 110


Leu Arg Thr Pro Ala Gln Pro Pro Pro Ala Ser Pro Ala Ala Ser Ser
        115                 120                 125
```

Ser Ser Ser Phe Ala Ala Val Val Arg Tyr Gly Pro Gly Ala Ala Ala
130 135 140

Ala Ala Gly Thr Gly Gly Thr Gly Ser Asp Ser Ala Ser Leu Glu Leu
145 150 155 160

Ser Ala Glu Ser Arg Met Ile Leu Asp Ala Phe Ala Gln Gln Cys Ser
165 170 175

Arg Val Leu Ser Leu Leu Asn Cys Gly Gly Lys Leu Leu Asp Ser Asn
180 185 190

His Ser Gln Ser Met Ile Ser Cys Val Lys Gln Glu Gly Ser Ser Tyr
195 200 205

Asn Glu Arg Gln Glu His Cys His Ile Gly Lys Gly Val His Ser Gln
210 215 220

Thr Ser Asp Asn Val Asp Ile Glu Met Gln Tyr Met Gln Arg Lys Gln
225 230 235 240

Gln Thr Ser Ala Phe Leu Arg Val Phe Thr Asp Ser Leu Gln Asn Tyr
245 250 255

Leu Leu Ser Gly Ser Phe Pro Thr Pro Asn Pro Ser Ser Ala Ser Glu
260 265 270

Tyr Gly His Leu Ala Asp Val Asp Pro Leu Ser Thr Ser Pro Val His
275 280 285

Thr Leu Gly Gly Trp Thr Ser Pro Ala Thr Ser Glu Ser His Gly His
290 295 300

Pro Ser Ser Ser Thr Leu Pro Glu Glu Glu Glu Glu Glu Asp Glu Glu
305 310 315 320

Gly Tyr Cys Pro Arg Cys Gln Glu Leu Glu Gln Glu Val Ile Ser Leu
325 330 335

Gln Gln Glu Asn Glu Glu Leu Arg Arg Lys Leu Glu Ser Ile Pro Val
340 345 350

Pro Cys Gln Thr Val Leu Asp Tyr Leu Lys Met Val Leu Gln His His

```
        355                 360                 365

Asn Gln Leu Leu Ile Pro Gln Pro Ala Asp Gln Pro Thr Glu Gly Ser
    370                 375                 380

Lys Gln Leu Leu Asn Asn Tyr Pro Val Tyr Ile Thr Ser Lys Gln Trp
385                 390                 395                 400

Asp Glu Ala Val Asn Ser Ser Lys Lys Asp Gly Arg Arg Leu Leu Arg
                405                 410                 415

Tyr Leu Ile Arg Phe Val Phe Thr Thr Asp Glu Leu Lys Tyr Ser Cys
            420                 425                 430

Gly Leu Gly Lys Arg Lys Arg Ser Val Gln Ser Gly Glu Thr Gly Pro
        435                 440                 445

Glu Arg Arg Pro Leu Asp Pro Val Lys Val Thr Cys Leu Arg Glu Phe
    450                 455                 460

Ile Arg Met His Cys Thr Ser Asn Pro Asp Trp Trp Met Pro Ser Glu
465                 470                 475                 480

Glu Gln Ile Asn Lys Val Phe Ser Asp Ala Val Gly His Ala Arg Gln
                485                 490                 495

Gly Arg Ala Val Gly Thr Phe Leu His Asn Gly Gly Ser Phe Tyr Glu
            500                 505                 510

Gly Ile Asp His Gln Ala Ser Gln Asp Glu Val Phe Asn Lys Ser Ser
        515                 520                 525

Gln Asp Gly Ser Gly Asp
    530


<210> 8904
<211> 405
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1806; "

<220>
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<221> source
<223> /note="Gene Symbol: BEND4; "

<220>
<221> source
<223> /note="Gene Name:
BEN
domain containing 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478660"

<400> 8904

```
Met Gln Pro Ala Glu Glu Gly Pro Ser Val Pro Lys Ile Tyr Lys Gln
1               5                  10                  15

Arg Ser Pro Tyr Ser Val Leu Lys Thr Phe Pro Ser Leu Glu Leu Ser
            20                  25                  30

Ala Glu Ser Arg Met Ile Leu Asp Ala Phe Ala Gln Gln Cys Ser Arg
        35                  40                  45

Val Leu Ser Leu Leu Asn Cys Gly Gly Lys Leu Leu Asp Ser Asn His
    50                  55                  60

Ser Gln Ser Met Ile Ser Cys Val Lys Gln Glu Gly Ser Ser Tyr Asn
65                  70                  75                  80

Glu Arg Gln Glu His Cys His Ile Gly Lys Gly Val His Ser Gln Thr
                85                  90                  95

Ser Asp Asn Val Asp Ile Glu Met Gln Tyr Met Gln Arg Lys Gln Gln
            100                 105                 110

Thr Ser Ala Phe Leu Arg Val Phe Thr Asp Ser Leu Gln Asn Tyr Leu
        115                 120                 125

Leu Ser Gly Ser Phe Pro Thr Pro Asn Pro Ser Ser Ala Ser Glu Tyr
    130                 135                 140

Gly His Leu Ala Asp Val Asp Pro Leu Ser Thr Ser Pro Val His Thr
145                 150                 155                 160

Leu Gly Gly Trp Thr Ser Pro Ala Thr Ser Glu Ser His Gly His Pro
                165                 170                 175
```

```
Ser Ser Ser Thr Leu Pro Glu Glu Glu Glu Glu Glu Asp Glu Glu Gly
            180                 185                 190

Tyr Cys Pro Arg Cys Gln Glu Leu Glu Gln Glu Val Ile Ser Leu Gln
        195                 200                 205

Gln Glu Asn Glu Glu Leu Arg Arg Lys Leu Glu Ser Ile Pro Val Pro
    210                 215                 220

Cys Gln Thr Val Leu Asp Tyr Leu Lys Met Val Leu Gln His His Asn
225                 230                 235                 240

Gln Leu Leu Ile Pro Gln Pro Ala Asp Gln Pro Thr Glu Gly Ser Lys
                245                 250                 255

Gln Leu Leu Asn Asn Tyr Pro Val Tyr Ile Thr Ser Lys Gln Trp Asp
            260                 265                 270

Glu Ala Val Asn Ser Ser Lys Lys Asp Gly Arg Arg Leu Leu Arg Tyr
        275                 280                 285

Leu Ile Arg Phe Val Phe Thr Thr Asp Glu Leu Lys Tyr Ser Cys Gly
    290                 295                 300

Leu Gly Lys Arg Lys Arg Ser Val Gln Ser Gly Glu Thr Gly Pro Glu
305                 310                 315                 320

Arg Arg Pro Leu Asp Pro Val Lys Val Thr Cys Leu Arg Glu Phe Ile
                325                 330                 335

Arg Met His Cys Thr Ser Asn Pro Asp Trp Trp Met Pro Ser Glu Glu
            340                 345                 350

Gln Ile Asn Lys Val Phe Ser Asp Ala Val Gly His Ala Arg Gln Gly
        355                 360                 365

Arg Ala Val Gly Thr Phe Leu His Asn Gly Gly Ser Phe Tyr Glu Gly
    370                 375                 380

Ile Asp His Gln Ala Ser Gln Asp Glu Val Phe Asn Lys Ser Ser Gln
385                 390                 395                 400
```

Asp Gly Ser Gly Asp
405

<210> 8905
<211> 421
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1807; "

<220>
<221> source
<223> /note="Gene Symbol: BEND5; "

<220>
<221> source
<223> /note="Gene Name:
BEN
domain containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q7L4P6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360899"

<400> 8905
Met Tyr Ala Phe Val Arg Phe Leu Glu Asp Asn Val Cys Tyr Ala Leu
1 5 10 15

Pro Val Ser Cys Val Arg Asp Phe Ser Pro Arg Ser Arg Leu Asp Phe
20 25 30

Asp Asn Gln Lys Val Tyr Ala Val Tyr Arg Gly Pro Glu Glu Leu Gly
35 40 45

Ala Gly Pro Glu Ser Pro Pro Arg Ala Pro Arg Asp Trp Gly Ala Leu
50 55 60

Leu Leu His Lys Ala Gln Ile Leu Ala Leu Ala Glu Asp Lys Ser Asp
65 70 75 80

Leu Glu Asn Ser Val Met Gln Lys Lys Ile Lys Ile Pro Lys Leu Ser
85 90 95

Leu Asn His Val Glu Glu Asp Gly Glu Val Lys Asp Tyr Gly Glu Glu

```
            100                 105                 110

Asp Leu Gln Leu Arg His Ile Lys Arg Pro Glu Gly Arg Lys Pro Ser
        115                 120                 125

Glu Val Ala His Lys Ser Ile Glu Ala Val Val Ala Arg Leu Glu Lys
    130                 135                 140

Gln Asn Gly Leu Ser Leu Gly His Ser Thr Cys Pro Glu Glu Val Phe
145                 150                 155                 160

Val Glu Ala Ser Pro Gly Thr Glu Asp Met Asp Ser Leu Glu Asp Ala
                165                 170                 175

Val Val Pro Arg Ala Leu Tyr Glu Glu Leu Leu Arg Asn Tyr Gln Gln
            180                 185                 190

Gln Gln Glu Glu Met Arg His Leu Gln Gln Glu Leu Glu Arg Thr Arg
        195                 200                 205

Arg Gln Leu Val Gln Gln Ala Lys Lys Leu Lys Glu Tyr Gly Ala Leu
    210                 215                 220

Val Ser Glu Met Lys Glu Leu Arg Asp Leu Asn Arg Arg Leu Gln Asp
225                 230                 235                 240

Val Leu Leu Leu Arg Leu Gly Ser Gly Pro Ala Ile Asp Leu Glu Lys
                245                 250                 255

Val Lys Ser Glu Cys Leu Glu Pro Glu Pro Glu Leu Arg Ser Thr Phe
            260                 265                 270

Ser Glu Glu Ala Asn Thr Ser Ser Tyr Tyr Pro Ala Pro Ala Pro Val
        275                 280                 285

Met Asp Lys Tyr Ile Leu Asp Asn Gly Lys Val His Leu Gly Ser Gly
    290                 295                 300

Ile Trp Val Asp Glu Glu Lys Trp His Gln Leu Gln Val Thr Gln Gly
305                 310                 315                 320

Asp Ser Lys Tyr Thr Lys Asn Leu Ala Val Met Ile Trp Gly Thr Asp
                325                 330                 335
```

```
Val Leu Lys Asn Arg Ser Val Thr Gly Val Ala Thr Lys Lys Lys Lys
            340                 345                 350

Asp Ala Val Pro Lys Pro Pro Leu Ser Pro His Lys Leu Ser Ile Val
        355                 360                 365

Arg Glu Cys Leu Tyr Asp Arg Ile Ala Gln Glu Thr Val Asp Glu Thr
    370                 375                 380

Glu Ile Ala Gln Arg Leu Ser Lys Val Asn Lys Tyr Ile Cys Glu Lys
385                 390                 395                 400

Ile Met Asp Ile Asn Lys Ser Cys Lys Asn Glu Glu Arg Arg Glu Ala
                405                 410                 415

Lys Tyr Asn Leu Gln
            420


<210> 8906
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1808; "

<220>
<221> source
<223> /note="Gene Symbol: BEND6; "

<220>
<221> source
<223> /note="Gene Name:
      BEN
      domain containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359781"

<400> 8906
Met Gln Lys Ile Val Gln Thr Asp Glu Ile Thr Asn Thr Gln Ala Phe
1               5                   10                  15

Arg Lys Gly Lys Arg Lys Arg Thr Glu Thr Met Asp Ser Glu Asn Ala
            20                  25                  30
```

```
Asn Ser Asp Met Asp Lys Gly Gln Arg Asp Pro Tyr Ser Gly Asn Ala
        35                  40                  45

Phe Leu Pro Gly Glu Ser Ser Ser Glu Asp Glu Glu Pro Leu Ala Glu
    50                  55                  60

Leu Ser Lys Glu Glu Leu Cys Ala Lys Ile Lys Ser Leu Lys Glu Lys
65                  70                  75                  80

Leu Thr Asn Thr Arg Lys Glu Asn Ser Arg Leu Arg Gln Ser Leu Val
                85                  90                  95

Met Leu Gln Gly Asn Lys Leu Asp Ile Thr Thr Glu Lys Thr Ile Leu
            100                 105                 110

His Gly Gly Met Lys Thr Leu Asn Val Val Thr Thr Ser Ser His Pro
        115                 120                 125

Val
```

<210> 8907
<211> 279
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1808; "

<220>
<221> source
<223> /note="Gene Symbol: BEND6; "

<220>
<221> source
<223> /note="Gene Name:
BEN
domain containing 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q5SZJ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359782"

<400> 8907

```
Met Gln Lys Ile Val Gln Thr Asp Glu Ile Thr Asn Thr Gln Ala Phe
1               5                  10                  15

Arg Lys Gly Lys Arg Lys Arg Thr Glu Thr Met Asp Ser Glu Asn Ala
            20                  25                  30

Asn Ser Asp Met Asp Lys Gly Gln Arg Asp Pro Tyr Ser Gly Asn Ala
        35                  40                  45

Phe Leu Pro Gly Glu Ser Ser Ser Glu Asp Glu Glu Pro Leu Ala Glu
    50                  55                  60

Leu Ser Lys Glu Glu Leu Cys Ala Lys Ile Lys Ser Leu Lys Glu Lys
65                  70                  75                  80

Leu Thr Asn Thr Arg Lys Glu Asn Ser Arg Leu Arg Gln Ser Leu Val
                85                  90                  95

Met Leu Gln Val Leu Pro Gln Ala Val Thr Gln Phe Glu Glu Leu Val
            100                 105                 110

Gly Met Ala Glu Ala Leu Leu Lys Gly Gly Gly Thr Met Ser Thr Ser
        115                 120                 125

Ala Ser Thr Leu Trp Arg Ala Thr Asn Asn Ser Ser Pro Asp Ser Phe
    130                 135                 140

Ala Ser Thr Cys Ser Asn Ser Asn Ser Asn Ser Ser Ser Pro Val Ser
145                 150                 155                 160

Leu Lys Pro Glu Glu Glu His Gln Thr Asp Glu Lys Gln Phe Gln Ile
                165                 170                 175

Glu Lys Trp Gln Ile Ala Arg Cys Asn Lys Ser Lys Pro Gln Lys Phe
            180                 185                 190

Ile Asn Asp Leu Met Gln Val Leu Tyr Thr Asn Glu Tyr Met Ala Thr
        195                 200                 205

His Ser Leu Thr Gly Ala Lys Ser Ser Thr Ser Arg Asp Lys Ala Val
    210                 215                 220

Lys Pro Ala Met Asn Gln Asn Glu Val Gln Glu Ile Ile Gly Val Thr
```

```
225                 230                 235                 240

Lys Gln Leu Phe Pro Asn Thr Asp Asp Val Ser Ile Arg Arg Met Ile
                245                 250                 255

Gly Gln Lys Leu Asn Asn Cys Thr Lys Lys Pro Asn Leu Ser Lys Asn
            260                 265                 270

Leu Asn Ser Gln Asp Ile Lys
        275


<210> 8908
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1808; "

<220>
<221> source
<223> /note="Gene Symbol: BEND6; "

<220>
<221> source
<223> /note="Gene Name:
      BEN
      domain containing 6; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5SZJ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359784"

<400> 8908
Met Gln Lys Ile Val Gln Thr Asp Glu Ile Thr Asn Thr Gln Ala Phe
1               5                   10                  15

Arg Lys Gly Lys Arg Lys Arg Thr Glu Thr Met Asp Ser Glu Asn Ala
            20                  25                  30

Asn Ser Asp Met Asp Lys Gly Gln Arg Asp Pro Tyr Ser Gly Asn Ala
        35                  40                  45

Phe Leu Pro Gly Glu Ser Ser Ser Glu Asp Glu Glu Pro Leu Ala Glu
    50                  55                  60
```

```
Leu Ser Lys Glu Glu Leu Cys Ala Lys Ile Lys Ser Leu Lys Glu Lys
65                  70                  75                  80


Leu Thr Asn Thr Arg Lys Glu Asn Ser Arg Leu Arg Gln Ser Leu Val
                85                  90                  95


Met Leu Gln Ala Trp Ser Arg Glu Leu Pro
            100                 105


<210> 8909
<211> 468
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1809; "

<220>
<221> source
<223> /note="Gene Symbol: BEND7; "

<220>
<221> source
<223> /note="Gene Name:
      BEN
      domain containing 7; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N7W2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000345773"

<400> 8909
Met Glu Ile Lys Lys Gln Ile Thr Gly Met Arg Arg Leu Leu Asn Asp
1               5                   10                  15


Ser Thr Gly Arg Ile Tyr Gln Arg Val Gly Lys Glu Gly Glu Lys Leu
            20                  25                  30


Lys Glu Glu Pro Gln Asp Leu Asp Leu Val Trp Pro Pro Arg Leu Asn
        35                  40                  45


Ser Ser Ala Glu Ala Pro Gln Ser Leu His Pro Ser Ser Arg Gly Val
    50                  55                  60
```

```
Trp Asn Glu Leu Pro Pro Gln Ser Gly Gln Phe Ser Gly Gln Tyr Gly
65                  70                  75                  80

Thr Arg Ser Arg Thr Phe Gln Ser Gln Pro His Pro Thr Thr Ser Ser
                85                  90                  95

Asn Gly Glu Leu Pro Val Val Asn Ser Ser Ala Gly Ser Asn Cys Cys
            100                 105                 110

Thr Cys Asn Cys Gln Ser Thr Leu Gln Ala Ile Leu Gln Glu Leu Lys
        115                 120                 125

Thr Met Arg Lys Leu Met Gln Ile Gln Ala Val Gly Thr Gln Asn Arg
    130                 135                 140

Gln Gln Pro Pro Ile Ser Leu Ile Cys Ser Gln Arg Thr Ala Val Ser
145                 150                 155                 160

Arg Lys Arg Asn Lys Lys Lys Lys Val Pro Pro Lys Thr Val Glu Pro
                165                 170                 175

Leu Thr Val Lys Gln Lys Pro Ser Gly Ser Glu Met Glu Lys Lys Ser
            180                 185                 190

Val Val Ala Ser Glu Leu Ser Ala Leu Gln Ala Ala Glu His Thr Ser
        195                 200                 205

Pro Glu Glu Ser Arg Val Leu Gly Phe Gly Ile Val Leu Glu Ser Pro
    210                 215                 220

Ser Ser Asp Pro Glu Val Gln Leu Ala Glu Gly Phe Asp Val Phe Met
225                 230                 235                 240

Pro Lys Ser Gln Leu Asp Ser Ile Leu Ser Asn Tyr Thr Arg Ser Gly
                245                 250                 255

Ser Leu Leu Phe Arg Lys Leu Val Cys Ala Phe Phe Asp Asp Lys Thr
            260                 265                 270

Leu Ala Asn Ser Leu Pro Asn Gly Lys Arg Lys Arg Gly Leu Asn Asp
        275                 280                 285
```

```
Asn Arg Lys Gly Leu Asp Gln Asn Ile Val Gly Ala Ile Lys Val Phe
    290                 295                 300

Thr Glu Lys Tyr Cys Thr Ala Asn His Val Asp Lys Leu Pro Gly Pro
305                 310                 315                 320

Arg Asp Trp Val Gln Ile Leu Gln Asp Gln Ile Lys Leu Ala Arg Arg
                325                 330                 335

Arg Leu Lys Arg Gly Ser Ala Glu Ile Ala Asp Ser Asp Glu Arg Leu
            340                 345                 350

Asp Gly Ile Ala Leu Pro Pro Thr Gly Ala Cys Gly Gly Pro Cys Thr
        355                 360                 365

Val Leu Pro Gly Gly Ser Ala Ala Val Thr Leu Val Leu Gln Ser Ser
    370                 375                 380

Pro Gln Thr Met Ser Gln Glu Lys Gly Gln Met Ala Glu Pro Trp Glu
385                 390                 395                 400

Glu Gln His Leu Val Leu Leu Asn Asn Leu Thr Arg Asp Arg Ala Glu
                405                 410                 415

Thr Gly Ala Leu Ser Gln Thr Ser Gln Asp Phe Lys His His Ser Phe
            420                 425                 430

Leu Ile Thr Gln Val Ser Ala Thr Leu His His Gln Arg Gly Ile Arg
        435                 440                 445

Asn Phe Pro Thr Pro Gly Ser Ala Lys Ser Leu Thr Leu His Ile Ser
    450                 455                 460

Cys Leu Ser Leu
465
```

<210> 8910
<211> 374
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1809; "

<220>
<221> source
<223> /note="Gene Symbol: BEND7; "

<220>
<221> source
<223> /note="Gene Name:
BEN
domain containing 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N7W2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000367868"

<400> 8910
Met Glu Ile Lys Lys Gln Ile Thr Gly Met Arg Arg Leu Leu Asn Asp
1   5   10   15

Ser Thr Gly Arg Ile Tyr Gln Arg Val Gly Lys Glu Gly Glu Lys Leu
            20   25   30

Lys Glu Glu Pro Gln Asp Leu Asp Leu Val Trp Pro Pro Arg Leu Asn
        35   40   45

Ser Ser Ala Glu Ala Pro Gln Ser Leu His Pro Ser Ser Arg Gly Val
    50   55   60

Trp Asn Glu Leu Pro Pro Gln Ser Gly Gln Phe Ser Gly Gln Tyr Gly
65   70   75   80

Thr Arg Ser Arg Thr Phe Gln Ser Gln Pro His Pro Thr Thr Ser Ser
                85   90   95

Asn Gly Met Val Val Asn Lys His Ser Glu Gly Ser His Gly Gly Glu
            100   105   110

Leu Pro Val Val Asn Ser Ser Ala Gly Ser Asn Cys Cys Thr Cys Asn
        115   120   125

Cys Gln Ser Thr Leu Gln Ala Ile Leu Gln Glu Leu Lys Thr Met Arg
    130   135   140

Lys Leu Met Gln Ile Gln Ala Val Gly Thr Gln Asn Arg Gln Gln Pro
145   150   155   160

```
Pro Ile Ser Leu Ile Cys Ser Gln Arg Thr Ala Val Ser Arg Lys Arg
                165                 170                 175

Asn Lys Lys Lys Lys Val Pro Pro Lys Thr Val Glu Pro Leu Thr Val
            180                 185                 190

Lys Gln Lys Pro Ser Gly Ser Glu Met Glu Lys Lys Ser Val Val Ala
        195                 200                 205

Ser Glu Leu Ser Ala Leu Gln Ala Ala Glu His Thr Ser Pro Glu Glu
    210                 215                 220

Ser Arg Val Leu Gly Phe Gly Ile Val Leu Glu Ser Pro Ser Ser Asp
225                 230                 235                 240

Pro Glu Val Gln Leu Ala Glu Gly Phe Asp Val Phe Met Pro Lys Ser
                245                 250                 255

Gln Leu Asp Ser Ile Leu Ser Asn Tyr Thr Arg Ser Gly Ser Leu Leu
            260                 265                 270

Phe Arg Lys Leu Val Cys Ala Phe Phe Asp Asp Lys Thr Leu Ala Asn
        275                 280                 285

Ser Leu Pro Asn Gly Lys Arg Lys Arg Gly Leu Asn Asp Asn Arg Lys
    290                 295                 300

Gly Leu Asp Gln Asn Ile Val Gly Ala Ile Lys Val Phe Thr Glu Lys
305                 310                 315                 320

Tyr Cys Thr Ala Asn His Val Asp Lys Leu Pro Gly Pro Arg Asp Trp
                325                 330                 335

Val Gln Ile Leu Gln Asp Gln Ile Lys Leu Ala Arg Arg Arg Leu Lys
            340                 345                 350

Arg Gly Ser Glu Ile Ala Asp Ser Asp Glu Arg Leu Asp Gly Ile Ala
        355                 360                 365

Leu Pro Pro Thr Val Val
    370
```

<210> 8911
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1809; "

<220>
<221> source
<223> /note="Gene Symbol: BEND7; "

<220>
<221> source
<223> /note="Gene Name:
BEN
domain containing 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401256"

<400> 8911
Leu Asp Ser Ile Leu Ser Asn Tyr Thr Arg Ser Gly Ser Leu Leu Phe
1 5 10 15

Arg Lys Leu Val Cys Ala Phe Phe Asp Asp Lys Thr Leu Ala Asn Ser
20 25 30

Leu Pro Asn Gly Lys Arg Lys Arg Gly Leu Asn Asp Asn Arg Lys Gly
35 40 45

Leu Asp Gln Asn Ile Val Gly Ala Ile Lys Val Phe Thr Glu Lys Tyr
50 55 60

Cys Thr Ala Asn His Val Asp Lys Leu Pro Gly Pro Arg Asp Trp Val
65 70 75 80

Gln Ile Leu Gln Asp Gln Ile Lys Leu Ala Arg Arg Arg Leu Lys Arg
85 90 95

Gly Ser Glu Ile Ala Asp Ser Asp Glu Arg Leu Asp Gly Ile Ala Leu
100 105 110

Pro Pro Thr Gly Lys
115

<210> 8912
<211> 1797
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1810; "

<220>
<221> source
<223> /note="Gene Symbol: BZRAP1; "

<220>
<221> source
<223> /note="Gene Name:
benzodiazepine receptor (peripheral) associated prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: O95153; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000268893"

<400> 8912
Met Glu Gln Leu Thr Thr Leu Pro Arg Pro Gly Asp Pro Gly Ala Met
1   5   10   15

Glu Pro Trp Ala Leu Pro Thr Trp His Ser Trp Thr Pro Gly Arg Gly
            20   25   30

Gly Glu Pro Ser Ser Ala Ala Pro Ser Ile Ala Asp Thr Pro Pro Ala
        35   40   45

Ala Leu Gln Leu Gln Glu Leu Arg Ser Glu Glu Ser Ser Lys Pro Lys
    50   55   60

Gly Asp Gly Ser Ser Arg Pro Val Gly Gly Thr Asp Pro Glu Gly Ala
65   70   75   80

Glu Ala Cys Leu Pro Ser Leu Gly Gln Gln Ala Ser Ser Ser Gly Pro
                85   90   95

Ala Cys Gln Arg Pro Glu Asp Glu Glu Val Glu Ala Phe Leu Lys Ala
            100   105   110

Lys Leu Asn Met Ser Phe Gly Asp Arg Pro Asn Leu Glu Leu Leu Arg
        115   120   125

```
Ala Leu Gly Glu Leu Arg Gln Arg Cys Ala Ile Leu Lys Glu Glu Asn
    130                 135                 140

Gln Met Leu Arg Lys Ser Ser Phe Pro Glu Thr Glu Glu Lys Val Arg
145                 150                 155                 160

Arg Leu Lys Arg Lys Asn Ala Glu Leu Ala Val Ile Ala Lys Arg Leu
                165                 170                 175

Glu Glu Arg Ala Arg Lys Leu Gln Glu Thr Asn Leu Arg Val Glu Gly
            180                 185                 190

Pro Gln Trp Leu His Val Arg Asp Phe Asp Arg Leu Leu Arg Glu Ser
        195                 200                 205

Gln Arg Glu Val Leu Arg Leu Gln Arg Gln Ile Ala Leu Arg Asn Gln
    210                 215                 220

Arg Glu Thr Leu Pro Leu Pro Pro Ser Trp Pro Pro Gly Pro Ala Leu
225                 230                 235                 240

Gln Ala Arg Ala Gly Ala Pro Ala Pro Gly Ala Pro Gly Glu Ala Thr
                245                 250                 255

Pro Gln Glu Asp Ala Asp Asn Leu Pro Val Ile Leu Gly Glu Pro Glu
            260                 265                 270

Lys Glu Gln Arg Val Gln Gln Leu Glu Ser Glu Leu Ser Lys Lys Arg
        275                 280                 285

Lys Lys Cys Glu Ser Leu Glu Gln Glu Ala Arg Lys Lys Gln Arg Arg
    290                 295                 300

Cys Glu Glu Leu Glu Leu Gln Leu Arg Gln Ala Gln Asn Glu Asn Ala
305                 310                 315                 320

Arg Leu Val Glu Glu Asn Ser Arg Leu Ser Gly Arg Ala Thr Glu Lys
                325                 330                 335

Glu Gln Val Glu Trp Glu Asn Ala Glu Leu Arg Gly Gln Leu Leu Gly
            340                 345                 350
```

```
Val Thr Gln Glu Arg Asp Ser Ala Leu Arg Lys Ser Gln Gly Leu Gln
        355                 360                 365

Ser Lys Leu Glu Ser Leu Glu Gln Val Leu Lys His Met Arg Glu Val
    370                 375                 380

Ala Gln Arg Arg Gln Gln Leu Glu Val Glu His Glu Gln Ala Arg Leu
385                 390                 395                 400

Ser Leu Arg Glu Lys Gln Glu Glu Val Arg Arg Leu Gln Gln Ala Gln
                405                 410                 415

Ala Glu Ala Gln Arg Glu His Glu Gly Ala Val Gln Leu Leu Glu Ser
            420                 425                 430

Thr Leu Asp Ser Met Gln Ala Arg Val Arg Glu Leu Glu Glu Gln Cys
        435                 440                 445

Arg Ser Gln Thr Glu Gln Phe Ser Leu Leu Ala Gln Glu Leu Gln Ala
    450                 455                 460

Phe Arg Leu His Pro Gly Pro Leu Asp Leu Leu Thr Ser Ala Leu Asp
465                 470                 475                 480

Cys Gly Ser Leu Gly Asp Cys Pro Pro Pro Pro Cys Cys Cys Ser Ile
                485                 490                 495

Pro Gln Pro Cys Arg Gly Ser Gly Pro Lys Asp Leu Asp Leu Pro Pro
            500                 505                 510

Gly Ser Pro Gly Arg Cys Thr Pro Lys Ser Ser Glu Pro Ala Pro Ala
        515                 520                 525

Thr Leu Thr Gly Val Pro Arg Arg Thr Ala Lys Lys Ala Glu Ser Leu
    530                 535                 540

Ser Asn Ser Ser His Ser Glu Ser Ile His Asn Ser Pro Lys Ser Cys
545                 550                 555                 560

Pro Thr Pro Glu Val Asp Thr Ala Ser Glu Val Glu Glu Leu Glu Ala
                565                 570                 575
```

```
Asp Ser Val Ser Leu Leu Pro Ala Ala Pro Glu Gly Ser Arg Gly Gly
            580                 585                 590

Ala Arg Ile Gln Val Phe Leu Ala Arg Tyr Ser Tyr Asn Pro Phe Glu
        595                 600                 605

Gly Pro Asn Glu Asn Pro Glu Ala Glu Leu Pro Leu Thr Ala Gly Glu
    610                 615                 620

Tyr Ile Tyr Ile Tyr Gly Asn Met Asp Glu Asp Gly Phe Phe Glu Gly
625                 630                 635                 640

Glu Leu Met Asp Gly Arg Arg Gly Leu Val Pro Ser Asn Phe Val Glu
                645                 650                 655

Arg Val Ser Asp Asp Asp Leu Leu Thr Ser Leu Pro Pro Glu Leu Ala
            660                 665                 670

Asp Leu Ser His Ser Ser Gly Pro Glu Leu Ser Phe Leu Ser Val Gly
        675                 680                 685

Gly Gly Gly Ser Ser Ser Gly Gly Gln Ser Ser Val Gly Arg Ser Gln
    690                 695                 700

Pro Arg Pro Glu Glu Glu Asp Ala Gly Asp Glu Leu Ser Leu Ser Pro
705                 710                 715                 720

Ser Pro Glu Gly Leu Gly Glu Pro Pro Ala Val Pro Tyr Pro Arg Arg
                725                 730                 735

Leu Val Val Leu Lys Gln Leu Ala His Ser Val Val Leu Ala Trp Glu
            740                 745                 750

Pro Pro Pro Glu Gln Val Glu Leu His Gly Phe His Ile Cys Val Asn
        755                 760                 765

Gly Glu Leu Arg Gln Ala Leu Gly Pro Gly Ala Pro Pro Lys Ala Val
    770                 775                 780

Leu Glu Asn Leu Asp Leu Trp Ala Gly Pro Leu His Ile Ser Val Gln
785                 790                 795                 800

Ala Leu Thr Ser Arg Gly Ser Ser Asp Pro Leu Arg Cys Cys Leu Ala
```

805 810 815

Val Gly Ala Arg Ala Gly Val Val Pro Ser Gln Leu Arg Val His Arg
820 825 830

Leu Thr Ala Thr Ser Ala Glu Ile Thr Trp Val Pro Gly Asn Ser Asn
835 840 845

Leu Ala His Ala Ile Tyr Leu Asn Gly Glu Glu Cys Pro Pro Ala Ser
850 855 860

Pro Ser Thr Tyr Trp Ala Thr Phe Cys His Leu Arg Pro Gly Thr Pro
865 870 875 880

Tyr Gln Ala Gln Val Glu Ala Gln Leu Pro Pro Gln Gly Pro Trp Glu
885 890 895

Pro Gly Trp Glu Arg Leu Glu Gln Arg Ala Ala Thr Leu Gln Phe Thr
900 905 910

Thr Leu Pro Ala Gly Pro Pro Asp Ala Pro Leu Asp Val Gln Ile Glu
915 920 925

Pro Gly Pro Ser Pro Gly Ile Leu Ile Ile Ser Trp Leu Pro Val Thr
930 935 940

Ile Asp Ala Ala Gly Thr Ser Asn Gly Val Arg Val Thr Gly Tyr Ala
945 950 955 960

Ile Tyr Ala Asp Gly Gln Lys Ile Met Glu Val Ala Ser Pro Thr Ala
965 970 975

Gly Ser Val Leu Val Glu Leu Ser Gln Leu Gln Leu Leu Gln Val Cys
980 985 990

Arg Glu Val Val Val Arg Thr Met Ser Pro His Gly Glu Ser Ala
Asp
995 1000 1005

Ser Ile Pro Ala Pro Ile Thr Pro Ala Leu Ala Pro Ala Ser Leu
1010 1015 1020

Pro Ala Arg Val Ser Cys Pro Ser Pro His Pro Ser Pro Glu Ala

1025 1030 1035

Arg Ala Pro Leu Ala Ser Ala Ser Pro Gly Pro Gly Asp Pro Ser
1040 1045 1050

Ser Pro Leu Gln His Pro Ala Pro Leu Gly Thr Gln Glu Pro Pro
1055 1060 1065

Gly Ala Pro Pro Ala Ser Pro Ser Arg Glu Met Ala Lys Gly Ser
1070 1075 1080

His Glu Asp Pro Pro Ala Pro Cys Ser Gln Glu Glu Ala Gly Ala
1085 1090 1095

Ala Val Leu Gly Thr Ser Glu Glu Arg Thr Ala Ser Thr Ser Thr
1100 1105 1110

Leu Gly Glu Lys Asp Pro Gly Pro Ala Ala Pro Ser Leu Ala Lys
1115 1120 1125

Gln Glu Ala Glu Trp Thr Ala Gly Glu Ala Cys Pro Ala Ser Ser
1130 1135 1140

Ser Thr Gln Gly Ala Arg Ala Gln Gln Ala Pro Asn Thr Glu Met
1145 1150 1155

Cys Gln Gly Gly Asp Pro Gly Ser Gly Leu Arg Pro Arg Ala Glu
1160 1165 1170

Lys Glu Asp Thr Ala Glu Leu Gly Val His Leu Val Asn Ser Leu
1175 1180 1185

Val Asp His Gly Arg Asn Ser Asp Leu Ser Asp Ile Gln Glu Glu
1190 1195 1200

Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Leu Gly Ser Arg
1205 1210 1215

Thr Cys Ser Phe Gln Lys Gln Val Ala Gly Asn Ser Ile Arg Glu
1220 1225 1230

Asn Gly Ala Lys Ser Gln Pro Asp Pro Phe Cys Glu Thr Asp Ser
1235 1240 1245

```
Asp Glu  Glu Ile Leu Glu Gln  Ile Leu Glu Leu Pro  Leu Gln Gln
    1250                 1255                 1260

Phe Cys  Ser Lys Lys Leu Phe  Ser Ile Pro Glu Glu  Glu Glu Glu
    1265                 1270                 1275

Glu Glu  Glu Asp Glu Glu Glu  Glu Lys Ser Gly Ala  Gly Cys Ser
    1280                 1285                 1290

Ser Arg  Asp Pro Gly Pro Pro  Glu Pro Ala Leu Leu  Gly Leu Gly
    1295                 1300                 1305

Cys Asp  Ser Gly Gln Pro Arg  Arg Pro Gly Gln Cys  Pro Leu Ser
    1310                 1315                 1320

Pro Glu  Ser Ser Arg Ala Gly  Asp Cys Leu Glu Asp  Met Pro Gly
    1325                 1330                 1335

Leu Val  Gly Gly Ser Ser Arg  Arg Arg Gly Gly Gly  Ser Pro Glu
    1340                 1345                 1350

Lys Pro  Pro Ser Arg Arg Arg  Pro Pro Asp Pro Arg  Glu His Cys
    1355                 1360                 1365

Ser Arg  Leu Leu Ser Asn Asn  Gly Pro Gln Ala Ser  Gly Arg Leu
    1370                 1375                 1380

Gly Pro  Thr Arg Glu Arg Gly  Gly Leu Pro Val Ile  Glu Gly Pro
    1385                 1390                 1395

Arg Thr  Gly Leu Glu Ala Ser  Gly Arg Gly Arg Leu  Gly Pro Ser
    1400                 1405                 1410

Arg Arg  Cys Ser Arg Gly Arg  Ala Leu Glu Pro Gly  Leu Ala Ser
    1415                 1420                 1425

Cys Leu  Ser Pro Lys Cys Leu  Glu Ile Ser Ile Glu  Tyr Asp Ser
    1430                 1435                 1440

Glu Asp  Glu Gln Glu Ala Gly  Ser Gly Gly Ile Ser  Ile Thr Ser
    1445                 1450                 1455
```

```
Ser Cys  Tyr Pro Gly Asp Gly  Glu Ala Trp Gly Thr  Ala Thr Val
    1460                1465                1470

Gly Arg  Pro Arg Gly Pro Pro  Lys Ala Asn Ser Gly  Pro Lys Pro
    1475                1480                1485

Tyr Pro  Arg Leu Pro Ala Trp  Glu Lys Gly Glu Pro  Glu Arg Arg
    1490                1495                1500

Gly Arg  Ser Ala Thr Gly Arg  Ala Lys Glu Pro Leu  Ser Arg Ala
    1505                1510                1515

Thr Glu  Thr Gly Glu Ala Arg  Gly Gln Asp Gly Ser  Gly Arg Arg
    1520                1525                1530

Gly Pro  Gln Lys Arg Gly Val  Arg Val Leu Arg Pro  Ser Thr Ala
    1535                1540                1545

Glu Leu  Val Pro Ala Arg Ser  Pro Ser Glu Thr Leu  Ala Tyr Gln
    1550                1555                1560

His Leu  Pro Val Arg Ile Phe  Val Ala Leu Phe Asp  Tyr Asp Pro
    1565                1570                1575

Val Ser  Met Ser Pro Asn Pro  Asp Ala Gly Glu Glu  Glu Leu Pro
    1580                1585                1590

Phe Arg  Glu Gly Gln Ile Leu  Lys Val Phe Gly Asp  Lys Asp Ala
    1595                1600                1605

Asp Gly  Phe Tyr Gln Gly Glu  Gly Gly Gly Arg Thr  Gly Tyr Ile
    1610                1615                1620

Pro Cys  Asn Met Val Ala Glu  Val Ala Val Asp Ser  Pro Ala Gly
    1625                1630                1635

Arg Gln  Gln Leu Leu Gln Arg  Gly Tyr Leu Ser Pro  Asp Ile Leu
    1640                1645                1650

Leu Glu  Gly Ser Gly Asn Gly  Pro Phe Val Tyr Ser  Thr Ala His
    1655                1660                1665
```

```
Thr Thr  Gly Pro Pro Pro Lys  Pro Arg Arg Ser Lys  Lys Ala Glu
    1670                 1675                 1680

Ser Glu  Gly Pro Ala Gln Pro  Cys Pro Gly Pro Pro  Lys Leu Val
    1685                 1690                 1695

Pro Ser  Ala Asp Leu Lys Ala  Pro His Ser Met Val  Ala Ala Phe
    1700                 1705                 1710

Asp Tyr  Asn Pro Gln Glu Ser  Ser Pro Asn Met Asp  Val Glu Ala
    1715                 1720                 1725

Glu Leu  Pro Phe Arg Ala Gly  Asp Val Ile Thr Val  Phe Gly Gly
    1730                 1735                 1740

Met Asp  Asp Asp Gly Phe Tyr  Tyr Gly Glu Leu Asn  Gly Gln Arg
    1745                 1750                 1755

Gly Leu  Val Pro Ser Asn Phe  Leu Glu Gly Pro Gly  Pro Glu Ala
    1760                 1765                 1770

Gly Gly  Leu Asp Arg Glu Pro  Arg Thr Pro Gln Ala  Glu Ser Gln
    1775                 1780                 1785

Arg Thr  Arg Arg Arg Arg Val  Gln Cys
    1790                 1795


<210> 8913
<211> 1857
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BZRAP1; "

<220>
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      benzodiazepine receptor (peripheral) associated prt 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O95153; "
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<220>
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<400> 8913
Met Glu Gln Leu Thr Thr Leu Pro Arg Pro Gly Asp Pro Gly Ala Met
1   5   10   15

Glu Pro Trp Ala Leu Pro Thr Trp His Ser Trp Thr Pro Gly Arg Gly
            20   25   30

Gly Glu Pro Ser Ser Ala Ala Pro Ser Ile Ala Asp Thr Pro Pro Ala
        35   40   45

Ala Leu Gln Leu Gln Glu Leu Arg Ser Glu Glu Ser Ser Lys Pro Lys
    50   55   60

Gly Asp Gly Ser Ser Arg Pro Val Gly Gly Thr Asp Pro Glu Gly Ala
65   70   75   80

Glu Ala Cys Leu Pro Ser Leu Gly Gln Gln Ala Ser Ser Ser Gly Pro
                85   90   95

Ala Cys Gln Arg Pro Glu Asp Glu Glu Val Glu Ala Phe Leu Lys Ala
            100   105   110

Lys Leu Asn Met Ser Phe Gly Asp Arg Pro Asn Leu Glu Leu Leu Arg
        115   120   125

Ala Leu Gly Glu Leu Arg Gln Arg Cys Ala Ile Leu Lys Glu Glu Asn
    130   135   140

Gln Met Leu Arg Lys Ser Ser Phe Pro Glu Thr Glu Glu Lys Val Arg
145   150   155   160

Arg Leu Lys Arg Lys Asn Ala Glu Leu Ala Val Ile Ala Lys Arg Leu
                165   170   175

Glu Glu Arg Ala Arg Lys Leu Gln Glu Thr Asn Leu Arg Val Val Ser
            180   185   190

Ala Pro Leu Pro Arg Pro Gly Thr Ser Leu Glu Leu Cys Arg Lys Ala
        195   200   205

```
Leu Ala Arg Gln Arg Ala Arg Asp Leu Ser Glu Thr Ala Ser Ala Leu
    210                 215                 220

Leu Ala Lys Asp Lys Gln Ile Ala Ala Leu Gln Arg Glu Cys Arg Glu
225                 230                 235                 240

Leu Gln Ala Arg Leu Thr Leu Val Gly Lys Glu Gly Pro Gln Trp Leu
                245                 250                 255

His Val Arg Asp Phe Asp Arg Leu Leu Arg Glu Ser Gln Arg Glu Val
            260                 265                 270

Leu Arg Leu Gln Arg Gln Ile Ala Leu Arg Asn Gln Arg Glu Thr Leu
        275                 280                 285

Pro Leu Pro Pro Ser Trp Pro Pro Gly Pro Ala Leu Gln Ala Arg Ala
    290                 295                 300

Gly Ala Pro Ala Pro Gly Ala Pro Gly Glu Ala Thr Pro Gln Glu Asp
305                 310                 315                 320

Ala Asp Asn Leu Pro Val Ile Leu Gly Glu Pro Glu Lys Glu Gln Arg
                325                 330                 335

Val Gln Gln Leu Glu Ser Glu Leu Ser Lys Lys Arg Lys Lys Cys Glu
            340                 345                 350

Ser Leu Glu Gln Glu Ala Arg Lys Lys Gln Arg Arg Cys Glu Glu Leu
        355                 360                 365

Glu Leu Gln Leu Arg Gln Ala Gln Asn Glu Asn Ala Arg Leu Val Glu
    370                 375                 380

Glu Asn Ser Arg Leu Ser Gly Arg Ala Thr Glu Lys Glu Gln Val Glu
385                 390                 395                 400

Trp Glu Asn Ala Glu Leu Arg Gly Gln Leu Leu Gly Val Thr Gln Glu
                405                 410                 415

Arg Asp Ser Ala Leu Arg Lys Ser Gln Gly Leu Gln Ser Lys Leu Glu
            420                 425                 430
```

```
Ser Leu Glu Gln Val Leu Lys His Met Arg Glu Val Ala Gln Arg Arg
        435                 440                 445

Gln Gln Leu Glu Val Glu His Glu Gln Ala Arg Leu Ser Leu Arg Glu
    450                 455                 460

Lys Gln Glu Glu Val Arg Arg Leu Gln Gln Ala Gln Ala Glu Ala Gln
465                 470                 475                 480

Arg Glu His Glu Gly Ala Val Gln Leu Leu Glu Ser Thr Leu Asp Ser
                485                 490                 495

Met Gln Ala Arg Val Arg Glu Leu Glu Glu Gln Cys Arg Ser Gln Thr
            500                 505                 510

Glu Gln Phe Ser Leu Leu Ala Gln Glu Leu Gln Ala Phe Arg Leu His
        515                 520                 525

Pro Gly Pro Leu Asp Leu Leu Thr Ser Ala Leu Asp Cys Gly Ser Leu
    530                 535                 540

Gly Asp Cys Pro Pro Pro Pro Cys Cys Cys Ser Ile Pro Gln Pro Cys
545                 550                 555                 560

Arg Gly Ser Gly Pro Lys Asp Leu Asp Leu Pro Pro Gly Ser Pro Gly
                565                 570                 575

Arg Cys Thr Pro Lys Ser Ser Glu Pro Ala Pro Ala Thr Leu Thr Gly
            580                 585                 590

Val Pro Arg Arg Thr Ala Lys Lys Ala Glu Ser Leu Ser Asn Ser Ser
        595                 600                 605

His Ser Glu Ser Ile His Asn Ser Pro Lys Ser Cys Pro Thr Pro Glu
    610                 615                 620

Val Asp Thr Ala Ser Glu Val Glu Glu Leu Glu Ala Asp Ser Val Ser
625                 630                 635                 640

Leu Leu Pro Ala Ala Pro Glu Gly Ser Arg Gly Gly Ala Arg Ile Gln
                645                 650                 655

Val Phe Leu Ala Arg Tyr Ser Tyr Asn Pro Phe Glu Gly Pro Asn Glu
```

660 665 670

Asn Pro Glu Ala Glu Leu Pro Leu Thr Ala Gly Glu Tyr Ile Tyr Ile
675 680 685

Tyr Gly Asn Met Asp Glu Asp Gly Phe Phe Glu Gly Glu Leu Met Asp
690 695 700

Gly Arg Arg Gly Leu Val Pro Ser Asn Phe Val Glu Arg Val Ser Asp
705 710 715 720

Asp Asp Leu Leu Thr Ser Leu Pro Pro Glu Leu Ala Asp Leu Ser His
725 730 735

Ser Ser Gly Pro Glu Leu Ser Phe Leu Ser Val Gly Gly Gly Gly Ser
740 745 750

Ser Ser Gly Gly Gln Ser Ser Val Gly Arg Ser Gln Pro Arg Pro Glu
755 760 765

Glu Glu Asp Ala Gly Asp Glu Leu Ser Leu Ser Pro Ser Pro Glu Gly
770 775 780

Leu Gly Glu Pro Pro Ala Val Pro Tyr Pro Arg Arg Leu Val Val Leu
785 790 795 800

Lys Gln Leu Ala His Ser Val Val Leu Ala Trp Glu Pro Pro Pro Glu
805 810 815

Gln Val Glu Leu His Gly Phe His Ile Cys Val Asn Gly Glu Leu Arg
820 825 830

Gln Ala Leu Gly Pro Gly Ala Pro Pro Lys Ala Val Leu Glu Asn Leu
835 840 845

Asp Leu Trp Ala Gly Pro Leu His Ile Ser Val Gln Ala Leu Thr Ser
850 855 860

Arg Gly Ser Ser Asp Pro Leu Arg Cys Cys Leu Ala Val Gly Ala Arg
865 870 875 880

Ala Gly Val Val Pro Ser Gln Leu Arg Val His Arg Leu Thr Ala Thr
885 890 895

```
Ser Ala Glu Ile Thr Trp Val Pro Gly Asn Ser Asn Leu Ala His Ala
            900                 905                 910

Ile Tyr Leu Asn Gly Glu Glu Cys Pro Pro Ala Ser Pro Ser Thr Tyr
        915                 920                 925

Trp Ala Thr Phe Cys His Leu Arg Pro Gly Thr Pro Tyr Gln Ala Gln
    930                 935                 940

Val Glu Ala Gln Leu Pro Pro Gln Gly Pro Trp Glu Pro Gly Trp Glu
945                 950                 955                 960

Arg Leu Glu Gln Arg Ala Ala Thr Leu Gln Phe Thr Thr Leu Pro Ala
                965                 970                 975

Gly Pro Pro Asp Ala Pro Leu Asp Val Gln Ile Glu Pro Gly Pro Ser
            980                 985                 990

Pro Gly Ile Leu Ile Ile Ser Trp  Leu Pro Val Thr Ile  Asp Ala
Ala
        995                 1000                1005

Gly Thr  Ser Asn Gly Val Arg  Val Thr Gly Tyr Ala  Ile Tyr Ala
    1010                1015                1020

Asp Gly  Gln Lys Ile Met Glu  Val Ala Ser Pro Thr  Ala Gly Ser
    1025                1030                1035

Val Leu  Val Glu Leu Ser Gln  Leu Gln Leu Leu Gln  Val Cys Arg
    1040                1045                1050

Glu Val  Val Val Arg Thr Met  Ser Pro His Gly Glu  Ser Ala Asp
    1055                1060                1065

Ser Ile  Pro Ala Pro Ile Thr  Pro Ala Leu Ala Pro  Ala Ser Leu
    1070                1075                1080

Pro Ala  Arg Val Ser Cys Pro  Ser Pro His Pro Ser  Pro Glu Ala
    1085                1090                1095

Arg Ala  Pro Leu Ala Ser Ala  Ser Pro Gly Pro Gly  Asp Pro Ser
    1100                1105                1110
```

```
Ser Pro  Leu Gln His Pro Ala  Pro Leu Gly Thr Gln  Glu Pro Pro
    1115                1120                1125

Gly Ala  Pro Pro Ala Ser Pro  Ser Arg Glu Met Ala  Lys Gly Ser
    1130                1135                1140

His Glu  Asp Pro Pro Ala Pro  Cys Ser Gln Glu Glu  Ala Gly Ala
    1145                1150                1155

Ala Val  Leu Gly Thr Ser Glu  Glu Arg Thr Ala Ser  Thr Ser Thr
    1160                1165                1170

Leu Gly  Glu Lys Asp Pro Gly  Pro Ala Ala Pro Ser  Leu Ala Lys
    1175                1180                1185

Gln Glu  Ala Glu Trp Thr Ala  Gly Glu Ala Cys Pro  Ala Ser Ser
    1190                1195                1200

Ser Thr  Gln Gly Ala Arg Ala  Gln Gln Ala Pro Asn  Thr Glu Met
    1205                1210                1215

Cys Gln  Gly Gly Asp Pro Gly  Ser Gly Leu Arg Pro  Arg Ala Glu
    1220                1225                1230

Lys Glu  Asp Thr Ala Glu Leu  Gly Val His Leu Val  Asn Ser Leu
    1235                1240                1245

Val Asp  His Gly Arg Asn Ser  Asp Leu Ser Asp Ile  Gln Glu Glu
    1250                1255                1260

Glu Glu  Glu Glu Glu Glu Glu  Glu Glu Glu Glu Leu  Gly Ser Arg
    1265                1270                1275

Thr Cys  Ser Phe Gln Lys Gln  Val Ala Gly Asn Ser  Ile Arg Glu
    1280                1285                1290

Asn Gly  Ala Lys Ser Gln Pro  Asp Pro Phe Cys Glu  Thr Asp Ser
    1295                1300                1305

Asp Glu  Glu Ile Leu Glu Gln  Ile Leu Glu Leu Pro  Leu Gln Gln
    1310                1315                1320
```

```
Phe Cys  Ser Lys Lys Leu Phe  Ser Ile Pro Glu Glu  Glu Glu Glu
    1325                1330                1335

Glu Glu  Glu Asp Glu Glu Glu  Glu Lys Ser Gly Ala  Gly Cys Ser
    1340                1345                1350

Ser Arg  Asp Pro Gly Pro Pro  Glu Pro Ala Leu Leu  Gly Leu Gly
    1355                1360                1365

Cys Asp  Ser Gly Gln Pro Arg  Arg Pro Gly Gln Cys  Pro Leu Ser
    1370                1375                1380

Pro Glu  Ser Ser Arg Ala Gly  Asp Cys Leu Glu Asp  Met Pro Gly
    1385                1390                1395

Leu Val  Gly Gly Ser Ser Arg  Arg Arg Gly Gly Gly  Ser Pro Glu
    1400                1405                1410

Lys Pro  Pro Ser Arg Arg Arg  Pro Pro Asp Pro Arg  Glu His Cys
    1415                1420                1425

Ser Arg  Leu Leu Ser Asn Asn  Gly Pro Gln Ala Ser  Gly Arg Leu
    1430                1435                1440

Gly Pro  Thr Arg Glu Arg Gly  Gly Leu Pro Val Ile  Glu Gly Pro
    1445                1450                1455

Arg Thr  Gly Leu Glu Ala Ser  Gly Arg Gly Arg Leu  Gly Pro Ser
    1460                1465                1470

Arg Arg  Cys Ser Arg Gly Arg  Ala Leu Glu Pro Gly  Leu Ala Ser
    1475                1480                1485

Cys Leu  Ser Pro Lys Cys Leu  Glu Ile Ser Ile Glu  Tyr Asp Ser
    1490                1495                1500

Glu Asp  Glu Gln Glu Ala Gly  Ser Gly Gly Ile Ser  Ile Thr Ser
    1505                1510                1515

Ser Cys  Tyr Pro Gly Asp Gly  Glu Ala Trp Gly Thr  Ala Thr Val
    1520                1525                1530
```

```
Gly Arg  Pro Arg Gly Pro Pro  Lys Ala Asn Ser Gly  Pro Lys Pro
    1535                1540                1545

Tyr Pro  Arg Leu Pro Ala Trp  Glu Lys Gly Glu Pro  Glu Arg Arg
    1550                1555                1560

Gly Arg  Ser Ala Thr Gly Arg  Ala Lys Glu Pro Leu  Ser Arg Ala
    1565                1570                1575

Thr Glu  Thr Gly Glu Ala Arg  Gly Gln Asp Gly Ser  Gly Arg Arg
    1580                1585                1590

Gly Pro  Gln Lys Arg Gly Val  Arg Val Leu Arg Pro  Ser Thr Ala
    1595                1600                1605

Glu Leu  Val Pro Ala Arg Ser  Pro Ser Glu Thr Leu  Ala Tyr Gln
    1610                1615                1620

His Leu  Pro Val Arg Ile Phe  Val Ala Leu Phe Asp  Tyr Asp Pro
    1625                1630                1635

Val Ser  Met Ser Pro Asn Pro  Asp Ala Gly Glu Glu  Glu Leu Pro
    1640                1645                1650

Phe Arg  Glu Gly Gln Ile Leu  Lys Val Phe Gly Asp  Lys Asp Ala
    1655                1660                1665

Asp Gly  Phe Tyr Gln Gly Glu  Gly Gly Gly Arg Thr  Gly Tyr Ile
    1670                1675                1680

Pro Cys  Asn Met Val Ala Glu  Val Ala Val Asp Ser  Pro Ala Gly
    1685                1690                1695

Arg Gln  Gln Leu Leu Gln Arg  Gly Tyr Leu Ser Pro  Asp Ile Leu
    1700                1705                1710

Leu Glu  Gly Ser Gly Asn Gly  Pro Phe Val Tyr Ser  Thr Ala His
    1715                1720                1725

Thr Thr  Gly Pro Pro Pro Lys  Pro Arg Arg Ser Lys  Lys Ala Glu
    1730                1735                1740

Ser Glu  Gly Pro Ala Gln Pro  Cys Pro Gly Pro Pro  Lys Leu Val
```

```
    1745                1750                1755

Pro Ser  Ala Asp Leu Lys Ala  Pro His Ser Met Val  Ala Ala Phe
    1760                1765                1770

Asp Tyr  Asn Pro Gln Glu Ser  Ser Pro Asn Met Asp  Val Glu Ala
    1775                1780                1785

Glu Leu  Pro Phe Arg Ala Gly  Asp Val Ile Thr Val  Phe Gly Gly
    1790                1795                1800

Met Asp  Asp Asp Gly Phe Tyr  Tyr Gly Glu Leu Asn  Gly Gln Arg
    1805                1810                1815

Gly Leu  Val Pro Ser Asn Phe  Leu Glu Gly Pro Gly  Pro Glu Ala
    1820                1825                1830

Gly Gly  Leu Asp Arg Glu Pro  Arg Thr Pro Gln Ala  Glu Ser Gln
    1835                1840                1845

Arg Thr  Arg Arg Arg Arg Val  Gln Cys
    1850                1855


<210> 8914
<211> 171
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1810; "

<220>
<221> source
<223> /note="Gene Symbol: BZRAP1; "

<220>
<221> source
<223> /note="Gene Name:
      benzodiazepine receptor (peripheral) associated prt 1; "

<220>
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<223> /note="ENSP ID: ENSP00000462518"

<400> 8914
Arg Arg Ser Lys Lys Ala Glu Ser Glu Gly Pro Ala Gln Pro Cys Pro
1               5                   10                  15
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Gly Pro Pro Lys Leu Val Pro Ser Ala Asp Leu Lys Ala Pro His Ser
            20                  25                  30

Met Val Ala Ala Phe Asp Tyr Asn Pro Gln Glu Ser Ser Pro Asn Met
        35                  40                  45

Asp Val Glu Ala Glu Leu Pro Phe Arg Ala Gly Asp Val Ile Thr Val
    50                  55                  60

Phe Gly Gly Met Asp Asp Asp Gly Phe Tyr Tyr Gly Glu Leu Asn Gly
65                  70                  75                  80

Gln Arg Gly Leu Val Pro Ser Asn Phe Leu Glu Gly Pro Gly Pro Glu
                85                  90                  95

Ala Gly Gly Leu Asp Arg Glu Pro Arg Thr Pro Gln Ala Glu Ser Gln
            100                 105                 110

Asp Trp Gly Cys Thr Thr Gln Gly Ser Pro Gly Pro Pro Gly Gly Pro
        115                 120                 125

Cys Thr Pro Ser Ser Gly Ser Ala Pro Arg Ile Glu Arg Gly Glu Pro
    130                 135                 140

Gln Gly Arg Ser Glu Lys Val Trp Gly Phe Phe Ser Lys Gly Lys Gln
145                 150                 155                 160

Leu Leu Arg Arg Leu Gly Ser Gly Lys Lys Glu
                165                 170
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<210> 8915
<211> 296
<212> PRT
<213> Homo sapiens

<220>
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<220>
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benzodiazepine receptor (peripheral) associated prt 1; "

<220>
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<223> /note="ENSP ID: ENSP00000462710"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 8915

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Xaa Ala Ala Val Leu Gly Thr Ser Glu Glu Arg Thr Ala Ser Thr Ser
1               5                  10                  15

Thr Leu Gly Glu Lys Asp Pro Gly Pro Ala Ala Pro Ser Leu Ala Lys
            20                  25                  30

Gln Glu Ala Glu Trp Thr Ala Gly Glu Ala Cys Pro Ala Ser Ser Ser
        35                  40                  45

Thr Gln Gly Ala Arg Ala Gln Gln Ala Pro Asn Thr Glu Met Cys Gln
    50                  55                  60

Gly Gly Asp Pro Gly Ser Gly Leu Arg Pro Arg Ala Glu Lys Glu Asp
65                  70                  75                  80

Thr Ala Glu Leu Gly Val His Leu Val Asn Ser Leu Val Asp His Gly
                85                  90                  95

Arg Asn Ser Asp Leu Ser Asp Ile Gln Glu Glu Glu Glu Glu Glu Glu
            100                 105                 110

Glu Glu Glu Glu Glu Glu Leu Gly Ser Arg Thr Cys Ser Phe Gln Lys
        115                 120                 125

Gln Val Ala Gly Asn Ser Ile Arg Glu Asn Gly Ala Lys Ala Thr Glu
    130                 135                 140

Thr Gly Glu Ala Arg Gly Gln Asp Gly Ser Gly Arg Arg Gly Pro Gln
145                 150                 155                 160

Lys Arg Gly Val Arg Val Leu Arg Pro Ser Thr Ala Glu Leu Val Pro
                165                 170                 175
```

```
Ala Arg Ser Pro Ser Glu Thr Leu Ala Tyr Gln His Leu Pro Val Arg
            180                 185                 190

Ile Phe Val Ala Leu Phe Asp Tyr Asp Pro Val Ser Met Ser Pro Asn
        195                 200                 205

Pro Asp Ala Gly Glu Glu Glu Leu Pro Phe Arg Glu Gly Gln Ile Leu
    210                 215                 220

Lys Val Phe Gly Asp Lys Asp Ala Asp Gly Phe Tyr Gln Gly Glu Gly
225                 230                 235                 240

Gly Gly Arg Thr Gly Tyr Ile Pro Cys Asn Met Val Ala Glu Val Ala
                245                 250                 255

Val Asp Ser Pro Ala Gly Arg Gln Gln Leu Leu Gln Arg Gly Tyr Leu
            260                 265                 270

Ser Pro Asp Ile Leu Leu Glu Gly Ser Ala His Thr Thr Gly Pro Pro
        275                 280                 285

Pro Lys Pro Arg Arg Ser Lys Lys
    290                 295


<210> 8916
<211> 270
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      benzodiazepine receptor (peripheral) associated prt 1; "

<220>
<221> source
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<220>
<221> MOD_RES
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<222> (1)..(1)
<223> Any amino acid

<400> 8916
Xaa Ala Lys Glu Pro Leu Ser Arg Ala Thr Glu Thr Gly Glu Ala Arg
1 5 10 15

Gly Gln Asp Gly Ser Gly Arg Arg Gly Pro Gln Lys Arg Gly Val Arg
20 25 30

Val Leu Arg Pro Ser Thr Ala Glu Leu Val Pro Ala Arg Ser Pro Ser
35 40 45

Glu Thr Leu Ala Tyr Gln His Leu Pro Val Arg Ile Phe Val Ala Leu
50 55 60

Phe Asp Tyr Asp Pro Val Ser Met Ser Pro Asn Pro Asp Ala Gly Glu
65 70 75 80

Glu Glu Leu Pro Phe Arg Glu Gly Gln Ile Leu Lys Val Phe Gly Asp
85 90 95

Lys Asp Ala Asp Gly Phe Tyr Gln Gly Glu Gly Gly Gly Arg Thr Gly
100 105 110

Tyr Ile Pro Cys Asn Met Val Ala Glu Val Ala Val Asp Ser Pro Ala
115 120 125

Gly Arg Gln Gln Leu Leu Gln Arg Gly Tyr Leu Ser Pro Asp Ile Leu
130 135 140

Leu Glu Gly Ser Ala His Thr Thr Gly Pro Pro Pro Lys Pro Arg Arg
145 150 155 160

Ser Lys Lys Ala Glu Ser Glu Gly Pro Ala Gln Pro Cys Pro Gly Pro
165 170 175

Pro Lys Leu Val Pro Ser Ala Asp Leu Lys Ala Pro His Ser Met Val
180 185 190

Ala Ala Phe Asp Tyr Asn Pro Gln Glu Ser Ser Pro Asn Met Asp Val
195 200 205

Glu Ala Glu Leu Pro Phe Arg Ala Gly Asp Val Ile Thr Val Phe Gly

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    210                 215                 220

Gly Met Asp Asp Asp Gly Phe Tyr Tyr Gly Glu Leu Asn Gly Gln Arg
225                 230                 235                 240

Gly Leu Val Pro Ser Asn Phe Leu Glu Gly Pro Gly Pro Glu Ala Gly
                245                 250                 255

Gly Leu Asp Arg Glu Pro Arg Thr Pro Gln Ala Glu Ser Gln
            260                 265                 270


<210> 8917
<211> 287
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="Uniprot ID:  Q96G97; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000278893"

<400> 8917
Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
1               5                   10                  15

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
            20                  25                  30

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
        35                  40                  45

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
    50                  55                  60
```

```
Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
65                  70                  75                  80

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
                85                  90                  95

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
            100                 105                 110

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
        115                 120                 125

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
    130                 135                 140

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
145                 150                 155                 160

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
                165                 170                 175

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
            180                 185                 190

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
        195                 200                 205

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Arg
    210                 215                 220

Leu Thr Ser Glu Lys Glu Thr Ile Pro Gly Arg Lys Ser Asn Glu Gly
225                 230                 235                 240

Ser Leu Leu Ile Ser Gln Gly Leu Lys Ala Arg Arg Ser Gln Leu Arg
                245                 250                 255

Asn Gln Met Leu Gln Arg Met Val Arg Ala Leu Lys Ile Pro Gln Gly
            260                 265                 270

Gln Arg Val Ser Cys Pro Arg Arg Arg Asn Gln Ile Ser Ser Pro
        275                 280                 285
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<210> 8918
<211> 277
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
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<223> /note="ENSP ID: ENSP00000301781"

<400> 8918
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1 5 10 15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Glu Pro Pro
20 25 30

Ala Ala Ala Ser His Gly Gln Gly Trp Arg Pro Gly Gly Arg Ala Ala
35 40 45

Arg Asn Ala Arg Pro Glu Pro Gly Ala Arg His Pro Ala Leu Pro Ala
50 55 60

Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
65 70 75 80

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
85 90 95

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
100 105 110

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
115 120 125

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
130 135 140

```
Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
145                 150                 155                 160

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
                165                 170                 175

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
            180                 185                 190

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
        195                 200                 205

Arg Ser Val Thr Ser Cys Tyr Leu Ala Leu Gln Ser Arg Ser Ser Cys
    210                 215                 220

Trp Arg Trp Asn Ser Thr Gln Thr Ile Glu Arg Thr Arg Thr Cys Arg
225                 230                 235                 240

Pro Leu Glu Arg Ser Leu Arg Ser Thr Ala Ser Ala Ser Ser Cys Met
                245                 250                 255

Glu Pro Thr Ser Ala Ser Thr Arg Thr Ser Leu Gly Ser Asp Thr Cys
            260                 265                 270

Tyr Thr Thr Ser Arg
        275


<210> 8919
<211> 462
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BSCL2; "

<220>
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<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
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<221> source
<223> /note="Uniprot ID: Q96G97; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354032"

<400> 8919
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1   5   10   15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Glu Pro Pro
            20   25   30

Ala Ala Ala Ser His Gly Gln Gly Trp Arg Pro Gly Gly Arg Ala Ala
        35   40   45

Arg Asn Ala Arg Pro Glu Pro Gly Ala Arg His Pro Ala Leu Pro Ala
    50   55   60

Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
65   70   75   80

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
                85   90   95

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
            100   105   110

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
        115   120   125

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
    130   135   140

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
145   150   155   160

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
                165   170   175

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
            180   185   190

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser

```
        195                 200                 205

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
    210                 215                 220

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
225                 230                 235                 240

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
                245                 250                 255

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
            260                 265                 270

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Arg
        275                 280                 285

Tyr Leu Leu Tyr Asn Phe Pro Met Thr Cys Ala Phe Ile Gly Val Ala
    290                 295                 300

Ser Asn Phe Thr Phe Leu Ser Val Ile Val Leu Phe Ser Tyr Met Gln
305                 310                 315                 320

Trp Val Trp Gly Gly Ile Trp Pro Arg His Arg Phe Ser Leu Gln Val
                325                 330                 335

Asn Ile Arg Lys Arg Asp Asn Ser Arg Lys Glu Val Gln Arg Arg Ile
            340                 345                 350

Ser Ala His Gln Pro Gly Pro Glu Gly Gln Glu Glu Ser Thr Pro Gln
        355                 360                 365

Ser Asp Val Thr Glu Asp Gly Glu Ser Pro Glu Asp Pro Ser Gly Thr
    370                 375                 380

Glu Gly Gln Leu Ser Glu Glu Glu Lys Pro Asp Gln Gln Pro Leu Ser
385                 390                 395                 400

Gly Glu Glu Glu Leu Glu Pro Glu Ala Ser Asp Gly Ser Gly Ser Trp
                405                 410                 415

Glu Asp Ala Ala Leu Leu Thr Glu Ala Asn Leu Pro Ala Pro Ala Pro
            420                 425                 430
```

```
Ala Ser Ala Ser Ala Pro Val Leu Glu Thr Leu Gly Ser Ser Glu Pro
        435                 440                 445

Ala Gly Gly Ala Leu Arg Gln Arg Pro Thr Cys Ser Ser Ser
    450                 455                 460


<210> 8920
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="Uniprot ID:  Q96G97; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384080"

<400> 8920
Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
1               5                   10                  15

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
            20                  25                  30

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
        35                  40                  45

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
    50                  55                  60

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
65                  70                  75                  80
```

```
Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
                85                  90                  95

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
            100                 105                 110

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
        115                 120                 125

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
    130                 135                 140

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
145                 150                 155                 160

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
                165                 170                 175

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
            180                 185                 190

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
        195                 200                 205

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Arg
    210                 215                 220

Tyr Leu Leu Tyr Asn Phe Pro Met Thr Cys Ala Phe Ile Gly Val Ala
225                 230                 235                 240

Ser Asn Phe Thr Phe Leu Ser Val Ile Val Leu Phe Ser Tyr Met Gln
                245                 250                 255

Trp Val Trp Gly Gly Ile Trp Pro Arg His Arg Phe Ser Leu Gln Val
            260                 265                 270

Asn Ile Arg Lys Arg Asp Asn Ser Arg Lys Glu Val Gln Arg Arg Ile
        275                 280                 285

Ser Ala His Gln Pro Gly Pro Glu Gly Gln Glu Glu Ser Thr Pro Gln
    290                 295                 300

Ser Asp Val Thr Glu Asp Gly Glu Ser Pro Glu Asp Pro Ser Gly Thr
```

305 310 315 320

Glu Gly Gln Leu Ser Glu Glu Glu Lys Pro Asp Gln Gln Pro Leu Ser
325 330 335

Gly Glu Glu Glu Leu Glu Pro Glu Ala Ser Asp Gly Ser Gly Ser Trp
340 345 350

Glu Asp Ala Ala Leu Leu Thr Glu Ala Asn Leu Pro Ala Pro Ala Pro
355 360 365

Ala Ser Ala Ser Ala Pro Val Leu Glu Thr Leu Gly Ser Ser Glu Pro
370 375 380

Ala Gly Gly Ala Leu Arg Gln Arg Pro Thr Cys Ser Ser Ser
385 390 395

<210> 8921
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384258"

<400> 8921
Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys Gln Leu
1 5 10 15

Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr Val Pro
20 25 30

Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln Leu Tyr
35 40 45

```
Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Ser Ser Glu
    50                  55                  60

Pro Ala Gly Gly Ala Leu Arg Gln Arg Pro Thr Cys Ser Ser Ser
65                  70                  75


<210> 8922
<211> 464
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385332"

<400> 8922
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1               5                   10                  15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Glu Pro Pro
            20                  25                  30

Ala Ala Ala Ser His Gly Gln Gly Trp Arg Pro Gly Gly Arg Ala Ala
        35                  40                  45

Arg Asn Ala Arg Pro Glu Pro Gly Ala Arg His Pro Ala Leu Pro Ala
    50                  55                  60

Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
65                  70                  75                  80

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
                85                  90                  95

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
```

```
            100                 105                 110

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
        115                 120                 125

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
    130                 135                 140

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
145                 150                 155                 160

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
                165                 170                 175

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
            180                 185                 190

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
        195                 200                 205

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
    210                 215                 220

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
225                 230                 235                 240

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
                245                 250                 255

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
            260                 265                 270

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Arg
        275                 280                 285

Tyr Leu Leu Tyr Asn Phe Pro Met Thr Cys Ala Phe Ile Gly Val Ala
    290                 295                 300

Ser Asn Phe Thr Phe Leu Ser Val Ile Val Leu Phe Ser Tyr Met Gln
305                 310                 315                 320

Trp Val Trp Gly Gly Ile Trp Pro Arg His Arg Phe Ser Leu Gln Val
                325                 330                 335
```

```
Asn Ile Arg Lys Arg Asp Asn Ser Arg Lys Glu Val Gln Arg Arg Ile
            340                 345                 350

Ser Ala His Gln Pro Gly Ala Gly Pro Glu Gly Gln Glu Glu Ser Thr
        355                 360                 365

Pro Gln Ser Asp Val Thr Glu Asp Gly Glu Ser Pro Glu Asp Pro Ser
    370                 375                 380

Gly Thr Glu Gly Gln Leu Ser Glu Glu Glu Lys Pro Asp Gln Gln Pro
385                 390                 395                 400

Leu Ser Gly Glu Glu Glu Leu Glu Pro Glu Ala Ser Asp Gly Ser Gly
                405                 410                 415

Ser Trp Glu Asp Ala Ala Leu Leu Thr Glu Ala Asn Leu Pro Ala Pro
            420                 425                 430

Ala Pro Ala Ser Ala Ser Ala Pro Val Leu Glu Thr Leu Gly Ser Ser
        435                 440                 445

Glu Pro Ala Gly Gly Ala Leu Arg Gln Arg Pro Thr Cys Ser Ser Ser
    450                 455                 460


<210> 8923
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="Uniprot ID:  Q96G97; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000385561"

<400> 8923
Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
1 5 10 15

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
20 25 30

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
35 40 45

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
50 55 60

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
65 70 75 80

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
85 90 95

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
100 105 110

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
115 120 125

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
130 135 140

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
145 150 155 160

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
165 170 175

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
180 185 190

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
195 200 205

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Arg

```
    210                 215                 220

Tyr Leu Leu Tyr Asn Phe Pro Met Thr Cys Ala Phe Ile Gly Val Ala
225                 230                 235                 240

Ser Asn Phe Thr Phe Leu Ser Val Ile Val Leu Phe Ser Tyr Met Gln
                245                 250                 255

Trp Val Trp Gly Gly Ile Trp Pro Arg His Arg Phe Ser Leu Gln Val
            260                 265                 270

Asn Ile Arg Lys Arg Asp Asn Ser Arg Lys Glu Val Gln Arg Arg Ile
        275                 280                 285

Ser Ala His Gln Pro Gly Pro Glu Gly Gln Glu Glu Ser Thr Pro Gln
    290                 295                 300

Ser Asp Val Thr Glu Asp Gly Glu Ser Pro Glu Asp Pro Ser Gly Thr
305                 310                 315                 320

Glu Gly Gln Leu Ser Glu Glu Glu Lys Pro Asp Gln Gln Pro Leu Ser
                325                 330                 335

Gly Glu Glu Glu Leu Glu Pro Glu Ala Ser Asp Gly Ser Gly Ser Trp
            340                 345                 350

Glu Asp Ala Ala Leu Leu Thr Glu Ala Asn Leu Pro Ala Pro Ala Pro
        355                 360                 365

Ala Ser Ala Ser Ala Pro Val Leu Glu Thr Leu Gly Ser Ser Glu Pro
    370                 375                 380

Ala Gly Gly Ala Leu Arg Gln Arg Pro Thr Cys Ser Ser Ser
385                 390                 395


<210> 8924
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: BSCL2; "

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<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393728"

<400> 8924
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1 5 10 15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Met Pro Thr
20 25 30

Gly Pro Arg Ser Cys Gly Arg
35

<210> 8925
<211> 150
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
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<223> /note="Gene Symbol: BSCL2; "

<220>
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<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405265"

<400> 8925
Phe Ser Tyr Met Gln Trp Val Trp Gly Gly Ile Trp Pro Arg His Arg
1 5 10 15

Phe Ser Leu Gln Val Asn Ile Arg Lys Arg Asp Asn Ser Arg Lys Glu
20 25 30

Val Gln Arg Arg Ile Ser Ala His Gln Pro Gly Pro Glu Gly Gln Glu

```
        35                  40                  45

Glu Ser Thr Pro Gln Ser Asp Val Thr Glu Asp Val Ser Gly Ser Asp
    50                  55                  60

Pro Cys Ile Pro Leu Leu Ala Ala Glu Gly Gln Leu Ser Glu Glu Glu
65                  70                  75                  80

Lys Pro Asp Gln Gln Pro Leu Ser Gly Glu Glu Glu Leu Glu Pro Glu
                85                  90                  95

Ala Ser Asp Gly Ser Gly Ser Trp Glu Asp Ala Ala Leu Leu Thr Glu
            100                 105                 110

Ala Asn Leu Pro Ala Pro Ala Pro Ala Ser Ala Ser Ala Pro Val Leu
        115                 120                 125

Glu Thr Leu Gly Ser Ser Glu Pro Ala Gly Gly Ala Leu Arg Gln Arg
    130                 135                 140

Pro Thr Cys Ser Ser Ser
145                 150
```

<210> 8926
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
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<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="Uniprot ID: Q96G97; "

<220>
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<223> /note="ENSP ID: ENSP00000413209"

<400> 8926
Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
1 5 10 15

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
20 25 30

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
35 40 45

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
50 55 60

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
65 70 75 80

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
85 90 95

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
100 105 110

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
115 120 125

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
130 135 140

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
145 150 155 160

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
165 170 175

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
180 185 190

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
195 200 205

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu Arg
210 215 220

```
Tyr Leu Leu Tyr Asn Phe Pro Met Thr Cys Ala Phe Ile Gly Val Ala
225                 230                 235                 240

Ser Asn Phe Thr Phe Leu Ser Val Ile Val Leu Phe Ser Tyr Met Gln
                245                 250                 255

Trp Val Trp Gly Gly Ile Trp Pro Arg His Arg Phe Ser Leu Gln Val
            260                 265                 270

Asn Ile Arg Lys Arg Asp Asn Ser Arg Lys Glu Val Gln Arg Arg Ile
        275                 280                 285

Ser Ala His Gln Pro Gly Pro Glu Gly Gln Glu Glu Ser Thr Pro Gln
    290                 295                 300

Ser Asp Val Thr Glu Asp Gly Glu Ser Pro Glu Asp Pro Ser Gly Thr
305                 310                 315                 320

Glu Gly Gln Leu Ser Glu Glu Glu Lys Pro Asp Gln Gln Pro Leu Ser
                325                 330                 335

Gly Glu Glu Glu Leu Glu Pro Glu Ala Ser Asp Gly Ser Gly Ser Trp
            340                 345                 350

Glu Asp Ala Ala Leu Leu Thr Glu Ala Asn Leu Pro Ala Pro Ala Pro
        355                 360                 365

Ala Ser Ala Ser Ala Pro Val Leu Glu Thr Leu Gly Ser Ser Glu Pro
    370                 375                 380

Ala Gly Gly Ala Leu Arg Gln Arg Pro Thr Cys Ser Ser Ser
385                 390                 395


<210> 8927
<211> 223
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "
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<220>
<221> source
<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413340"

<400> 8927
Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
1 5 10 15

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
20 25 30

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
35 40 45

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
50 55 60

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
65 70 75 80

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
85 90 95

Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
100 105 110

Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
115 120 125

Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
130 135 140

Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
145 150 155 160

Thr Leu Val Phe Ser Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys
165 170 175

Gln Leu Leu Glu Val Glu Leu Tyr Ala Asp Tyr Arg Glu Asn Ser Tyr
180 185 190

Val Pro Thr Thr Gly Ala Ile Ile Glu Ile His Ser Lys Arg Ile Gln
195 200 205

Leu Tyr Gly Ala Tyr Leu Arg Ile His Ala His Phe Thr Gly Leu
210 215 220

<210> 8928
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
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<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431782"

<400> 8928
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1 5 10 15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Glu Pro Pro
20 25 30

Ala Ala Ala Ser His Gly Gln Gly Trp Arg Pro Gly Gly Arg Ala Ala
35 40 45

Arg Asn Ala Arg Pro Glu Pro Gly Ala Arg His Pro Ala Leu Pro Ala
50 55 60

Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
65 70 75 80

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu
85 90

<210> 8929

<211> 226
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433888"

<400> 8929

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Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1               5                  10                  15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Glu Pro Pro
            20                  25                  30

Ala Ala Ala Ser His Gly Gln Gly Trp Arg Pro Gly Gly Arg Ala Ala
        35                  40                  45

Arg Asn Ala Arg Pro Glu Pro Gly Ala Arg His Pro Ala Leu Pro Ala
    50                  55                  60

Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
65                  70                  75                  80

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
                85                  90                  95

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
            100                 105                 110

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
        115                 120                 125

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
    130                 135                 140
```

```
Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
145                 150                 155                 160


Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu
                165                 170                 175


Glu Leu Pro Glu Ser Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val
            180                 185                 190


Thr Ile Ser Cys Tyr Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser
        195                 200                 205


Arg Ser Val Met Leu His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp
    210                 215                 220


Thr Leu
225


<210> 8930
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434149"

<400> 8930
Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
1               5                   10                  15


Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
            20                  25                  30


Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
```

```
        35                  40                  45

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr Val Ser His Leu Ser
    50                  55                  60

Pro Val His Phe Tyr Tyr Arg Thr Asp Cys Asp Ser Ser Thr Thr Ser
65                  70                  75                  80

Leu Cys Ser Phe Pro Val Ala Asn Val Ser Leu Thr Lys Gly Gly Arg
                85                  90                  95

Asp Arg Val



<210> 8931
<211> 28
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
      Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435500"

<400> 8931
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1               5                   10                  15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu
            20                  25


<210> 8932
<211> 123
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435831"

<400> 8932
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1 5 10 15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Glu Pro Pro
20 25 30

Ala Ala Ala Ser His Gly Gln Gly Trp Arg Pro Gly Gly Arg Ala Ala
35 40 45

Arg Asn Ala Arg Pro Glu Pro Gly Ala Arg His Pro Ala Leu Pro Ala
50 55 60

Met Val Asn Asp Pro Pro Val Pro Ala Leu Leu Trp Ala Gln Glu Val
65 70 75 80

Gly Gln Val Leu Ala Gly Arg Ala Arg Arg Leu Leu Leu Gln Phe Gly
85 90 95

Val Leu Phe Cys Thr Ile Leu Leu Leu Leu Trp Val Ser Val Phe Leu
100 105 110

Tyr Gly Ser Phe Tyr Tyr Ser Tyr Met Pro Thr
115 120

<210> 8933
<211> 111
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436026"

<400> 8933
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1 5 10 15

Val Cys Gly Asp Gln Ile Lys Gly Pro Asp Lys Glu Glu Val Leu Met
20 25 30

Tyr Gly Gln Pro Tyr Arg Val Thr Leu Glu Leu Glu Leu Pro Glu Ser
35 40 45

Pro Val Asn Gln Asp Leu Gly Met Phe Leu Val Thr Ile Ser Cys Tyr
50 55 60

Thr Arg Gly Gly Arg Ile Ile Ser Thr Ser Ser Arg Ser Val Met Leu
65 70 75 80

His Tyr Arg Ser Asp Leu Leu Gln Met Leu Asp Thr Leu Val Phe Ser
85 90 95

Ser Leu Leu Leu Phe Gly Phe Ala Glu Gln Lys Gln Leu Leu Glu
100 105 110

<210> 8934
<211> 23
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source

<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436991"

<400> 8934
Met Ser Thr Glu Lys Val Asp Gln Lys Glu Glu Ala Gly Glu Lys Glu
1 5 10 15

Val Cys Gly Asp Gln Ile Lys
20

<210> 8935
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1811; "

<220>
<221> source
<223> /note="Gene Symbol: BSCL2; "

<220>
<221> source
<223> /note="Gene Name:
Berardinelli-Seip congenital lipodystrophy 2 (seipin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437044"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8935
Xaa Ala Glu Thr Arg Ser Lys Asp Arg Thr Lys Arg Arg Thr Asp Cys
1 5 10 15

Asp Ser Ser Thr Thr Ser Leu Cys Ser Phe Pro Val Ala Asn Val Ser
20 25 30

Leu Thr Lys Gly Gly Arg Asp Arg Val Leu Met Tyr Gly Gln Pro Tyr
35 40 45

Arg Val Thr Leu
50

<210> 8936
<211> 585
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1812; "

<220>
<221> source
<223> /note="Gene Symbol: BEST1; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 1; "

<220>
<221> source
<223> /note="Uniprot ID: O76090; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000367282"

<400> 8936
Met Thr Ile Thr Tyr Thr Ser Gln Val Ala Asn Ala Arg Leu Gly Ser
1 5 10 15

Phe Ser Arg Leu Leu Leu Cys Trp Arg Gly Ser Ile Tyr Lys Leu Leu
20 25 30

Tyr Gly Glu Phe Leu Ile Phe Leu Leu Cys Tyr Tyr Ile Ile Arg Phe
35 40 45

Ile Tyr Arg Leu Ala Leu Thr Glu Glu Gln Gln Leu Met Phe Glu Lys
50 55 60

Leu Thr Leu Tyr Cys Asp Ser Tyr Ile Gln Leu Ile Pro Ile Ser Phe
65 70 75 80

Val Leu Gly Phe Tyr Val Thr Leu Val Val Thr Arg Trp Trp Asn Gln
85 90 95

Tyr Glu Asn Leu Pro Trp Pro Asp Arg Leu Met Ser Leu Val Ser Gly
100 105 110

```
Phe Val Glu Gly Lys Asp Glu Gln Gly Arg Leu Leu Arg Arg Thr Leu
        115                 120                 125

Ile Arg Tyr Ala Asn Leu Gly Asn Val Leu Ile Leu Arg Ser Val Ser
    130                 135                 140

Thr Ala Val Tyr Lys Arg Phe Pro Ser Ala Gln His Leu Val Gln Ala
145                 150                 155                 160

Gly Phe Met Thr Pro Ala Glu His Lys Gln Leu Glu Lys Leu Ser Leu
                165                 170                 175

Pro His Asn Met Phe Trp Val Pro Trp Val Trp Phe Ala Asn Leu Ser
            180                 185                 190

Met Lys Ala Trp Leu Gly Gly Arg Ile Arg Asp Pro Ile Leu Leu Gln
        195                 200                 205

Ser Leu Leu Asn Glu Met Asn Thr Leu Arg Thr Gln Cys Gly His Leu
    210                 215                 220

Tyr Ala Tyr Asp Trp Ile Ser Ile Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Val Ala Val Tyr Ser Phe Phe Leu Thr Cys Leu Val Gly Arg Gln
                245                 250                 255

Phe Leu Asn Pro Ala Lys Ala Tyr Pro Gly His Glu Leu Asp Leu Val
            260                 265                 270

Val Pro Val Phe Thr Phe Leu Gln Phe Phe Phe Tyr Val Gly Trp Leu
        275                 280                 285

Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp
    290                 295                 300

Phe Glu Thr Asn Trp Ile Val Asp Arg Asn Leu Gln Val Ser Leu Leu
305                 310                 315                 320

Ala Val Asp Glu Met His Gln Asp Leu Pro Arg Met Glu Pro Asp Met
                325                 330                 335
```

```
Tyr Trp Asn Lys Pro Glu Pro Gln Pro Pro Tyr Thr Ala Ala Ser Ala
            340                 345                 350

Gln Phe Arg Arg Ala Ser Phe Met Gly Ser Thr Phe Asn Ile Ser Leu
        355                 360                 365

Asn Lys Glu Glu Met Glu Phe Gln Pro Asn Gln Glu Asp Glu Glu Asp
    370                 375                 380

Ala His Ala Gly Ile Ile Gly Arg Phe Leu Gly Leu Gln Ser His Asp
385                 390                 395                 400

His His Pro Pro Arg Ala Asn Ser Arg Thr Lys Leu Leu Trp Pro Lys
                405                 410                 415

Arg Glu Ser Leu Leu His Glu Gly Leu Pro Lys Asn His Lys Ala Ala
            420                 425                 430

Lys Gln Asn Val Arg Gly Gln Glu Asp Asn Lys Ala Trp Lys Leu Lys
        435                 440                 445

Ala Val Asp Ala Phe Lys Ser Ala Pro Leu Tyr Gln Arg Pro Gly Tyr
    450                 455                 460

Tyr Ser Ala Pro Gln Thr Pro Leu Ser Pro Thr Pro Met Phe Phe Pro
465                 470                 475                 480

Leu Glu Pro Ser Ala Pro Ser Lys Leu His Ser Val Thr Gly Ile Asp
                485                 490                 495

Thr Lys Asp Lys Ser Leu Lys Thr Val Ser Ser Gly Ala Lys Lys Ser
            500                 505                 510

Phe Glu Leu Leu Ser Glu Ser Asp Gly Ala Leu Met Glu His Pro Glu
        515                 520                 525

Val Ser Gln Val Arg Arg Lys Thr Val Glu Phe Asn Leu Thr Asp Met
    530                 535                 540

Pro Glu Ile Pro Glu Asn His Leu Lys Glu Pro Leu Glu Gln Ser Pro
545                 550                 555                 560
```

```
Thr Asn Ile His Thr Thr Leu Lys Asp His Met Asp Pro Tyr Trp Ala
                565                 570                 575


Leu Glu Asn Arg Asp Glu Ala His Ser
            580                 585


<210> 8937
<211> 604
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1812; "

<220>
<221> source
<223> /note="Gene Symbol: BEST1; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O76090; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399709"

<400> 8937
Met Phe Glu Lys Leu Thr Leu Tyr Cys Asp Ser Tyr Ile Gln Leu Ile
1               5                   10                  15


Pro Ile Ser Phe Val Leu Gly Phe Tyr Val Thr Leu Val Val Thr Arg
            20                  25                  30


Trp Trp Asn Gln Tyr Glu Asn Leu Pro Trp Pro Asp Arg Leu Met Ser
        35                  40                  45


Leu Val Ser Gly Phe Val Glu Gly Lys Asp Glu Gln Gly Arg Leu Leu
    50                  55                  60


Arg Arg Thr Leu Ile Arg Tyr Ala Asn Leu Gly Asn Val Leu Ile Leu
65                  70                  75                  80


Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Ser Ala Gln His
                85                  90                  95
```

```
Leu Val Gln Ala Gly Phe Met Thr Pro Ala Glu His Lys Gln Leu Glu
            100                 105                 110

Lys Leu Ser Leu Pro His Asn Met Phe Trp Val Pro Trp Val Trp Phe
        115                 120                 125

Ala Asn Leu Ser Met Lys Ala Trp Leu Gly Gly Arg Ile Arg Asp Pro
    130                 135                 140

Ile Leu Leu Gln Ser Leu Leu Asn Glu Met Asn Thr Leu Arg Thr Gln
145                 150                 155                 160

Cys Gly His Leu Tyr Ala Tyr Asp Trp Ile Ser Ile Pro Leu Val Tyr
                165                 170                 175

Thr Gln Val Val Thr Val Ala Val Tyr Ser Phe Phe Leu Thr Cys Leu
            180                 185                 190

Val Gly Arg Gln Phe Leu Asn Pro Ala Lys Ala Tyr Pro Gly His Glu
        195                 200                 205

Leu Asp Leu Val Val Pro Val Phe Thr Phe Leu Gln Phe Phe Phe Tyr
    210                 215                 220

Val Gly Trp Leu Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu
225                 230                 235                 240

Asp Asp Asp Asp Phe Glu Thr Asn Trp Ile Val Asp Arg Asn Leu Gln
                245                 250                 255

Val Ser Leu Leu Ala Val Asp Glu Met His Gln Asp Leu Pro Arg Met
            260                 265                 270

Glu Pro Asp Met Tyr Trp Asn Lys Pro Glu Pro Gln Pro Pro Tyr Thr
        275                 280                 285

Ala Ala Ser Ala Gln Phe Arg Arg Ala Ser Phe Met Gly Ser Thr Phe
    290                 295                 300

Asn Ile Ser Leu Asn Lys Glu Glu Met Glu Phe Gln Pro Asn Gln Glu
305                 310                 315                 320
```

Asp Glu Glu Asp Ala His Ala Gly Ile Ile Gly Arg Phe Leu Gly Leu
325 330 335

Gln Ser His Asp His His Pro Pro Arg Ala Asn Ser Arg Thr Lys Leu
340 345 350

Leu Trp Pro Lys Arg Glu Ser Leu Leu His Glu Gly Leu Pro Lys Asn
355 360 365

His Lys Ala Ala Lys Gln Asn Val Arg Gly Gln Glu Asp Asn Lys Ala
370 375 380

Trp Lys Leu Lys Ala Val Asp Ala Phe Lys Ser Ala Pro Leu Tyr Gln
385 390 395 400

Arg Pro Gly Tyr Tyr Ser Ala Pro Gln Thr Pro Leu Ser Pro Thr Pro
405 410 415

Met Phe Phe Pro Leu Glu Pro Ser Ala Pro Ser Lys Leu His Ser Val
420 425 430

Thr Gly Ile Asp Thr Lys Asp Lys Ser Leu Lys Thr Val Ser Ser Gly
435 440 445

Ala Lys Lys Ser Phe Glu Leu Leu Ser Glu Ser Asp Gly Ala Leu Met
450 455 460

Glu His Pro Glu Val Ser Gln Val Arg Arg Lys Thr Val Glu Phe Asn
465 470 475 480

Leu Thr Asp Met Pro Glu Ile Pro Glu Asn His Leu Lys Glu Pro Leu
485 490 495

Glu Gln Ser Pro Thr Asn Ile His Thr Thr Leu Lys Asp His Met Asp
500 505 510

Pro Tyr Trp Ala Leu Glu Asn Arg Ser Val Leu His Leu Asn Gln Gly
515 520 525

His Cys Ile Ala Leu Cys Pro Thr Pro Ala Ser Leu Ala Leu Ser Leu
530 535 540

```
Pro Phe Leu His Asn Phe Leu Gly Phe His His Cys Gln Ser Thr Leu
545                 550                 555                 560


Asp Leu Arg Pro Ala Leu Ala Trp Gly Ile Tyr Leu Ala Thr Phe Thr
                565                 570                 575


Gly Ile Leu Gly Lys Cys Ser Gly Pro Phe Leu Thr Ser Pro Trp Tyr
            580                 585                 590


His Pro Glu Asp Phe Leu Gly Pro Gly Glu Gly Arg
        595                 600


<210> 8938
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1812; "

<220>
<221> source
<223> /note="Gene Symbol: BEST1; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431189"

<400> 8938
Met Ser Leu Val Ser Gly Phe Val Glu Gly Lys Asp Glu Gln Gly Arg
1               5                   10                  15


Leu Leu Arg Arg Thr Leu Ile Arg Tyr Ala Asn Leu Gly Asn Val Leu
            20                  25                  30


Ile Leu Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Ser Ala
        35                  40                  45


Gln His Leu Val Gln Ala Ala
    50                  55


<210> 8939
<211> 435
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<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1812; "

<220>
<221> source
<223> /note="Gene Symbol: BEST1; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432681"

<400> 8939
Met Thr Ile Thr Tyr Thr Ser Gln Val Ala Asn Ala Arg Leu Gly Ser
1 5 10 15

Phe Ser Arg Leu Leu Leu Cys Trp Arg Gly Ser Ile Tyr Lys Leu Leu
20 25 30

Tyr Gly Glu Phe Leu Ile Phe Leu Leu Cys Tyr Tyr Ile Ile Arg Phe
35 40 45

Ile Tyr Arg Leu Ala Leu Thr Glu Glu Gln Gln Leu Met Phe Glu Lys
50 55 60

Leu Thr Leu Tyr Cys Asp Ser Tyr Ile Gln Leu Ile Pro Ile Ser Phe
65 70 75 80

Val Leu Gly Phe Tyr Val Thr Leu Val Val Thr Arg Trp Trp Asn Gln
85 90 95

Tyr Glu Asn Leu Pro Trp Pro Asp Arg Leu Met Ser Leu Val Ser Gly
100 105 110

Phe Val Glu Gly Lys Asp Glu Gln Gly Arg Leu Leu Arg Arg Thr Leu
115 120 125

Ile Arg Tyr Ala Asn Leu Gly Asn Val Leu Ile Leu Arg Ser Val Ser
130 135 140

```
Thr Ala Val Tyr Lys Arg Phe Pro Ser Ala Gln His Leu Val Gln Ala
145                 150                 155                 160

Gly Phe Met Thr Pro Ala Glu His Lys Gln Leu Glu Lys Leu Ser Leu
                165                 170                 175

Pro His Asn Met Phe Trp Val Pro Trp Val Trp Phe Ala Asn Leu Ser
            180                 185                 190

Met Lys Ala Trp Leu Gly Gly Arg Ile Arg Asp Pro Ile Leu Leu Gln
        195                 200                 205

Ser Leu Leu Asn Glu Met Asn Thr Leu Arg Thr Gln Cys Gly His Leu
    210                 215                 220

Tyr Ala Tyr Asp Trp Ile Ser Ile Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Val Ala Val Tyr Ser Phe Phe Leu Thr Cys Leu Val Gly Arg Gln
                245                 250                 255

Phe Leu Asn Pro Ala Lys Ala Tyr Pro Gly His Glu Leu Asp Leu Val
            260                 265                 270

Val Pro Val Phe Thr Phe Leu Gln Phe Phe Phe Tyr Val Gly Trp Leu
        275                 280                 285

Lys Val Gly Leu Ser Arg Ala Leu Leu Gly Trp Arg His Gly Gln Arg
    290                 295                 300

Gly His Gly Gln Gln Leu Pro Glu Thr Arg Met Gln Cys Gln Glu Arg
305                 310                 315                 320

Lys Val Ser Arg Val Glu Ser Ser Gln Ala Trp Trp Arg Thr Pro Val
                325                 330                 335

Ile Pro Ala Thr Arg Glu Ala Glu Ala Gly Glu Ser Leu Glu Pro Gly
            340                 345                 350

Arg Arg Arg Leu Trp Trp Gln Ser Ser Ser Ser Thr Pro Leu Glu Arg
        355                 360                 365

Met Met Met Ile Leu Arg Pro Thr Gly Leu Ser Thr Gly Ile Cys Arg
```

370 375 380

Cys Pro Cys Trp Leu Trp Met Arg Cys Thr Arg Thr Cys Leu Gly Trp
385 390 395 400

Ser Arg Thr Cys Thr Gly Ile Ser Pro Ser His Ser Pro Pro Thr Gln
405 410 415

Leu Leu Pro Pro Ser Ser Val Glu Pro Pro Leu Trp Ala Pro Pro Ser
420 425 430

Thr Ser Ala
435

<210> 8940
<211> 329
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1812; "

<220>
<221> source
<223> /note="Gene Symbol: BEST1; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433195"

<400> 8940
Met Ser Leu Val Ser Gly Phe Val Glu Gly Lys Asp Glu Gln Gly Arg
1 5 10 15

Leu Leu Arg Arg Thr Leu Ile Arg Tyr Ala Asn Leu Gly Asn Val Leu
20 25 30

Ile Leu Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Ser Ala
35 40 45

Gln His Leu Val Gln Ala Gly Phe Met Thr Pro Ala Glu His Lys Gln
50 55 60

```
Leu Glu Lys Leu Ser Leu Pro His Asn Met Phe Trp Val Pro Trp Val
65                  70                  75                  80

Trp Phe Ala Asn Leu Ser Met Lys Ala Trp Leu Gly Gly Arg Ile Arg
                85                  90                  95

Asp Pro Ile Leu Leu Gln Ser Leu Leu Asn Glu Met Asn Thr Leu Arg
            100                 105                 110

Thr Gln Cys Gly His Leu Tyr Ala Tyr Asp Trp Ile Ser Ile Pro Leu
        115                 120                 125

Val Tyr Thr Gln Val Val Thr Val Ala Val Tyr Ser Phe Phe Leu Thr
    130                 135                 140

Cys Leu Val Gly Arg Gln Phe Leu Asn Pro Ala Lys Ala Tyr Pro Gly
145                 150                 155                 160

His Glu Leu Asp Leu Val Val Pro Val Phe Thr Phe Leu Gln Phe Phe
                165                 170                 175

Phe Tyr Val Gly Trp Leu Lys Val Gly Leu Ser Arg Ala Leu Leu Gly
            180                 185                 190

Trp Arg His Gly Gln Arg Gly His Gly Gln Gln Leu Pro Glu Thr Arg
        195                 200                 205

Met Gln Cys Gln Glu Arg Lys Val Ser Arg Val Glu Ser Ser Gln Ala
    210                 215                 220

Trp Trp Arg Thr Pro Val Ile Pro Ala Thr Arg Glu Ala Glu Ala Gly
225                 230                 235                 240

Glu Ser Leu Glu Pro Gly Arg Arg Arg Leu Trp Trp Gln Ser Ser Ser
                245                 250                 255

Ser Thr Pro Leu Glu Arg Met Met Met Ile Leu Arg Pro Thr Gly Leu
            260                 265                 270

Ser Thr Gly Ile Cys Arg Cys Pro Cys Trp Leu Trp Met Arg Cys Thr
        275                 280                 285
```

```
Arg Thr Cys Leu Gly Trp Ser Arg Thr Cys Thr Gly Ile Ser Pro Ser
    290                 295                 300

His Ser Pro Pro Thr Gln Leu Leu Pro Pro Ser Ser Val Glu Pro Pro
305                 310                 315                 320

Leu Trp Ala Pro Pro Ser Thr Ser Ala
                325


<210> 8941
<211> 509
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1813; "

<220>
<221> source
<223> /note="Gene Symbol: BEST2; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NFU1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000042931"

<400> 8941
Met Thr Val Thr Tyr Thr Ala Arg Val Ala Asn Ala Arg Phe Gly Gly
1               5                   10                  15

Phe Ser Gln Leu Leu Leu Leu Trp Arg Gly Ser Ile Tyr Lys Leu Leu
            20                  25                  30

Trp Arg Glu Leu Leu Cys Phe Leu Gly Phe Tyr Met Ala Leu Ser Ala
        35                  40                  45

Ala Tyr Arg Phe Val Leu Thr Glu Gly Gln Lys Arg Tyr Phe Glu Lys
    50                  55                  60

Leu Val Ile Tyr Cys Asp Gln Tyr Ala Ser Leu Ile Pro Val Ser Phe
65                  70                  75                  80
```

```
Val Leu Gly Phe Tyr Val Thr Leu Val Val Asn Arg Trp Trp Ser Gln
                85                  90                  95

Tyr Leu Cys Met Pro Leu Pro Asp Ala Leu Met Cys Val Val Ala Gly
            100                 105                 110

Thr Val His Gly Arg Asp Asp Arg Gly Arg Leu Tyr Arg Arg Thr Leu
        115                 120                 125

Met Arg Tyr Ala Gly Leu Ser Ala Val Leu Ile Leu Arg Ser Val Ser
    130                 135                 140

Thr Ala Val Phe Lys Arg Phe Pro Thr Ile Asp His Val Val Glu Ala
145                 150                 155                 160

Gly Phe Met Thr Arg Glu Glu Arg Lys Lys Phe Glu Asn Leu Asn Ser
                165                 170                 175

Ser Tyr Asn Lys Tyr Trp Val Pro Cys Val Trp Phe Ser Asn Leu Ala
            180                 185                 190

Ala Gln Ala Arg Arg Glu Gly Arg Ile Arg Asp Asn Ser Ala Leu Lys
        195                 200                 205

Leu Leu Leu Glu Glu Leu Asn Val Phe Arg Gly Lys Cys Gly Met Leu
    210                 215                 220

Phe His Tyr Asp Trp Ile Ser Val Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Ile Ala Leu Tyr Ser Tyr Phe Leu Ala Cys Leu Ile Gly Arg Gln
                245                 250                 255

Phe Leu Asp Pro Ala Gln Gly Tyr Lys Asp His Asp Leu Asp Leu Cys
            260                 265                 270

Val Pro Ile Phe Thr Leu Leu Gln Phe Phe Phe Tyr Ala Gly Trp Leu
        275                 280                 285

Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp
    290                 295                 300
```

```
Phe Glu Thr Asn Phe Leu Ile Asp Arg Asn Phe Gln Val Ser Met Leu
305                 310                 315                 320

Ala Val Asp Glu Met Tyr Asp Asp Leu Ala Val Leu Glu Lys Asp Leu
                325                 330                 335

Tyr Trp Asp Ala Ala Glu Ala Arg Ala Pro Tyr Thr Ala Ala Thr Val
            340                 345                 350

Phe Gln Leu Arg Gln Pro Ser Phe Gln Gly Ser Thr Phe Asp Ile Thr
        355                 360                 365

Leu Ala Lys Glu Asp Met Gln Phe Gln Arg Leu Asp Gly Leu Asp Gly
    370                 375                 380

Pro Met Gly Glu Ala Pro Gly Asp Phe Leu Gln Arg Leu Leu Pro Ala
385                 390                 395                 400

Gly Ala Gly Met Val Ala Gly Gly Pro Leu Gly Arg Arg Leu Ser Phe
                405                 410                 415

Leu Leu Arg Lys Asn Ser Cys Val Ser Glu Ala Ser Thr Gly Ala Ser
            420                 425                 430

Cys Ser Cys Ala Val Val Pro Glu Gly Ala Ala Pro Glu Cys Ser Cys
        435                 440                 445

Gly Asp Pro Leu Leu Asp Pro Gly Leu Pro Glu Pro Glu Ala Pro Pro
    450                 455                 460

Pro Ala Gly Pro Glu Pro Leu Thr Leu Ile Pro Gly Pro Val Glu Pro
465                 470                 475                 480

Phe Ser Ile Val Thr Met Pro Gly Pro Arg Gly Pro Ala Pro Pro Trp
                485                 490                 495

Leu Pro Ser Pro Ile Gly Glu Glu Glu Glu Asn Leu Ala
            500                 505
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<210> 8942
<211> 509
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1813; "

<220>
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<223> /note="Gene Symbol: BEST2; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NFU1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447203"

<400> 8942

```
Met Thr Val Thr Tyr Thr Ala Arg Val Ala Asn Ala Arg Phe Gly Gly
1               5                   10                  15


Phe Ser Gln Leu Leu Leu Leu Trp Arg Gly Ser Ile Tyr Lys Leu Leu
            20                  25                  30


Trp Arg Glu Leu Leu Cys Phe Leu Gly Phe Tyr Met Ala Leu Ser Ala
        35                  40                  45


Ala Tyr Arg Phe Val Leu Thr Glu Gly Gln Lys Arg Tyr Phe Glu Lys
    50                  55                  60


Leu Val Ile Tyr Cys Asp Gln Tyr Ala Ser Leu Ile Pro Val Ser Phe
65                  70                  75                  80


Val Leu Gly Phe Tyr Val Thr Leu Val Val Asn Arg Trp Trp Ser Gln
                85                  90                  95


Tyr Leu Cys Met Pro Leu Pro Asp Ala Leu Met Cys Val Val Ala Gly
            100                 105                 110


Thr Val His Gly Arg Asp Asp Arg Gly Arg Leu Tyr Arg Arg Thr Leu
        115                 120                 125


Met Arg Tyr Ala Gly Leu Ser Ala Val Leu Ile Leu Arg Ser Val Ser
    130                 135                 140
```

```
Thr Ala Val Phe Lys Arg Phe Pro Thr Ile Asp His Val Val Glu Ala
145                 150                 155                 160

Gly Phe Met Thr Arg Glu Glu Arg Lys Lys Phe Glu Asn Leu Asn Ser
                165                 170                 175

Ser Tyr Asn Lys Tyr Trp Val Pro Cys Val Trp Phe Ser Asn Leu Ala
            180                 185                 190

Ala Gln Ala Arg Arg Glu Gly Arg Ile Arg Asp Asn Ser Ala Leu Lys
        195                 200                 205

Leu Leu Leu Glu Glu Leu Asn Val Phe Arg Gly Lys Cys Gly Met Leu
    210                 215                 220

Phe His Tyr Asp Trp Ile Ser Val Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Ile Ala Leu Tyr Ser Tyr Phe Leu Ala Cys Leu Ile Gly Arg Gln
                245                 250                 255

Phe Leu Asp Pro Ala Gln Gly Tyr Lys Asp His Asp Leu Asp Leu Cys
            260                 265                 270

Val Pro Ile Phe Thr Leu Leu Gln Phe Phe Phe Tyr Ala Gly Trp Leu
        275                 280                 285

Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp
    290                 295                 300

Phe Glu Thr Asn Phe Leu Ile Asp Arg Asn Phe Gln Val Ser Met Leu
305                 310                 315                 320

Ala Val Asp Glu Met Tyr Asp Asp Leu Ala Val Leu Glu Lys Asp Leu
                325                 330                 335

Tyr Trp Asp Ala Ala Glu Ala Arg Ala Pro Tyr Thr Ala Ala Thr Val
            340                 345                 350

Phe Gln Leu Arg Gln Pro Ser Phe Gln Gly Ser Thr Phe Asp Ile Thr
        355                 360                 365
```

```
Leu Ala Lys Glu Asp Met Gln Phe Gln Arg Leu Asp Gly Leu Asp Gly
    370                 375                 380

Pro Met Gly Glu Ala Pro Gly Asp Phe Leu Gln Arg Leu Leu Pro Ala
385                 390                 395                 400

Gly Ala Gly Met Val Ala Gly Gly Pro Leu Gly Arg Arg Leu Ser Phe
                405                 410                 415

Leu Leu Arg Lys Asn Ser Cys Val Ser Glu Ala Ser Thr Gly Ala Ser
            420                 425                 430

Cys Ser Cys Ala Val Val Pro Glu Gly Ala Ala Pro Glu Cys Ser Cys
        435                 440                 445

Gly Asp Pro Leu Leu Asp Pro Gly Leu Pro Glu Pro Glu Ala Pro Pro
    450                 455                 460

Pro Ala Gly Pro Glu Pro Leu Thr Leu Ile Pro Gly Pro Val Glu Pro
465                 470                 475                 480

Phe Ser Ile Val Thr Met Pro Gly Pro Arg Gly Pro Ala Pro Pro Trp
                485                 490                 495

Leu Pro Ser Pro Ile Gly Glu Glu Glu Glu Asn Leu Ala
            500                 505


<210> 8943
<211> 509
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      bestrophin 2; "

<220>
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<223> /note="Uniprot ID: Q8NFU1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448310"

<400> 8943

```
Met Thr Val Thr Tyr Thr Ala Arg Val Ala Asn Ala Arg Phe Gly Gly
1               5                  10                  15

Phe Ser Gln Leu Leu Leu Leu Trp Arg Gly Ser Ile Tyr Lys Leu Leu
            20                  25                  30

Trp Arg Glu Leu Leu Cys Phe Leu Gly Phe Tyr Met Ala Leu Ser Ala
        35                  40                  45

Ala Tyr Arg Phe Val Leu Thr Glu Gly Gln Lys Arg Tyr Phe Glu Lys
    50                  55                  60

Leu Val Ile Tyr Cys Asp Gln Tyr Ala Ser Leu Ile Pro Val Ser Phe
65                  70                  75                  80

Val Leu Gly Phe Tyr Val Thr Leu Val Val Asn Arg Trp Trp Ser Gln
                85                  90                  95

Tyr Leu Cys Met Pro Leu Pro Asp Ala Leu Met Cys Val Val Ala Gly
            100                 105                 110

Thr Val His Gly Arg Asp Asp Arg Gly Arg Leu Tyr Arg Arg Thr Leu
        115                 120                 125

Met Arg Tyr Ala Gly Leu Ser Ala Val Leu Ile Leu Arg Ser Val Ser
    130                 135                 140

Thr Ala Val Phe Lys Arg Phe Pro Thr Ile Asp His Val Val Glu Ala
145                 150                 155                 160

Gly Phe Met Thr Arg Glu Glu Arg Lys Lys Phe Glu Asn Leu Asn Ser
                165                 170                 175

Ser Tyr Asn Lys Tyr Trp Val Pro Cys Val Trp Phe Ser Asn Leu Ala
            180                 185                 190

Ala Gln Ala Arg Arg Glu Gly Arg Ile Arg Asp Asn Ser Ala Leu Lys
        195                 200                 205
```

```
Leu Leu Leu Glu Glu Leu Asn Val Phe Arg Gly Lys Cys Gly Met Leu
    210                 215                 220

Phe His Tyr Asp Trp Ile Ser Val Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Ile Ala Leu Tyr Ser Tyr Phe Leu Ala Cys Leu Ile Gly Arg Gln
                245                 250                 255

Phe Leu Asp Pro Ala Gln Gly Tyr Lys Asp His Asp Leu Asp Leu Cys
            260                 265                 270

Val Pro Ile Phe Thr Leu Leu Gln Phe Phe Phe Tyr Ala Gly Trp Leu
        275                 280                 285

Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp
    290                 295                 300

Phe Glu Thr Asn Phe Leu Ile Asp Arg Asn Phe Gln Val Ser Met Leu
305                 310                 315                 320

Ala Val Asp Glu Met Tyr Asp Asp Leu Ala Val Leu Glu Lys Asp Leu
                325                 330                 335

Tyr Trp Asp Ala Ala Glu Ala Arg Ala Pro Tyr Thr Ala Ala Thr Val
            340                 345                 350

Phe Gln Leu Arg Gln Pro Ser Phe Gln Gly Ser Thr Phe Asp Ile Thr
        355                 360                 365

Leu Ala Lys Glu Asp Met Gln Phe Gln Arg Leu Asp Gly Leu Asp Gly
    370                 375                 380

Pro Met Gly Glu Ala Pro Gly Asp Phe Leu Gln Arg Leu Leu Pro Ala
385                 390                 395                 400

Gly Ala Gly Met Val Ala Gly Gly Pro Leu Gly Arg Arg Leu Ser Phe
                405                 410                 415

Leu Leu Arg Lys Asn Ser Cys Val Ser Glu Ala Ser Thr Gly Ala Ser
            420                 425                 430
```

```
Cys Ser Cys Ala Val Val Pro Glu Gly Ala Ala Pro Glu Cys Ser Cys
        435                 440                 445

Gly Asp Pro Leu Leu Asp Pro Gly Leu Pro Glu Pro Glu Ala Pro Pro
    450                 455                 460

Pro Ala Gly Pro Glu Pro Leu Thr Leu Ile Pro Gly Pro Val Glu Pro
465                 470                 475                 480

Phe Ser Ile Val Thr Met Pro Gly Pro Arg Gly Pro Ala Pro Pro Trp
                485                 490                 495

Leu Pro Ser Pro Ile Gly Glu Glu Glu Glu Asn Leu Ala
            500                 505


<210> 8944
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Gene Name:
      bestrophin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449403"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8944
Xaa Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp Phe Glu
1               5                   10                  15

Thr Asn Phe Leu Ile Asp Arg Asn Phe Gln Val Ser Met Leu Ala Val
            20                  25                  30
```

```
Asp Glu Met Tyr Asp Asp Leu Ala Val Leu Glu Lys Asp Leu Tyr Trp
        35                  40                  45

Asp Ala Ala Glu Ala Arg Ala Pro Tyr Thr Ala Ala Thr Val Phe Gln
    50                  55                  60

Leu Arg Gln Pro Ser Phe Gln Gly Ser Thr Phe Asp Ile Thr
65                  70                  75


<210> 8945
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1814; "

<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N1M1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000266661"

<400> 8945
Met Phe Leu Ile Ser Ser Ser Val His Gly Ser Asp Glu His Gly Arg
1               5                   10                  15

Leu Leu Arg Arg Thr Leu Met Arg Tyr Val Asn Leu Thr Ser Leu Leu
            20                  25                  30

Ile Phe Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Thr Met
        35                  40                  45

Asp His Val Val Glu Ala Glu Arg Thr Gly Met Lys Pro Ile Leu Pro
    50                  55                  60

Ser Ser Phe Glu Met Gln Ser Phe
```

65 70

<210> 8946
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N1M1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000329064"

<400> 8946
Met Thr Val Thr Tyr Ser Ser Lys Val Ala Asn Ala Thr Phe Phe Gly
1 5 10 15

Phe His Arg Leu Leu Leu Lys Trp Arg Gly Ser Ile Tyr Lys Leu Leu
20 25 30

Tyr Arg Glu Phe Ile Val Phe Ala Val Leu Tyr Thr Ala Ile Ser Leu
35 40 45

Val Tyr Arg Leu Leu Leu Thr Gly Val Gln Lys Arg Tyr Phe Glu Lys
50 55 60

Leu Ser Ile Tyr Cys Asp Arg Tyr Ala Glu Gln Ile Pro Val Thr Phe
65 70 75 80

Val Leu Gly Phe Tyr Val Thr Leu Val Val Asn Arg Trp Trp Asn Gln
85 90 95

Phe Val Asn Leu Pro Trp Pro Asp Arg Leu Met Phe Leu Ile Ser Ser
100 105 110

```
Ser Val His Gly Ser Asp Glu His Gly Arg Leu Leu Arg Arg Thr Leu
        115                 120                 125

Met Arg Tyr Val Asn Leu Thr Ser Leu Leu Ile Phe Arg Ser Val Ser
    130                 135                 140

Thr Ala Val Tyr Lys Arg Phe Pro Thr Met Asp His Val Val Glu Ala
145                 150                 155                 160

Gly Phe Met Thr Thr Asp Glu Arg Lys Leu Phe Asn His Leu Lys Ser
                165                 170                 175

Pro His Leu Lys Tyr Trp Val Pro Phe Ile Trp Phe Gly Asn Leu Ala
            180                 185                 190

Thr Lys Ala Arg Asn Glu Gly Arg Ile Arg Asp Ser Val Asp Leu Gln
        195                 200                 205

Ser Leu Met Thr Glu Met Asn Arg Tyr Arg Ser Trp Cys Ser Leu Leu
    210                 215                 220

Phe Gly Tyr Asp Trp Val Gly Ile Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Leu Ala Val Tyr Thr Phe Phe Phe Ala Cys Leu Ile Gly Arg Gln
                245                 250                 255

Phe Leu Asp Pro Thr Lys Gly Tyr Ala Gly His Asp Leu Asp Leu Tyr
            260                 265                 270

Ile Pro Ile Phe Thr Leu Leu Gln Phe Phe Phe Tyr Ala Gly Trp Leu
        275                 280                 285

Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp
    290                 295                 300

Phe Glu Thr Asn Trp Cys Ile Asp Arg Asn Leu Gln Val Ser Leu Leu
305                 310                 315                 320

Ala Val Asp Glu Met His Met Ser Leu Pro Lys Met Lys Lys Asp Ile
                325                 330                 335
```

```
Tyr Trp Asp Asp Ser Ala Ala Arg Pro Pro Tyr Thr Leu Ala Ala Ala
            340                 345                 350

Asp Tyr Cys Ile Pro Ser Phe Leu Gly Ser Thr Val Gln Met Gly Lys
        355                 360                 365

Gln Met Pro Lys Asn Glu Trp Lys Met Glu Asp Ile Lys Ile Pro Leu
    370                 375                 380

Pro Gln Pro Gln Phe Gln Cys Ala Lys Ser Asp Pro Gly Gly
385                 390                 395


<210> 8947
<211> 668
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1814; "

<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
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<223> /note="Gene Name:
      bestrophin 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N1M1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000332413"

<400> 8947
Met Thr Val Thr Tyr Ser Ser Lys Val Ala Asn Ala Thr Phe Phe Gly
1               5                   10                  15

Phe His Arg Leu Leu Leu Lys Trp Arg Gly Ser Ile Tyr Lys Leu Leu
            20                  25                  30

Tyr Arg Glu Phe Ile Val Phe Ala Val Leu Tyr Thr Ala Ile Ser Leu
        35                  40                  45

Val Tyr Arg Leu Leu Leu Thr Gly Val Gln Lys Arg Tyr Phe Glu Lys
    50                  55                  60
```

```
Leu Ser Ile Tyr Cys Asp Arg Tyr Ala Glu Gln Ile Pro Val Thr Phe
65                  70                  75                  80

Val Leu Gly Phe Tyr Val Thr Leu Val Val Asn Arg Trp Trp Asn Gln
                85                  90                  95

Phe Val Asn Leu Pro Trp Pro Asp Arg Leu Met Phe Leu Ile Ser Ser
            100                 105                 110

Ser Val His Gly Ser Asp Glu His Gly Arg Leu Leu Arg Arg Thr Leu
        115                 120                 125

Met Arg Tyr Val Asn Leu Thr Ser Leu Leu Ile Phe Arg Ser Val Ser
    130                 135                 140

Thr Ala Val Tyr Lys Arg Phe Pro Thr Met Asp His Val Val Glu Ala
145                 150                 155                 160

Gly Phe Met Thr Thr Asp Glu Arg Lys Leu Phe Asn His Leu Lys Ser
                165                 170                 175

Pro His Leu Lys Tyr Trp Val Pro Phe Ile Trp Phe Gly Asn Leu Ala
            180                 185                 190

Thr Lys Ala Arg Asn Glu Gly Arg Ile Arg Asp Ser Val Asp Leu Gln
        195                 200                 205

Ser Leu Met Thr Glu Met Asn Arg Tyr Arg Ser Trp Cys Ser Leu Leu
    210                 215                 220

Phe Gly Tyr Asp Trp Val Gly Ile Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Leu Ala Val Tyr Thr Phe Phe Phe Ala Cys Leu Ile Gly Arg Gln
                245                 250                 255

Phe Leu Asp Pro Thr Lys Gly Tyr Ala Gly His Asp Leu Asp Leu Tyr
            260                 265                 270

Ile Pro Ile Phe Thr Leu Leu Gln Phe Phe Phe Tyr Ala Gly Trp Leu
        275                 280                 285
```

```
Lys Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp
    290                 295                 300

Phe Glu Thr Asn Trp Cys Ile Asp Arg Asn Leu Gln Val Ser Leu Leu
305                 310                 315                 320

Ala Val Asp Glu Met His Met Ser Leu Pro Lys Met Lys Lys Asp Ile
                325                 330                 335

Tyr Trp Asp Asp Ser Ala Ala Arg Pro Pro Tyr Thr Leu Ala Ala Ala
            340                 345                 350

Asp Tyr Cys Ile Pro Ser Phe Leu Gly Ser Thr Val Gln Met Gly Leu
        355                 360                 365

Ser Gly Ser Asp Phe Pro Asp Glu Glu Trp Leu Trp Asp Tyr Glu Lys
    370                 375                 380

His Gly His Arg His Ser Met Ile Arg Arg Val Lys Arg Phe Leu Ser
385                 390                 395                 400

Ala His Glu His Pro Ser Ser Pro Arg Arg Arg Ser Tyr Arg Arg Gln
                405                 410                 415

Thr Ser Asp Ser Ser Met Phe Leu Pro Arg Asp Asp Leu Ser Pro Ala
            420                 425                 430

Arg Asp Leu Leu Asp Val Pro Ser Arg Asn Pro Pro Arg Ala Ser Pro
        435                 440                 445

Thr Trp Lys Lys Ser Cys Phe Pro Glu Gly Ser Pro Thr Leu His Phe
    450                 455                 460

Ser Met Gly Glu Leu Ser Thr Ile Arg Glu Thr Ser Gln Thr Ser Thr
465                 470                 475                 480

Leu Gln Ser Leu Thr Pro Gln Ser Ser Val Arg Thr Ser Pro Ile Lys
                485                 490                 495

Met Pro Leu Val Pro Glu Val Leu Ile Thr Ala Ala Glu Ala Pro Val
            500                 505                 510
```

```
Pro Thr Ser Gly Gly Tyr His His Asp Ser Ala Thr Ser Ile Leu Ser
        515                 520                 525

Ser Glu Phe Thr Gly Val Gln Pro Ser Lys Thr Glu Gln Gln Gln Gly
    530                 535                 540

Pro Met Gly Ser Ile Leu Ser Pro Ser Glu Lys Glu Thr Pro Pro Gly
545                 550                 555                 560

Gly Pro Ser Pro Gln Thr Val Ser Ala Ser Ala Glu Glu Asn Ile Phe
                565                 570                 575

Asn Cys Glu Glu Asp Pro Gly Asp Thr Phe Leu Lys Arg Trp Ser Leu
            580                 585                 590

Pro Gly Phe Leu Gly Ser Ser His Thr Ser Leu Gly Asn Leu Ser Pro
        595                 600                 605

Asp Pro Met Ser Ser Gln Pro Ala Leu Leu Ile Asp Thr Glu Thr Ser
    610                 615                 620

Ser Glu Ile Ser Gly Ile Asn Ile Val Ala Gly Ser Arg Val Ser Ser
625                 630                 635                 640

Asp Met Leu Tyr Leu Met Glu Asn Leu Asp Thr Lys Glu Thr Asp Ile
                645                 650                 655

Ile Glu Leu Asn Lys Glu Thr Glu Glu Ser Pro Lys
            660                 665


<210> 8948
<211> 455
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1814; "

<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 3; "
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<220>
<221> source
<223> /note="Uniprot ID: Q8N1M1; "

<220>
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<223> /note="ENSP ID: ENSP00000433213"

<400> 8948
Met Thr Thr Asp Glu Arg Lys Leu Phe Asn His Leu Lys Ser Pro His
1   5   10   15

Leu Lys Tyr Trp Val Pro Phe Ile Trp Phe Gly Asn Leu Ala Thr Lys
            20   25   30

Ala Arg Asn Glu Gly Arg Ile Arg Asp Ser Val Asp Leu Gln Ser Leu
        35   40   45

Met Thr Glu Met Asn Arg Tyr Arg Ser Trp Cys Ser Leu Leu Phe Gly
    50   55   60

Tyr Asp Trp Val Gly Ile Pro Leu Val Tyr Thr Gln Val Ala Glu Gln
65   70   75   80

Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp Phe Glu Thr Asn Trp
                85   90   95

Cys Ile Asp Arg Asn Leu Gln Val Ser Leu Leu Ala Val Asp Glu Met
            100   105   110

His Met Ser Leu Pro Lys Met Lys Lys Asp Ile Tyr Trp Asp Asp Ser
        115   120   125

Ala Ala Arg Pro Pro Tyr Thr Leu Ala Ala Ala Asp Tyr Cys Ile Pro
    130   135   140

Ser Phe Leu Gly Ser Thr Val Gln Met Gly Leu Ser Gly Ser Asp Phe
145   150   155   160

Pro Asp Glu Glu Trp Leu Trp Asp Tyr Glu Lys His Gly His Arg His
                165   170   175

Ser Met Ile Arg Arg Val Lys Arg Phe Leu Ser Ala His Glu His Pro
            180   185   190

```
Ser Ser Pro Arg Arg Arg Ser Tyr Arg Arg Gln Thr Ser Asp Ser Ser
        195                 200                 205

Met Phe Leu Pro Arg Asp Asp Leu Ser Pro Ala Arg Asp Leu Leu Asp
    210                 215                 220

Val Pro Ser Arg Asn Pro Pro Arg Ala Ser Pro Thr Trp Lys Lys Ser
225                 230                 235                 240

Cys Phe Pro Glu Gly Ser Pro Thr Leu His Phe Ser Met Gly Glu Leu
                245                 250                 255

Ser Thr Ile Arg Glu Thr Ser Gln Thr Ser Thr Leu Gln Ser Leu Thr
            260                 265                 270

Pro Gln Ser Ser Val Arg Thr Ser Pro Ile Lys Met Pro Leu Val Pro
        275                 280                 285

Glu Val Leu Ile Thr Ala Ala Glu Ala Pro Val Pro Thr Ser Gly Gly
    290                 295                 300

Tyr His His Asp Ser Ala Thr Ser Ile Leu Ser Ser Glu Phe Thr Gly
305                 310                 315                 320

Val Gln Pro Ser Lys Thr Glu Gln Gln Gln Gly Pro Met Gly Ser Ile
                325                 330                 335

Leu Ser Pro Ser Glu Lys Glu Thr Pro Pro Gly Gly Pro Ser Pro Gln
            340                 345                 350

Thr Val Ser Ala Ser Ala Glu Glu Asn Ile Phe Asn Cys Glu Glu Asp
        355                 360                 365

Pro Gly Asp Thr Phe Leu Lys Arg Trp Ser Leu Pro Gly Phe Leu Gly
    370                 375                 380

Ser Ser His Thr Ser Leu Gly Asn Leu Ser Pro Asp Pro Met Ser Ser
385                 390                 395                 400

Gln Pro Ala Leu Leu Ile Asp Thr Glu Thr Ser Ser Glu Ile Ser Gly
                405                 410                 415
```

```
Ile Asn Ile Val Ala Gly Ser Arg Val Ser Ser Asp Met Leu Tyr Leu
            420                 425                 430

Met Glu Asn Leu Asp Thr Lys Glu Thr Asp Ile Ile Glu Leu Asn Lys
        435                 440                 445

Glu Thr Glu Glu Ser Pro Lys
    450                 455


<210> 8949
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1814; "

<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434713"

<400> 8949
Met Thr Thr Asp Glu Arg Lys Leu Phe Asn His Leu Lys Ser Pro His
1               5                   10                  15

Leu Lys Tyr Trp Val Pro Phe Ile Trp Phe Gly Asn Leu Ala Thr Lys
            20                  25                  30

Ala Arg Asn Glu Gly Arg Ile Arg Asp Ser Val Asp Leu Gln Ser Leu
        35                  40                  45

Met Thr Glu Met Asn Arg Tyr Arg Ser Trp Cys Ser Leu Leu Phe Gly
    50                  55                  60

Tyr Asp Trp Val Gly Ile Pro Leu Val Tyr Thr Gln Val Ala Glu Gln
65                  70                  75                  80

Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp Phe Glu Thr Asn Trp
                85                  90                  95
```

```
Cys Ile Asp Arg Asn Leu Gln Val Ser Leu Leu Ala Val Asp Glu Met
            100                 105                 110

His Met Ser Leu Pro Lys Met Lys Lys Asp Ile Tyr Trp Asp Asp Ser
        115                 120                 125

Ala Ala Arg Pro Pro Tyr Thr Leu Ala Ala Ala Asp Tyr Cys Ile Pro
    130                 135                 140

Ser Phe Leu Gly Ser Thr Val Gln Met Gly Arg Ser Arg Phe Asn Pro
145                 150                 155                 160

Val Pro Phe Ala Glu Cys Leu Leu Ile Pro Ile Ser Asp Gly Leu Trp
                165                 170                 175

His Phe Ser Ser Lys Gly Ala Ser Glu Ala Glu Asn Leu Ser Arg Pro
            180                 185                 190

Lys Glu Lys Glu Asp
        195


<210> 8950
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1814; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
      bestrophin 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446575"

<400> 8950
Met Thr Val Thr Tyr Ser Ser Lys Val Ala Asn Ala Thr Phe Phe Gly
1               5                   10                  15
```

```
Phe His Arg Leu Leu Leu Lys Trp Arg Gly Ser Ile Tyr Lys Leu Leu
            20                  25                  30

Tyr Arg Glu Phe Ile Val Phe Ala Val Leu Tyr Thr Ala Ile Ser Leu
        35                  40                  45

Val Tyr Arg Leu Leu Leu Thr Gly Val Gln Lys Arg Tyr Phe Glu Lys
    50                  55                  60

Leu Ser Ile Tyr Cys Asp Arg Tyr Ala Glu Gln Ile Pro Val Thr Phe
65                  70                  75                  80

Val Leu Gly Phe Met Thr Thr Asp Glu Arg Lys Leu Phe Asn His Leu
                85                  90                  95

Lys Ser Pro His Leu Lys Tyr Trp Val Pro Phe Ile Trp Phe Gly Asn
            100                 105                 110

Leu Ala Thr Lys Ala Arg Asn Glu Gly Arg Ile Arg Asp Ser Val Asp
        115                 120                 125

Leu Gln Ser Leu Met Thr Glu Met Asn Arg Tyr Arg Ser Trp
    130                 135                 140


<210> 8951
<211> 161
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1814; "

<220>
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<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447689"

<400> 8951
Met Phe Leu Ile Ser Ser Ser Val His Gly Ser Asp Glu His Gly Arg
1               5                   10                  15
```

```
Leu Leu Arg Arg Thr Leu Met Arg Tyr Val Asn Leu Thr Ser Leu Leu
            20                  25                  30

Ile Phe Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Thr Met
        35                  40                  45

Asp His Val Val Glu Ala Gly Phe Met Thr Thr Asp Glu Arg Lys Leu
    50                  55                  60

Phe Asn His Leu Lys Ser Pro His Leu Lys Tyr Trp Val Pro Phe Ile
65                  70                  75                  80

Trp Phe Gly Asn Leu Ala Thr Lys Ala Arg Asn Glu Gly Arg Ile Arg
                85                  90                  95

Asp Ser Val Asp Leu Gln Ser Leu Met Thr Glu Met Asn Arg Tyr Arg
            100                 105                 110

Ser Trp Cys Ser Leu Leu Phe Gly Tyr Asp Trp Val Gly Ile Pro Leu
        115                 120                 125

Val Tyr Thr Gln Val Ala Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp
    130                 135                 140

Asp Asp Asp Phe Glu Thr Asn Trp Cys Ile Asp Arg Asn Leu Gln Val
145                 150                 155                 160

Ser
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<210> 8952
<211> 72
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1814; "

<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source

<223> /note="Gene Name:
bestrophin 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N1M1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449377"

<400> 8952
Met Phe Leu Ile Ser Ser Ser Val His Gly Ser Asp Glu His Gly Arg
1   5   10   15

Leu Leu Arg Arg Thr Leu Met Arg Tyr Val Asn Leu Thr Ser Leu Leu
            20   25   30

Ile Phe Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Thr Met
        35   40   45

Asp His Val Val Glu Ala Glu Arg Thr Gly Met Lys Pro Ile Leu Pro
    50   55   60

Ser Ser Phe Glu Met Gln Ser Phe
65   70

<210> 8953
<211> 562
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N1M1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449548"

<400> 8953
Met Phe Leu Ile Ser Ser Ser Val His Gly Ser Asp Glu His Gly Arg
1 5 10 15

Leu Leu Arg Arg Thr Leu Met Arg Tyr Val Asn Leu Thr Ser Leu Leu
20 25 30

Ile Phe Arg Ser Val Ser Thr Ala Val Tyr Lys Arg Phe Pro Thr Met
35 40 45

Asp His Val Val Glu Ala Gly Phe Met Thr Thr Asp Glu Arg Lys Leu
50 55 60

Phe Asn His Leu Lys Ser Pro His Leu Lys Tyr Trp Val Pro Phe Ile
65 70 75 80

Trp Phe Gly Asn Leu Ala Thr Lys Ala Arg Asn Glu Gly Arg Ile Arg
85 90 95

Asp Ser Val Asp Leu Gln Ser Leu Met Thr Glu Met Asn Arg Tyr Arg
100 105 110

Ser Trp Cys Ser Leu Leu Phe Gly Tyr Asp Trp Val Gly Ile Pro Leu
115 120 125

Val Tyr Thr Gln Val Val Thr Leu Ala Val Tyr Thr Phe Phe Phe Ala
130 135 140

Cys Leu Ile Gly Arg Gln Phe Leu Asp Pro Thr Lys Gly Tyr Ala Gly
145 150 155 160

His Asp Leu Asp Leu Tyr Ile Pro Ile Phe Thr Leu Leu Gln Phe Phe
165 170 175

Phe Tyr Ala Gly Trp Leu Lys Val Ala Glu Gln Leu Ile Asn Pro Phe
180 185 190

Gly Glu Asp Asp Asp Asp Phe Glu Thr Asn Trp Cys Ile Asp Arg Asn
195 200 205

Leu Gln Val Ser Leu Leu Ala Val Asp Glu Met His Met Ser Leu Pro
210 215 220

```
Lys Met Lys Lys Asp Ile Tyr Trp Asp Asp Ser Ala Ala Arg Pro Pro
225                 230                 235                 240

Tyr Thr Leu Ala Ala Ala Asp Tyr Cys Ile Pro Ser Phe Leu Gly Ser
                245                 250                 255

Thr Val Gln Met Gly Leu Ser Gly Ser Asp Phe Pro Asp Glu Glu Trp
            260                 265                 270

Leu Trp Asp Tyr Glu Lys His Gly His Arg His Ser Met Ile Arg Arg
        275                 280                 285

Val Lys Arg Phe Leu Ser Ala His Glu His Pro Ser Ser Pro Arg Arg
    290                 295                 300

Arg Ser Tyr Arg Arg Gln Thr Ser Asp Ser Ser Met Phe Leu Pro Arg
305                 310                 315                 320

Asp Asp Leu Ser Pro Ala Arg Asp Leu Leu Asp Val Pro Ser Arg Asn
                325                 330                 335

Pro Pro Arg Ala Ser Pro Thr Trp Lys Lys Ser Cys Phe Pro Glu Gly
            340                 345                 350

Ser Pro Thr Leu His Phe Ser Met Gly Glu Leu Ser Thr Ile Arg Glu
        355                 360                 365

Thr Ser Gln Thr Ser Thr Leu Gln Ser Leu Thr Pro Gln Ser Ser Val
    370                 375                 380

Arg Thr Ser Pro Ile Lys Met Pro Leu Val Pro Glu Val Leu Ile Thr
385                 390                 395                 400

Ala Ala Glu Ala Pro Val Pro Thr Ser Gly Gly Tyr His His Asp Ser
                405                 410                 415

Ala Thr Ser Ile Leu Ser Ser Glu Phe Thr Gly Val Gln Pro Ser Lys
            420                 425                 430

Thr Glu Gln Gln Gln Gly Pro Met Gly Ser Ile Leu Ser Pro Ser Glu
        435                 440                 445
```

```
Lys Glu Thr Pro Pro Gly Gly Pro Ser Pro Gln Thr Val Ser Ala Ser
    450                 455                 460

Ala Glu Glu Asn Ile Phe Asn Cys Glu Glu Asp Pro Gly Asp Thr Phe
465                 470                 475                 480

Leu Lys Arg Trp Ser Leu Pro Gly Phe Leu Gly Ser Ser His Thr Ser
                485                 490                 495

Leu Gly Asn Leu Ser Pro Asp Pro Met Ser Ser Gln Pro Ala Leu Leu
            500                 505                 510

Ile Asp Thr Glu Thr Ser Ser Glu Ile Ser Gly Ile Asn Ile Val Ala
        515                 520                 525

Gly Ser Arg Val Ser Ser Asp Met Leu Tyr Leu Met Glu Asn Leu Asp
    530                 535                 540

Thr Lys Glu Thr Asp Ile Ile Glu Leu Asn Lys Glu Thr Glu Glu Ser
545                 550                 555                 560

Pro Lys
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<210> 8954
<211> 143
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1814; "

<220>
<221> source
<223> /note="Gene Symbol: BEST3; "

<220>
<221> source
<223> /note="Gene Name:
bestrophin 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449868"

<400> 8954

```
Met Arg Tyr Val Asn Leu Thr Ser Leu Leu Ile Phe Arg Ser Val Ser
1               5                   10                  15
```

```
Thr Ala Val Tyr Lys Arg Phe Pro Thr Met Asp His Val Val Glu Ala
            20                  25                  30

Gly Phe Met Thr Thr Asp Glu Arg Lys Leu Phe Asn His Leu Lys Ser
        35                  40                  45

Pro His Leu Lys Tyr Trp Val Pro Phe Ile Trp Phe Gly Asn Leu Ala
    50                  55                  60

Thr Lys Ala Arg Asn Glu Gly Arg Ile Arg Asp Ser Val Asp Leu Gln
65                  70                  75                  80

Ser Leu Met Thr Glu Met Asn Arg Tyr Arg Ser Trp Cys Ser Leu Leu
                85                  90                  95

Phe Gly Tyr Asp Trp Val Gly Ile Pro Leu Val Tyr Thr Gln Val Ala
            100                 105                 110

Glu Gln Leu Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp Phe Glu Thr
        115                 120                 125

Asn Trp Cys Ile Asp Arg Asn Leu Gln Leu Trp Thr Lys Cys Thr
    130                 135                 140


<210> 8955
<211> 473
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1815; "

<220>
<221> source
<223> /note="Gene Symbol: BEST4; "

<220>
<221> source
<223> /note="Gene Name:
      bestrophin 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NFU0; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000361281"

<400> 8955
Met Thr Val Ser Tyr Thr Leu Lys Val Ala Glu Ala Arg Phe Gly Gly
1 5 10 15

Phe Ser Gly Leu Leu Leu Arg Trp Arg Gly Ser Ile Tyr Lys Leu Leu
20 25 30

Tyr Lys Glu Phe Leu Leu Phe Gly Ala Leu Tyr Ala Val Leu Ser Ile
35 40 45

Thr Tyr Arg Leu Leu Leu Thr Gln Glu Gln Arg Tyr Val Tyr Ala Gln
50 55 60

Val Ala Arg Tyr Cys Asn Arg Ser Ala Asp Leu Ile Pro Leu Ser Phe
65 70 75 80

Val Leu Gly Phe Tyr Val Thr Leu Val Val Asn Arg Trp Trp Ser Gln
85 90 95

Tyr Thr Ser Ile Pro Leu Pro Asp Gln Leu Met Cys Val Ile Ser Ala
100 105 110

Ser Val His Gly Val Asp Gln Arg Gly Arg Leu Leu Arg Arg Thr Leu
115 120 125

Ile Arg Tyr Ala Asn Leu Ala Ser Val Leu Val Leu Arg Ser Val Ser
130 135 140

Thr Arg Val Leu Lys Arg Phe Pro Thr Met Glu His Val Val Asp Ala
145 150 155 160

Gly Phe Met Ser Gln Glu Glu Arg Lys Lys Phe Glu Ser Leu Lys Ser
165 170 175

Asp Phe Asn Lys Tyr Trp Val Pro Cys Val Trp Phe Thr Asn Leu Ala
180 185 190

Ala Gln Ala Arg Arg Asp Gly Arg Ile Arg Asp Asp Ile Ala Leu Cys
195 200 205

Leu Leu Leu Glu Glu Leu Asn Lys Tyr Arg Ala Lys Cys Ser Met Leu

```
    210                 215                 220

Phe His Tyr Asp Trp Ile Ser Ile Pro Leu Val Tyr Thr Gln Val Val
225                 230                 235                 240

Thr Ile Ala Val Tyr Ser Phe Phe Ala Leu Ser Leu Val Gly Arg Gln
                245                 250                 255

Phe Val Glu Pro Glu Ala Gly Ala Ala Lys Pro Gln Lys Leu Leu Lys
            260                 265                 270

Pro Gly Gln Glu Pro Ala Pro Ala Leu Gly Asp Pro Asp Met Tyr Val
        275                 280                 285

Pro Leu Thr Thr Leu Leu Gln Phe Phe Phe Tyr Ala Gly Trp Leu Lys
    290                 295                 300

Val Ala Glu Gln Ile Ile Asn Pro Phe Gly Glu Asp Asp Asp Asp Phe
305                 310                 315                 320

Glu Thr Asn Gln Leu Ile Asp Arg Asn Leu Gln Val Ser Leu Leu Ser
                325                 330                 335

Val Asp Glu Met Tyr Gln Asn Leu Pro Pro Ala Glu Lys Asp Gln Tyr
            340                 345                 350

Trp Asp Glu Asp Gln Pro Gln Pro Pro Tyr Thr Val Ala Thr Ala Ala
        355                 360                 365

Glu Ser Leu Arg Pro Ser Phe Leu Gly Ser Thr Phe Asn Leu Arg Met
    370                 375                 380

Ser Asp Asp Pro Glu Gln Ser Leu Gln Val Glu Ala Ser Pro Gly Ser
385                 390                 395                 400

Gly Arg Pro Ala Pro Ala Ala Gln Thr Pro Leu Leu Gly Arg Phe Leu
                405                 410                 415

Gly Val Gly Ala Pro Ser Pro Ala Ile Ser Leu Arg Asn Phe Gly Arg
            420                 425                 430

Val Arg Gly Thr Pro Arg Pro Pro His Leu Leu Arg Phe Arg Ala Glu
        435                 440                 445
```

```
Glu Gly Gly Asp Pro Glu Ala Ala Ala Arg Ile Glu Glu Glu Ser Ala
    450                 455                 460

Glu Ser Gly Asp Glu Ala Leu Glu Pro
465                 470


<210> 8956
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1816; "

<220>
<221> source
<223> /note="Gene Symbol: BET1; "

<220>
<221> source
<223> /note="Gene Name:
      Bet1 golgi vesicular membrane trafficking prt; "

<220>
<221> source
<223> /note="Uniprot ID:  O15155; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000222547"

<400> 8956
Met Arg Arg Ala Gly Leu Gly Glu Gly Val Pro Pro Gly Asn Tyr Gly
1               5                   10                  15

Asn Tyr Gly Tyr Ala Asn Ser Gly Tyr Ser Ala Cys Glu Glu Glu Asn
            20                  25                  30

Glu Arg Leu Thr Glu Ser Leu Arg Ser Lys Val Thr Ala Ile Lys Ser
        35                  40                  45

Leu Ser Ile Glu Ile Gly His Glu Val Lys Thr Gln Asn Lys Leu Leu
    50                  55                  60

Ala Glu Met Asp Ser Gln Phe Asp Ser Thr Thr Gly Phe Leu Gly Lys
65                  70                  75                  80
```

```
Thr Met Gly Lys Leu Lys Ile Leu Ser Arg Gly Ser Gln Thr Lys Leu
                85                  90                  95

Leu Cys Tyr Met Met Leu Phe Ser Leu Phe Val Phe Phe Ile Ile Tyr
            100                 105                 110

Trp Ile Ile Lys Leu Arg
        115


<210> 8957
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1816; "

<220>
<221> source
<223> /note="Gene Symbol: BET1; "

<220>
<221> source
<223> /note="Gene Name:
      Bet1 golgi vesicular membrane trafficking prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350125"

<400> 8957
Met Arg Arg Ala Gly Leu Gly Glu Gly Val Pro Pro Gly Asn Tyr Gly
1               5                   10                  15

Asn Tyr Gly Tyr Ala Asn Ser Gly Tyr Ser Ala Cys Glu Glu Glu Asn
            20                  25                  30

Glu Arg Leu Thr Glu Ser Leu Arg Ser Lys Val Thr Ala Ile Lys Ser
        35                  40                  45

Leu Ser Ile Glu Ile Gly His Glu Val Lys Thr Gln Asn Lys Leu Leu
    50                  55                  60

Ala Glu Met Asp Ser Gln Phe Asp Ser Thr Thr Gly Phe Leu Val Asp
65                  70                  75                  80

Pro Ser Gly Ser Arg Asp Phe Thr Ser Ser Ser Glu Ser Leu Leu Leu
                85                  90                  95
```

```
Leu Ile Leu Thr Val Pro Gln His Leu Ser Arg Ser Leu Lys Arg Arg
            100                 105                 110

Arg Leu Thr Phe Ser Ala Ile Tyr His Ser Cys Arg Ile Ile Ser
        115                 120                 125


<210> 8958
<211> 83
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1816; "

<220>
<221> source
<223> /note="Gene Symbol: BET1; "

<220>
<221> source
<223> /note="Gene Name:
      Bet1 golgi vesicular membrane trafficking prt; "

<220>
<221> source
<223> /note="Uniprot ID:  O15155; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391228"

<400> 8958
Met Arg Arg Ala Gly Leu Gly Glu Gly Val Pro Pro Gly Asn Tyr Gly
1               5                   10                  15

Asn Tyr Gly Tyr Ala Asn Ser Gly Tyr Ser Ala Cys Glu Glu Glu Asn
            20                  25                  30

Glu Arg Leu Thr Glu Ser Leu Arg Ser Lys Val Thr Ala Ile Lys Ser
        35                  40                  45

Leu Ser Ile Glu Ile Gly His Glu Val Lys Thr Gln Asn Lys Leu Leu
    50                  55                  60

Ala Glu Met Asp Ser Gln Phe Asp Ser Thr Thr Gly Phe Leu Gly Leu
65                  70                  75                  80
```

Cys Pro Met

<210> 8959
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1816; "

<220>
<221> source
<223> /note="Gene Symbol: BET1; "

<220>
<221> source
<223> /note="Gene Name:
Bet1 golgi vesicular membrane trafficking prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401260"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 8959
Xaa Leu Pro Ser Phe Cys Ile Asn His Phe Ser Leu Pro Leu His Ser
1 5 10 15

His Ala Phe Ser Met Gly Glu Gly Val Pro Pro Gly Asn Tyr Gly Asn
20 25 30

Tyr Gly Tyr Ala Asn Ser Gly Tyr Ser Ala Cys Glu Glu Glu Asn Glu
35 40 45

Arg Leu Thr Glu Ser Leu Arg Ser Lys Val Thr Ala Ile Lys Ser Leu
50 55 60

Ser Ile Glu Ile Gly His Glu Val Lys Thr Gln Asn Lys Leu Leu Ala
65 70 75 80

Glu Met Asp Ser Gln Phe Asp Ser Thr Thr Gly Phe Leu Gly Lys Thr
85 90 95

```
Met Gly Lys Leu Lys Ile Leu Ser Arg Gly Ser Gln Thr Lys Leu Leu
            100                 105                 110

Cys Tyr Met Met Leu Phe Ser Leu Phe Val Phe Phe Ile Ile Tyr Trp
        115                 120                 125

Ile Ile Lys Leu Arg
    130


<210> 8960
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1816; "

<220>
<221> source
<223> /note="Gene Symbol: BET1; "

<220>
<221> source
<223> /note="Gene Name:
      Bet1 golgi vesicular membrane trafficking prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413063"

<400> 8960
Met Arg Arg Ala Gly Leu Gly Glu Gly Val Pro Pro Gly Asn Tyr Gly
1               5                   10                  15

Asn Tyr Gly Tyr Ala Asn Ser Gly Tyr Ser Ala Cys Glu Glu Glu Asn
            20                  25                  30

Glu Arg Leu Thr Glu Ser Leu Arg Ser Lys Val Thr Ala Ile Lys Ser
        35                  40                  45

Leu Ser Ile Glu Ile Gly His Glu Val Lys Thr Gln Asn Lys Leu Leu
    50                  55                  60

Ala Glu Met Val Ser Gly Tyr Asp Phe Asn Phe Lys Lys Phe Asp Leu
65                  70                  75                  80

Ile Phe Ala Asn Asn Arg Ile Ser Thr Phe Ile His Phe Glu Ile Gln
                85                  90                  95
```

Arg Ser

<210> 8961
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1817; "

<220>
<221> source
<223> /note="Gene Symbol: BET1L; "

<220>
<221> source
<223> /note="Gene Name:
Bet1 golgi vesicular membrane trafficking prt-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000333470"

<400> 8961
Met Ala Asp Trp Ala Arg Ala Gln Ser Pro Gly Ala Val Glu Glu Ile
1 5 10 15

Leu Asp Arg Glu Asn Lys Arg Met Ala Asp Ser Leu Ala Ser Lys Val
20 25 30

Thr Arg Leu Lys Ser Leu Ala Leu Asp Ile Asp Arg Asp Ala Glu Asp
35 40 45

Gln Asn Arg Tyr Leu Asp Gly Met Gly Ala
50 55

<210> 8962
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1817; "

<220>
<221> source
<223> /note="Gene Symbol: BET1L; "

<220>
<221> source
<223> /note="Gene Name:
Bet1 golgi vesicular membrane trafficking prt-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339093"

<400> 8962
Met Ala Asp Trp Ala Arg Ala Gln Ser Pro Gly Ala Val Glu Glu Ile
1 5 10 15

Leu Asp Arg Glu Asn Lys Arg Met Ala Asp Ser Leu Ala Ser Lys Val
20 25 30

Thr Arg Leu Lys Ser Leu Ala Leu Asp Ile Asp Arg Asp Ala Glu Asp
35 40 45

Gln Asn Arg Tyr Leu Asp Gly Met Val Arg Ala His Gly Val Arg Val
50 55 60

Ser Val Pro Cys Pro Ser Thr Thr Cys Cys Arg Ala Cys Ser Val Ser
65 70 75 80

Phe Ser Thr Gly Ala Gly Gly Trp Ser Asn His His Phe Cys Val Ile
85 90 95

Leu Leu Gly Phe Leu Pro
100

<210> 8963
<211> 111
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1817; "

<220>
<221> source
<223> /note="Gene Symbol: BET1L; "

<220>
<221> source
<223> /note="Gene Name:
Bet1 golgi vesicular membrane trafficking prt-like; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NYM9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000372210"

<400> 8963
Met Ala Asp Trp Ala Arg Ala Gln Ser Pro Gly Ala Val Glu Glu Ile
1   5   10   15

Leu Asp Arg Glu Asn Lys Arg Met Ala Asp Ser Leu Ala Ser Lys Val
            20   25   30

Thr Arg Leu Lys Ser Leu Ala Leu Asp Ile Asp Arg Asp Ala Glu Asp
        35   40   45

Gln Asn Arg Tyr Leu Asp Gly Met Asp Ser Asp Phe Thr Ser Met Thr
    50   55   60

Ser Leu Leu Thr Gly Ser Val Lys Arg Phe Ser Thr Met Ala Arg Ser
65   70   75   80

Gly Gln Asp Asn Arg Lys Leu Leu Cys Gly Met Ala Val Gly Leu Ile
                85   90   95

Val Ala Phe Phe Ile Leu Ser Tyr Phe Leu Ser Arg Ala Arg Thr
            100   105   110

<210> 8964
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1817; "

<220>
<221> source
<223> /note="Gene Symbol: BET1L; "

<220>
<221> source
<223> /note="Gene Name:
      Bet1 golgi vesicular membrane trafficking prt-like; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000386558"

<400> 8964
Met Ala Asp Trp Ala Arg Ala Gln Ser Pro Gly Ala Val Glu Glu Ile
1 5 10 15

Leu Asp Arg Glu Asn Lys Arg Met Ala Asp Ser Leu Ala Ser Lys Val
20 25 30

Thr Arg Leu Lys Ser Leu Ala Leu Asp Ile Asp Arg Asp Ala Glu Asp
35 40 45

Gln Asn Arg Tyr Leu Asp Gly Met Val Phe Gln Asp Ser Gln Glu Gly
50 55 60

Ala His Ile Arg Arg Glu Thr Val Ser Lys Ser Val Cys Ala Glu Pro
65 70 75 80

Trp Arg His Gln Arg Ala Arg Asp Pro Ala Pro Thr Asn Phe Pro Leu
85 90 95

Lys Cys Gln Lys Gln Arg Gly Ala Ser Thr Ser Ser Gly Gln His Gly
100 105 110

Gly Arg Val Asn Leu Val Phe Phe Ile Asp Asp Asp Tyr Ser Pro Pro
115 120 125

Ser Lys Arg Gln Arg Pro Thr Ser His His Ser His Gln Ser Gln Asn
130 135 140

Pro Pro Met Leu Gly Asn Gly Lys
145 150

<210> 8965
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1817; "

<220>
<221> source
<223> /note="Gene Symbol: BET1L; "

<220>

<221> source
<223> /note="Gene Name:
Bet1 golgi vesicular membrane trafficking prt-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436205"

<400> 8965
Met Ala Asp Ser Leu Ala Ser Lys Val Thr Arg Leu Lys Ser Leu Ala
1 5 10 15

Leu Asp Ile Asp Arg Asp Ala Glu Asp Gln Asn Arg Tyr Leu Asp Gly
20 25 30

Met Asp Ser Asp Phe Thr Ser Met Thr Ser Leu Leu Thr Gly Ser Val
35 40 45

Lys Arg Phe Ser Thr Met Ala Arg Ser Gly Gln Asp Asn Arg Lys Leu
50 55 60

Leu Cys Gly Met Ala Val Gly Leu Ile Val Ala Phe Phe Ile Leu Ser
65 70 75 80

Tyr Phe Leu Ser Arg Ala Arg Thr
85

<210> 8966
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1817; "

<220>
<221> source
<223> /note="Gene Symbol: BET1L; "

<220>
<221> source
<223> /note="Gene Name:
Bet1 golgi vesicular membrane trafficking prt-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436643"

<400> 8966
Met Ala Asp Trp Ala Arg Ala Gln Ser Pro Gly Ala Val Glu Glu Ile

```
1               5                   10                  15

Leu Asp Arg Glu Asn Lys Arg Met Ala Asp Ser Leu Ala Ser Lys Val
            20                  25                  30

Thr Arg Leu Lys Ser Asp Ser Asp Phe Thr Ser Met Thr Ser Leu Leu
        35                  40                  45

Thr Gly Ser Val Lys Arg Phe Ser Thr Met Ala Arg Ser Gly Gln Asp
    50                  55                  60

Asn Arg Lys Leu Leu Cys Gly Met Ala Val Gly Leu Ile Val Ala Phe
65                  70                  75                  80

Phe Ile Leu Ser Tyr Phe Leu Ser Arg Ala Arg Thr
                85                  90


<210> 8967
<211> 498
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1818; "

<220>
<221> source
<223> /note="Gene Symbol: B3GLCT; "

<220>
<221> source
<223> /note="Gene Name:
      beta 3-glucosyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6Y288; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000343002"

<400> 8967
Met Arg Pro Pro Ala Cys Trp Trp Leu Leu Ala Pro Pro Ala Leu Leu
1               5                   10                  15

Ala Leu Leu Thr Cys Ser Leu Ala Phe Gly Leu Ala Ser Glu Asp Thr
            20                  25                  30
```

```
Lys Lys Glu Val Lys Gln Ser Gln Asp Leu Glu Lys Ser Gly Ile Ser
        35                  40                  45

Arg Lys Asn Asp Ile Asp Leu Lys Gly Ile Val Phe Val Ile Gln Ser
    50                  55                  60

Gln Ser Asn Ser Phe His Ala Lys Arg Ala Glu Gln Leu Lys Lys Ser
65                  70                  75                  80

Ile Leu Lys Gln Ala Ala Asp Leu Thr Gln Glu Leu Pro Ser Val Leu
                85                  90                  95

Leu Leu His Gln Leu Ala Lys Gln Glu Gly Ala Trp Thr Ile Leu Pro
            100                 105                 110

Leu Leu Pro His Phe Ser Val Thr Tyr Ser Arg Asn Ser Ser Trp Ile
        115                 120                 125

Phe Phe Cys Glu Glu Glu Thr Arg Ile Gln Ile Pro Lys Leu Leu Glu
    130                 135                 140

Thr Leu Arg Arg Tyr Asp Pro Ser Lys Glu Trp Phe Leu Gly Lys Ala
145                 150                 155                 160

Leu His Asp Glu Glu Ala Thr Ile Ile His His Tyr Ala Phe Ser Glu
                165                 170                 175

Asn Pro Thr Val Phe Lys Tyr Pro Asp Phe Ala Ala Gly Trp Ala Leu
            180                 185                 190

Ser Ile Pro Leu Val Asn Lys Leu Thr Lys Arg Leu Lys Ser Glu Ser
        195                 200                 205

Leu Lys Ser Asp Phe Thr Ile Asp Leu Lys His Glu Ile Ala Leu Tyr
    210                 215                 220

Ile Trp Asp Lys Gly Gly Gly Pro Pro Leu Thr Pro Val Pro Glu Phe
225                 230                 235                 240

Cys Thr Asn Asp Val Asp Phe Tyr Cys Ala Thr Thr Phe His Ser Phe
                245                 250                 255
```

```
Leu Pro Leu Cys Arg Lys Pro Val Lys Lys Lys Asp Ile Phe Val Ala
            260                 265                 270

Val Lys Thr Cys Lys Lys Phe His Gly Asp Arg Ile Pro Ile Val Lys
        275                 280                 285

Gln Thr Trp Glu Ser Gln Ala Ser Leu Ile Glu Tyr Tyr Ser Asp Tyr
    290                 295                 300

Thr Glu Asn Ser Ile Pro Thr Val Asp Leu Gly Ile Pro Asn Thr Asp
305                 310                 315                 320

Arg Gly His Cys Gly Lys Thr Phe Ala Ile Leu Glu Arg Phe Leu Asn
                325                 330                 335

Arg Ser Gln Asp Lys Thr Ala Trp Leu Val Ile Val Asp Asp Asp Thr
            340                 345                 350

Leu Ile Ser Ile Ser Arg Leu Gln His Leu Leu Ser Cys Tyr Asp Ser
        355                 360                 365

Gly Glu Pro Val Phe Leu Gly Glu Arg Tyr Gly Tyr Gly Leu Gly Thr
    370                 375                 380

Gly Gly Tyr Ser Tyr Ile Thr Gly Gly Gly Gly Met Val Phe Ser Arg
385                 390                 395                 400

Glu Ala Val Arg Arg Leu Leu Ala Ser Lys Cys Arg Cys Tyr Ser Asn
                405                 410                 415

Asp Ala Pro Asp Asp Met Val Leu Gly Met Cys Phe Ser Gly Leu Gly
            420                 425                 430

Ile Pro Val Thr His Ser Pro Leu Phe His Gln Ala Arg Pro Val Asp
        435                 440                 445

Tyr Pro Lys Asp Tyr Leu Ser His Gln Val Pro Ile Ser Phe His Lys
    450                 455                 460

His Trp Asn Ile Asp Pro Val Lys Val Tyr Phe Thr Trp Leu Ala Pro
465                 470                 475                 480

Ser Asp Glu Asp Lys Ala Arg Gln Glu Thr Gln Lys Gly Phe Arg Glu
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485 490 495

Glu Leu

<210> 8968
<211> 334
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1819; "

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q9P2W7; "

<220>
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<400> 8968
Met Pro Lys Arg Arg Asp Ile Leu Ala Ile Val Leu Ile Val Leu Pro
1 5 10 15

Trp Thr Leu Leu Ile Thr Val Trp His Gln Ser Thr Leu Ala Pro Leu
20 25 30

Leu Ala Val His Lys Asp Glu Gly Ser Asp Pro Arg Arg Glu Thr Pro
35 40 45

Pro Gly Ala Asp Pro Arg Glu Tyr Cys Thr Ser Asp Arg Asp Ile Val
50 55 60

Glu Val Val Arg Thr Glu Tyr Val Tyr Thr Arg Pro Pro Pro Trp Ser
65 70 75 80

Asp Thr Leu Pro Thr Ile His Val Val Thr Pro Thr Tyr Ser Arg Pro
85 90 95

```
Val Gln Lys Ala Glu Leu Thr Arg Met Ala Asn Thr Leu Leu His Val
            100                 105                 110

Pro Asn Leu His Trp Leu Val Val Glu Asp Ala Pro Arg Arg Thr Pro
        115                 120                 125

Leu Thr Ala Arg Leu Leu Arg Asp Thr Gly Leu Asn Tyr Thr His Leu
    130                 135                 140

His Val Glu Thr Pro Arg Asn Tyr Lys Leu Arg Gly Asp Ala Arg Asp
145                 150                 155                 160

Pro Arg Ile Pro Arg Gly Thr Met Gln Arg Asn Leu Ala Leu Arg Trp
                165                 170                 175

Leu Arg Glu Thr Phe Pro Arg Asn Ser Ser Gln Pro Gly Val Val Tyr
            180                 185                 190

Phe Ala Asp Asp Asp Asn Thr Tyr Ser Leu Glu Leu Phe Glu Glu Met
        195                 200                 205

Arg Ser Thr Arg Arg Val Ser Val Trp Pro Val Ala Phe Val Gly Gly
    210                 215                 220

Leu Arg Tyr Glu Ala Pro Arg Val Asn Gly Ala Gly Lys Val Val Gly
225                 230                 235                 240

Trp Lys Thr Val Phe Asp Pro His Arg Pro Phe Ala Ile Asp Met Ala
                245                 250                 255

Gly Phe Ala Val Asn Leu Arg Leu Ile Leu Gln Arg Ser Gln Ala Tyr
            260                 265                 270

Phe Lys Leu Arg Gly Val Lys Gly Gly Tyr Gln Glu Ser Ser Leu Leu
        275                 280                 285

Arg Glu Leu Val Thr Leu Asn Asp Leu Glu Pro Lys Ala Ala Asn Cys
    290                 295                 300

Thr Lys Ile Leu Val Trp His Thr Arg Thr Glu Lys Pro Val Leu Val
305                 310                 315                 320
```

Asn Glu Gly Lys Lys Gly Phe Thr Asp Pro Ser Val Glu Ile
325 330

<210> 8969
<211> 334
<212> PRT
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<400> 8969
Met Pro Lys Arg Arg Asp Ile Leu Ala Ile Val Leu Ile Val Leu Pro
1 5 10 15

Trp Thr Leu Leu Ile Thr Val Trp His Gln Ser Thr Leu Ala Pro Leu
20 25 30

Leu Ala Val His Lys Asp Glu Gly Ser Asp Pro Arg Arg Glu Thr Pro
35 40 45

Pro Gly Ala Asp Pro Arg Glu Tyr Cys Thr Ser Asp Arg Asp Ile Val
50 55 60

Glu Val Val Arg Thr Glu Tyr Val Tyr Thr Arg Pro Pro Pro Trp Ser
65 70 75 80

Asp Thr Leu Pro Thr Ile His Val Val Thr Pro Thr Tyr Ser Arg Pro
85 90 95

Val Gln Lys Ala Glu Leu Thr Arg Met Ala Asn Thr Leu Leu His Val
100 105 110

```
Pro Asn Leu His Trp Leu Val Val Glu Asp Ala Pro Arg Arg Thr Pro
        115                 120                 125

Leu Thr Ala Arg Leu Leu Arg Asp Thr Gly Leu Asn Tyr Thr His Leu
    130                 135                 140

His Val Glu Thr Pro Arg Asn Tyr Lys Leu Arg Gly Asp Ala Arg Asp
145                 150                 155                 160

Pro Arg Ile Pro Arg Gly Thr Met Gln Arg Asn Leu Ala Leu Arg Trp
                165                 170                 175

Leu Arg Glu Thr Phe Pro Arg Asn Ser Ser Gln Pro Gly Val Val Tyr
            180                 185                 190

Phe Ala Asp Asp Asp Asn Thr Tyr Ser Leu Glu Leu Phe Glu Glu Met
        195                 200                 205

Arg Ser Thr Arg Arg Val Ser Val Trp Pro Val Ala Phe Val Gly Gly
    210                 215                 220

Leu Arg Tyr Glu Ala Pro Arg Val Asn Gly Ala Gly Lys Val Val Gly
225                 230                 235                 240

Trp Lys Thr Val Phe Asp Pro His Arg Pro Phe Ala Ile Asp Met Ala
                245                 250                 255

Gly Phe Ala Val Asn Leu Arg Leu Ile Leu Gln Arg Ser Gln Ala Tyr
            260                 265                 270

Phe Lys Leu Arg Gly Val Lys Gly Gly Tyr Gln Glu Ser Ser Leu Leu
        275                 280                 285

Arg Glu Leu Val Thr Leu Asn Asp Leu Glu Pro Lys Ala Ala Asn Cys
    290                 295                 300

Thr Lys Ile Leu Val Trp His Thr Arg Thr Glu Lys Pro Val Leu Val
305                 310                 315                 320

Asn Glu Gly Lys Lys Gly Phe Thr Asp Pro Ser Val Glu Ile
                325                 330
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<210> 8970
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<213> Homo sapiens

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<220>
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<400> 8970
Met Pro Lys Arg Arg Asp Ile Leu Ala Ile Val Leu Ile Val Leu Pro
1   5   10   15

Trp Thr Leu Leu Ile Thr Val Trp His Gln Ser Thr Leu Ala Pro Leu
            20   25   30

Leu Ala Val His Lys Asp Glu Gly Ser Asp Pro Arg Arg Glu Thr Pro
        35   40   45

Pro Gly Ala Asp Pro Arg Glu Tyr Cys Thr Ser Asp Arg Asp Ile Val
    50   55   60

Glu Val Val Arg Thr Glu Tyr Val Tyr Thr Arg Pro Pro Pro Trp Ser
65   70   75   80

Asp Thr Leu Pro Thr Ile His Val Val Thr Pro Thr Tyr Ser Arg Pro
                85   90   95

Val Gln Lys Ala Glu Leu Thr Arg Met Ala Asn Thr Leu Leu His Val
            100   105   110

Pro Asn Leu His Trp Leu Val Val Glu Asp Ala Pro Arg Arg Thr Pro

```
        115                 120                 125

Leu Thr Ala Arg Leu Leu Arg Asp Thr Gly Leu Asn Tyr Thr His Leu
    130                 135                 140

His Val Glu Thr Pro Arg Asn Tyr Lys Leu Arg Gly Asp Ala Arg Asp
145                 150                 155                 160

Pro Arg Ile Pro Arg Gly Thr Met Gln Arg Asn Leu Ala Leu Arg Trp
                165                 170                 175

Leu Arg Glu Thr Phe Pro Arg Asn Ser Ser Gln Pro Gly Val Val Tyr
            180                 185                 190

Phe Ala Asp Asp Asp Asn Thr Tyr Ser Leu Glu Leu Phe Glu Glu Met
        195                 200                 205

Arg Ser Thr Arg Arg Val Ser Val Trp Pro Val Ala Phe Val Gly Gly
    210                 215                 220

Leu Arg Tyr Glu Ala Pro Arg Val Asn Gly Ala Gly Lys Val Val Gly
225                 230                 235                 240

Trp Lys Thr Val Phe Asp Pro His Arg Pro Phe Ala Ile Asp Met Ala
                245                 250                 255

Gly Phe Ala Val Asn Leu Arg Leu Ile Leu Gln Arg Ser Gln Ala Tyr
            260                 265                 270

Phe Lys Leu Arg Gly Val Lys Gly Gly Tyr Gln Glu Ser Ser Leu Leu
        275                 280                 285

Arg Glu Leu Val Thr Leu Asn Asp Leu Glu Pro Lys Ala Ala Asn Cys
    290                 295                 300

Thr Lys Ile Leu Val Trp His Thr Arg Thr Glu Lys Pro Val Leu Val
305                 310                 315                 320

Asn Glu Gly Lys Lys Gly Phe Thr Asp Pro Ser Val Glu Ile
                325                 330
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<210> 8971
<211> 323

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: B3GAT2; "

<220>
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<223> /note="Gene Name:
beta-1,3-glucuronyltransferase 2; "

<220>
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<223> /note="Uniprot ID: Q9NPZ5; "

<220>
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<223> /note="ENSP ID: ENSP00000230053"

<400> 8971

Met	Lys	Ser	Ala	Leu	Phe	Thr	Arg	Phe	Phe	Ile	Leu	Leu	Pro	Trp	Ile
1				5				10						15	

Leu	Ile	Val	Ile	Ile	Met	Leu	Asp	Val	Asp	Thr	Arg	Arg	Pro	Val	Pro
			20					25					30		

Pro	Leu	Thr	Pro	Arg	Pro	Tyr	Phe	Ser	Pro	Tyr	Ala	Val	Gly	Arg	Gly
		35					40					45			

Gly	Ala	Arg	Leu	Pro	Leu	Arg	Arg	Gly	Gly	Pro	Ala	His	Gly	Thr	Gln
	50					55					60				

Lys	Arg	Asn	Gln	Ser	Arg	Pro	Gln	Pro	Gln	Pro	Glu	Pro	Gln	Leu	Pro
65					70					75					80

Thr	Ile	Tyr	Ala	Ile	Thr	Pro	Thr	Tyr	Ser	Arg	Pro	Val	Gln	Lys	Ala
				85					90					95	

Glu	Leu	Thr	Arg	Leu	Ala	Asn	Thr	Phe	Arg	Gln	Val	Ala	Gln	Leu	His
			100					105					110		

Trp	Ile	Leu	Val	Glu	Asp	Ala	Ala	Ala	Arg	Ser	Glu	Leu	Val	Ser	Arg
		115					120					125			

```
Phe Leu Ala Arg Ala Gly Leu Pro Ser Thr His Leu His Val Pro Thr
    130                 135                 140

Pro Arg Arg Tyr Lys Arg Pro Gly Leu Pro Arg Ala Thr Glu Gln Arg
145                 150                 155                 160

Asn Ala Gly Leu Ala Trp Leu Arg Gln Arg His Gln His Gln Arg Ala
                165                 170                 175

Gln Pro Gly Val Leu Phe Phe Ala Asp Asp Asp Asn Thr Tyr Ser Leu
            180                 185                 190

Glu Leu Phe Gln Glu Met Arg Thr Thr Arg Lys Val Ser Val Trp Pro
        195                 200                 205

Val Gly Leu Val Gly Gly Arg Arg Tyr Glu Arg Pro Leu Val Glu Asn
    210                 215                 220

Gly Lys Val Val Gly Trp Tyr Thr Gly Trp Arg Ala Asp Arg Pro Phe
225                 230                 235                 240

Ala Ile Asp Met Ala Gly Phe Ala Val Ser Leu Gln Val Ile Leu Ser
                245                 250                 255

Asn Pro Lys Ala Val Phe Lys Arg Arg Gly Ser Gln Pro Gly Met Gln
            260                 265                 270

Glu Ser Asp Phe Leu Lys Gln Ile Thr Thr Val Glu Glu Leu Glu Pro
        275                 280                 285

Lys Ala Asn Asn Cys Thr Lys Val Leu Val Trp His Thr Arg Thr Glu
    290                 295                 300

Lys Val Asn Leu Ala Asn Glu Pro Lys Tyr His Leu Asp Thr Val Lys
305                 310                 315                 320

Ile Glu Val
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<210> 8972
<211> 251
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<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
beta-1,3-glucuronyltransferase 2; "

<220>
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<223> /note="ENSP ID: ENSP00000481320"

<400> 8972

```
Met Lys Ser Ala Leu Phe Thr Arg Phe Phe Ile Leu Leu Pro Trp Ile
1               5                  10                  15

Leu Ile Val Ile Ile Met Leu Asp Val Asp Thr Arg Arg Pro Val Pro
            20                  25                  30

Pro Leu Thr Pro Arg Pro Tyr Phe Ser Pro Tyr Ala Val Gly Arg Gly
        35                  40                  45

Gly Ala Arg Leu Pro Leu Arg Arg Gly Gly Pro Ala His Gly Thr Gln
    50                  55                  60

Lys Arg Asn Gln Ser Arg Pro Gln Pro Gln Pro Glu Pro Gln Leu Pro
65                  70                  75                  80

Thr Ile Tyr Ala Ile Thr Pro Thr Tyr Ser Arg Pro Val Gln Lys Ala
                85                  90                  95

Glu Leu Thr Arg Leu Ala Asn Thr Phe Arg Gln Val Ala Gln Leu His
            100                 105                 110

Trp Ile Leu Val Glu Asp Ala Ala Ala Arg Ser Glu Leu Met Arg Thr
        115                 120                 125

Thr Arg Lys Val Ser Val Trp Pro Val Gly Leu Val Gly Gly Arg Arg
    130                 135                 140

Tyr Glu Arg Pro Leu Val Glu Asn Gly Lys Val Val Gly Trp Tyr Thr
145                 150                 155                 160
```

```
Gly Trp Arg Ala Asp Arg Pro Phe Ala Ile Asp Met Ala Gly Phe Ala
                165                 170                 175

Val Ser Leu Gln Val Ile Leu Ser Asn Pro Lys Ala Val Phe Lys Arg
            180                 185                 190

Arg Gly Ser Gln Pro Gly Met Gln Glu Ser Asp Phe Leu Lys Gln Ile
        195                 200                 205

Thr Thr Val Glu Glu Leu Glu Pro Lys Ala Asn Asn Cys Thr Lys Val
    210                 215                 220

Leu Val Trp His Thr Arg Thr Glu Lys Val Asn Leu Ala Asn Glu Pro
225                 230                 235                 240

Lys Tyr His Leu Asp Thr Val Lys Ile Glu Val
                245                 250


<210> 8973
<211> 335
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  O94766; "

<220>
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<223> /note="ENSP ID: ENSP00000265471"

<400> 8973
Met Lys Leu Lys Leu Lys Asn Val Phe Leu Ala Tyr Phe Leu Val Ser
1               5                   10                  15

Ile Ala Gly Leu Leu Tyr Ala Leu Val Gln Leu Gly Gln Pro Cys Asp
```

```
            20                  25                  30

Cys Leu Pro Pro Leu Arg Ala Ala Ala Glu Gln Leu Arg Gln Lys Asp
        35                  40                  45

Leu Arg Ile Ser Gln Leu Gln Ala Glu Leu Arg Arg Pro Pro Pro Ala
    50                  55                  60

Pro Ala Gln Pro Pro Glu Pro Glu Ala Leu Pro Thr Ile Tyr Val Val
65                  70                  75                  80

Thr Pro Thr Tyr Ala Arg Leu Val Gln Lys Ala Glu Leu Val Arg Leu
                85                  90                  95

Ser Gln Thr Leu Ser Leu Val Pro Arg Leu His Trp Leu Leu Val Glu
            100                 105                 110

Asp Ala Glu Gly Pro Thr Pro Leu Val Ser Gly Leu Leu Ala Ala Ser
        115                 120                 125

Gly Leu Leu Phe Thr His Leu Val Val Leu Thr Pro Lys Ala Gln Arg
    130                 135                 140

Leu Arg Glu Gly Glu Pro Gly Trp Val His Pro Arg Gly Val Glu Gln
145                 150                 155                 160

Arg Asn Lys Ala Leu Asp Trp Leu Arg Gly Arg Gly Gly Ala Val Gly
                165                 170                 175

Gly Glu Lys Asp Pro Pro Pro Pro Gly Thr Gln Gly Val Val Tyr Phe
            180                 185                 190

Ala Asp Asp Asp Asn Thr Tyr Ser Arg Glu Leu Phe Glu Glu Met Arg
        195                 200                 205

Trp Thr Arg Gly Val Ser Val Trp Pro Val Gly Leu Val Gly Gly Leu
    210                 215                 220

Arg Phe Glu Gly Pro Gln Val Gln Asp Gly Arg Val Val Gly Phe His
225                 230                 235                 240

Thr Ala Trp Glu Pro Ser Arg Pro Phe Pro Val Asp Met Ala Gly Phe
                245                 250                 255
```

```
Ala Val Ala Leu Pro Leu Leu Leu Asp Lys Pro Asn Ala Gln Phe Asp
            260                 265                 270

Ser Thr Ala Pro Arg Gly His Leu Glu Ser Ser Leu Leu Ser His Leu
        275                 280                 285

Val Asp Pro Lys Asp Leu Glu Pro Arg Ala Ala Asn Cys Thr Arg Val
    290                 295                 300

Leu Val Trp His Thr Arg Thr Glu Lys Pro Lys Met Lys Gln Glu Glu
305                 310                 315                 320

Gln Leu Gln Arg Gln Gly Arg Gly Ser Asp Pro Ala Ile Glu Val
                325                 330                 335


<210> 8974
<211> 319
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 8974
Met Lys Leu Lys Leu Lys Asn Val Phe Leu Ala Tyr Phe Leu Val Ser
1               5                   10                  15

Ile Ala Gly Leu Leu Tyr Ala Leu Val Gln Leu Gly Gln Pro Cys Asp
            20                  25                  30

Cys Leu Pro Pro Leu Arg Ala Ala Ala Glu Gln Leu Arg Gln Lys Asp
        35                  40                  45
```

```
Leu Arg Ile Ser Gln Leu Gln Ala Glu Leu Arg Arg Pro Pro Pro Ala
    50                  55                  60

Pro Ala Gln Pro Pro Glu Pro Glu Ala Leu Pro Thr Ile Tyr Val Val
65                  70                  75                  80

Thr Pro Thr Tyr Ala Arg Leu Val Gln Lys Ala Glu Leu Val Arg Leu
                85                  90                  95

Ser Gln Thr Leu Ser Leu Val Pro Arg Leu His Trp Leu Leu Val Glu
            100                 105                 110

Asp Ala Glu Gly Pro Thr Pro Leu Val Ser Gly Leu Leu Ala Ala Ser
        115                 120                 125

Gly Leu Leu Phe Thr His Leu Val Val Leu Thr Pro Lys Ala Gln Arg
    130                 135                 140

Leu Arg Glu Gly Glu Pro Gly Trp Val His Pro Arg Gly Val Glu Gln
145                 150                 155                 160

Arg Asn Lys Ala Leu Asp Trp Leu Arg Gly Arg Gly Gly Ala Val Gly
                165                 170                 175

Gly Glu Lys Asp Pro Pro Pro Pro Gly Thr Gln Gly Val Val Tyr Phe
            180                 185                 190

Ala Asp Asp Asp Asn Thr Tyr Ser Arg Glu Leu Phe Glu Glu Met Arg
        195                 200                 205

Trp Thr Arg Gly Val Ser Val Trp Pro Val Gly Leu Val Gly Gly Leu
    210                 215                 220

Arg Phe Glu Gly Pro Gln Val Gln Asp Gly Arg Val Val Gly Phe His
225                 230                 235                 240

Thr Ala Trp Glu Pro Ser Arg Pro Phe Pro Val Asp Met Ala Gly Phe
                245                 250                 255

Ala Val Ala Leu Pro Leu Leu Leu Asp Lys Pro Asn Ala Gln Phe Asp
            260                 265                 270

Ser Thr Ala Pro Arg Gly His Leu Glu Ser Ser Leu Leu Ser His Leu
```

275 280 285

Val Asp Pro Lys Asp Leu Glu Pro Arg Ala Ala Asn Cys Thr Arg Ser
290 295 300

Leu Ala Val Ser Pro Arg Leu Glu Cys Ser Ser Ala Ile Leu Ala
305 310 315

<210> 8975
<211> 315
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: O94766; "

<220>
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<223> /note="ENSP ID: ENSP00000432474"

<400> 8975
Met Lys Leu Lys Leu Lys Asn Val Phe Leu Ala Tyr Phe Leu Val Ser
1 5 10 15

Ile Ala Gly Leu Leu Tyr Ala Leu Val Gln Leu Gly Gln Pro Cys Asp
20 25 30

Cys Leu Pro Pro Leu Arg Ala Ala Ala Glu Gln Leu Arg Gln Lys Asp
35 40 45

Leu Arg Ile Ser Gln Leu Gln Ala Glu Leu Arg Arg Pro Pro Pro Ala
50 55 60

Pro Ala Gln Pro Pro Glu Pro Glu Ala Leu Pro Thr Ile Tyr Val Val
65 70 75 80

```
Thr Pro Thr Tyr Ala Arg Leu Val Gln Lys Ala Glu Leu Val Arg Leu
                85                  90                  95

Ser Gln Thr Leu Ser Leu Val Pro Arg Leu His Trp Leu Leu Val Glu
            100                 105                 110

Asp Ala Glu Gly Pro Thr Pro Leu Val Ser Gly Leu Leu Ala Ala Ser
        115                 120                 125

Gly Leu Leu Phe Thr His Leu Val Val Leu Thr Pro Lys Ala Gln Arg
    130                 135                 140

Leu Arg Glu Gly Glu Pro Gly Trp Val His Pro Arg Gly Val Glu Gln
145                 150                 155                 160

Arg Asn Lys Ala Leu Asp Trp Leu Arg Gly Arg Gly Gly Ala Val Gly
                165                 170                 175

Gly Glu Lys Asp Pro Pro Pro Pro Gly Thr Gln Gly Val Val Tyr Phe
            180                 185                 190

Ala Asp Asp Asp Asn Thr Tyr Ser Arg Glu Leu Phe Glu Glu Met Arg
        195                 200                 205

Trp Thr Arg Gly Val Ser Val Trp Pro Val Gly Leu Val Gly Gly Leu
    210                 215                 220

Arg Phe Glu Gly Pro Gln Val Gln Asp Gly Arg Val Val Gly Phe His
225                 230                 235                 240

Thr Ala Trp Glu Pro Ser Arg Pro Phe Pro Val Asp Met Ala Gly Phe
                245                 250                 255

Ala Val Ala Leu Pro Leu Leu Leu Asp Lys Pro Asn Ala Gln Phe Asp
            260                 265                 270

Ser Thr Ala Pro Arg Gly His Leu Glu Ser Ser Leu Leu Ser His Leu
        275                 280                 285

Val Asp Pro Lys Asp Leu Glu Pro Arg Ala Ala Asn Cys Thr Arg Thr
    290                 295                 300
```

```
Glu Ser Arg Cys Val Thr Gln Ala Gly Val Gln
305                 310                 315


<210> 8976
<211> 38
<212> PRT
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<220>
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<220>
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<220>
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<400> 8976
Met Lys Leu Lys Leu Lys Asn Val Phe Leu Ala Tyr Phe Leu Val Ser
1               5                   10                  15


Ile Ala Gly Leu Leu Tyr Ala Leu Val Gln Leu Val Ser Ala Ser Ser
            20                  25                  30


Thr Lys Gln Lys Ala Arg
        35


<210> 8977
<211> 223
<212> PRT
<213> Homo sapiens

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<220>
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<400> 8977
Met Lys Leu Lys Leu Lys Asn Val Phe Leu Ala Tyr Phe Leu Val Ser
1   5   10   15

Ile Ala Gly Leu Leu Tyr Ala Leu Val Gln Leu Ala Lys Gly Met Asp
            20   25   30

Arg Thr Leu Pro Leu Met Gln Arg Phe Arg Asp Ser Ala Thr Ala Leu
        35   40   45

Ser Ser Gly Gln Pro Cys Asp Cys Leu Pro Pro Leu Arg Ala Ala Ala
    50   55   60

Glu Gln Leu Arg Gln Lys Asp Leu Arg Ile Ser Gln Leu Gln Ala Glu
65   70   75   80

Leu Arg Arg Pro Pro Pro Ala Pro Ala Gln Pro Pro Glu Pro Glu Ala
                85   90   95

Leu Pro Thr Ile Tyr Val Val Thr Pro Thr Tyr Ala Arg Leu Val Gln
            100   105   110

Lys Ala Glu Leu Val Arg Leu Ser Gln Thr Leu Ser Leu Val Pro Arg
        115   120   125

Leu His Trp Leu Leu Val Glu Asp Ala Glu Gly Pro Thr Pro Leu Val
    130   135   140

Ser Gly Leu Leu Ala Ala Ser Gly Leu Leu Phe Thr His Leu Val Val
145   150   155   160

Leu Thr Pro Lys Ala Gln Arg Leu Arg Glu Gly Glu Pro Gly Trp Val
                165   170   175

His Pro Arg Gly Val Glu Gln Arg Asn Lys Ala Leu Asp Trp Leu Arg
            180   185   190

Gly Arg Gly Gly Ala Val Gly Gly Glu Lys Asp Pro Pro Pro Pro Gly
        195   200   205

Thr Gln Gly Val Val Tyr Phe Ala Asp Asp Asp Asn Thr Tyr Ser
210 215 220

<210> 8978
<211> 331
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: B3GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
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<223> /note="Uniprot ID: O75752; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000323479"

<400> 8978
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
35 40 45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
50 55 60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
65 70 75 80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
85 90 95

```
Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu Val
            100                 105                 110

Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp Lys Met
        115                 120                 125

Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp Ile Ile
    130                 135                 140

Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile
145                 150                 155                 160

Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val
                165                 170                 175

Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys
            180                 185                 190

Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro
        195                 200                 205

Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile
    210                 215                 220

Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
225                 230                 235                 240

Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu Met
                245                 250                 255

Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val Gly Ile
            260                 265                 270

Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp Thr Asn
        275                 280                 285

Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu Arg Arg
    290                 295                 300

Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
305                 310                 315                 320

Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
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325 330

<210> 8979
<211> 331
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: O75752; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376530"

<400> 8979
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
35 40 45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
50 55 60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
65 70 75 80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
85 90 95

Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu Val

```
            100                 105                 110

Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp Lys Met
        115                 120                 125

Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp Ile Ile
    130                 135                 140

Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile
145                 150                 155                 160

Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val
                165                 170                 175

Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys
            180                 185                 190

Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro
        195                 200                 205

Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile
    210                 215                 220

Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
225                 230                 235                 240

Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu Met
                245                 250                 255

Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val Gly Ile
            260                 265                 270

Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp Thr Asn
        275                 280                 285

Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu Arg Arg
    290                 295                 300

Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
305                 310                 315                 320

Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
                325                 330
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<210> 8980
<211> 331
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: O75752; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376532"

<400> 8980
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1   5   10   15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
            20   25   30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
        35   40   45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
    50   55   60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
65   70   75   80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
                85   90   95

Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu Val
            100   105   110

```
Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp Lys Met
        115                 120                 125

Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp Ile Ile
    130                 135                 140

Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile
145                 150                 155                 160

Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val
                165                 170                 175

Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys
            180                 185                 190

Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro
        195                 200                 205

Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile
    210                 215                 220

Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
225                 230                 235                 240

Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu Met
                245                 250                 255

Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val Gly Ile
            260                 265                 270

Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp Thr Asn
        275                 280                 285

Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu Arg Arg
    290                 295                 300

Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
305                 310                 315                 320

Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
                325                 330
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<210> 8981
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407027"

<400> 8981
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
35 40 45

Trp Met Tyr Phe Tyr Glu Ile His Leu Asp Val Cys Gln Leu Arg Arg
50 55 60

Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
65 70 75 80

Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
85 90

<210> 8982
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417053"

<400> 8982

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Met Ser Phe Phe Leu Phe Ser Glu Phe Thr Thr Asp Leu Ser Val Leu
1               5                  10                  15

Ile Lys His Gly Ile Gln Lys Thr Thr Lys Asn Leu Ser Phe Asn Phe
            20                  25                  30

Ile Trp Asn Ser Thr Val Phe Leu Ala Pro Trp Thr Arg Leu Thr Cys
        35                  40                  45

Trp Leu Phe Pro Leu Ala Ala Leu Ser Arg Gly Ala Leu Arg Leu Leu
    50                  55                  60

Thr Pro Ser Val Lys Ser Cys Cys Ser Val Ala Gln Ala Gly Val Gln
65                  70                  75                  80

Trp Gln Asp Leu Ser Ser Leu Gln Ser Pro Ser Leu Arg Phe Lys Gln
                85                  90                  95

Phe Ser Cys Leu Ser Leu Pro Ser Arg Trp Asp Tyr Arg Thr Phe Gly
            100                 105                 110

Ser Arg Ala Ser Glu Leu Leu Trp Met Ala Ser Ala Leu Trp Thr Val
        115                 120                 125

Leu Pro Ser Arg Met Ser Leu Arg Ser Leu Lys Trp Ser Leu Leu Leu
    130                 135                 140

Leu Ser Leu Leu Ser Phe
145                 150
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<210> 8983
<211> 54
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417643"

<400> 8983
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
35 40 45

Trp Met Tyr Phe Tyr Glu
50

<210> 8984
<211> 331
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: O75752; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418226"

<400> 8984

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Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1               5                   10                  15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
            20                  25                  30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
        35                  40                  45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
    50                  55                  60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
65                  70                  75                  80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
                85                  90                  95

Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu Val
            100                 105                 110

Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp Lys Met
        115                 120                 125

Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp Ile Ile
    130                 135                 140

Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile
145                 150                 155                 160

Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val
                165                 170                 175
```

```
Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys
            180                 185                 190

Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro
        195                 200                 205

Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile
    210                 215                 220

Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
225                 230                 235                 240

Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu Met
                245                 250                 255

Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val Gly Ile
            260                 265                 270

Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp Thr Asn
        275                 280                 285

Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu Arg Arg
    290                 295                 300

Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
305                 310                 315                 320

Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
                325                 330
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<210> 8985
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:

beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418567"

<400> 8985
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
35 40 45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
50 55 60

Phe
65

<210> 8986
<211> 29
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419127"

<400> 8986
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser
            20   25

<210> 8987
<211> 111
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
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      (globoside
      blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419476"

<400> 8987
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1   5   10   15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
            20   25   30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
        35   40   45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
    50   55   60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
65   70   75   80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
                85   90   95

Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu
            100   105   110

<210> 8988
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420059"

<400> 8988
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr
35 40

<210> 8989
<211> 331
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1822; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: O75752; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420163"

<400> 8989
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1   5   10   15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
            20   25   30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
        35   40   45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
    50   55   60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
65   70   75   80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
                85   90   95

Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu Val
            100   105   110

Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp Lys Met
        115   120   125

Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp Ile Ile
    130   135   140

Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile
145   150   155   160

Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val
                165   170   175

Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys
            180   185   190

```
Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro
        195                 200                 205

Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile
    210                 215                 220

Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
225                 230                 235                 240

Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu Met
                245                 250                 255

Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val Gly Ile
            260                 265                 270

Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp Thr Asn
        275                 280                 285

Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu Arg Arg
    290                 295                 300

Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
305                 310                 315                 320

Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
                325                 330
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<210> 8990
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: B3GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 1
(globoside
blood group); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420604"

<400> 8990
Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
1   5   10   15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
            20   25   30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
        35   40   45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile
    50   55

<210> 8991
<211> 326
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1823; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT2; "

<220>
<221> source
<223> /note="Gene Name:
      beta-1,3-N-acetylgalactosaminyltransferase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NCR0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000315678"

<400> 8991
Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
1   5   10   15

Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
            20   25   30

Gly Ala Gly Pro Ala Gly Gly Val Ser Leu Leu Leu Pro Arg Leu Glu

```
        35                  40                  45

Cys Asn Gly Ala Val Ser Ala His Pro Asn Leu His Leu Pro Gly Ser
    50                  55                  60

Arg Asp Ser Pro Ala Ser Ala Ser Gln Val Ala Gly Ile Thr Asp Gln
65                  70                  75                  80

Leu Ala Leu Phe Pro Gln Trp Lys Ser Thr His Tyr Asp Val Val Val
                85                  90                  95

Gly Val Leu Ser Ala Arg Asn Asn His Glu Leu Arg Asn Val Ile Arg
            100                 105                 110

Ser Thr Trp Met Arg His Leu Leu Gln His Pro Thr Leu Ser Gln Arg
        115                 120                 125

Val Leu Val Lys Phe Ile Ile Gly Ala His Gly Cys Glu Val Pro Val
    130                 135                 140

Glu Asp Arg Glu Asp Pro Tyr Ser Cys Lys Leu Leu Asn Ile Thr Asn
145                 150                 155                 160

Pro Val Leu Asn Gln Glu Ile Glu Ala Phe Ser Leu Ser Glu Asp Thr
                165                 170                 175

Ser Ser Gly Leu Pro Glu Asp Arg Val Val Ser Val Ser Phe Arg Val
            180                 185                 190

Leu Tyr Pro Ile Val Ile Thr Ser Leu Gly Val Phe Tyr Asp Ala Asn
        195                 200                 205

Asp Val Gly Phe Gln Arg Asn Ile Thr Val Lys Leu Tyr Gln Ala Glu
    210                 215                 220

Gln Glu Glu Ala Leu Phe Ile Ala Arg Phe Ser Pro Pro Ser Cys Gly
225                 230                 235                 240

Val Gln Val Asn Lys Leu Trp Tyr Lys Pro Val Glu Gln Phe Ile Leu
                245                 250                 255

Pro Glu Ser Phe Glu Gly Thr Ile Val Trp Glu Ser Gln Asp Leu His
            260                 265                 270
```

```
Gly Leu Val Ser Arg Asn Leu His Lys Val Thr Val Asn Asp Gly Gly
        275                 280                 285

Gly Val Leu Arg Val Ile Thr Ala Gly Glu Gly Ala Leu Pro His Glu
    290                 295                 300

Phe Leu Glu Gly Val Glu Gly Val Ala Gly Gly Phe Ile Tyr Thr Ile
305                 310                 315                 320

Gln Gly Lys Phe Ala Ser
                325
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<210> 8992
<211> 500
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1823; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT2; "

<220>
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<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NCR0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355559"

<400> 8992

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Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
1               5                   10                  15

Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
            20                  25                  30

Gly Ala Gly Pro Ala Asp Gln Leu Ala Leu Phe Pro Gln Trp Lys Ser
        35                  40                  45
```

```
Thr His Tyr Asp Val Val Val Gly Val Leu Ser Ala Arg Asn Asn His
    50                  55                  60

Glu Leu Arg Asn Val Ile Arg Ser Thr Trp Met Arg His Leu Leu Gln
65                  70                  75                  80

His Pro Thr Leu Ser Gln Arg Val Leu Val Lys Phe Ile Ile Gly Ala
                85                  90                  95

His Gly Cys Glu Val Pro Val Glu Asp Arg Glu Asp Pro Tyr Ser Cys
            100                 105                 110

Lys Leu Leu Asn Ile Thr Asn Pro Val Leu Asn Gln Glu Ile Glu Ala
        115                 120                 125

Phe Ser Leu Ser Glu Asp Thr Ser Ser Gly Leu Pro Glu Asp Arg Val
    130                 135                 140

Val Ser Val Ser Phe Arg Val Leu Tyr Pro Ile Val Ile Thr Ser Leu
145                 150                 155                 160

Gly Val Phe Tyr Asp Ala Asn Asp Val Gly Phe Gln Arg Asn Ile Thr
                165                 170                 175

Val Lys Leu Tyr Gln Ala Glu Gln Glu Glu Ala Leu Phe Ile Ala Arg
            180                 185                 190

Phe Ser Pro Pro Ser Cys Gly Val Gln Val Asn Lys Leu Trp Tyr Lys
        195                 200                 205

Pro Val Glu Gln Phe Ile Leu Pro Glu Ser Phe Glu Gly Thr Ile Val
    210                 215                 220

Trp Glu Ser Gln Asp Leu His Gly Leu Val Ser Arg Asn Leu His Lys
225                 230                 235                 240

Val Thr Val Asn Asp Gly Gly Gly Val Leu Arg Val Ile Thr Ala Gly
                245                 250                 255

Glu Gly Ala Leu Pro His Glu Phe Leu Glu Gly Val Glu Gly Val Ala
            260                 265                 270

Gly Gly Phe Ile Tyr Thr Ile Gln Glu Gly Asp Ala Leu Leu His Asn
```

```
        275                 280                 285

Leu His Ser Arg Pro Gln Arg Leu Ile Asp His Ile Arg Asn Leu His
    290                 295                 300

Glu Glu Asp Ala Leu Leu Lys Glu Glu Ser Ser Ile Tyr Asp Asp Ile
305                 310                 315                 320

Val Phe Val Asp Val Val Asp Thr Tyr Arg Asn Val Pro Ala Lys Leu
                325                 330                 335

Leu Asn Phe Tyr Arg Trp Thr Val Glu Thr Thr Ser Phe Asn Leu Leu
            340                 345                 350

Leu Lys Thr Asp Asp Asp Cys Tyr Ile Asp Leu Glu Ala Val Phe Asn
        355                 360                 365

Arg Ile Val Gln Lys Asn Leu Asp Gly Pro Asn Phe Trp Trp Gly Asn
    370                 375                 380

Phe Arg Leu Asn Trp Ala Val Asp Arg Thr Gly Lys Trp Gln Glu Leu
385                 390                 395                 400

Glu Tyr Pro Ser Pro Ala Tyr Pro Ala Phe Ala Cys Gly Ser Gly Tyr
                405                 410                 415

Val Ile Ser Lys Asp Ile Val Lys Trp Leu Ala Ser Asn Ser Gly Arg
            420                 425                 430

Leu Lys Thr Tyr Gln Gly Glu Asp Val Ser Met Gly Ile Trp Met Ala
        435                 440                 445

Ala Ile Gly Pro Lys Arg Tyr Gln Asp Ser Leu Trp Leu Cys Glu Lys
    450                 455                 460

Thr Cys Glu Thr Gly Met Leu Ser Ser Pro Gln Tyr Ser Pro Trp Glu
465                 470                 475                 480

Leu Thr Glu Leu Trp Lys Leu Lys Glu Arg Cys Gly Asp Pro Cys Arg
                485                 490                 495

Cys Gln Ala Arg
            500
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<210> 8993
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1823; "

<220>
<221> source
<223> /note="Gene Symbol: B3GALNT2; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,3-N-acetylgalactosaminyltransferase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481548"

<400> 8993
Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
1 5 10 15

Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
20 25 30

Gly Ala Gly Pro Ala Asp Gln Leu Ala Leu Phe Pro Gln Trp Lys Ser
35 40 45

Thr His Tyr Asp Val Val Val Gly Val Leu Ser Ala Arg Asn Asn His
50 55 60

Glu Leu Arg Asn Val Ile Arg Ser Thr Trp Met Arg His Leu Leu Gln
65 70 75 80

His Pro Thr Leu Ser Gln Arg Phe Glu Ser Gly Asn
85 90

<210> 8994
<211> 326
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: B3GALNT2; "

<220>
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Beta-1,3-N-acetylgalactosaminyltransferase 2; "

<220>
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<223> /note="ENSP ID: ENSP00000489219"

<400> 8994

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Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
1               5                  10                  15

Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
            20                  25                  30

Gly Ala Gly Pro Ala Gly Gly Val Ser Leu Leu Leu Pro Arg Leu Glu
        35                  40                  45

Cys Asn Gly Ala Val Ser Ala His Pro Asn Leu His Leu Pro Gly Ser
    50                  55                  60

Arg Asp Ser Pro Ala Ser Ala Ser Gln Val Ala Gly Ile Thr Asp Gln
65                  70                  75                  80

Leu Ala Leu Phe Pro Gln Trp Lys Ser Thr His Tyr Asp Val Val Val
                85                  90                  95

Gly Val Leu Ser Ala Arg Asn Asn His Glu Leu Arg Asn Val Ile Arg
            100                 105                 110

Ser Thr Trp Met Arg His Leu Leu Gln His Pro Thr Leu Ser Gln Arg
        115                 120                 125

Val Leu Val Lys Phe Ile Ile Gly Ala His Gly Cys Glu Val Pro Val
    130                 135                 140

Glu Asp Arg Glu Asp Pro Tyr Ser Cys Lys Leu Leu Asn Ile Thr Asn
145                 150                 155                 160

Pro Val Leu Asn Gln Glu Ile Glu Ala Phe Ser Leu Ser Glu Asp Thr
                165                 170                 175
```

```
Ser Ser Gly Leu Pro Glu Asp Arg Val Val Ser Val Ser Phe Arg Val
            180                 185                 190

Leu Tyr Pro Ile Val Ile Thr Ser Leu Gly Val Phe Tyr Asp Ala Asn
        195                 200                 205

Asp Val Gly Phe Gln Arg Asn Ile Thr Val Lys Leu Tyr Gln Ala Glu
    210                 215                 220

Gln Glu Glu Ala Leu Phe Ile Ala Arg Phe Ser Pro Pro Ser Cys Gly
225                 230                 235                 240

Val Gln Val Asn Lys Leu Trp Tyr Lys Pro Val Glu Gln Phe Ile Leu
                245                 250                 255

Pro Glu Ser Phe Glu Gly Thr Ile Val Trp Glu Ser Gln Asp Leu His
            260                 265                 270

Gly Leu Val Ser Arg Asn Leu His Lys Val Thr Val Asn Asp Gly Gly
        275                 280                 285

Gly Val Leu Arg Val Ile Thr Ala Gly Glu Gly Ala Leu Pro His Glu
    290                 295                 300

Phe Leu Glu Gly Val Glu Gly Val Ala Gly Gly Phe Ile Tyr Thr Ile
305                 310                 315                 320

Gln Gly Lys Phe Ala Ser
                325


<210> 8995
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: B3GALNT2; "

<220>
<221> source
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<223> /note="Gene Name:
Beta-1,3-N-acetylgalactosaminyltransferase 2; "

<220>
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<223> /note="ENSP ID: ENSP00000489249"

<400> 8995
Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
1 5 10 15

Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
20 25 30

Gly Ala Gly Pro Ala Asp Gln Leu Ala Leu Phe Pro Gln Trp Lys Ser
35 40 45

Thr His Tyr Asp Val Val Val Gly Val Leu Ser Ala Arg Asn Asn His
50 55 60

Glu Leu Arg Asn Val Ile Arg Ser Thr Trp Met Arg His Leu Leu Gln
65 70 75 80

His Pro Thr Leu Ser Gln Arg Phe Glu Ser Gly Asn
85 90

<210> 8996
<211> 500
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: B3GALNT2; "

<220>
<221> source
<223> /note="Gene Name:
Beta-1,3-N-acetylgalactosaminyltransferase 2; "

<220>
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<223> /note="ENSP ID: ENSP00000489342"

<400> 8996
Met Arg Asn Trp Leu Val Leu Leu Cys Pro Cys Val Leu Gly Ala Ala
1 5 10 15

```
Leu His Leu Trp Leu Arg Leu Arg Ser Pro Pro Pro Ala Cys Ala Ser
            20                  25                  30

Gly Ala Gly Pro Ala Asp Gln Leu Ala Leu Phe Pro Gln Trp Lys Ser
        35                  40                  45

Thr His Tyr Asp Val Val Val Gly Val Leu Ser Ala Arg Asn Asn His
    50                  55                  60

Glu Leu Arg Asn Val Ile Arg Ser Thr Trp Met Arg His Leu Leu Gln
65                  70                  75                  80

His Pro Thr Leu Ser Gln Arg Val Leu Val Lys Phe Ile Ile Gly Ala
                85                  90                  95

His Gly Cys Glu Val Pro Val Glu Asp Arg Glu Asp Pro Tyr Ser Cys
            100                 105                 110

Lys Leu Leu Asn Ile Thr Asn Pro Val Leu Asn Gln Glu Ile Glu Ala
        115                 120                 125

Phe Ser Leu Ser Glu Asp Thr Ser Ser Gly Leu Pro Glu Asp Arg Val
    130                 135                 140

Val Ser Val Ser Phe Arg Val Leu Tyr Pro Ile Val Ile Thr Ser Leu
145                 150                 155                 160

Gly Val Phe Tyr Asp Ala Asn Asp Val Gly Phe Gln Arg Asn Ile Thr
                165                 170                 175

Val Lys Leu Tyr Gln Ala Glu Gln Glu Glu Ala Leu Phe Ile Ala Arg
            180                 185                 190

Phe Ser Pro Pro Ser Cys Gly Val Gln Val Asn Lys Leu Trp Tyr Lys
        195                 200                 205

Pro Val Glu Gln Phe Ile Leu Pro Glu Ser Phe Glu Gly Thr Ile Val
    210                 215                 220

Trp Glu Ser Gln Asp Leu His Gly Leu Val Ser Arg Asn Leu His Lys
225                 230                 235                 240
```

```
Val Thr Val Asn Asp Gly Gly Gly Val Leu Arg Val Ile Thr Ala Gly
                245                 250                 255

Glu Gly Ala Leu Pro His Glu Phe Leu Glu Gly Val Glu Gly Val Ala
            260                 265                 270

Gly Gly Phe Ile Tyr Thr Ile Gln Glu Gly Asp Ala Leu Leu His Asn
        275                 280                 285

Leu His Ser Arg Pro Gln Arg Leu Ile Asp His Ile Arg Asn Leu His
    290                 295                 300

Glu Glu Asp Ala Leu Leu Lys Glu Glu Ser Ser Ile Tyr Asp Asp Ile
305                 310                 315                 320

Val Phe Val Asp Val Val Asp Thr Tyr Arg Asn Val Pro Ala Lys Leu
                325                 330                 335

Leu Asn Phe Tyr Arg Trp Thr Val Glu Thr Thr Ser Phe Asn Leu Leu
            340                 345                 350

Leu Lys Thr Asp Asp Asp Cys Tyr Ile Asp Leu Glu Ala Val Phe Asn
        355                 360                 365

Arg Ile Val Gln Lys Asn Leu Asp Gly Pro Asn Phe Trp Trp Gly Asn
    370                 375                 380

Phe Arg Leu Asn Trp Ala Val Asp Arg Thr Gly Lys Trp Gln Glu Leu
385                 390                 395                 400

Glu Tyr Pro Ser Pro Ala Tyr Pro Ala Phe Ala Cys Gly Ser Gly Tyr
                405                 410                 415

Val Ile Ser Lys Asp Ile Val Lys Trp Leu Ala Ser Asn Ser Gly Arg
            420                 425                 430

Leu Lys Thr Tyr Gln Gly Glu Asp Val Ser Met Gly Ile Trp Met Ala
        435                 440                 445

Ala Ile Gly Pro Lys Arg Tyr Gln Asp Ser Leu Trp Leu Cys Glu Lys
    450                 455                 460
```

```
Thr Cys Glu Thr Gly Met Leu Ser Ser Pro Gln Tyr Ser Pro Trp Glu
465                 470                 475                 480


Leu Thr Glu Leu Trp Lys Leu Lys Glu Arg Cys Gly Asp Pro Cys Arg
                485                 490                 495


Cys Gln Ala Arg
            500


<210> 8997
<211> 415
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1824; "

<220>
<221> source
<223> /note="Gene Symbol: B4GAT1; "

<220>
<221> source
<223> /note="Gene Name:
      beta-1,4-glucuronyltransferase 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O43505; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000309096"

<400> 8997
Met Gln Met Ser Tyr Ala Ile Arg Cys Ala Phe Tyr Gln Leu Leu Leu
1               5                   10                  15


Ala Ala Leu Met Leu Val Ala Met Leu Gln Leu Leu Tyr Leu Ser Leu
            20                  25                  30


Leu Ser Gly Leu His Gly Gln Glu Glu Gln Asp Gln Tyr Phe Glu Phe
        35                  40                  45


Phe Pro Pro Ser Pro Arg Ser Val Asp Gln Val Lys Ala Gln Leu Arg
    50                  55                  60


Thr Ala Leu Ala Ser Gly Gly Val Leu Asp Ala Ser Gly Asp Tyr Arg
65                  70                  75                  80
```

```
Val Tyr Arg Gly Leu Leu Lys Thr Thr Met Asp Pro Asn Asp Val Ile
                85                  90                  95

Leu Ala Thr His Ala Ser Val Asp Asn Leu Leu His Leu Ser Gly Leu
            100                 105                 110

Leu Glu Arg Trp Glu Gly Pro Leu Ser Val Ser Val Phe Ala Ala Thr
        115                 120                 125

Lys Glu Glu Ala Gln Leu Ala Thr Val Leu Ala Tyr Ala Leu Ser Ser
    130                 135                 140

His Cys Pro Asp Met Arg Ala Arg Val Ala Met His Leu Val Cys Pro
145                 150                 155                 160

Ser Arg Tyr Glu Ala Ala Val Pro Asp Pro Arg Glu Pro Gly Glu Phe
                165                 170                 175

Ala Leu Leu Arg Ser Cys Gln Glu Val Phe Asp Lys Leu Ala Arg Val
            180                 185                 190

Ala Gln Pro Gly Ile Asn Tyr Ala Leu Gly Thr Asn Val Ser Tyr Pro
        195                 200                 205

Asn Asn Leu Leu Arg Asn Leu Ala Arg Glu Gly Ala Asn Tyr Ala Leu
    210                 215                 220

Val Ile Asp Val Asp Met Val Pro Ser Glu Gly Leu Trp Arg Gly Leu
225                 230                 235                 240

Arg Glu Met Leu Asp Gln Ser Asn Gln Trp Gly Gly Thr Ala Leu Val
                245                 250                 255

Val Pro Ala Phe Glu Ile Arg Arg Ala Arg Arg Met Pro Met Asn Lys
            260                 265                 270

Asn Glu Leu Val Gln Leu Tyr Gln Val Gly Glu Val Arg Pro Phe Tyr
        275                 280                 285

Tyr Gly Leu Cys Thr Pro Cys Gln Ala Pro Thr Asn Tyr Ser Arg Trp
    290                 295                 300
```

```
Val Asn Leu Pro Glu Glu Ser Leu Leu Arg Pro Ala Tyr Val Val Pro
305                 310                 315                 320

Trp Gln Asp Pro Trp Glu Pro Phe Tyr Val Ala Gly Gly Lys Val Pro
                325                 330                 335

Thr Phe Asp Glu Arg Phe Arg Gln Tyr Gly Phe Asn Arg Ile Ser Gln
            340                 345                 350

Ala Cys Glu Leu His Val Ala Gly Phe Asp Phe Glu Val Leu Asn Glu
        355                 360                 365

Gly Phe Leu Val His Lys Gly Phe Lys Glu Ala Leu Lys Phe His Pro
    370                 375                 380

Gln Lys Glu Ala Glu Asn Gln His Asn Lys Ile Leu Tyr Arg Gln Phe
385                 390                 395                 400

Lys Gln Glu Leu Lys Ala Lys Tyr Pro Asn Ser Pro Arg Arg Cys
                405                 410                 415


<210> 8998
<211> 533
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
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<223> /note="Gene Name:
      beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q00973; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000341562"

<400> 8998
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
```

```
1               5                   10                  15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20                  25                  30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
        35                  40                  45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50                  55                  60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65                  70                  75                  80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
                85                  90                  95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
            100                 105                 110

Ala Ala Ser Ala Thr Arg Glu Gln Glu Phe Gln Ala Phe Leu Ser Arg
        115                 120                 125

Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser Pro
    130                 135                 140

Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser Ile
145                 150                 155                 160

Leu Val Pro Gly Leu Ser Leu Gln Ala Ala Ser Gly Gln Glu Val Tyr
                165                 170                 175

Gln Val Asn Leu Thr Ala Ser Leu Gly Thr Trp Asp Val Ala Gly Glu
            180                 185                 190

Val Thr Gly Val Thr Leu Thr Gly Glu Gly Gln Ala Asp Leu Thr Leu
        195                 200                 205

Val Ser Pro Gly Leu Asp Gln Leu Asn Arg Gln Leu Gln Leu Val Thr
    210                 215                 220

Tyr Ser Ser Arg Ser Tyr Gln Thr Asn Thr Ala Asp Thr Val Arg Phe
225                 230                 235                 240
```

```
Ser Thr Glu Gly His Glu Ala Ala Phe Thr Ile Arg Ile Arg His Pro
                245                 250                 255

Pro Asn Pro Arg Leu Tyr Pro Pro Gly Ser Leu Pro Gln Gly Ala Gln
            260                 265                 270

Tyr Asn Ile Ser Ala Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg
        275                 280                 285

Tyr Asp Arg Leu Arg Ala Leu Ile Thr Ser Ile Arg Arg Phe Tyr Pro
    290                 295                 300

Thr Val Thr Val Val Ile Ala Asp Asp Ser Asp Lys Pro Glu Arg Val
305                 310                 315                 320

Ser Gly Pro Tyr Val Glu His Tyr Leu Met Pro Phe Gly Lys Gly Trp
                325                 330                 335

Phe Ala Gly Arg Asn Leu Ala Val Ser Gln Val Thr Thr Lys Tyr Val
            340                 345                 350

Leu Trp Val Asp Asp Asp Phe Val Phe Thr Ala Arg Thr Arg Leu Glu
        355                 360                 365

Arg Leu Val Asp Val Leu Glu Arg Thr Pro Leu Asp Leu Val Gly Gly
    370                 375                 380

Ala Val Arg Glu Ile Ser Gly Phe Ala Thr Thr Tyr Arg Gln Leu Leu
385                 390                 395                 400

Ser Val Glu Pro Gly Ala Pro Gly Leu Gly Asn Cys Leu Arg Gln Arg
                405                 410                 415

Arg Gly Phe His His Glu Leu Val Gly Phe Pro Gly Cys Val Val Thr
            420                 425                 430

Asp Gly Val Val Asn Phe Phe Leu Ala Arg Thr Asp Lys Val Arg Glu
        435                 440                 445

Val Gly Phe Asp Pro Arg Leu Ser Arg Val Ala His Leu Glu Phe Phe
    450                 455                 460
```

```
Leu Asp Gly Leu Gly Ser Leu Arg Val Gly Ser Cys Ser Asp Val Val
465                 470                 475                 480


Val Asp His Ala Ser Lys Leu Lys Leu Pro Trp Thr Ser Arg Asp Ala
                485                 490                 495


Gly Ala Glu Thr Tyr Ala Arg Tyr Arg Tyr Pro Gly Ser Leu Asp Glu
            500                 505                 510


Ser Gln Met Ala Lys His Arg Leu Leu Phe Phe Lys His Arg Leu Gln
        515                 520                 525


Cys Met Thr Ser Gln
    530


<210> 8999
<211> 478
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
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<223> /note="Gene Name:
      beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q00973; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401601"

<400> 8999
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1               5                   10                  15


Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20                  25                  30


Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
```

```
        35                  40                  45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50                  55                  60

Val Arg Ile Lys Glu Gln Val Val Gly Ser Gln Ser Pro Ala Asp Gln
65                  70                  75                  80

Leu Leu Ile Ala Pro Ala Asn Ser Pro Leu Gln Tyr Pro Leu Gln Gly
                85                  90                  95

Val Glu Val Gln Pro Leu Arg Ser Ile Leu Val Pro Gly Leu Ser Leu
            100                 105                 110

Gln Ala Ala Ser Gly Gln Glu Val Tyr Gln Val Asn Leu Thr Ala Ser
        115                 120                 125

Leu Gly Thr Trp Asp Val Ala Gly Glu Val Thr Gly Val Thr Leu Thr
    130                 135                 140

Gly Glu Gly Gln Ala Asp Leu Thr Leu Val Ser Pro Gly Leu Asp Gln
145                 150                 155                 160

Leu Asn Arg Gln Leu Gln Leu Val Thr Tyr Ser Ser Arg Ser Tyr Gln
                165                 170                 175

Thr Asn Thr Ala Asp Thr Val Arg Phe Ser Thr Glu Gly His Glu Ala
            180                 185                 190

Ala Phe Thr Ile Arg Ile Arg His Pro Pro Asn Pro Arg Leu Tyr Pro
        195                 200                 205

Pro Gly Ser Leu Pro Gln Gly Ala Gln Tyr Asn Ile Ser Ala Leu Val
    210                 215                 220

Thr Ile Ala Thr Lys Thr Phe Leu Arg Tyr Asp Arg Leu Arg Ala Leu
225                 230                 235                 240

Ile Thr Ser Ile Arg Arg Phe Tyr Pro Thr Val Thr Val Val Ile Ala
                245                 250                 255

Asp Asp Ser Asp Lys Pro Glu Arg Val Ser Gly Pro Tyr Val Glu His
            260                 265                 270
```

```
Tyr Leu Met Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg Asn Leu Ala
        275                 280                 285

Val Ser Gln Val Thr Thr Lys Tyr Val Leu Trp Val Asp Asp Asp Phe
    290                 295                 300

Val Phe Thr Ala Arg Thr Arg Leu Glu Arg Leu Val Asp Val Leu Glu
305                 310                 315                 320

Arg Thr Pro Leu Asp Leu Val Gly Gly Ala Val Arg Glu Ile Ser Gly
                325                 330                 335

Phe Ala Thr Thr Tyr Arg Gln Leu Leu Ser Val Glu Pro Gly Ala Pro
            340                 345                 350

Gly Leu Gly Asn Cys Leu Arg Gln Arg Arg Gly Phe His His Glu Leu
        355                 360                 365

Val Gly Phe Pro Gly Cys Val Val Thr Asp Gly Val Val Asn Phe Phe
    370                 375                 380

Leu Ala Arg Thr Asp Lys Val Arg Glu Val Gly Phe Asp Pro Arg Leu
385                 390                 395                 400

Ser Arg Val Ala His Leu Glu Phe Phe Leu Asp Gly Leu Gly Ser Leu
                405                 410                 415

Arg Val Gly Ser Cys Ser Asp Val Val Val Asp His Ala Ser Lys Leu
            420                 425                 430

Lys Leu Pro Trp Thr Ser Arg Asp Ala Gly Ala Glu Thr Tyr Ala Arg
        435                 440                 445

Tyr Arg Tyr Pro Gly Ser Leu Asp Glu Ser Gln Met Ala Lys His Arg
    450                 455                 460

Leu Leu Phe Phe Lys His Arg Leu Gln Cys Met Thr Ser Gln
465                 470                 475

<210> 9000
<211> 120
<212> PRT
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<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446566"

<400> 9000
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1 5 10 15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
20 25 30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
35 40 45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
50 55 60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65 70 75 80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
85 90 95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
100 105 110

Ala Ala Ser Ala Thr Arg Glu Gln
115 120

<210> 9001
<211> 231
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447076"

<400> 9001

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Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1               5                  10                  15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20                  25                  30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
        35                  40                  45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50                  55                  60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65                  70                  75                  80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
                85                  90                  95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
            100                 105                 110

Ala Ala Ser Ala Thr Arg Glu Gln Glu Phe Gln Ala Phe Leu Ser Arg
        115                 120                 125

Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser Pro
    130                 135                 140

Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser Ile
145                 150                 155                 160
```

```
Leu Val Pro Gly Glu Pro Asp Cys Leu Pro Arg His Leu Gly Arg Gly
                165                 170                 175

Arg Gly Ser Asp Trp Ser Tyr Ser His Trp Arg Gly Ser Gly Arg Ser
            180                 185                 190

His Pro Cys Gln Pro Arg Ala Gly Pro Thr Gln Gln Ala Thr Thr Thr
        195                 200                 205

Gly His Leu Gln Gln Pro Lys Leu Pro Asp Gln His Ser Arg His Ser
    210                 215                 220

Pro Val Leu His Arg Gly Thr
225                 230


<210> 9002
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
      beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447750"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9002
Xaa Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser
1               5                   10                  15

Pro Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser
            20                  25                  30
```

```
Ile Leu Val Pro Gly Leu Ser Leu Gln Ala Ala Ser Gly Gln Glu Val
        35                  40                  45

Tyr Gln Val Asn Leu Thr Ala Ser Leu Gly Thr Trp Asp Val Ala Gly
    50                  55                  60

Glu Val Thr Gly Val Thr Leu Thr Gly Glu Gly Gln Ala Asp Leu Thr
65                  70                  75                  80

Leu Val Ser Pro Gly Leu Asp Gln Leu Asn Arg Gln Leu Gln Leu Val
                85                  90                  95

Thr Tyr Ser Ser Arg Ser Tyr Gln Thr Asn Thr Ala Asp Thr Gly Ser
            100                 105                 110

Asn Ala Met Ser Phe Leu Pro Ser Pro Val Leu His Arg Gly Thr
        115                 120                 125


<210> 9003
<211> 237
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

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<223> /note="Gene Symbol: B4GALNT1; "

<220>
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<223> /note="Gene Name:
      beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447945"

<400> 9003
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1               5                   10                  15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20                  25                  30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
```

```
        35                  40                  45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50                  55                  60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65                  70                  75                  80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
                85                  90                  95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
            100                 105                 110

Ala Ala Ser Ala Thr Arg Glu Gln Glu Phe Gln Ala Phe Leu Ser Arg
        115                 120                 125

Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser Pro
    130                 135                 140

Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser Ile
145                 150                 155                 160

Leu Val Pro Gly Leu Ser Leu Gln Ala Ala Ser Gly Gln Glu Val Tyr
                165                 170                 175

Gln Val Asn Leu Thr Ala Ser Leu Gly Thr Trp Asp Val Ala Gly Glu
            180                 185                 190

Val Thr Gly Val Thr Leu Thr Gly Glu Gly Gln Ala Asp Leu Thr Leu
        195                 200                 205

Val Ser Pro Gly Leu Asp Gln Leu Asn Arg Gln Leu Gln Leu Val Thr
    210                 215                 220

Tyr Ser Ser Arg Ser Tyr Gln Thr Asn Thr Ala Asp Thr
225                 230                 235


<210> 9004
<211> 96
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="Payload ID: 1825; "

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<220>
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beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448340"

<400> 9004
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1 5 10 15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
20 25 30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
35 40 45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
50 55 60

Val Arg Ile Lys Glu Gln Val Val Gly Ala Glu Gly Cys Leu Cys His
65 70 75 80

Lys Arg Ala Gly Val Pro Gly Leu Ser Val Glu Glu Pro Val Pro Ser
85 90 95

<210> 9005
<211> 328
<212> PRT
<213> Homo sapiens

<220>
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beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q00973; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448500"

<400> 9005
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1   5   10   15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20   25   30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
        35   40   45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50   55   60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65   70   75   80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
                85   90   95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
            100   105   110

Ala Ala Ser Ala Thr Arg Glu Gln Glu Phe Gln Ala Phe Leu Ser Arg
        115   120   125

Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser Pro
    130   135   140

Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser Ile
145   150   155   160

Leu Val Pro Gly Leu Ser Leu Gln Ala Ala Ser Gly Gln Glu Val Tyr
                165   170   175

Gln Val Asn Leu Thr Ala Ser Leu Gly Thr Trp Asp Val Ala Gly Glu
            180   185   190

```
Val Thr Gly Val Thr Leu Thr Gly Glu Gly Gln Ala Asp Leu Thr Leu
        195                 200                 205

Val Ser Pro Gly Leu Asp Gln Leu Asn Arg Gln Leu Gln Leu Val Thr
    210                 215                 220

Tyr Ser Ser Arg Ser Tyr Gln Thr Asn Thr Ala Asp Thr Gly Ala Arg
225                 230                 235                 240

Pro Gly Trp Arg Asp Gly Gln Ala Gly Gln Thr Glu Lys Asn Gln Lys
                245                 250                 255

Gly Trp Ser Gly Gln Met Ala Glu Gly Met Gly Gly Ile Trp Ala Met
            260                 265                 270

Ala Arg Ala Val Gln Pro His Asn Gly Cys Phe Asn Trp Thr Ser Arg
        275                 280                 285

Ala Arg Gly Arg Lys Gly Ala Phe Val His Leu Gly Leu Glu Gln Ala
    290                 295                 300

Arg Gly Lys Pro Glu Pro Trp Val Cys Leu Pro Phe Arg Pro Thr Val
305                 310                 315                 320

Gly Gly Pro Arg Lys Arg Leu Val
                325
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<210> 9006
<211> 151
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
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<223> /note="Gene Symbol: B4GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000448577"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9006
Xaa Met Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg Asn Leu Ala Val
1 5 10 15

Ser Gln Val Thr Thr Lys Tyr Val Leu Trp Val Asp Asp Asp Phe Val
20 25 30

Phe Thr Ala Arg Thr Arg Leu Glu Arg Leu Val Asp Val Leu Glu Arg
35 40 45

Thr Pro Leu Asp Leu Ala Arg Leu Glu Ala Thr Ser Leu Ser Leu Gln
50 55 60

Val Gly Gly Ala Val Arg Glu Ile Ser Gly Phe Ala Thr Thr Tyr Arg
65 70 75 80

Gln Leu Leu Ser Val Glu Pro Gly Ala Pro Gly Leu Gly Asn Cys Leu
85 90 95

Arg Gln Arg Arg Gly Phe His His Glu Leu Val Gly Phe Pro Gly Cys
100 105 110

Val Val Thr Asp Gly Val Val Asn Phe Phe Leu Ala Arg Thr Asp Lys
115 120 125

Val Arg Glu Val Gly Phe Asp Pro Arg Leu Ser Arg Val Ala His Leu
130 135 140

Glu Phe Phe Leu Asp Gly Leu
145 150

<210> 9007
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449534"

<400> 9007
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1 5 10 15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
20 25 30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
35 40 45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
50 55 60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65 70 75 80

Ser

<210> 9008
<211> 328
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
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<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q00973; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450303"

<400> 9008
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1   5   10   15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20   25   30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
        35   40   45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50   55   60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65   70   75   80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
                85   90   95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
            100   105   110

Ala Ala Ser Ala Thr Arg Glu Gln Glu Phe Gln Ala Phe Leu Ser Arg
        115   120   125

Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser Pro
    130   135   140

Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser Ile
145   150   155   160

Leu Val Pro Gly Leu Ser Leu Gln Ala Ala Ser Gly Gln Glu Val Tyr
                165   170   175

Gln Val Asn Leu Thr Ala Ser Leu Gly Thr Trp Asp Val Ala Gly Glu
            180   185   190

```
Val Thr Gly Val Thr Leu Thr Gly Glu Gly Gln Ala Asp Leu Thr Leu
        195                 200                 205

Val Ser Pro Gly Leu Asp Gln Leu Asn Arg Gln Leu Gln Leu Val Thr
    210                 215                 220

Tyr Ser Ser Arg Ser Tyr Gln Thr Asn Thr Ala Asp Thr Gly Ala Arg
225                 230                 235                 240

Pro Gly Trp Arg Asp Gly Gln Ala Gly Gln Thr Glu Lys Asn Gln Lys
                245                 250                 255

Gly Trp Ser Gly Gln Met Ala Glu Gly Met Gly Gly Ile Trp Ala Met
            260                 265                 270

Ala Arg Ala Val Gln Pro His Asn Gly Cys Phe Asn Trp Thr Ser Arg
        275                 280                 285

Ala Arg Gly Arg Lys Gly Ala Phe Val His Leu Gly Leu Glu Gln Ala
    290                 295                 300

Arg Gly Lys Pro Glu Pro Trp Val Cys Leu Pro Phe Arg Pro Thr Val
305                 310                 315                 320

Gly Gly Pro Arg Lys Arg Leu Val
                325


<210> 9009
<211> 304
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1825; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT1; "

<220>
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<223> /note="Gene Name:
      beta-1,4-N-acetyl-galactosaminyl transferase 1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000473533"

<400> 9009

```
Met Trp Leu Gly Arg Arg Ala Leu Cys Ala Leu Val Leu Leu Leu Ala
1               5                  10                  15

Cys Ala Ser Leu Gly Leu Leu Tyr Ala Ser Thr Arg Asp Ala Pro Gly
            20                  25                  30

Leu Arg Leu Pro Leu Ala Pro Trp Ala Pro Pro Gln Ser Pro Arg Arg
        35                  40                  45

Pro Glu Leu Pro Asp Leu Ala Pro Glu Pro Arg Tyr Ala His Ile Pro
    50                  55                  60

Val Arg Ile Lys Glu Gln Val Val Gly Leu Leu Ala Trp Asn Asn Cys
65                  70                  75                  80

Ser Cys Glu Ser Ser Gly Gly Gly Leu Pro Leu Pro Phe Gln Lys Gln
                85                  90                  95

Val Arg Ala Ile Asp Leu Thr Lys Ala Phe Asp Pro Ala Glu Leu Arg
            100                 105                 110

Ala Ala Ser Ala Thr Arg Glu Gln Glu Phe Gln Ala Phe Leu Ser Arg
        115                 120                 125

Ser Gln Ser Pro Ala Asp Gln Leu Leu Ile Ala Pro Ala Asn Ser Pro
    130                 135                 140

Leu Gln Tyr Pro Leu Gln Gly Val Glu Val Gln Pro Leu Arg Ser Ile
145                 150                 155                 160

Leu Val Pro Gly Leu Ser Leu Gln Ala Ala Ser Gly Gln Glu Val Tyr
                165                 170                 175

Gln Val Asn Leu Thr Ala Ser Leu Gly Thr Trp Asp Val Ala Gly Glu
            180                 185                 190

Val Thr Gly Val Thr Leu Thr Gly Glu Gly Gln Ala Asp Leu Thr Leu
        195                 200                 205

Val Ser Pro Gly Leu Asp Gln Leu Asn Arg Gln Leu Gln Leu Val Thr
    210                 215                 220
```

```
Tyr Ser Ser Arg Ser Tyr Gln Thr Asn Thr Ala Asp Thr Ala Gln Tyr
225                 230                 235                 240


Asn Ile Ser Ala Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg Tyr
                245                 250                 255


Asp Arg Leu Arg Ala Leu Ile Thr Ser Ile Arg Arg Phe Tyr Pro Thr
            260                 265                 270


Val Thr Val Val Ile Ala Asp Asp Ser Asp Lys Pro Glu Arg Val Ser
        275                 280                 285


Gly Pro Tyr Val Glu His Tyr Leu Met Pro Phe Gly Lys Val Cys Ser
    290                 295                 300


<210> 9010
<211> 566
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1826; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT2; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q8NHY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000300404"

<400> 9010
Met Gly Ser Ala Gly Phe Ser Val Gly Lys Phe His Val Glu Val Ala
1               5                   10                  15


Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu Cys Gly Asn Arg
            20                  25                  30
```

```
Leu Gly Ser Ala Gly Phe Gly Ala Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45

Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60

Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80

Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95

Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110

Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125

Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn
    130                 135                 140

Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp
145                 150                 155                 160

Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe Glu His Phe Gln
                165                 170                 175

Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro Leu Leu Val Gln Pro Asn
            180                 185                 190

Leu Pro Phe Gly Tyr Pro Val His Gly Val Glu Val Met Pro Leu His
        195                 200                 205

Thr Val Pro Ile Pro Gly Leu Gln Phe Glu Gly Pro Asp Ala Pro Val
    210                 215                 220

Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly Thr Leu Asn Thr Leu Ala
225                 230                 235                 240

Asp Val Pro Asp Ser Val Val Gln Gly Arg Gly Gln Lys Gln Leu Ile
                245                 250                 255

Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys Phe Ile Leu Gln His Val
```

```
            260                 265                 270

Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln Lys Val Asp Ile Val Ser
        275                 280                 285

Leu Glu Ser Arg Ser Ser Val Ala Lys Phe Pro Val Thr Ile Arg His
    290                 295                 300

Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly Pro Glu Arg Lys Leu Arg
305                 310                 315                 320

Asn Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg Pro His Lys Leu
                325                 330                 335

Met Ile Met Leu Arg Ser Ile Arg Glu Tyr Tyr Pro Asp Leu Thr Val
            340                 345                 350

Ile Val Ala Asp Asp Ser Gln Lys Pro Leu Glu Ile Lys Asp Asn His
        355                 360                 365

Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg
    370                 375                 380

Asn Leu Ala Ile Ser Gln Val Thr Thr Lys Tyr Val Leu Trp Val Asp
385                 390                 395                 400

Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys Ile Glu Val Leu Val Asp
                405                 410                 415

Val Leu Glu Lys Thr Glu Leu Asp Val Val Gly Gly Ser Val Leu Gly
            420                 425                 430

Asn Val Phe Gln Phe Lys Leu Leu Leu Glu Gln Ser Glu Asn Gly Ala
        435                 440                 445

Cys Leu His Lys Arg Met Gly Phe Phe Gln Pro Leu Asp Gly Phe Pro
    450                 455                 460

Ser Cys Val Val Thr Ser Gly Val Val Asn Phe Phe Leu Ala His Thr
465                 470                 475                 480

Glu Arg Leu Gln Arg Val Gly Phe Asp Pro Arg Leu Gln Arg Val Ala
                485                 490                 495
```

```
His Ser Glu Phe Phe Ile Asp Gly Leu Gly Thr Leu Leu Val Gly Ser
            500                 505                 510

Cys Pro Glu Val Ile Ile Gly His Gln Ser Arg Ser Pro Val Val Asp
        515                 520                 525

Ser Glu Leu Ala Ala Leu Glu Lys Thr Tyr Asn Thr Tyr Arg Ser Asn
    530                 535                 540

Thr Leu Thr Arg Val Gln Phe Lys Leu Ala Leu His Tyr Phe Lys Asn
545                 550                 555                 560

His Leu Gln Cys Ala Ala
                565
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<210> 9011
<211> 506
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1826; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT2; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NHY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377022"

<400> 9011

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Met Thr Ser Gly Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val
1               5                  10                  15

Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
```

```
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45

Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60

Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys
65                  70                  75                  80

Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr
                85                  90                  95

Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe
            100                 105                 110

Glu His Phe Gln Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro Leu Leu
        115                 120                 125

Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro Val His Gly Val Glu Val
    130                 135                 140

Met Pro Leu His Thr Val Pro Ile Pro Gly Leu Gln Phe Glu Gly Pro
145                 150                 155                 160

Asp Ala Pro Val Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly Thr Leu
                165                 170                 175

Asn Thr Leu Ala Asp Val Pro Asp Ser Val Val Gln Gly Arg Gly Gln
            180                 185                 190

Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys Phe Ile
        195                 200                 205

Leu Gln His Val Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln Lys Val
    210                 215                 220

Asp Ile Val Ser Leu Glu Ser Arg Ser Ser Val Ala Lys Phe Pro Val
225                 230                 235                 240

Thr Ile Arg His Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly Pro Glu
                245                 250                 255

Arg Lys Leu Arg Asn Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg
```

260 265 270

Pro His Lys Leu Met Ile Met Leu Arg Ser Ile Arg Glu Tyr Tyr Pro
275 280 285

Asp Leu Thr Val Ile Val Ala Asp Asp Ser Gln Lys Pro Leu Glu Ile
290 295 300

Lys Asp Asn His Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys Gly Trp
305 310 315 320

Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln Val Thr Thr Lys Tyr Val
325 330 335

Leu Trp Val Asp Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys Ile Glu
340 345 350

Val Leu Val Asp Val Leu Glu Lys Thr Glu Leu Asp Val Val Gly Gly
355 360 365

Ser Val Leu Gly Asn Val Phe Gln Phe Lys Leu Leu Leu Glu Gln Ser
370 375 380

Glu Asn Gly Ala Cys Leu His Lys Arg Met Gly Phe Phe Gln Pro Leu
385 390 395 400

Asp Gly Phe Pro Ser Cys Val Val Thr Ser Gly Val Val Asn Phe Phe
405 410 415

Leu Ala His Thr Glu Arg Leu Gln Arg Val Gly Phe Asp Pro Arg Leu
420 425 430

Gln Arg Val Ala His Ser Glu Phe Phe Ile Asp Gly Leu Gly Thr Leu
435 440 445

Leu Val Gly Ser Cys Pro Glu Val Ile Ile Gly His Gln Ser Arg Ser
450 455 460

Pro Val Val Asp Ser Glu Leu Ala Ala Leu Glu Lys Thr Tyr Asn Thr
465 470 475 480

Tyr Arg Ser Asn Thr Leu Thr Arg Val Gln Phe Lys Leu Ala Leu His
485 490 495

Tyr Phe Lys Asn His Leu Gln Cys Ala Ala
500 505

<210> 9012
<211> 480
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1826; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT2; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NHY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425510"

<400> 9012
Met Phe Gly Ser Met Phe Leu Gln Ala Val Phe Ser Ser Pro Lys Pro
1 5 10 15

Glu Leu Pro Ser Pro Ala Pro Gly Val Gln Lys Leu Lys Leu Leu Pro
20 25 30

Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe
35 40 45

Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr
50 55 60

Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala
65 70 75 80

Arg Arg Gln Ala Glu Phe Glu His Phe Gln Arg Arg Glu Gly Leu Pro
85 90 95

```
Arg Pro Leu Pro Leu Leu Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro
            100                 105                 110

Val His Gly Val Glu Val Met Pro Leu His Thr Val Pro Ile Pro Gly
        115                 120                 125

Leu Gln Phe Glu Gly Pro Asp Ala Pro Val Tyr Glu Val Thr Leu Thr
    130                 135                 140

Ala Ser Leu Gly Thr Leu Asn Thr Leu Ala Asp Val Pro Asp Ser Val
145                 150                 155                 160

Val Gln Gly Arg Gly Gln Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg
                165                 170                 175

Lys Leu Leu Lys Phe Ile Leu Gln His Val Thr Tyr Thr Ser Thr Gly
            180                 185                 190

Tyr Gln His Gln Lys Val Asp Ile Val Ser Leu Glu Ser Arg Ser Ser
        195                 200                 205

Val Ala Lys Phe Pro Val Thr Ile Arg His Pro Val Ile Pro Lys Leu
    210                 215                 220

Tyr Asp Pro Gly Pro Glu Arg Lys Leu Arg Asn Leu Val Thr Ile Ala
225                 230                 235                 240

Thr Lys Thr Phe Leu Arg Pro His Lys Leu Met Ile Met Leu Arg Ser
                245                 250                 255

Ile Arg Glu Tyr Tyr Pro Asp Leu Thr Val Ile Val Ala Asp Asp Ser
            260                 265                 270

Gln Lys Pro Leu Glu Ile Lys Asp Asn His Val Glu Tyr Tyr Thr Met
        275                 280                 285

Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln
    290                 295                 300

Val Thr Thr Lys Tyr Val Leu Trp Val Asp Asp Asp Phe Leu Phe Asn
305                 310                 315                 320

Glu Glu Thr Lys Ile Glu Val Leu Val Asp Val Leu Glu Lys Thr Glu
```

325 330 335

Leu Asp Val Val Gly Gly Ser Val Leu Gly Asn Val Phe Gln Phe Lys
340 345 350

Leu Leu Leu Glu Gln Ser Glu Asn Gly Ala Cys Leu His Lys Arg Met
355 360 365

Gly Phe Phe Gln Pro Leu Asp Gly Phe Pro Ser Cys Val Val Thr Ser
370 375 380

Gly Val Val Asn Phe Phe Leu Ala His Thr Glu Arg Leu Gln Arg Val
385 390 395 400

Gly Phe Asp Pro Arg Leu Gln Arg Val Ala His Ser Glu Phe Phe Ile
405 410 415

Asp Gly Leu Gly Thr Leu Leu Val Gly Ser Cys Pro Glu Val Ile Ile
420 425 430

Gly His Gln Ser Arg Ser Pro Val Val Asp Ser Glu Leu Ala Ala Leu
435 440 445

Glu Lys Thr Tyr Asn Thr Tyr Arg Ser Asn Thr Leu Thr Arg Val Gln
450 455 460

Phe Lys Leu Ala Leu His Tyr Phe Lys Asn His Leu Gln Cys Ala Ala
465 470 475 480

<210> 9013
<211> 998
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1827; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT3; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q6L9W6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000266383"

<400> 9013
Met Gly Ser Pro Arg Ala Ala Arg Pro Pro Leu Leu Leu Arg Pro Val
1   5   10   15

Lys Leu Leu Arg Arg Arg Phe Arg Leu Leu Leu Ala Leu Ala Val Val
            20   25   30

Ser Val Gly Leu Trp Thr Leu Tyr Leu Glu Leu Val Ala Ser Ala Gln
        35   40   45

Val Gly Gly Asn Pro Leu Asn Arg Arg Tyr Gly Ser Trp Arg Glu Leu
    50   55   60

Ala Lys Ala Leu Ala Ser Arg Asn Ile Pro Ala Val Asp Pro His Leu
65   70   75   80

Gln Phe Tyr His Pro Gln Arg Leu Ser Leu Glu Asp His Asp Ile Asp
                85   90   95

Gln Gly Val Ser Ser Asn Ser Ser Tyr Leu Lys Trp Asn Lys Pro Val
            100   105   110

Pro Trp Leu Ser Glu Phe Arg Gly Arg Ala Asn Leu His Val Phe Glu
        115   120   125

Asp Trp Cys Gly Ser Ser Ile Gln Gln Leu Arg Arg Asn Leu His Phe
    130   135   140

Pro Leu Tyr Pro His Ile Arg Thr Thr Leu Arg Lys Leu Ala Val Ser
145   150   155   160

Pro Lys Trp Thr Asn Tyr Gly Leu Arg Ile Phe Gly Tyr Leu His Pro
                165   170   175

Phe Thr Asp Gly Lys Ile Gln Phe Ala Ile Ala Ala Asp Asp Asn Ala
            180   185   190

```
Glu Phe Trp Leu Ser Leu Asp Asp Gln Val Ser Gly Leu Gln Leu Leu
        195                 200                 205

Ala Ser Val Gly Lys Thr Gly Lys Glu Trp Thr Ala Pro Gly Glu Phe
    210                 215                 220

Gly Lys Phe Arg Ser Gln Ile Ser Lys Pro Val Ser Leu Ser Ala Ser
225                 230                 235                 240

His Arg Tyr Tyr Phe Glu Val Leu His Lys Gln Asn Glu Glu Gly Thr
                245                 250                 255

Asp His Val Glu Val Ala Trp Arg Arg Asn Asp Pro Gly Ala Lys Phe
            260                 265                 270

Thr Ile Ile Asp Ser Leu Ser Leu Ser Leu Phe Thr Asn Glu Thr Phe
        275                 280                 285

Leu Gln Met Asp Glu Val Gly His Ile Pro Gln Thr Ala Ala Ser His
    290                 295                 300

Val Asp Ser Ser Asn Ala Leu Pro Arg Asp Glu Gln Pro Pro Ala Asp
305                 310                 315                 320

Met Leu Arg Pro Asp Pro Arg Asp Thr Leu Tyr Arg Val Pro Leu Ile
                325                 330                 335

Pro Lys Ser His Leu Arg His Val Leu Pro Asp Cys Pro Tyr Lys Pro
            340                 345                 350

Ser Tyr Leu Val Asp Gly Leu Pro Leu Gln Arg Tyr Gln Gly Leu Arg
        355                 360                 365

Phe Val His Leu Ser Phe Val Tyr Pro Asn Asp Tyr Thr Arg Leu Ser
    370                 375                 380

His Met Glu Thr His Asn Lys Cys Phe Tyr Gln Glu Asn Ala Tyr Tyr
385                 390                 395                 400

Gln Asp Arg Phe Ser Phe Gln Glu Tyr Ile Lys Ile Asp Gln Pro Glu
                405                 410                 415

Lys Gln Gly Leu Glu Gln Pro Gly Phe Glu Glu Asn Leu Leu Glu Glu
```

```
            420                 425                 430

Ser Gln Tyr Gly Glu Val Ala Glu Glu Thr Pro Ala Ser Asn Asn Gln
        435                 440                 445

Asn Ala Arg Met Leu Glu Gly Arg Gln Thr Pro Ala Ser Thr Leu Glu
    450                 455                 460

Gln Asp Ala Thr Asp Tyr Arg Leu Arg Ser Leu Arg Lys Leu Leu Ala
465                 470                 475                 480

Gln Pro Arg Glu Gly Leu Leu Ala Pro Phe Ser Lys Arg Asn Ser Thr
                485                 490                 495

Ala Ser Phe Pro Gly Arg Thr Ser His Ile Pro Val Gln Gln Pro Glu
            500                 505                 510

Lys Arg Lys Gln Lys Pro Ser Pro Glu Pro Ser Gln Asp Ser Pro His
        515                 520                 525

Ser Asp Lys Trp Pro Pro Gly His Pro Val Lys Asn Leu Pro Gln Met
    530                 535                 540

Arg Gly Pro Arg Pro Arg Pro Ala Gly Asp Ser Pro Arg Lys Thr Gln
545                 550                 555                 560

Trp Leu Asn Gln Val Glu Ser Tyr Ile Ala Glu Gln Arg Arg Gly Asp
                565                 570                 575

Arg Met Arg Pro Gln Ala Pro Gly Arg Gly Trp His Gly Glu Glu Glu
            580                 585                 590

Val Val Ala Ala Ala Gly Gln Glu Gly Gln Val Glu Gly Glu Glu Glu
        595                 600                 605

Gly Glu Glu Glu Glu Glu Glu Glu Asp Met Ser Glu Val Phe Glu Tyr
    610                 615                 620

Val Pro Val Phe Asp Pro Val Val Asn Trp Asp Gln Thr Phe Ser Ala
625                 630                 635                 640

Arg Asn Leu Asp Phe Gln Ala Leu Arg Thr Asp Trp Ile Asp Leu Ser
                645                 650                 655
```

```
Cys Asn Thr Ser Gly Asn Leu Leu Leu Pro Glu Gln Glu Ala Leu Glu
            660                 665                 670

Val Thr Arg Val Phe Leu Lys Lys Leu Asn Gln Arg Ser Arg Gly Arg
        675                 680                 685

Tyr Gln Leu Gln Arg Ile Val Asn Val Glu Lys Arg Gln Asp Gln Leu
    690                 695                 700

Arg Gly Gly Arg Tyr Leu Leu Glu Leu Glu Leu Leu Glu Gln Gly Gln
705                 710                 715                 720

Arg Val Val Arg Leu Ser Glu Tyr Val Ser Ala Arg Gly Trp Gln Gly
                725                 730                 735

Ile Asp Pro Ala Gly Gly Glu Glu Val Glu Ala Arg Asn Leu Gln Gly
            740                 745                 750

Leu Val Trp Asp Pro His Asn Arg Arg Arg Gln Val Leu Asn Thr Arg
        755                 760                 765

Ala Gln Glu Pro Lys Leu Cys Trp Pro Gln Gly Phe Ser Trp Ser His
    770                 775                 780

Arg Ala Val Val His Phe Val Val Pro Val Lys Asn Gln Ala Arg Trp
785                 790                 795                 800

Val Gln Gln Phe Ile Lys Asp Met Glu Asn Leu Phe Gln Val Thr Gly
                805                 810                 815

Asp Pro His Phe Asn Ile Val Ile Thr Asp Tyr Ser Ser Glu Asp Met
            820                 825                 830

Asp Val Glu Met Ala Leu Lys Arg Ser Lys Leu Arg Ser Tyr Gln Tyr
        835                 840                 845

Val Lys Leu Ser Gly Asn Phe Glu Arg Ser Ala Gly Leu Gln Ala Gly
    850                 855                 860

Ile Asp Leu Val Lys Asp Pro His Ser Ile Ile Phe Leu Cys Asp Leu
865                 870                 875                 880
```

```
His Ile His Phe Pro Ala Gly Val Ile Asp Ala Ile Arg Lys His Cys
                885                 890                 895

Val Glu Gly Lys Met Ala Phe Ala Pro Met Val Met Arg Leu His Cys
            900                 905                 910

Gly Ala Thr Pro Gln Trp Pro Glu Gly Tyr Trp Glu Val Asn Gly Phe
        915                 920                 925

Gly Leu Leu Gly Ile Tyr Lys Ser Asp Leu Asp Arg Ile Gly Gly Met
    930                 935                 940

Asn Thr Lys Glu Phe Arg Asp Arg Trp Gly Gly Glu Asp Trp Glu Leu
945                 950                 955                 960

Leu Asp Arg Ile Leu Gln Ala Gly Leu Asp Val Glu Arg Leu Ser Leu
                965                 970                 975

Arg Asn Phe Phe His His Phe His Ser Lys Arg Gly Met Trp Ser Arg
            980                 985                 990

Arg Gln Met Lys Thr Leu
        995


<210> 9014
<211> 636
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: B4GALNT3; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000322953"

<400> 9014
Met Ala Arg Ala Asp Leu Val Pro Lys Ala Arg Pro Trp Gly Glu His
```

```
1               5                   10                  15

Gln His Gln Phe Arg Gly Arg Ala Asn Leu His Val Phe Glu Asp Trp
            20                  25                  30

Cys Gly Ser Ser Ile Gln Gln Leu Arg Arg Asn Leu His Phe Pro Leu
        35                  40                  45

Tyr Pro His Ile Arg Thr Thr Leu Arg Lys Leu Ala Val Ser Pro Lys
    50                  55                  60

Trp Thr Asn Tyr Gly Leu Arg Ile Phe Gly Tyr Leu His Pro Phe Thr
65                  70                  75                  80

Asp Gly Lys Ile Gln Phe Ala Ile Ala Ala Asp Asp Asn Ala Glu Phe
                85                  90                  95

Trp Leu Ser Leu Asp Asp Gln Val Ser Gly Leu Gln Leu Leu Ala Ser
            100                 105                 110

Val Gly Lys Thr Gly Lys Glu Trp Thr Ala Pro Gly Glu Phe Gly Lys
        115                 120                 125

Phe Arg Ser Gln Ile Ser Lys Pro Val Ser Leu Ser Ala Ser His Arg
    130                 135                 140

Tyr Tyr Phe Glu Val Leu His Lys Gln Asn Glu Glu Gly Thr Asp His
145                 150                 155                 160

Val Glu Val Ala Trp Arg Arg Asn Asp Pro Gly Ala Lys Phe Thr Ile
                165                 170                 175

Ile Asp Ser Leu Ser Leu Ser Leu Phe Thr Asn Glu Thr Phe Leu Gln
            180                 185                 190

Met Asp Glu Val Gly His Ile Pro Gln Thr Ala Ala Ser His Val Asp
        195                 200                 205

Ser Ser Asn Ala Leu Pro Arg Asp Glu Gln Pro Pro Ala Asp Met Leu
    210                 215                 220

Arg Pro Asp Pro Arg Asp Thr Leu Tyr Arg Val Pro Leu Ile Pro Lys
225                 230                 235                 240
```

```
Ser His Leu Arg His Val Leu Pro Asp Cys Pro Tyr Lys Pro Ser Tyr
               245                 250                 255

Leu Val Asp Gly Leu Pro Leu Gln Arg Tyr Gln Gly Leu Arg Phe Val
            260                 265                 270

His Leu Ser Phe Val Tyr Pro Asn Asp Tyr Thr Arg Leu Ser His Met
        275                 280                 285

Glu Thr His Asn Lys Cys Phe Tyr Gln Glu Asn Ala Tyr Tyr Gln Asp
    290                 295                 300

Arg Phe Ser Phe Gln Glu Tyr Ile Lys Ile Asp Gln Pro Glu Lys Gln
305                 310                 315                 320

Gly Leu Glu Gln Pro Ala Gly Phe Glu Glu Asn Leu Leu Glu Glu Ser
                325                 330                 335

Gln Tyr Gly Glu Val Ala Glu Glu Thr Pro Ala Ser Asn Asn Gln Asn
            340                 345                 350

Ala Arg Met Leu Glu Gly Arg Gln Thr Pro Ala Ser Thr Leu Glu Gln
        355                 360                 365

Asp Ala Thr Asp Tyr Arg Leu Arg Ser Leu Arg Lys Leu Leu Ala Gln
    370                 375                 380

Pro Arg Glu Gly Leu Leu Ala Pro Phe Ser Lys Arg Asn Ser Thr Ala
385                 390                 395                 400

Ser Phe Pro Gly Arg Thr Ser His Ile Pro Val Gln Gln Pro Glu Lys
                405                 410                 415

Arg Lys Gln Lys Pro Ser Pro Glu Pro Ser Gln Asp Ser Pro His Ser
            420                 425                 430

Asp Lys Trp Pro Pro Gly His Pro Val Lys Asn Leu Pro Gln Met Arg
        435                 440                 445

Gly Pro Arg Pro Arg Pro Ala Gly Asp Ser Pro Arg Lys Thr Gln Trp
    450                 455                 460
```

```
Leu Asn Gln Val Glu Ser Tyr Ile Ala Glu Gln Arg Arg Gly Asp Arg
465                 470                 475                 480

Met Arg Pro Gln Ala Pro Gly Arg Gly Trp His Gly Glu Glu Glu Val
                485                 490                 495

Val Ala Ala Ala Gly Gln Glu Gly Gln Val Glu Gly Glu Glu Glu Gly
            500                 505                 510

Glu Glu Glu Glu Glu Glu Glu Asp Met Ser Glu Val Phe Glu Tyr Val
        515                 520                 525

Pro Val Phe Asp Pro Val Val Asn Trp Asp Gln Thr Phe Ser Ala Arg
    530                 535                 540

Asn Leu Asp Phe Gln Ala Leu Arg Thr Asp Trp Ile Asp Leu Ser Cys
545                 550                 555                 560

Asn Thr Ser Gly Asn Leu Leu Leu Pro Glu Gln Glu Ala Leu Glu Val
                565                 570                 575

Thr Arg Val Phe Leu Lys Lys Leu Asn Gln Arg Ser Arg Gly Ser Val
            580                 585                 590

Asp Phe Pro Ile Pro Asp Ile Leu Cys Lys Trp Asn His Val Met Cys
        595                 600                 605

Gly Leu Tyr Ile Gly Leu Phe Ala Glu Tyr Ser Leu Ser Thr Ser Phe
    610                 615                 620

Ile Arg Val Val Glu Ser Ile Lys His Phe Ile Pro
625                 630                 635


<210> 9015
<211> 1039
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: B4GALNT4; "
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<220>
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<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q76KP1; "

<220>
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<400> 9015
Met Pro Arg Leu Pro Val Lys Lys Ile Arg Lys Gln Met Lys Leu Leu
1   5   10   15

Leu Leu Leu Leu Leu Leu Ser Cys Ala Ala Trp Leu Thr Tyr Val His
            20   25   30

Leu Gly Leu Val Arg Gln Gly Arg Ala Leu Arg Gln Arg Leu Gly Tyr
        35   40   45

Gly Arg Asp Gly Glu Lys Leu Thr Ser Glu Thr Asp Gly Arg Gly Val
    50   55   60

His Ala Ala Pro Ser Thr Gln Arg Ala Glu Asp Ser Ser Glu Ser Arg
65   70   75   80

Glu Glu Glu Gln Ala Pro Glu Gly Arg Asp Leu Asp Met Leu Phe Pro
                85   90   95

Gly Gly Ala Gly Arg Leu Pro Leu Asn Phe Thr His Gln Thr Pro Pro
            100   105   110

Trp Arg Glu Glu Tyr Lys Gly Gln Val Asn Leu His Val Phe Glu Asp
        115   120   125

Trp Cys Gly Gly Ala Val Gly His Leu Arg Arg Asn Leu His Phe Pro
    130   135   140

Leu Phe Pro His Thr Arg Thr Thr Val Lys Lys Leu Ala Val Ser Pro
145   150   155   160

Lys Trp Lys Asn Tyr Gly Leu Arg Ile Phe Gly Phe Ile His Pro Ala
                165   170   175

```
Arg Asp Gly Asp Val Gln Phe Ser Val Ala Ser Asp Asp Asn Ser Glu
            180                 185                 190

Phe Trp Leu Ser Leu Asp Glu Ser Pro Ala Ala Ala Gln Leu Val Ala
        195                 200                 205

Phe Val Gly Lys Thr Gly Ser Glu Trp Thr Ala Pro Gly Glu Phe Thr
    210                 215                 220

Lys Phe Ser Ser Gln Val Ser Lys Pro Arg Arg Leu Met Ala Ser Arg
225                 230                 235                 240

Arg Tyr Tyr Phe Glu Leu Leu His Lys Gln Asp Asp Arg Gly Ser Asp
                245                 250                 255

His Val Glu Val Gly Trp Arg Ala Phe Leu Pro Gly Leu Lys Phe Glu
            260                 265                 270

Val Ile Ser Ser Ala His Ile Ser Leu Tyr Thr Asp Glu Ser Ala Leu
        275                 280                 285

Lys Met Asp His Val Ala His Val Pro Gln Ser Pro Ala Ser His Val
    290                 295                 300

Gly Gly Arg Pro Pro Gln Glu Glu Thr Ser Ala Asp Met Leu Arg Pro
305                 310                 315                 320

Asp Pro Arg Asp Thr Phe Phe Leu Thr Pro Arg Met Glu Ser Ser Ser
                325                 330                 335

Leu Glu Asn Val Leu Glu Pro Cys Ala Tyr Ala Pro Thr Tyr Val Val
            340                 345                 350

Lys Asp Phe Pro Ile Ala Arg Tyr Gln Gly Leu Gln Phe Val Tyr Leu
        355                 360                 365

Ser Phe Val Tyr Pro Asn Asp Tyr Thr Arg Leu Thr His Met Glu Thr
    370                 375                 380

Asp Asn Lys Cys Phe Tyr Arg Glu Ser Pro Leu Tyr Leu Glu Arg Phe
385                 390                 395                 400
```

Gly Phe Tyr Lys Tyr Met Lys Met Asp Lys Glu Glu Gly Asp Glu Asp
405 410 415

Glu Glu Asp Glu Val Gln Arg Arg Ala Phe Leu Phe Leu Asn Pro Asp
420 425 430

Asp Phe Leu Asp Asp Glu Asp Glu Gly Glu Leu Leu Asp Ser Leu Glu
435 440 445

Pro Thr Glu Ala Ala Pro Pro Arg Ser Gly Pro Gln Ser Pro Ala Pro
450 455 460

Ala Ala Pro Ala Gln Pro Gly Ala Thr Leu Ala Pro Pro Thr Pro Pro
465 470 475 480

Arg Pro Arg Asp Gly Gly Thr Pro Arg His Ser Arg Ala Leu Ser Trp
485 490 495

Ala Ala Arg Ala Ala Arg Pro Leu Pro Leu Phe Leu Gly Arg Ala Pro
500 505 510

Pro Pro Arg Pro Ala Val Glu Gln Pro Pro Pro Lys Val Tyr Val Thr
515 520 525

Arg Val Arg Pro Gly Gln Arg Ala Ser Pro Arg Ala Pro Ala Pro Arg
530 535 540

Ala Pro Trp Pro Pro Phe Pro Gly Val Phe Leu His Pro Arg Pro Leu
545 550 555 560

Pro Arg Val Gln Leu Arg Ala Pro Pro Arg Pro Pro Arg Pro His Gly
565 570 575

Arg Arg Thr Gly Gly Pro Gln Ala Thr Gln Pro Arg Pro Pro Ala Arg
580 585 590

Ala Gln Ala Thr Gln Gly Gly Arg Glu Gly Gln Ala Arg Thr Leu Gly
595 600 605

Pro Ala Ala Pro Thr Val Asp Ser Asn Leu Ser Ser Glu Ala Arg Pro
610 615 620

```
Val Thr Ser Phe Leu Ser Leu Ser Gln Val Ser Gly Pro Gln Leu Pro
625                 630                 635                 640

Gly Glu Gly Glu Glu Glu Glu Glu Gly Glu Asp Asp Gly Ala Pro Gly
                645                 650                 655

Asp Glu Ala Ala Ser Glu Asp Ser Glu Glu Ala Ala Gly Pro Ala Leu
            660                 665                 670

Gly Arg Trp Arg Glu Asp Ala Ile Asp Trp Gln Arg Thr Phe Ser Val
        675                 680                 685

Gly Ala Val Asp Phe Glu Leu Leu Arg Ser Asp Trp Asn Asp Leu Arg
    690                 695                 700

Cys Asn Val Ser Gly Asn Leu Gln Leu Pro Glu Ala Glu Ala Val Asp
705                 710                 715                 720

Val Thr Ala Gln Tyr Met Glu Arg Leu Asn Ala Arg His Gly Gly Arg
                725                 730                 735

Phe Ala Leu Leu Arg Ile Val Asn Val Glu Lys Arg Arg Asp Ser Ala
            740                 745                 750

Arg Gly Ser Arg Phe Leu Leu Glu Leu Glu Leu Gln Glu Arg Gly Gly
        755                 760                 765

Gly Arg Leu Arg Leu Ser Glu Tyr Val Phe Leu Arg Leu Pro Gly Ala
    770                 775                 780

Arg Val Gly Asp Ala Asp Gly Glu Ser Pro Glu Pro Ala Pro Ala Ala
785                 790                 795                 800

Ser Val Arg Pro Asp Gly Arg Pro Glu Leu Cys Arg Pro Leu Arg Leu
                805                 810                 815

Ala Trp Arg Gln Asp Val Met Val His Phe Ile Val Pro Val Lys Asn
            820                 825                 830

Gln Ala Arg Trp Val Ala Gln Phe Leu Ala Asp Met Ala Ala Leu His
        835                 840                 845

Ala Arg Thr Gly Asp Ser Arg Phe Ser Val Val Leu Val Asp Phe Glu
```

```
    850                 855                 860

Ser Glu Asp Met Asp Val Glu Arg Ala Leu Arg Ala Ala Arg Leu Pro
865                 870                 875                 880

Arg Tyr Gln Tyr Leu Arg Arg Thr Gly Asn Phe Glu Arg Ser Ala Gly
                885                 890                 895

Leu Gln Ala Gly Val Asp Ala Val Glu Asp Ala Ser Ser Ile Val Phe
            900                 905                 910

Leu Cys Asp Leu His Ile His Phe Pro Pro Asn Ile Leu Asp Gly Ile
        915                 920                 925

Arg Lys His Cys Val Glu Gly Arg Leu Ala Phe Ala Pro Val Val Met
    930                 935                 940

Arg Leu Ser Cys Gly Ser Ser Pro Arg Asp Pro His Gly Tyr Trp Glu
945                 950                 955                 960

Val Asn Gly Phe Gly Leu Phe Gly Ile Tyr Lys Ser Asp Phe Asp Arg
                965                 970                 975

Val Gly Gly Met Asn Thr Glu Glu Phe Arg Asp Gln Trp Gly Gly Glu
            980                 985                 990

Asp Trp Glu Leu Leu Asp Arg Val  Leu Gln Ala Gly Leu  Glu Val
Glu
        995                 1000                1005

Arg Leu  Arg Leu Arg Asn Phe  Tyr His His Tyr His  Ser Lys Arg
    1010                1015                1020

Gly Met  Trp Ser Val Arg Ser  Arg Lys Gly Ser Arg  Thr Gly Ala
    1025                1030                1035

Ser
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<210> 9016
<211> 53
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1828; "

<220>
<221> source
<223> /note="Gene Symbol: B4GALNT4; "

<220>
<221> source
<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432372"

<400> 9016
Asp Ala Ser Ser Ile Val Phe Leu Cys Asp Leu His Ile His Phe Pro
1 5 10 15

Pro Asn Ile Leu Asp Gly Ile Arg Lys His Cys Val Glu Gly Arg Leu
20 25 30

Ala Phe Ala Pro Val Val Met Arg Leu Ser Cys Gly Ser Ser Pro Arg
35 40 45

Asp Pro His Gly Ser
50

<210> 9017
<211> 26
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: B4GALNT4; "

<220>
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<223> /note="Gene Name:
beta-1,4-N-acetyl-galactosaminyl transferase 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434463"

<400> 9017

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Asp Val Glu Arg Ala Leu Arg Ala Ala Arg Leu Pro Arg Asp Arg Ala
1               5                   10                  15


Cys Asp Ser Pro Ser Pro Gly Thr Ser Thr
            20                  25


<210> 9018
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1829; "

<220>
<221> source
<223> /note="Gene Symbol: B2M; "

<220>
<221> source
<223> /note="Gene Name:
      beta-2-microglobulin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000340858"

<400> 9018
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1               5                   10                  15


Gly Leu Glu Arg Glu Leu Lys Lys Trp Ser Ile Gln Thr Cys Leu Ser
            20                  25                  30


Ala Arg Thr Gly Leu Ser Ile Ser Cys Thr Thr Leu Asn Ser Pro Pro
        35                  40                  45


Leu Lys Lys Met Ser Met Pro Ala Val
    50                  55


<210> 9019
<211> 101
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1829; "

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<221> source
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<223> /note="Gene Name:
beta-2-microglobulin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437604"

<400> 9019
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1 5 10 15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
20 25 30

His Pro Ala Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu Arg Ile
35 40 45

Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp Ser Phe
50 55 60

Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp Glu Tyr
65 70 75 80

Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile Val Lys
85 90 95

Trp Asp Arg Asp Met
100

<210> 9020
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1829; "

<220>
<221> source
<223> /note="Gene Symbol: B2M; "

<220>
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<223> /note="Gene Name:

beta-2-microglobulin; "

<220>
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<223> /note="Uniprot ID: P61769; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452780"

<400> 9020
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1   5   10   15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
            20   25   30

His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser
        35   40   45

Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
    50   55   60

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
65   70   75   80

Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
                85   90   95

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
            100   105   110

Val Lys Trp Asp Arg Asp Met
        115

<210> 9021
<211> 51
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1829; "

<220>
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<223> /note="Gene Symbol: B2M; "

<220>

<221> source
<223> /note="Gene Name:
beta-2-microglobulin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452861"

<400> 9021
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1 5 10 15

Gly Leu Glu Ala Ile Gln His Ser Gly Leu Leu Thr Ser Ser Ser Arg
20 25 30

Glu Trp Lys Val Lys Phe Pro Glu Leu Leu Cys Val Trp Val Ser Ser
35 40 45

Ile Arg His
50

<210> 9022
<211> 71
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1829; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
beta-2-microglobulin; "

<220>
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<223> /note="ENSP ID: ENSP00000453186"

<400> 9022
Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
1 5 10 15

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
20 25 30

Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp

35 40 45

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
50 55 60

Val Lys Trp Asp Arg Asp Met
65 70

<210> 9023
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: B2M; "

<220>
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<223> /note="Gene Name:
beta-2-microglobulin; "

<220>
<221> source
<223> /note="Uniprot ID: P61769; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453191"

<400> 9023
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1 5 10 15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
20 25 30

His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser
35 40 45

Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
50 55 60

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
65 70 75 80

```
Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
                85                  90                  95

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
            100                 105                 110

Val Lys Trp Asp Arg Asp Met
        115


<210> 9024
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1829; "

<220>
<221> source
<223> /note="Gene Symbol: B2M; "

<220>
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<223> /note="Gene Name:
      beta-2-microglobulin; "

<220>
<221> source
<223> /note="Uniprot ID:  P61769; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453350"

<400> 9024
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1               5                   10                  15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
            20                  25                  30

His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser
        35                  40                  45

Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
    50                  55                  60

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
```

65 70 75 80

Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
85 90 95

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
100 105 110

Val Lys Trp Asp Arg Asp Met
115

<210> 9025
<211> 119
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<213> Homo sapiens

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<400> 9025
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1 5 10 15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
20 25 30

His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser
35 40 45

Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
50 55 60

```
Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
65                  70                  75                  80


Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
                85                  90                  95


Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
            100                 105                 110


Val Lys Trp Asp Arg Asp Met
        115


<210> 9026
<211> 101
<212> PRT
<213> Homo sapiens

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<220>
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<400> 9026
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1               5                   10                  15


Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
            20                  25                  30


His Pro Ala Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu Arg Ile
        35                  40                  45


Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp Ser Phe
    50                  55                  60


Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp Glu Tyr
```

65 70 75 80

Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile Val Lys
85 90 95

Trp Asp Arg Asp Met
100

<210> 9027
<211> 51
<212> PRT
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<220>
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<220>
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<400> 9027
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1 5 10 15

Gly Leu Glu Ala Ile Gln His Ser Gly Leu Leu Thr Ser Ser Ser Arg
20 25 30

Glu Trp Lys Val Lys Phe Pro Glu Leu Leu Cys Val Trp Val Ser Ser
35 40 45

Ile Arg His
50

<210> 9028
<211> 71
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 9028
Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
1 5 10 15

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
20 25 30

Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
35 40 45

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
50 55 60

Val Lys Trp Asp Arg Asp Met
65 70

<210> 9029
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 9029
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1   5   10   15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
            20   25   30

His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser
        35   40   45

Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
    50   55   60

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
65   70   75   80

Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
                85   90   95

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
            100   105   110

Val Lys Trp Asp Arg Asp Met
        115

<210> 9030
<211> 57
<212> PRT
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<220>
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<400> 9030
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1   5   10   15

Gly Leu Glu Arg Glu Leu Lys Lys Trp Ser Ile Gln Thr Cys Leu Ser
            20   25   30

Ala Arg Thr Gly Leu Ser Ile Ser Cys Thr Thr Leu Asn Ser Pro Pro
        35   40   45

Leu Lys Lys Met Ser Met Pro Ala Val
    50   55

<210> 9031
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: P61769; "

<220>
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<223> /note="ENSP ID: ENSP00000488548"

<400> 9031
Met Ser Arg Ser Val Ala Leu Ala Val Leu Ala Leu Leu Ser Leu Ser
1   5   10   15

Gly Leu Glu Ala Ile Gln Arg Thr Pro Lys Ile Gln Val Tyr Ser Arg
            20   25   30

His Pro Ala Glu Asn Gly Lys Ser Asn Phe Leu Asn Cys Tyr Val Ser
        35   40   45

```
Gly Phe His Pro Ser Asp Ile Glu Val Asp Leu Leu Lys Asn Gly Glu
    50                  55                  60

Arg Ile Glu Lys Val Glu His Ser Asp Leu Ser Phe Ser Lys Asp Trp
65                  70                  75                  80

Ser Phe Tyr Leu Leu Tyr Tyr Thr Glu Phe Thr Pro Thr Glu Lys Asp
                85                  90                  95

Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln Pro Lys Ile
            100                 105                 110

Val Lys Trp Asp Arg Asp Met
        115


<210> 9032
<211> 547
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1830; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
      beta-carotene oxygenase 1; "

<220>
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<223> /note="Uniprot ID:  Q9HAY6; "

<220>
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<223> /note="ENSP ID: ENSP00000258168"

<400> 9032
Met Asp Ile Ile Phe Gly Arg Asn Arg Lys Glu Gln Leu Glu Pro Val
1               5                   10                  15

Arg Ala Lys Val Thr Gly Lys Ile Pro Ala Trp Leu Gln Gly Thr Leu
            20                  25                  30
```

```
Leu Arg Asn Gly Pro Gly Met His Thr Val Gly Glu Ser Arg Tyr Asn
        35                  40                  45

His Trp Phe Asp Gly Leu Ala Leu Leu His Ser Phe Thr Ile Arg Asp
    50                  55                  60

Gly Glu Val Tyr Tyr Arg Ser Lys Tyr Leu Arg Ser Asp Thr Tyr Asn
65                  70                  75                  80

Thr Asn Ile Glu Ala Asn Arg Ile Val Val Ser Glu Phe Gly Thr Met
                85                  90                  95

Ala Tyr Pro Asp Pro Cys Lys Asn Ile Phe Ser Lys Ala Phe Ser Tyr
            100                 105                 110

Leu Ser His Thr Ile Pro Asp Phe Thr Asp Asn Cys Leu Ile Asn Ile
        115                 120                 125

Met Lys Cys Gly Glu Asp Phe Tyr Ala Thr Ser Glu Thr Asn Tyr Ile
    130                 135                 140

Arg Lys Ile Asn Pro Gln Thr Leu Glu Thr Leu Glu Lys Val Asp Tyr
145                 150                 155                 160

Arg Lys Tyr Val Ala Val Asn Leu Ala Thr Ser His Pro His Tyr Asp
                165                 170                 175

Glu Ala Gly Asn Val Leu Asn Met Gly Thr Ser Ile Val Glu Lys Gly
            180                 185                 190

Lys Thr Lys Tyr Val Ile Phe Lys Ile Pro Ala Thr Val Pro Glu Gly
        195                 200                 205

Lys Lys Gln Gly Lys Ser Pro Trp Lys His Thr Glu Val Phe Cys Ser
    210                 215                 220

Ile Pro Ser Arg Ser Leu Leu Ser Pro Ser Tyr Tyr His Ser Phe Gly
225                 230                 235                 240

Val Thr Glu Asn Tyr Val Ile Phe Leu Glu Gln Pro Phe Arg Leu Asp
                245                 250                 255

Ile Leu Lys Met Ala Thr Ala Tyr Ile Arg Arg Met Ser Trp Ala Ser
```

260 265 270

Cys Leu Ala Phe His Arg Glu Glu Lys Thr Tyr Ile His Ile Ile Asp
275 280 285

Gln Arg Thr Arg Gln Pro Val Gln Thr Lys Phe Tyr Thr Asp Ala Met
290 295 300

Val Val Phe His His Val Asn Ala Tyr Glu Glu Asp Gly Cys Ile Val
305 310 315 320

Phe Asp Val Ile Ala Tyr Glu Asp Asn Ser Leu Tyr Gln Leu Phe Tyr
325 330 335

Leu Ala Asn Leu Asn Gln Asp Phe Lys Glu Asn Ser Arg Leu Thr Ser
340 345 350

Val Pro Thr Leu Arg Arg Phe Ala Val Pro Leu His Val Asp Lys Asn
355 360 365

Ala Glu Val Gly Thr Asn Leu Ile Lys Val Ala Ser Thr Thr Ala Thr
370 375 380

Ala Leu Lys Glu Glu Asp Gly Gln Val Tyr Cys Gln Pro Glu Phe Leu
385 390 395 400

Tyr Glu Gly Leu Glu Leu Pro Arg Val Asn Tyr Ala His Asn Gly Lys
405 410 415

Gln Tyr Arg Tyr Val Phe Ala Thr Gly Val Gln Trp Ser Pro Ile Pro
420 425 430

Thr Lys Ile Ile Lys Tyr Asp Ile Leu Thr Lys Ser Ser Leu Lys Trp
435 440 445

Arg Glu Asp Asp Cys Trp Pro Ala Glu Pro Leu Phe Val Pro Ala Pro
450 455 460

Gly Ala Lys Asp Glu Asp Asp Gly Val Ile Leu Ser Ala Ile Val Ser
465 470 475 480

Thr Asp Pro Gln Lys Leu Pro Phe Leu Leu Ile Leu Asp Ala Lys Ser
485 490 495

```
Phe Thr Glu Leu Ala Arg Ala Ser Val Asp Val Asp Met His Met Asp
            500                 505                 510

Leu His Gly Leu Phe Ile Thr Asp Met Asp Trp Asp Thr Lys Lys Gln
        515                 520                 525

Ala Ala Ser Glu Glu Gln Arg Asp Arg Ala Ser Asp Cys His Gly Ala
    530                 535                 540

Pro Leu Thr
545
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<210> 9033
<211> 162
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1830; "

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<223> /note="Gene Name:
beta-carotene oxygenase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455219"

<400> 9033

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Met Asp Ile Ile Phe Gly Arg Asn Arg Lys Glu Gln Leu Glu Pro Val
1               5                  10                  15

Arg Ala Lys Val Thr Gly Lys Ile Pro Ala Trp Leu Gln Gly Thr Leu
            20                  25                  30

Leu Arg Asn Gly Pro Gly Met His Thr Val Gly Glu Ser Arg Tyr Asn
        35                  40                  45

His Trp Phe Asp Gly Leu Ala Leu Leu His Ser Phe Thr Ile Arg Asp
    50                  55                  60
```

```
Gly Glu Val Tyr Tyr Arg Ser Lys Tyr Leu Arg Ser Asp Thr Tyr Asn
65                  70                  75                  80

Thr Asn Ile Glu Ala Asn Arg Ile Val Val Ser Glu Phe Gly Thr Met
                85                  90                  95

Ala Tyr Pro Asp Pro Cys Lys Asn Ile Phe Ser Lys Ala Phe Ser Tyr
            100                 105                 110

Leu Ser His Thr Ile Pro Asp Phe Thr Asp Asn Cys Leu Ile Asn Ile
        115                 120                 125

Met Lys Cys Gly Glu Asp Phe Tyr Ala Thr Ser Glu Thr Asn Tyr Ile
    130                 135                 140

Arg Lys Ile Asn Pro Gln Thr Leu Glu Thr Leu Glu Lys Val Ser Thr
145                 150                 155                 160

His Met
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<210> 9034
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1830; "

<220>
<221> source
<223> /note="Gene Symbol: BCO1; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457910"

<400> 9034

```
Met Asp Ile Ile Phe Gly Arg Asn Arg Lys Glu Gln Leu Glu Pro Val
1               5                   10                  15

Arg Ala Lys Val Thr Gly Lys Ile Pro Ala Trp Leu Gln Gly Thr Leu
            20                  25                  30
```

```
Leu Arg Asn Gly Pro Gly Met His Thr Val Gly Glu Ser Arg Tyr Asn
        35                  40                  45

His Trp Phe Asp Gly Leu Ala Leu Leu His Ser Phe Thr Ile Arg Asp
    50                  55                  60

Glu Leu Ser Pro Thr Cys Leu Thr Pro Ser Pro Ile Ser Pro Thr Thr
65                  70                  75                  80

Ala
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<210> 9035
<211> 579
<212> PRT
<213> Homo sapiens

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<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BYV7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350314"

<400> 9035

```
Met Phe Phe Arg Val Phe Leu His Phe Ile Arg Ser His Ser Ala Thr
1               5                   10                  15

Ala Val Asp Phe Leu Pro Val Met Val His Arg Leu Pro Val Phe Lys
            20                  25                  30

Arg Tyr Met Gly Asn Thr Pro Gln Lys Lys Ala Val Phe Gly Gln Cys
        35                  40                  45
```

```
Arg Gly Leu Pro Cys Val Ala Pro Leu Leu Thr Thr Val Glu Glu Ala
    50                  55                  60

Pro Arg Gly Ile Ser Ala Arg Val Trp Gly His Phe Pro Lys Trp Leu
65                  70                  75                  80

Asn Gly Ser Leu Leu Arg Ile Gly Pro Gly Lys Phe Glu Phe Gly Lys
                85                  90                  95

Asp Lys Tyr Asn His Trp Phe Asp Gly Met Ala Leu Leu His Gln Phe
            100                 105                 110

Arg Met Ala Lys Gly Thr Val Thr Tyr Arg Ser Lys Phe Leu Gln Ser
        115                 120                 125

Asp Thr Tyr Lys Ala Asn Ser Ala Lys Asn Arg Ile Val Ile Ser Glu
    130                 135                 140

Phe Gly Thr Leu Ala Leu Pro Asp Pro Cys Lys Asn Val Phe Glu Arg
145                 150                 155                 160

Phe Met Ser Arg Phe Glu Leu Pro Gly Lys Ala Ala Ala Met Thr Asp
                165                 170                 175

Asn Thr Asn Val Asn Tyr Val Arg Tyr Lys Gly Asp Tyr Tyr Leu Cys
            180                 185                 190

Thr Glu Thr Asn Phe Met Asn Lys Val Asp Ile Glu Thr Leu Glu Lys
        195                 200                 205

Thr Glu Lys Val Asp Trp Ser Lys Phe Ile Ala Val Asn Gly Ala Thr
    210                 215                 220

Ala His Pro His Tyr Asp Leu Asp Gly Thr Ala Tyr Asn Met Gly Asn
225                 230                 235                 240

Ser Phe Gly Pro Tyr Gly Phe Ser Tyr Lys Val Ile Arg Val Pro Pro
                245                 250                 255

Glu Lys Val Asp Leu Gly Glu Thr Ile His Gly Val Gln Val Ile Cys
            260                 265                 270

Ser Ile Ala Ser Thr Glu Lys Gly Lys Pro Ser Tyr Tyr His Ser Phe
```

275 280 285

Gly Met Thr Arg Asn Tyr Ile Ile Phe Ile Glu Gln Pro Leu Lys Met
290 295 300

Asn Leu Trp Lys Ile Ala Thr Ser Lys Ile Arg Gly Lys Ala Phe Ser
305 310 315 320

Asp Gly Ile Ser Trp Glu Pro Gln Cys Asn Thr Arg Phe His Val Val
325 330 335

Glu Lys Arg Thr Gly Gln Leu Leu Pro Gly Arg Tyr Tyr Ser Lys Pro
340 345 350

Phe Val Thr Phe His Gln Ile Asn Ala Phe Glu Asp Gln Gly Cys Val
355 360 365

Ile Ile Asp Leu Cys Cys Gln Asp Asn Gly Arg Thr Leu Glu Val Tyr
370 375 380

Gln Leu Gln Asn Leu Arg Lys Ala Gly Glu Gly Leu Asp Gln Val His
385 390 395 400

Asn Ser Ala Ala Lys Ser Phe Pro Arg Arg Phe Val Leu Pro Leu Asn
405 410 415

Val Ser Leu Asn Ala Pro Glu Gly Asp Asn Leu Ser Pro Leu Ser Tyr
420 425 430

Thr Ser Ala Ser Ala Val Lys Gln Ala Asp Gly Thr Ile Trp Cys Ser
435 440 445

His Glu Asn Leu His Gln Glu Asp Leu Glu Lys Glu Gly Gly Ile Glu
450 455 460

Phe Pro Gln Ile Tyr Tyr Asp Arg Phe Ser Gly Lys Lys Tyr His Phe
465 470 475 480

Phe Tyr Gly Cys Gly Phe Arg His Leu Val Gly Asp Ser Leu Ile Lys
485 490 495

Val Asp Val Val Asn Lys Thr Leu Lys Val Trp Arg Glu Asp Gly Phe
500 505 510

```
Tyr Pro Ser Glu Pro Val Phe Val Pro Ala Pro Gly Thr Asn Glu Glu
        515                 520                 525

Asp Gly Gly Val Ile Leu Ser Val Val Ile Thr Pro Asn Gln Asn Glu
    530                 535                 540

Ser Asn Phe Ile Leu Val Leu Asp Ala Lys Asn Phe Glu Glu Leu Gly
545                 550                 555                 560

Arg Ala Glu Val Pro Val Gln Met Pro Tyr Gly Phe His Gly Thr Phe
                565                 570                 575

Ile Pro Ile
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<210> 9036
<211> 506
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1831; "

<220>
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<223> /note="Gene Symbol: BCO2; "

<220>
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<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BYV7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354338"

<400> 9036

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Met Phe Phe Arg Val Phe Leu His Phe Ile Arg Ser His Ser Ala Thr
1               5                   10                  15

Ala Val Asp Phe Leu Pro Val Met Val His Arg Leu Pro Val Phe Lys
            20                  25                  30
```

```
Arg Tyr Met Gly Asn Thr Pro Gln Lys Lys Ala Val Phe Gly Gln Cys
        35                  40                  45

Arg Gly Leu Pro Cys Val Ala Pro Leu Leu Thr Thr Val Glu Glu Ala
    50                  55                  60

Pro Arg Gly Ile Ser Ala Arg Val Trp Gly His Phe Pro Lys Trp Leu
65                  70                  75                  80

Asn Gly Ser Leu Leu Arg Ile Gly Pro Gly Lys Phe Glu Phe Gly Lys
                85                  90                  95

Asp Lys Tyr Asn His Trp Phe Asp Gly Met Ala Leu Leu His Gln Phe
            100                 105                 110

Arg Met Ala Lys Gly Thr Val Thr Tyr Arg Ser Lys Phe Leu Gln Ser
        115                 120                 125

Asp Thr Tyr Lys Ala Asn Ser Ala Lys Asn Arg Ile Val Ile Ser Glu
    130                 135                 140

Phe Gly Thr Leu Ala Leu Pro Asp Pro Cys Lys Asn Val Phe Glu Arg
145                 150                 155                 160

Phe Met Ser Arg Phe Glu Leu Pro Gly Lys Ala Ala Gly Phe Ser Tyr
                165                 170                 175

Lys Val Ile Arg Val Pro Pro Glu Lys Val Asp Leu Gly Glu Thr Ile
            180                 185                 190

His Gly Val Gln Val Ile Cys Ser Ile Ala Ser Thr Glu Lys Gly Lys
        195                 200                 205

Pro Ser Tyr Tyr His Ser Phe Gly Met Thr Arg Asn Tyr Ile Ile Phe
    210                 215                 220

Ile Glu Gln Pro Leu Lys Met Asn Leu Trp Lys Ile Ala Thr Ser Lys
225                 230                 235                 240

Ile Arg Gly Lys Ala Phe Ser Asp Gly Ile Ser Trp Glu Pro Gln Cys
                245                 250                 255

Asn Thr Arg Phe His Val Val Glu Lys Arg Thr Gly Gln Leu Leu Pro
```

```
            260                 265                 270

Gly Arg Tyr Tyr Ser Lys Pro Phe Val Thr Phe His Gln Ile Asn Ala
        275                 280                 285

Phe Glu Asp Gln Gly Cys Val Ile Ile Asp Leu Cys Cys Gln Asp Asn
    290                 295                 300

Gly Arg Thr Leu Glu Val Tyr Gln Leu Gln Asn Leu Arg Lys Ala Gly
305                 310                 315                 320

Glu Gly Leu Asp Gln Val His Asn Ser Ala Ala Lys Ser Phe Pro Arg
                325                 330                 335

Arg Phe Val Leu Pro Leu Asn Val Ser Leu Asn Ala Pro Glu Gly Asp
            340                 345                 350

Asn Leu Ser Pro Leu Ser Tyr Thr Ser Ala Ser Ala Val Lys Gln Ala
        355                 360                 365

Asp Gly Thr Ile Trp Cys Ser His Glu Asn Leu His Gln Glu Asp Leu
    370                 375                 380

Glu Lys Glu Gly Gly Ile Glu Phe Pro Gln Ile Tyr Tyr Asp Arg Phe
385                 390                 395                 400

Ser Gly Lys Lys Tyr His Phe Phe Tyr Gly Cys Gly Phe Arg His Leu
                405                 410                 415

Val Gly Asp Ser Leu Ile Lys Val Asp Val Val Asn Lys Thr Leu Lys
            420                 425                 430

Val Trp Arg Glu Asp Gly Phe Tyr Pro Ser Glu Pro Val Phe Val Pro
        435                 440                 445

Ala Pro Gly Thr Asn Glu Glu Asp Gly Gly Val Ile Leu Ser Val Val
    450                 455                 460

Ile Thr Pro Asn Gln Asn Glu Ser Asn Phe Ile Leu Val Leu Asp Ala
465                 470                 475                 480

Lys Asn Phe Glu Glu Leu Gly Arg Ala Glu Val Pro Val Gln Met Pro
                485                 490                 495
```

Tyr Gly Phe His Gly Thr Phe Ile Pro Ile
500 505

<210> 9037
<211> 545
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BYV7; "

<220>
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<223> /note="ENSP ID: ENSP00000414843"

<400> 9037
Met Gly Asn Thr Pro Gln Lys Lys Ala Val Phe Gly Gln Cys Arg Gly
1 5 10 15

Leu Pro Cys Val Ala Pro Leu Leu Thr Thr Val Glu Glu Ala Pro Arg
20 25 30

Gly Ile Ser Ala Arg Val Trp Gly His Phe Pro Lys Trp Leu Asn Gly
35 40 45

Ser Leu Leu Arg Ile Gly Pro Gly Lys Phe Glu Phe Gly Lys Asp Lys
50 55 60

Tyr Asn His Trp Phe Asp Gly Met Ala Leu Leu His Gln Phe Arg Met
65 70 75 80

Ala Lys Gly Thr Val Thr Tyr Arg Ser Lys Phe Leu Gln Ser Asp Thr
85 90 95

```
Tyr Lys Ala Asn Ser Ala Lys Asn Arg Ile Val Ile Ser Glu Phe Gly
            100                 105                 110

Thr Leu Ala Leu Pro Asp Pro Cys Lys Asn Val Phe Glu Arg Phe Met
        115                 120                 125

Ser Arg Phe Glu Leu Pro Gly Lys Ala Ala Ala Met Thr Asp Asn Thr
    130                 135                 140

Asn Val Asn Tyr Val Arg Tyr Lys Gly Asp Tyr Tyr Leu Cys Thr Glu
145                 150                 155                 160

Thr Asn Phe Met Asn Lys Val Asp Ile Glu Thr Leu Glu Lys Thr Glu
                165                 170                 175

Lys Val Asp Trp Ser Lys Phe Ile Ala Val Asn Gly Ala Thr Ala His
            180                 185                 190

Pro His Tyr Asp Leu Asp Gly Thr Ala Tyr Asn Met Gly Asn Ser Phe
        195                 200                 205

Gly Pro Tyr Gly Phe Ser Tyr Lys Val Ile Arg Val Pro Pro Glu Lys
    210                 215                 220

Val Asp Leu Gly Glu Thr Ile His Gly Val Gln Val Ile Cys Ser Ile
225                 230                 235                 240

Ala Ser Thr Glu Lys Gly Lys Pro Ser Tyr Tyr His Ser Phe Gly Met
                245                 250                 255

Thr Arg Asn Tyr Ile Ile Phe Ile Glu Gln Pro Leu Lys Met Asn Leu
            260                 265                 270

Trp Lys Ile Ala Thr Ser Lys Ile Arg Gly Lys Ala Phe Ser Asp Gly
        275                 280                 285

Ile Ser Trp Glu Pro Gln Cys Asn Thr Arg Phe His Val Val Glu Lys
    290                 295                 300

Arg Thr Gly Gln Leu Leu Pro Gly Arg Tyr Tyr Ser Lys Pro Phe Val
305                 310                 315                 320

Thr Phe His Gln Ile Asn Ala Phe Glu Asp Gln Gly Cys Val Ile Ile
```

```
                325                 330                 335

Asp Leu Cys Cys Gln Asp Asn Gly Arg Thr Leu Glu Val Tyr Gln Leu
            340                 345                 350

Gln Asn Leu Arg Lys Ala Gly Glu Gly Leu Asp Gln Val His Asn Ser
        355                 360                 365

Ala Ala Lys Ser Phe Pro Arg Arg Phe Val Leu Pro Leu Asn Val Ser
    370                 375                 380

Leu Asn Ala Pro Glu Gly Asp Asn Leu Ser Pro Leu Ser Tyr Thr Ser
385                 390                 395                 400

Ala Ser Ala Val Lys Gln Ala Asp Gly Thr Ile Trp Cys Ser His Glu
                405                 410                 415

Asn Leu His Gln Glu Asp Leu Glu Lys Glu Gly Gly Ile Glu Phe Pro
            420                 425                 430

Gln Ile Tyr Tyr Asp Arg Phe Ser Gly Lys Lys Tyr His Phe Phe Tyr
        435                 440                 445

Gly Cys Gly Phe Arg His Leu Val Gly Asp Ser Leu Ile Lys Val Asp
    450                 455                 460

Val Val Asn Lys Thr Leu Lys Val Trp Arg Glu Asp Gly Phe Tyr Pro
465                 470                 475                 480

Ser Glu Pro Val Phe Val Pro Ala Pro Gly Thr Asn Glu Glu Asp Gly
                485                 490                 495

Gly Val Ile Leu Ser Val Val Ile Thr Pro Asn Gln Asn Glu Ser Asn
            500                 505                 510

Phe Ile Leu Val Leu Asp Ala Lys Asn Phe Glu Glu Leu Gly Arg Ala
        515                 520                 525

Glu Val Pro Val Gln Met Pro Tyr Gly Phe His Gly Thr Phe Ile Pro
    530                 535                 540

Ile
545
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<210> 9038
<211> 474
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
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<223> /note="Uniprot ID: Q9BYV7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431802"

<400> 9038
Met Ala Leu Leu His Gln Phe Arg Met Ala Lys Gly Thr Val Thr Tyr
1   5   10   15

Arg Ser Lys Phe Leu Gln Ser Asp Thr Tyr Lys Ala Asn Ser Ala Lys
            20   25   30

Asn Arg Ile Val Ile Ser Glu Phe Gly Thr Leu Ala Leu Pro Asp Pro
        35   40   45

Cys Lys Asn Val Phe Glu Arg Phe Met Ser Arg Phe Glu Leu Pro Gly
    50   55   60

Lys Ala Ala Ala Met Thr Asp Asn Thr Asn Val Asn Tyr Val Arg Tyr
65   70   75   80

Lys Gly Asp Tyr Tyr Leu Cys Thr Glu Thr Asn Phe Met Asn Lys Val
                85   90   95

Asp Ile Glu Thr Leu Glu Lys Thr Glu Lys Val Asp Trp Ser Lys Phe
            100   105   110

```
Ile Ala Val Asn Gly Ala Thr Ala His Pro His Tyr Asp Leu Asp Gly
        115                 120                 125

Thr Ala Tyr Asn Met Gly Asn Ser Phe Gly Pro Tyr Gly Phe Ser Tyr
    130                 135                 140

Lys Val Ile Arg Val Pro Pro Glu Lys Val Asp Leu Gly Glu Thr Ile
145                 150                 155                 160

His Gly Val Gln Val Ile Cys Ser Ile Ala Ser Thr Glu Lys Gly Lys
                165                 170                 175

Pro Ser Tyr Tyr His Ser Phe Gly Met Thr Arg Asn Tyr Ile Ile Phe
            180                 185                 190

Ile Glu Gln Pro Leu Lys Met Asn Leu Trp Lys Ile Ala Thr Ser Lys
        195                 200                 205

Ile Arg Gly Lys Ala Phe Ser Asp Gly Ile Ser Trp Glu Pro Gln Cys
    210                 215                 220

Asn Thr Arg Phe His Val Val Glu Lys Arg Thr Gly Gln Leu Leu Pro
225                 230                 235                 240

Gly Arg Tyr Tyr Ser Lys Pro Phe Val Thr Phe His Gln Ile Asn Ala
                245                 250                 255

Phe Glu Asp Gln Gly Cys Val Ile Ile Asp Leu Cys Cys Gln Asp Asn
            260                 265                 270

Gly Arg Thr Leu Glu Val Tyr Gln Leu Gln Asn Leu Arg Lys Ala Gly
        275                 280                 285

Glu Gly Leu Asp Gln Val His Asn Ser Ala Ala Lys Ser Phe Pro Arg
    290                 295                 300

Arg Phe Val Leu Pro Leu Asn Val Ser Leu Asn Ala Pro Glu Gly Asp
305                 310                 315                 320

Asn Leu Ser Pro Leu Ser Tyr Thr Ser Ala Ser Ala Val Lys Gln Ala
                325                 330                 335

Asp Gly Thr Ile Trp Cys Ser His Glu Asn Leu His Gln Glu Asp Leu
```

```
            340                 345                 350

Glu Lys Glu Gly Gly Ile Glu Phe Pro Gln Ile Tyr Tyr Asp Arg Phe
        355                 360                 365

Ser Gly Lys Lys Tyr His Phe Phe Tyr Gly Cys Gly Phe Arg His Leu
    370                 375                 380

Val Gly Asp Ser Leu Ile Lys Val Asp Val Val Asn Lys Thr Leu Lys
385                 390                 395                 400

Val Trp Arg Glu Asp Gly Phe Tyr Pro Ser Glu Pro Val Phe Val Pro
                405                 410                 415

Ala Pro Gly Thr Asn Glu Glu Asp Gly Gly Val Ile Leu Ser Val Val
            420                 425                 430

Ile Thr Pro Asn Gln Asn Glu Ser Asn Phe Ile Leu Val Leu Asp Ala
        435                 440                 445

Lys Asn Phe Glu Glu Leu Gly Arg Ala Glu Val Pro Val Gln Met Pro
    450                 455                 460

Tyr Gly Phe His Gly Thr Phe Ile Pro Ile
465                 470


<210> 9039
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
      beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431882"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9039
Xaa Lys Gln Ala Asp Gly Thr Ile Trp Cys Ser His Glu Asn Leu His
1 5 10 15

Gln Glu Asp Leu Glu Lys Glu Gly Gly Ile Glu Phe Pro Gln Ile Tyr
20 25 30

Tyr Asp Arg Phe Ser Gly Lys Lys Phe Gly Glu Lys Met Ala Phe Ile
35 40 45

Pro Gln Asn Leu Phe Leu Phe Gln His Gln Glu Pro Met Lys Lys Met
50 55 60

Val Gly Leu Phe Phe Leu Trp
65 70

<210> 9040
<211> 273
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432045"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9040
Xaa Tyr Asn His Trp Phe Asp Gly Met Ala Leu Leu His Gln Phe Arg

```
1               5                   10                  15

Met Ala Lys Gly Thr Val Thr Tyr Arg Ser Lys Phe Leu Gln Ser Asp
            20                  25                  30

Thr Tyr Lys Ala Asn Ser Ala Lys Asn Arg Ile Val Ile Ser Glu Phe
        35                  40                  45

Gly Thr Leu Ala Leu Pro Asp Pro Cys Lys Asn Val Phe Glu Arg Phe
    50                  55                  60

Met Ser Arg Phe Glu Leu Pro Ala Met Thr Asp Asn Thr Asn Val Asn
65                  70                  75                  80

Tyr Val Arg Tyr Lys Gly Asp Tyr Tyr Leu Cys Thr Glu Thr Asn Phe
                85                  90                  95

Met Asn Lys Val Asp Ile Glu Thr Leu Glu Lys Thr Glu Lys Leu Leu
            100                 105                 110

Pro Gly Arg Tyr Tyr Ser Lys Pro Phe Val Thr Phe His Gln Ile Asn
        115                 120                 125

Ala Phe Glu Asp Gln Gly Cys Val Ile Ile Asp Leu Cys Cys Gln Asp
    130                 135                 140

Asn Gly Arg Thr Leu Glu Val Tyr Gln Leu Gln Asn Leu Arg Lys Ala
145                 150                 155                 160

Gly Glu Gly Leu Asp Gln Val His Asn Ser Ala Ala Lys Ser Phe Pro
                165                 170                 175

Arg Arg Phe Val Leu Pro Leu Asn Val Ser Leu Asn Ala Pro Glu Gly
            180                 185                 190

Asp Asn Leu Ser Pro Leu Ser Tyr Thr Ser Ala Ser Ala Val Lys Gln
        195                 200                 205

Ala Asp Gly Thr Ile Trp Cys Ser His Glu Asn Leu His Gln Glu Asp
    210                 215                 220

Leu Glu Lys Glu Gly Gly Ile Glu Phe Pro Gln Ile Tyr Tyr Asp Arg
225                 230                 235                 240
```

```
Phe Ser Gly Lys Lys Tyr His Phe Phe Tyr Gly Cys Gly Phe Arg His
                245                 250                 255

Leu Val Gly Asp Ser Leu Ile Lys Val Asp Val Val Asn Lys Thr Leu
            260                 265                 270

Lys
```

<210> 9041
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434488"

<400> 9041

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Met Phe Phe Arg Val Phe Leu His Phe Ile Arg Ser His Ser Ala Thr
1               5                   10                  15

Ala Val Asp Phe Leu Pro Val Met Val His Arg Leu Pro Gly Thr Ile
            20                  25                  30

Ile Gly Leu Met Gly Trp Arg Cys Phe Thr Ser Ser Glu Trp Gln Arg
        35                  40                  45

Ala Gln
    50
```

<210> 9042
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435869"

<400> 9042
Met Phe Phe Arg Val Phe Leu His Phe Ile Arg Ser His Ser Ala Thr
1 5 10 15

Ala Val Asp Phe Leu Pro Val Met Val His Arg Leu Pro Val Phe Lys
20 25 30

Arg Tyr Met Gly Asn Thr Pro Gln Lys Lys Ala Val Phe Gly Gln Cys
35 40 45

Arg Gly Leu Pro Cys Val Ala Pro Leu Leu Thr Thr Val Glu Glu Ala
50 55 60

Pro Arg Gly Ile Ser Ala Arg Val Trp Gly His Phe Pro Lys Trp Leu
65 70 75 80

Asn Gly Ser Leu Leu Arg Ile Gly Pro Gly Lys Phe Glu Phe Gly Lys
85 90 95

Asp Lys

<210> 9043
<211> 539
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>

<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BYV7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436615"

<400> 9043

```
Met Gly Asn Thr Pro Gln Lys Lys Ala Val Phe Gly Gln Cys Arg Gly
1               5                  10                  15

Leu Pro Cys Val Ala Pro Leu Leu Thr Thr Val Glu Glu Ala Pro Arg
            20                  25                  30

Gly Ile Ser Ala Arg Val Trp Gly His Phe Pro Lys Trp Leu Asn Gly
        35                  40                  45

Ser Leu Leu Arg Ile Gly Pro Gly Lys Phe Glu Phe Gly Lys Asp Lys
    50                  55                  60

Tyr Asn His Trp Phe Asp Gly Met Ala Leu Leu His Gln Phe Arg Met
65                  70                  75                  80

Ala Lys Gly Thr Val Thr Tyr Arg Ser Lys Phe Leu Gln Ser Asp Thr
                85                  90                  95

Tyr Lys Ala Asn Ser Ala Lys Asn Arg Ile Val Ile Ser Glu Phe Gly
            100                 105                 110

Thr Leu Ala Leu Pro Asp Pro Cys Lys Asn Val Phe Glu Arg Phe Met
        115                 120                 125

Ser Arg Phe Glu Leu Pro Gly Lys Ala Ala Ala Met Thr Asp Asn Thr
    130                 135                 140

Asn Val Asn Tyr Val Arg Tyr Lys Gly Asp Tyr Tyr Leu Cys Thr Glu
145                 150                 155                 160
```

```
Thr Asn Phe Met Asn Lys Val Asp Ile Glu Thr Leu Glu Lys Thr Glu
                165                 170                 175

Lys Val Asp Trp Ser Lys Phe Ile Ala Val Asn Gly Ala Thr Ala His
            180                 185                 190

Pro His Tyr Asp Leu Asp Gly Thr Ala Tyr Asn Met Gly Asn Ser Phe
        195                 200                 205

Gly Pro Tyr Gly Phe Ser Tyr Lys Val Ile Arg Val Pro Pro Glu Lys
    210                 215                 220

Val Asp Leu Gly Glu Thr Ile His Gly Val Gln Val Ile Cys Ser Ile
225                 230                 235                 240

Ala Ser Thr Glu Lys Gly Lys Pro Ser Tyr Tyr His Ser Phe Gly Met
                245                 250                 255

Thr Arg Asn Tyr Ile Ile Phe Ile Glu Gln Pro Leu Lys Met Asn Leu
            260                 265                 270

Trp Lys Ile Ala Thr Ser Lys Ile Arg Gly Lys Ala Phe Ser Asp Gly
        275                 280                 285

Ile Ser Trp Glu Pro Gln Cys Asn Thr Arg Phe His Val Val Glu Lys
    290                 295                 300

Arg Thr Gly Gln Leu Leu Pro Gly Arg Tyr Tyr Ser Lys Pro Phe Val
305                 310                 315                 320

Thr Phe His Gln Ile Asn Ala Phe Glu Asp Gln Gly Cys Val Ile Ile
                325                 330                 335

Asp Leu Cys Cys Gln Asp Asn Gly Arg Thr Leu Glu Val Tyr Gln Leu
            340                 345                 350

Gln Asn Leu Arg Lys Ala Gly Glu Gly Leu Asp Gln Val His Asn Ser
        355                 360                 365

Ala Ala Lys Ser Phe Pro Arg Arg Phe Val Leu Pro Leu Asn Val Ser
    370                 375                 380

Leu Asn Ala Pro Glu Gly Asp Asn Leu Ser Pro Leu Ser Tyr Thr Ser
```

```
385                 390                 395                 400

Ala Ser Ala Val Lys Gln Ala Asp Gly Thr Ile Trp Cys Ser His Glu
                405                 410                 415

Asn Leu His Gln Glu Asp Leu Glu Lys Glu Gly Gly Ile Glu Phe Pro
            420                 425                 430

Gln Ile Tyr Tyr Asp Arg Phe Ser Gly Lys Lys Tyr His Phe Phe Tyr
        435                 440                 445

Gly Cys Gly Phe Arg His Leu Val Gly Asp Ser Leu Ile Lys Val Asp
    450                 455                 460

Val Val Trp Arg Glu Asp Gly Phe Tyr Pro Ser Glu Pro Val Phe Val
465                 470                 475                 480

Pro Ala Pro Gly Thr Asn Glu Glu Asp Gly Gly Val Ile Leu Ser Val
                485                 490                 495

Val Ile Thr Pro Asn Gln Asn Glu Ser Asn Phe Ile Leu Val Leu Asp
            500                 505                 510

Ala Lys Asn Phe Glu Glu Leu Gly Arg Ala Glu Val Pro Val Gln Met
        515                 520                 525

Pro Tyr Gly Phe His Gly Thr Phe Ile Pro Ile
    530                 535


<210> 9044
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
      beta-carotene oxygenase 2; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000436956"

<400> 9044
Met Phe Phe Arg Val Phe Leu His Phe Ile Arg Ser His Ser Ala Thr
1   5   10   15

Ala Val Asp Phe Leu Pro Val Met Val His Arg Leu Pro Gly Thr Ile
            20   25   30

Ile Gly Leu Met Gly Trp Arg Cys Phe Thr Ser Ser Glu Trp Gln Arg
        35   40   45

Ala Gln
    50

<210> 9045
<211> 545
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
      beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BYV7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437053"

<400> 9045
Met Gly Asn Thr Pro Gln Lys Lys Ala Val Phe Gly Gln Cys Arg Gly
1   5   10   15

Leu Pro Cys Val Ala Pro Leu Leu Thr Thr Val Glu Glu Ala Pro Arg
            20   25   30

Gly Ile Ser Ala Arg Val Trp Gly His Phe Pro Lys Trp Leu Asn Gly

```
        35                  40                  45

Ser Leu Leu Arg Ile Gly Pro Gly Lys Phe Glu Phe Gly Lys Asp Lys
    50                  55                  60

Tyr Asn His Trp Phe Asp Gly Met Ala Leu Leu His Gln Phe Arg Met
65                  70                  75                  80

Ala Lys Gly Thr Val Thr Tyr Arg Ser Lys Phe Leu Gln Ser Asp Thr
                85                  90                  95

Tyr Lys Ala Asn Ser Ala Lys Asn Arg Ile Val Ile Ser Glu Phe Gly
            100                 105                 110

Thr Leu Ala Leu Pro Asp Pro Cys Lys Asn Val Phe Glu Arg Phe Met
        115                 120                 125

Ser Arg Phe Glu Leu Pro Gly Lys Ala Ala Ala Met Thr Asp Asn Thr
    130                 135                 140

Asn Val Asn Tyr Val Arg Tyr Lys Gly Asp Tyr Tyr Leu Cys Thr Glu
145                 150                 155                 160

Thr Asn Phe Met Asn Lys Val Asp Ile Glu Thr Leu Glu Lys Thr Glu
                165                 170                 175

Lys Val Asp Trp Ser Lys Phe Ile Ala Val Asn Gly Ala Thr Ala His
            180                 185                 190

Pro His Tyr Asp Leu Asp Gly Thr Ala Tyr Asn Met Gly Asn Ser Phe
        195                 200                 205

Gly Pro Tyr Gly Phe Ser Tyr Lys Val Ile Arg Val Pro Pro Glu Lys
    210                 215                 220

Val Asp Leu Gly Glu Thr Ile His Gly Val Gln Val Ile Cys Ser Ile
225                 230                 235                 240

Ala Ser Thr Glu Lys Gly Lys Pro Ser Tyr Tyr His Ser Phe Gly Met
                245                 250                 255

Thr Arg Asn Tyr Ile Ile Phe Ile Glu Gln Pro Leu Lys Met Asn Leu
            260                 265                 270
```

```
Trp Lys Ile Ala Thr Ser Lys Ile Arg Gly Lys Ala Phe Ser Asp Gly
        275                 280                 285

Ile Ser Trp Glu Pro Gln Cys Asn Thr Arg Phe His Val Val Glu Lys
    290                 295                 300

Arg Thr Gly Gln Leu Leu Pro Gly Arg Tyr Tyr Ser Lys Pro Phe Val
305                 310                 315                 320

Thr Phe His Gln Ile Asn Ala Phe Glu Asp Gln Gly Cys Val Ile Ile
                325                 330                 335

Asp Leu Cys Cys Gln Asp Asn Gly Arg Thr Leu Glu Val Tyr Gln Leu
            340                 345                 350

Gln Asn Leu Arg Lys Ala Gly Glu Gly Leu Asp Gln Val His Asn Ser
        355                 360                 365

Ala Ala Lys Ser Phe Pro Arg Arg Phe Val Leu Pro Leu Asn Val Ser
    370                 375                 380

Leu Asn Ala Pro Glu Gly Asp Asn Leu Ser Pro Leu Ser Tyr Thr Ser
385                 390                 395                 400

Ala Ser Ala Val Lys Gln Ala Asp Gly Thr Ile Trp Cys Ser His Glu
                405                 410                 415

Asn Leu His Gln Glu Asp Leu Glu Lys Glu Gly Gly Ile Glu Phe Pro
            420                 425                 430

Gln Ile Tyr Tyr Asp Arg Phe Ser Gly Lys Lys Tyr His Phe Phe Tyr
        435                 440                 445

Gly Cys Gly Phe Arg His Leu Val Gly Asp Ser Leu Ile Lys Val Asp
    450                 455                 460

Val Val Asn Lys Thr Leu Lys Val Trp Arg Glu Asp Gly Phe Tyr Pro
465                 470                 475                 480

Ser Glu Pro Val Phe Val Pro Ala Pro Gly Thr Asn Glu Glu Asp Gly
                485                 490                 495
```

Gly Val Ile Leu Ser Val Val Ile Thr Pro Asn Gln Asn Glu Ser Asn
500 505 510

Phe Ile Leu Val Leu Asp Ala Lys Asn Phe Glu Glu Leu Gly Arg Ala
515 520 525

Glu Val Pro Val Gln Met Pro Tyr Gly Phe His Gly Thr Phe Ile Pro
530 535 540

Ile
545

<210> 9046
<211> 212
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1831; "

<220>
<221> source
<223> /note="Gene Symbol: BCO2; "

<220>
<221> source
<223> /note="Gene Name:
beta-carotene oxygenase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476560"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9046
Xaa Val His Arg Leu Pro Val Phe Lys Arg Tyr Met Gly Asn Thr Pro
1 5 10 15

Gln Lys Lys Ala Val Phe Gly Gln Cys Arg Gly Leu Pro Cys Val Ala
20 25 30

Pro Leu Leu Thr Thr Val Glu Glu Ala Pro Arg Gly Ile Ser Ala Arg
35 40 45

```
Val Trp Gly His Phe Pro Lys Trp Leu Asn Gly Ser Leu Leu Arg Ile
    50                  55                  60

Gly Pro Gly Lys Phe Glu Phe Gly Lys Asp Lys Tyr Asn His Trp Phe
65                  70                  75                  80

Asp Gly Met Ala Leu Leu His Gln Phe Arg Met Ala Lys Gly Thr Val
                85                  90                  95

Thr Tyr Arg Ser Lys Phe Leu Gln Ser Asp Thr Tyr Lys Ala Asn Ser
            100                 105                 110

Ala Lys Asn Arg Ile Val Ile Ser Glu Phe Gly Thr Leu Ala Leu Pro
        115                 120                 125

Asp Pro Cys Lys Asn Val Phe Glu Arg Phe Met Ser Arg Phe Glu Leu
    130                 135                 140

Pro Gly Lys Ala Ala Gly Phe Ser Tyr Lys Val Ile Arg Val Pro Pro
145                 150                 155                 160

Glu Lys Val Asp Leu Gly Glu Thr Ile His Gly Val Gln Val Ile Cys
                165                 170                 175

Ser Ile Ala Ser Thr Glu Lys Gly Lys Pro Ser Tyr Tyr His Ser Phe
            180                 185                 190

Gly Met Thr Arg Asn Tyr Ile Ile Phe Ile Glu Gln Pro Leu Lys Met
        195                 200                 205

Asn Leu Trp Lys
    210


<210> 9047
<211> 178
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1832; "

<220>
<221> source
<223> /note="Gene Symbol: BTC; "
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<220>
<221> source
<223> /note="Gene Name:
betacellulin; "

<220>
<221> source
<223> /note="Uniprot ID: P35070; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379092"

<400> 9047

```
Met Asp Arg Ala Ala Arg Cys Ser Gly Ala Ser Ser Leu Pro Leu Leu
1               5                  10                  15

Leu Ala Leu Ala Leu Gly Leu Val Ile Leu His Cys Val Val Ala Asp
            20                  25                  30

Gly Asn Ser Thr Arg Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly Asp
        35                  40                  45

Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys Gly
    50                  55                  60

His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly
65                  70                  75                  80

Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys Asp
                85                  90                  95

Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Leu Phe Tyr Leu
            100                 105                 110

Arg Gly Asp Arg Gly Gln Ile Leu Val Ile Cys Leu Ile Ala Val Met
        115                 120                 125

Val Val Phe Ile Ile Leu Val Ile Gly Val Cys Thr Cys Cys His Pro
    130                 135                 140

Leu Arg Lys Arg Arg Lys Arg Lys Lys Lys Glu Glu Glu Met Glu Thr
145                 150                 155                 160

Leu Gly Lys Asp Ile Thr Pro Ile Asn Glu Asp Ile Glu Glu Thr Asn
                165                 170                 175
```

Ile Ala

<210> 9048
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1832; "

<220>
<221> source
<223> /note="Gene Symbol: BTC; "

<220>
<221> source
<223> /note="Gene Name:
betacellulin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421747"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9048
Xaa Leu Val Ile Leu His Cys Val Val Ala Asp Gly Asn Ser Thr Arg
1 5 10 15

Ser Pro Glu Thr Asn Gly Leu Leu Cys Gly Asp Pro Glu Glu Asn Cys
20 25 30

Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys Gly His Phe Ser Arg Cys
35 40 45

Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly Arg Cys Arg Phe Val
50 55 60

Val Ala Glu Gln Thr Pro Ser Cys Val Pro Leu Arg Lys Arg Arg Lys
65 70 75 80

Arg Lys Lys Lys Glu Glu Glu Met Glu Thr Leu Gly Lys Asp Ile Thr
85 90 95

Pro Ile Asn Glu Asp Ile Glu Glu Thr Asn Ile Ala
100 105

<210> 9049
<211> 2970
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1833; "

<220>
<221> source
<223> /note="Gene Symbol: CRYBG3; "

<220>
<221> source
<223> /note="Gene Name:
beta-gamma crystallin
domain containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q68DQ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000374273"

<400> 9049
Met Ser Ser Gly Arg Arg Arg Gly Ser Ala Pro Trp His Ser Phe Ser
1 5 10 15

Arg Phe Phe Ala Pro Arg Ser Pro Ser Arg Asp Lys Glu Glu Glu Glu
20 25 30

Glu Glu Arg Pro Gly Thr Ser Pro Pro Pro Ala Pro Gly Arg Ser Ala
35 40 45

Ala Ser Val Glu Asn Glu Pro Met Ser Thr Ser Gln Lys Lys Glu Asn
50 55 60

Val Leu Ser Ser Glu Ala Val Lys Ile Arg Gln Ser Glu Asp Lys Arg
65 70 75 80

Asn His Ala Glu Lys Pro Val Thr Leu Pro Val Gln Glu Asp Pro Lys
85 90 95

```
Lys Ala Tyr Asp Leu Ser Ser Ser Thr Ser Asp Thr Lys Ile Gly Glu
            100                 105                 110

Ser Asp Arg Gln Pro Lys Glu Ser Phe Phe Gln Phe Leu Gly Asn Leu
        115                 120                 125

Phe Asn Ile Ser Gly Lys Ser Ser Leu Gly Glu Ala Lys Gln Ser Ser
    130                 135                 140

Phe Lys Asp Asp Gln Asp Lys Thr Glu Lys Asp Leu Gln Asn Pro Ser
145                 150                 155                 160

Asp His His Glu Asp Gly Ile Lys Arg Glu Arg Glu Ile Phe Ser Gly
                165                 170                 175

Ser Leu Arg Thr Gln Thr His Pro Thr Glu Glu Gln Asp Ser Asn Ser
            180                 185                 190

Ser Glu Leu Ser Asp Ala Phe Ser Leu Asp Thr Thr Gln Asp Ser Asp
        195                 200                 205

Gln Glu Thr Thr Asn Leu Leu Lys Gln Ile Asp Gly Lys Pro Glu Lys
    210                 215                 220

Pro Ser Val Thr Tyr Ala Thr Tyr Arg Gly Pro Arg His Ile Gly Lys
225                 230                 235                 240

Tyr Leu Lys Gln Gln Thr Gly Leu Ala Thr Val Asn Thr Leu Asp Arg
                245                 250                 255

Glu Asn Glu Ser Ser Asp Ser Ser Thr Asn Arg His Ile Asp Pro Gly
            260                 265                 270

Ser Glu Ile Glu Ala Gly Val Leu Pro Leu Leu Leu Ser Ala Ser Thr
        275                 280                 285

Asp Ser Ser Met Lys Gly Asn Leu Leu Glu Gly Pro Leu Glu Asp Ser
    290                 295                 300

Asp Cys Ser Lys Thr Ser Phe Asn Lys Glu Asn Ser Leu Thr Asn Asn
305                 310                 315                 320
```

```
Pro Glu Leu Gln Asn Ile Ala Ser Ser Asn Asn Leu Leu Asn Lys Asn
                325                 330                 335

Ala Trp Gly Ser Ile Glu Arg Asn Arg Ser Ser Pro Ser Ser Val Thr
            340                 345                 350

Asn Ser Ser Tyr Asp Gly Glu Ser Asp Ser Gln His His Leu Ser Cys
        355                 360                 365

Glu Pro Val Ser Gln Thr Asn Arg Asn Leu Val Cys Ser Ala Leu Leu
    370                 375                 380

Thr Gly Ser Asn His Arg Lys Val Pro Cys Ser Pro Asp Phe Gln Arg
385                 390                 395                 400

Val Thr Thr Thr Glu Asn Thr Ile Lys Glu Asn Ser Thr Val Met Ser
                405                 410                 415

Asn Arg Thr Leu Val Gln Arg Glu Glu Leu Val Glu Pro Gln Gly Pro
            420                 425                 430

Ala Ile Ser Asp Phe Ser Cys Ser Lys Ser Asp Gly Ser Asp Thr Thr
        435                 440                 445

Glu Gln Glu Ser Thr Asn Leu Pro Ser Pro Asn Lys Ser Ile Arg His
    450                 455                 460

Glu His Leu Gln Leu Pro Glu Ser Glu Cys Ser Asp Lys Gln Thr Ile
465                 470                 475                 480

Asp Ser Ser Ser Lys Gln Ala Ala Thr His Thr Asn Ile Ile Ala Leu
                485                 490                 495

Gln Arg His Ala Val Thr Asp Thr Glu Phe Val Asn Glu Gly Lys Arg
            500                 505                 510

Leu Ser Ala Gln Asp Ser Gln Lys Asn Val Ala Val Arg Glu Ile Arg
        515                 520                 525

Arg Glu Thr Glu Ser Ala Ser Ala Gly Glu Ser Ile Ala Ser Ser His
    530                 535                 540

Val Lys Ala Pro Glu Asp Lys Ile Glu Ser Leu Pro Lys Asp Thr Asp
```

545 550 555 560

Gln Tyr Phe Glu Thr Lys Ala Lys Lys Leu Asp Phe Arg Ser His Asp
565 570 575

Lys Ile Pro His Ile Arg Met Asn Lys Lys Asp Leu Ala Ser Leu Asn
580 585 590

Tyr Ile Ser Glu Ser Ala Val Val Ala Ser Leu Gly Asn Glu Asn Ala
595 600 605

Pro Glu Leu Lys Phe Glu Leu Asn Arg Ser His Ile Ser Glu Thr Pro
610 615 620

Leu Asp Ser Glu Ser Pro Gln Gln Ala Glu Val Ser Pro Asp Ala Lys
625 630 635 640

Thr Ser Leu Ser Leu Asp Cys Lys Lys Leu Asn Phe Ser Ile Ser Pro
645 650 655

Pro Thr Phe Val Ser Gly Val Gly Met Leu Ser Lys Leu Asp Ile Pro
660 665 670

Asp Leu Met Asn Glu Gly Ser Pro Val Pro Ile Glu Thr Gly Asn Val
675 680 685

Asn Ile Val Gly Ile Ser Tyr Gln Pro Arg Lys Cys Lys Glu Glu Asn
690 695 700

Val Lys Asn His Val Glu Ala Ala Gly Arg Lys Ser Pro Pro Pro Ser
705 710 715 720

Phe Cys Leu Glu Tyr Thr Ser Ala Ile Phe Glu Phe Lys Glu Val Leu
725 730 735

Ser Asn Ser Glu Lys Cys Gln Val Leu Pro Gly Ser Glu Ala Ser Gly
740 745 750

Pro His Leu Thr Gly Leu Glu Leu Leu Ser Phe Asp Ser Gly Asn Leu
755 760 765

Ser Lys Asp Cys Ser Ser Ile Leu Ser Gln Asp Pro Asn Arg Val Glu
770 775 780

```
Leu Val Ser Ser Asn Thr Lys Ala Asn Met Ser Ile Ile Glu Lys Ser
785                 790                 795                 800

Asp Ser Leu Ser Leu Glu Ala Lys Thr Ala Asn Ile Val Ser Lys Ala
                805                 810                 815

Glu Ile Asp Gly Gln Asn Asn Val Leu Val Glu Ser His Ser Gly Arg
            820                 825                 830

Gly Lys Thr Ile Ser Leu Ser Lys Val Ser Leu Ser Lys Val Glu Pro
        835                 840                 845

Arg Asn Ile Ser Gln Asp Lys Met Ser Ser Phe Pro Leu Lys Ile Thr
    850                 855                 860

His Val Pro Glu Lys Pro Ile Leu Ser Glu Leu Thr Phe Leu Glu Val
865                 870                 875                 880

Glu Gln Gly Lys Arg Phe Gln Ser Ile Asn His Asn Glu Ile Gly Glu
                885                 890                 895

Lys Cys Ser Asp Ala Gly Leu Lys Glu Asn Cys Gln Ala Glu Leu Ser
            900                 905                 910

Pro Ala Ala Ser Lys Tyr Glu Asp Lys Pro Glu Pro Glu Val Asp Ala
        915                 920                 925

Leu Gly Ser Pro Pro Ala Leu Leu Lys Ser Asn Ile Ser Trp Ile Leu
    930                 935                 940

Pro Pro Ile His Asp Glu Lys Ile Ser Arg Gln Met Ala Gln Asn Cys
945                 950                 955                 960

Glu Ala His Thr Cys Val Phe His Gln Ser Leu Asp Ile Cys Gly Thr
                965                 970                 975

Lys Lys Ile Ser Gly His Ser Glu Met Ala Glu Leu Ser Leu Thr Asn
            980                 985                 990

Ile Ser Pro Lys Phe Gln Glu Thr  Gly Ser Met Lys Val  Asn Ser
Pro
        995                 1000                1005
```

```
Phe Leu  Asp Ser Asp Ser Ser  Leu Glu Lys Asn Ser  Ser Ala Ser
    1010                1015                1020

Glu Asp  Ser Ser Phe Leu Lys  Val Pro Ser Val Leu  Lys Leu Glu
    1025                1030                1035

Lys Lys  Ser Ser Ser Tyr Arg  Lys Lys Glu Asn Ile  His Phe Leu
    1040                1045                1050

Asn Gly  Gly Ile Asp Ser Val  Ser Ser Ser Ser Ser  Tyr Pro Glu
    1055                1060                1065

Glu Val  Ser Met Ile Val Asn  Ser His Lys Pro Gln  Asn Asn Leu
    1070                1075                1080

Asp Ser  Ile Gln Val Thr Lys  Asp Leu Thr His Glu  Gly Thr Ser
    1085                1090                1095

Val Thr  Asn Leu Leu Tyr Pro  Thr Thr Ser Tyr Leu  Glu Phe Glu
    1100                1105                1110

Thr Ser  Val Ser Ile Gly Thr  Glu Val Thr Pro Phe  Gln Glu His
    1115                1120                1125

Phe Gly  Ile Tyr Thr Gly Lys  Ile Ser Ile Asp Phe  Pro Thr Ala
    1130                1135                1140

Ala Gln  Phe Asp Asn Leu Val  Glu Ala Glu Thr Gly  Ala Val Ala
    1145                1150                1155

Gly Pro  Ala Ala Ser Val Asn  Ser Ser Gly Gln Gln  Cys Ser Glu
    1160                1165                1170

Ala Ser  Ala Glu His Ile Glu  Ala Arg Arg Arg Ala  His Asp Gln
    1175                1180                1185

Leu Leu  Asp Leu Lys Ser Ser  Leu Leu Lys Lys Ala  Asp Thr Leu
    1190                1195                1200

Ile Gly  Glu Ile Phe Asn Ser  Val Arg Glu Glu Leu  Lys Phe Lys
    1205                1210                1215
```

```
His Thr  Val Ser Thr Cys Gln  Glu His Ile Ala Ile  Glu Gly Ile
    1220                1225                1230

Met Asn  Leu Gly Thr Leu Lys  Glu Asp Ile Ser Glu  Lys Asn Pro
    1235                1240                1245

Ser Glu  Val Thr Leu Thr Glu  Ile Gln Gln Thr Glu  Gly Leu Glu
    1250                1255                1260

Glu Gln  Gly Met Glu Asn Met  Ser Glu Val Lys Glu  Lys Pro Cys
    1265                1270                1275

Val Ser  Pro Thr Val Gly Glu  Lys Asn Leu Leu Val  Asp Pro Asn
    1280                1285                1290

Ser Met  Asn Val Ser Cys Leu  Leu Glu Asp Lys Ala  Arg Glu Leu
    1295                1300                1305

Val Asn  Glu Ile Ile Tyr Val  Ala Gln Glu Lys Leu  Arg Asn Asp
    1310                1315                1320

Thr Phe  Glu Asp Thr Glu Asp  Thr Trp Asp Ser Glu  Leu Gln Ala
    1325                1330                1335

Asn Thr  Ser Lys Ile Leu Asn  Ser Asp Ser Val Lys  Pro His Asp
    1340                1345                1350

Val Val  Arg Glu Phe Leu Val  Ser Glu Gln Pro Val  Asn Gln Ser
    1355                1360                1365

Thr Gln  Ile Ser Glu Asn Lys  Val Leu Asn Glu Phe  Phe Ser Leu
    1370                1375                1380

Ser Asn  Leu Ala Ser Gly Thr  Glu Ser Ile Lys Gly  Gly Glu Ile
    1385                1390                1395

Val Leu  Tyr Gln Lys Ser Leu  Phe Ser Gly Asn Gly  Ser Gly Leu
    1400                1405                1410

Ser Asp  Ser Ile Asn Leu Gln  Glu Ser Asp Thr Val  Leu Leu Ala
    1415                1420                1425
```

```
Glu Asp  Met Ser His Lys Arg  Leu Asp Asp Arg Val  Lys Thr His
    1430                1435                1440

Leu Phe  Arg Ser Glu Asp Cys  Asn Glu Thr Met Glu  Ile Glu Asn
    1445                1450                1455

Val Asp  Asn Asn Lys Thr Glu  Thr Glu Asp Arg Arg  Thr Leu Val
    1460                1465                1470

Leu Asn  Phe Lys Trp Pro Pro  Leu Val Asn Asp Asp  Ile His Ala
    1475                1480                1485

Pro Gly  Thr Ser Lys Ser Ser  Leu Ser Asp Ser Leu  Val Cys Ile
    1490                1495                1500

Ser Glu  Lys Asn Leu Pro Gly  His Ser Lys Asn Thr  Pro Leu Ala
    1505                1510                1515

Met Ser  Asp Val Gly Lys Val  His Lys Lys Asp Asn  Glu Ile Asn
    1520                1525                1530

Ile Gly  Lys Ile Glu Leu Ile  Pro Ser Met Leu Glu  Thr Gly Lys
    1535                1540                1545

Thr Asn  Lys Lys Asp Ala Glu  Leu Asn Ile Leu Lys  Tyr Glu Ala
    1550                1555                1560

Val Pro  Pro Met Ile Glu Met  Gly Arg Ile His Lys  Met Asp Ala
    1565                1570                1575

Glu Leu  Asn Val Thr Lys Thr  Glu Pro Lys Ala Asn  Val Phe Lys
    1580                1585                1590

Met Gly  Glu Val Tyr Gln Met  Asp Ala Glu Ser Cys  Ile Glu Lys
    1595                1600                1605

Thr Glu  Gly Ser Ala Val Ile  Leu Gly Met Glu Lys  Ala Tyr Lys
    1610                1615                1620

Met Lys  Asp Thr Glu Gly Asp  Ile Gly Lys Ile Glu  Val Ile Pro
    1625                1630                1635

Met Met  Pro Glu Val Lys Asn  Ile His Gln Lys Asp  Ala Glu Gly
```

1640 1645 1650

Asp Ile Val Lys Thr Glu Met Thr Pro Val Thr Val Asp Met Glu
1655 1660 1665

Asn Ile Tyr Gln Thr His Ala Glu Gly Asp Ile Gly Lys Thr Gly
1670 1675 1680

Thr Ile Ala Leu Ser Glu Val Glu Asn Ile His Gln Lys Gly Gly
1685 1690 1695

Glu Gly Ile Ser Glu Lys Ala Glu Val Ile Pro Val Thr Leu Ala
1700 1705 1710

Met Glu Asn Thr Tyr Gln Lys Asp Ala Glu Gly Asp Ile Gly Lys
1715 1720 1725

Ala Glu Val Met Pro Val Arg Leu Glu Met Glu Asn Thr Tyr Pro
1730 1735 1740

Lys Asp Thr Glu Arg Asp Gly Gly Lys Thr Glu Val Met Pro Leu
1745 1750 1755

Ala Leu Glu Val Val Asn Thr Tyr Gln Lys Asn Ala Lys Gly Phe
1760 1765 1770

Thr Gly Asn Thr Glu Gly Ser Val Leu Lys Met Glu Ala Thr Tyr
1775 1780 1785

Arg Lys Thr Ala Glu Glu Val Ile Lys Asn Thr Glu Ile Val Pro
1790 1795 1800

Cys Val Leu Lys Val Lys Glu Ala His Glu Thr Ala Pro Ala Pro
1805 1810 1815

Leu Glu Met Glu Lys Ala Cys Lys Arg Asp Val Lys Glu Thr Ile
1820 1825 1830

Gly Ala Thr Val Ser Thr Pro Ser Val Ile Glu Met Glu Lys Ile
1835 1840 1845

Ser Pro Glu Asp Arg Gly Glu Asn Ile Gly Lys His Lys Val Leu
1850 1855 1860

```
Pro Ala  Val Val Asp Ile Glu  Lys Ile His Gly Thr  Gly Leu Glu
    1865                1870                1875

Leu Thr  Thr Lys Gln Gly Glu  Ala Met Leu Pro Ala  Phe Glu Ser
    1880                1885                1890

Lys Thr  Pro Gln Glu Tyr Ala  Glu Gly Ser Val Glu  Glu Thr Lys
    1895                1900                1905

Glu Glu  Pro Thr Glu Ile Lys  Glu Gly Leu Ile Ala  His Glu Asn
    1910                1915                1920

Arg Leu  Pro Thr Tyr Phe Arg  Gly Tyr Glu Ser Pro  Thr Leu Ser
    1925                1930                1935

Lys Asp  Tyr Glu Gly Tyr Pro  Ala Pro Ala Met Pro  Asp Phe Gln
    1940                1945                1950

Pro Gly  Asp Thr Thr Val Arg  Leu Asp Lys Arg Met  Ser Leu Thr
    1955                1960                1965

Ala Ile  Tyr Asp Lys Arg Arg  Glu Thr Asp Tyr Ser  Asp Lys Gly
    1970                1975                1980

Tyr Asn  Leu Ala Phe Val Ser  Gln Asp Glu Gln Glu  Asn Ser Ser
    1985                1990                1995

Phe Thr  Ile Leu Tyr Glu Glu  Pro Leu Gln Glu Glu  Asp Lys Tyr
    2000                2005                2010

Ala Ser  Ala Glu Ala Arg Gln  Thr Gln Ser Val Leu  Phe His Asp
    2015                2020                2025

Thr Ser  Ala Asp Ser Met Pro  Val Leu Ala Cys Glu  Arg Ser Glu
    2030                2035                2040

Ser Arg  Thr Asp Leu Val His  His Phe Glu Lys Gly  Thr Lys Leu
    2045                2050                2055

Gly Glu  Thr Phe Asp Ser Asp  Ser Ser Glu Met Phe  Leu Ser Val
    2060                2065                2070
```

```
Glu Ala  Lys Arg Tyr Lys Ile  Tyr Pro Leu Ala Leu  Ser Pro Ile
    2075                2080                2085

Tyr Glu  Asp Asp Ser Ser Gln  Glu Asp Ile Leu Ser  Ser Glu Val
    2090                2095                2100

Ser Pro  Gly His His Gly Pro  Arg Lys Ser Arg Asp  Ser Glu Asn
    2105                2110                2115

Gln Ser  Ser Ser Val Leu Ser  Leu Leu Gln Ser Val  Ser Glu Arg
    2120                2125                2130

Leu Lys  Met Asn Phe Asp Glu  Asp Asp Arg Glu Ala  Ala Asp Glu
    2135                2140                2145

Glu Glu  Glu Glu Glu Glu Ala  Ala Val Leu His Lys  Gly Asp Leu
    2150                2155                2160

Arg Ala  Gly Ser Gly Glu Arg  Val Thr Phe Gln Leu  Pro Asp Pro
    2165                2170                2175

Ser Ile  Thr Phe Tyr Pro Asp  Asp Gln Glu Ser Val  Gly Ile Ser
    2180                2185                2190

Lys Asn  Ser Tyr Val Met Pro  Asn Glu Pro Thr Thr  Ser Asn Leu
    2195                2200                2205

Gln Val  Gly Leu Trp Pro Glu  Lys Thr Ser Phe Leu  Gln Lys Ser
    2210                2215                2220

Asp Leu  Thr Ser Lys Leu His  Ser Ser Leu Lys Ser  Ala Tyr His
    2225                2230                2235

Gln Tyr  Leu Gln Thr Ser Gln  Ser His Ser Ser Glu  Lys Gly Ala
    2240                2245                2250

Arg Phe  Gly Gly Ile Phe Gln  Glu Pro Val Ser Lys  Tyr Phe Arg
    2255                2260                2265

Val Gln  Asp Ser Pro Gly Arg  Leu Ser Pro Phe Ile  Glu Asn Val
    2270                2275                2280
```

```
Asp Lys  Gln Thr Leu Arg Cys  Asn Pro Arg Pro Gly  Lys Met Val
    2285                2290                2295

Ile Tyr  Asp Leu His Glu Ser  Thr Tyr Lys Gln Glu  Val Tyr Cys
    2300                2305                2310

Asn Ile  Pro Asp Ala Thr Ser  Trp Ser Phe Pro Asn  Gly Val Leu
    2315                2320                2325

Ile Lys  Val Val Arg Gly Cys  Trp Ile Leu Tyr Glu  Lys Pro His
    2330                2335                2340

Phe Arg  Gly Gln Lys Cys Val  Leu Glu Glu Gly Glu  Lys Val Leu
    2345                2350                2355

Asn Arg  Asp Trp Ile Leu Gln  Asn Arg Arg His Pro  Gln Arg Asn
    2360                2365                2370

Phe Ile  Leu Gly Ser Leu Lys  Arg Val Leu Lys Asp  Cys Ser Ile
    2375                2380                2385

Pro Glu  Ile Glu Leu Phe Pro  Gln Ser Asp Pro Ala  Cys Cys Pro
    2390                2395                2400

Val Tyr  Ile Gln Arg Ala Val  Pro Asn Leu Glu Glu  Leu Asn Ile
    2405                2410                2415

Ser Lys  Ser Val Ser Phe Thr  Val Lys Ser Gly Val  Trp Leu Ala
    2420                2425                2430

Tyr Pro  Asp Ile Asn Phe Lys  Gly Gln Ala Thr Val  Leu Glu Glu
    2435                2440                2445

Asp His  Gly Leu Phe Glu Ile  Ser Thr Ala Glu Met  Lys Ser Leu
    2450                2455                2460

His Pro  Leu Gln Met Gly Gly  Leu Lys Val Glu Met  Pro Met Asn
    2465                2470                2475

Leu Lys  Val Ile Ile Tyr Glu  Lys Pro His Phe His  Gly Gln Ala
    2480                2485                2490

Lys Glu  Phe Ser Glu His Ile  Asp Ser Val Pro Asn  Phe Leu Lys
```

```
    2495                2500                2505

Asn Asn  Gly Asp Phe His Arg  Ile Gly Ser Ile Arg  Val Ile Gly
    2510                2515                2520

Gly Val  Trp Val Ala Tyr Glu  Lys Glu His Phe Lys  Gly Gln Gln
    2525                2530                2535

Phe Leu  Leu Glu Glu Gly Asp  Phe Glu Asp Ser Asn  Ala Cys Gly
    2540                2545                2550

Ala Leu  Ser Ser Pro Ile Leu  Ser Phe Arg Tyr Leu  Gln Ala Asn
    2555                2560                2565

Phe Ile  Glu Ser Ser Val Thr  Leu Phe Glu Ser Asp  Leu Glu Ser
    2570                2575                2580

Gly Lys  Phe Ile Asp Ile Thr  Asn Gln Glu Ile Ser  Asp Leu Glu
    2585                2590                2595

Glu Ile  Gly Phe Gly Ser Lys  Thr Arg Ser Ile His  Val Lys Ser
    2600                2605                2610

Gly Val  Trp Val Ala Tyr Gln  Gln Lys Phe Phe Cys  Gly Glu Gln
    2615                2620                2625

Tyr Ile  Leu Glu Lys Gly Lys  Tyr Lys Cys Phe Phe  Asp Trp Gly
    2630                2635                2640

Gly Ser  Asn Asn Ile Ile Met  Ser Ile Arg Pro Ile  Gln Leu Glu
    2645                2650                2655

Pro Leu  Gly Ile Asn Glu Pro  Pro His Leu Leu Lys  Ala Phe Ser
    2660                2665                2670

Lys Pro  Gly Phe Gln Gly Glu  Cys Ile Asp Phe Thr  Glu Glu Thr
    2675                2680                2685

Ser Asp  Leu Thr Ser Leu Met  Pro Cys Ser Phe Lys  Val Leu Arg
    2690                2695                2700

Gly Cys  Trp Leu Leu Tyr Tyr  Gln Glu Asp Met Phe  Val Asn His
    2705                2710                2715
```

```
Cys Val  Leu Glu Glu Gly Leu  Tyr Ala Asp Leu Thr  Ser Cys Gly
    2720                2725                2730

Cys Pro  Ala Ser Lys Val Lys  Ser Leu Lys Pro Ile  Asp Tyr Val
    2735                2740                2745

Phe Glu  Glu Pro Ser Ile Ser  Leu Phe Ala Leu Glu  His Cys Glu
    2750                2755                2760

Gly Arg  Glu Leu His Leu Glu  Glu Ala Val Asn Ser  Val Leu Asn
    2765                2770                2775

Lys Asp  Leu His Phe Tyr Thr  Gln Ser Val Trp Val  Lys Ser Gly
    2780                2785                2790

Leu Trp  Ile Ala Tyr Glu Gly  Ser Asn Phe Leu Gly  Arg Gln Ile
    2795                2800                2805

Leu Leu  Arg Pro Asn Glu Ile  Pro Asn Trp Thr Ala  Phe Ser Arg
    2810                2815                2820

Trp Lys  Thr Ile Gly Ser Leu  Arg Pro Met Lys Gln  Pro Ala Val
    2825                2830                2835

Tyr Ile  Arg Ile Lys Asn Arg  Ala Gln Gly Glu Tyr  Leu Thr Val
    2840                2845                2850

Thr Gly  Ser Leu Ala Asp Thr  Arg Ala Thr Ser Val  Cys Ile Ser
    2855                2860                2865

Pro Tyr  Ser Gly Lys Asn Thr  Gln Ile Trp Tyr Tyr  Cys Arg Gly
    2870                2875                2880

Leu Phe  Lys Ser Lys Ala Ser  Asp Thr Cys Leu Asp  Val Ile Gly
    2885                2890                2895

Gly Arg  Asp Thr Pro Gly Ala  Lys Val Ala Leu Trp  Thr Glu His
    2900                2905                2910

Gly Gln  Phe Arg Gln Lys Trp  Arg Leu Asn Lys Asn  Gly Thr Ile
    2915                2920                2925
```

Ser Ser Tyr Leu Ser Asp Gln Leu Val Leu Asp Val Lys Gly Gly
2930 2935 2940

Asn Tyr Cys Asp Lys Thr His Val Ile Val Asn Gln Pro Leu Glu
2945 2950 2955

Gly Glu Glu Thr Gln Lys Trp Asp Ile Glu Ile Leu
2960 2965 2970

<210> 9050
<211> 131
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1833; "

<220>
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<223> /note="Gene Symbol: CRYBG3; "

<220>
<221> source
<223> /note="Gene Name:
beta-gamma crystallin
domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418420"

<400> 9050
Met Asn Lys Lys Lys Val Phe Glu Glu Pro Ser Ile Ser Leu Phe Ala
1 5 10 15

Leu Glu His Cys Glu Gly Arg Glu Leu His Leu Glu Glu Ala Val Asn
20 25 30

Ser Val Leu Asn Lys Asp Leu His Phe Tyr Thr Gln Ser Val Trp Val
35 40 45

Lys Ser Gly Leu Trp Ile Ala Tyr Glu Gly Ser Asn Phe Leu Gly Arg
50 55 60

Gln Ile Leu Leu Arg Pro Asn Glu Ile Pro Asn Trp Thr Ala Phe Ser
65 70 75 80

```
Arg Trp Lys Thr Ile Gly Ser Leu Arg Pro Met Lys Gln Pro Ala Val
                85                  90                  95

Tyr Ile Arg Ile Lys Asn Arg Ala Gln Gly Glu Tyr Leu Thr Val Thr
            100                 105                 110

Gly Ser Leu Ala Asp Thr Arg Ala Thr Ser Val Cys Ile Ser Pro Tyr
        115                 120                 125

Ser Gly Lys
    130


<210> 9051
<211> 406
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1834; "

<220>
<221> source
<223> /note="Gene Symbol: BHMT; "

<220>
<221> source
<223> /note="Gene Name:
      betaine--homocysteine S-
      methyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q93088; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000274353"

<400> 9051
Met Pro Pro Val Gly Gly Lys Lys Ala Lys Lys Gly Ile Leu Glu Arg
1               5                  10                  15

Leu Asn Ala Gly Glu Ile Val Ile Gly Asp Gly Gly Phe Val Phe Ala
            20                  25                  30

Leu Glu Lys Arg Gly Tyr Val Lys Ala Gly Pro Trp Thr Pro Glu Ala
        35                  40                  45

Ala Val Glu His Pro Glu Ala Val Arg Gln Leu His Arg Glu Phe Leu
```

```
    50                  55                  60

Arg Ala Gly Ser Asn Val Met Gln Thr Phe Thr Phe Tyr Ala Ser Glu
65                  70                  75                  80

Asp Lys Leu Glu Asn Arg Gly Asn Tyr Val Leu Glu Lys Ile Ser Gly
                85                  90                  95

Gln Glu Val Asn Glu Ala Ala Cys Asp Ile Ala Arg Gln Val Ala Asp
            100                 105                 110

Glu Gly Asp Ala Leu Val Ala Gly Gly Val Ser Gln Thr Pro Ser Tyr
        115                 120                 125

Leu Ser Cys Lys Ser Glu Thr Glu Val Lys Lys Val Phe Leu Gln Gln
    130                 135                 140

Leu Glu Val Phe Met Lys Lys Asn Val Asp Phe Leu Ile Ala Glu Tyr
145                 150                 155                 160

Phe Glu His Val Glu Glu Ala Val Trp Ala Val Glu Thr Leu Ile Ala
                165                 170                 175

Ser Gly Lys Pro Val Ala Ala Thr Met Cys Ile Gly Pro Glu Gly Asp
            180                 185                 190

Leu His Gly Val Pro Pro Gly Glu Cys Ala Val Arg Leu Val Lys Ala
        195                 200                 205

Gly Ala Ser Ile Ile Gly Val Asn Cys His Phe Asp Pro Thr Ile Ser
    210                 215                 220

Leu Lys Thr Val Lys Leu Met Lys Glu Gly Leu Glu Ala Ala Arg Leu
225                 230                 235                 240

Lys Ala His Leu Met Ser Gln Pro Leu Ala Tyr His Thr Pro Asp Cys
                245                 250                 255

Asn Lys Gln Gly Phe Ile Asp Leu Pro Glu Phe Pro Phe Gly Leu Glu
            260                 265                 270

Pro Arg Val Ala Thr Arg Trp Asp Ile Gln Lys Tyr Ala Arg Glu Ala
        275                 280                 285
```

```
Tyr Asn Leu Gly Val Arg Tyr Ile Gly Gly Cys Cys Gly Phe Glu Pro
    290                 295                 300

Tyr His Ile Arg Ala Ile Ala Glu Glu Leu Ala Pro Glu Arg Gly Phe
305                 310                 315                 320

Leu Pro Pro Ala Ser Glu Lys His Gly Ser Trp Gly Ser Gly Leu Asp
                325                 330                 335

Met His Thr Lys Pro Trp Val Arg Ala Arg Ala Arg Lys Glu Tyr Trp
            340                 345                 350

Glu Asn Leu Arg Ile Ala Ser Gly Arg Pro Tyr Asn Pro Ser Met Ser
        355                 360                 365

Lys Pro Asp Gly Trp Gly Val Thr Lys Gly Thr Ala Glu Leu Met Gln
    370                 375                 380

Gln Lys Glu Ala Thr Thr Glu Gln Gln Leu Lys Glu Leu Phe Glu Lys
385                 390                 395                 400

Gln Lys Phe Lys Ser Gln
                405


<210> 9052
<211> 253
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1834; "

<220>
<221> source
<223> /note="Gene Symbol: BHMT; "

<220>
<221> source
<223> /note="Gene Name:
      betaine--homocysteine S-
      methyltransferase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428240"
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<400> 9052
Met Pro Pro Val Gly Gly Lys Lys Ala Lys Lys Gly Ile Leu Glu Arg
1 5 10 15

Leu Asn Ala Gly Glu Ile Val Ile Gly Asp Gly Gly Phe Val Phe Ala
20 25 30

Leu Glu Lys Arg Gly Tyr Val Lys Ala Gly Pro Trp Thr Pro Glu Ala
35 40 45

Ala Val Glu His Pro Glu Ala Gly Ala Ser Ile Ile Gly Val Asn Cys
50 55 60

His Phe Asp Pro Thr Ile Ser Leu Lys Thr Val Lys Leu Met Lys Glu
65 70 75 80

Gly Leu Glu Ala Ala Arg Leu Lys Ala His Leu Met Ser Gln Pro Leu
85 90 95

Ala Tyr His Thr Pro Asp Cys Asn Lys Gln Gly Phe Ile Asp Leu Pro
100 105 110

Glu Phe Pro Phe Gly Leu Glu Pro Arg Val Ala Thr Arg Trp Asp Ile
115 120 125

Gln Lys Tyr Ala Arg Glu Ala Tyr Asn Leu Gly Val Arg Tyr Ile Gly
130 135 140

Gly Cys Cys Gly Phe Glu Pro Tyr His Ile Arg Ala Ile Ala Glu Glu
145 150 155 160

Leu Ala Pro Glu Arg Gly Phe Leu Pro Pro Ala Ser Glu Lys His Gly
165 170 175

Ser Trp Gly Ser Gly Leu Asp Met His Thr Lys Pro Trp Val Arg Ala
180 185 190

Arg Ala Arg Lys Glu Tyr Trp Glu Asn Leu Arg Ile Ala Ser Gly Arg
195 200 205

Pro Tyr Asn Pro Ser Met Ser Lys Pro Asp Gly Trp Gly Val Thr Lys
210 215 220

```
Gly Thr Ala Glu Leu Met Gln Gln Lys Glu Ala Thr Thr Glu Gln Gln
225                 230                 235                 240


Leu Lys Glu Leu Phe Glu Lys Gln Lys Phe Lys Ser Gln
                245                 250


<210> 9053
<211> 363
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1835; "

<220>
<221> source
<223> /note="Gene Symbol: BHMT2; "

<220>
<221> source
<223> /note="Gene Name:
      betaine--homocysteine S-methyltransferase 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H2M3; "

<220>
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<223> /note="ENSP ID: ENSP00000255192"

<400> 9053
Met Ala Pro Ala Gly Arg Pro Gly Ala Lys Lys Gly Ile Leu Glu Arg
1               5                   10                  15


Leu Glu Ser Gly Glu Val Val Ile Gly Asp Gly Ser Phe Leu Ile Thr
            20                  25                  30


Leu Glu Lys Arg Gly Tyr Val Lys Ala Gly Leu Trp Thr Pro Glu Ala
        35                  40                  45


Val Ile Glu His Pro Asp Ala Val Arg Gln Leu His Met Glu Phe Leu
    50                  55                  60


Arg Ala Gly Ser Asn Val Met Gln Thr Phe Thr Phe Ser Ala Ser Glu
65                  70                  75                  80


Asp Asn Met Glu Ser Lys Trp Glu Asp Val Asn Ala Ala Ala Cys Asp
                85                  90                  95
```

```
Leu Ala Arg Glu Val Ala Gly Lys Gly Asp Ala Leu Val Ala Gly Gly
            100                 105                 110

Ile Cys Gln Thr Ser Ile Tyr Lys Tyr Gln Lys Asp Glu Ala Arg Ile
        115                 120                 125

Lys Lys Leu Phe Arg Gln Gln Leu Glu Val Phe Ala Trp Lys Asn Val
    130                 135                 140

Asp Phe Leu Ile Ala Glu Tyr Phe Glu His Val Glu Glu Ala Val Trp
145                 150                 155                 160

Ala Val Glu Val Leu Lys Glu Ser Asp Arg Pro Val Ala Val Thr Met
                165                 170                 175

Cys Ile Gly Pro Glu Gly Asp Met His Asp Ile Thr Pro Gly Glu Cys
            180                 185                 190

Ala Val Arg Leu Val Lys Ala Gly Ala Ser Ile Val Gly Val Asn Cys
        195                 200                 205

Arg Phe Gly Pro Asp Thr Ser Leu Lys Thr Met Glu Leu Met Lys Glu
    210                 215                 220

Gly Leu Glu Trp Ala Gly Leu Lys Ala His Leu Met Val Gln Pro Leu
225                 230                 235                 240

Gly Phe His Ala Pro Asp Cys Gly Lys Glu Gly Phe Val Asp Leu Pro
                245                 250                 255

Glu Tyr Pro Phe Gly Leu Glu Ser Arg Val Ala Thr Arg Trp Asp Ile
            260                 265                 270

Gln Lys Tyr Ala Arg Glu Ala Tyr Asn Leu Gly Val Arg Tyr Ile Gly
        275                 280                 285

Gly Cys Cys Gly Phe Glu Pro Tyr His Ile Arg Ala Ile Ala Glu Glu
    290                 295                 300

Leu Ala Pro Glu Arg Gly Phe Leu Pro Pro Ala Ser Glu Lys His Gly
305                 310                 315                 320
```

Ser Trp Gly Ser Gly Leu Asp Met His Thr Lys Pro Trp Ile Arg Ala
325 330 335

Arg Ala Arg Arg Glu Tyr Trp Glu Asn Leu Leu Pro Ala Ser Gly Arg
340 345 350

Pro Phe Cys Pro Ser Leu Ser Lys Pro Asp Phe
355 360

<210> 9054
<211> 68
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BHMT2; "

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<223> /note="Gene Name:
betaine--homocysteine S-methyltransferase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428640"

<400> 9054
Met Glu Phe Leu Arg Ala Gly Ser Asn Val Met Gln Thr Phe Thr Phe
1 5 10 15

Ser Ala Ser Glu Asp Asn Met Glu Ser Lys Trp Glu Asp Val Asn Ala
20 25 30

Ala Ala Cys Asp Leu Ala Arg Glu Val Ala Gly Lys Gly Asp Ala Leu
35 40 45

Val Ala Gly Gly Ile Cys Gln Thr Ser Ile Tyr Lys Tyr Gln Lys Asp
50 55 60

Glu Ala Arg Ile
65

<210> 9055

<211> 58
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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<220>
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<400> 9055
Met Ala Pro Ala Gly Arg Pro Gly Ala Lys Lys Gly Ile Leu Glu Arg
1 5 10 15

Leu Glu Ser Gly Glu Val Val Ile Gly Asp Gly Ser Asp Arg Thr Pro
20 25 30

Arg Arg Ser Ser Ser Thr Ser His Gly Ile Leu Glu Ser Arg Ile Lys
35 40 45

Cys His Ala Asp Phe Tyr Leu Phe Cys Gln
50 55

<210> 9056
<211> 299
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
betaine--homocysteine S-methyltransferase 2; "

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<223> /note="Uniprot ID: Q9H2M3; "

<220>
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<223> /note="ENSP ID: ENSP00000430278"

<400> 9056
Met Ala Pro Ala Gly Arg Pro Gly Ala Lys Lys Gly Ile Leu Glu Arg
1   5   10   15

Leu Glu Ser Gly Glu Val Val Ile Gly Asp Gly Ser Phe Leu Ile Thr
            20   25   30

Leu Glu Lys Arg Gly Tyr Val Lys Ala Gly Leu Trp Thr Pro Glu Ala
        35   40   45

Val Ile Glu His Pro Asp Ala Val Arg Gln Leu His Met Glu Phe Leu
    50   55   60

Arg Ala Gly Ser Asn Val Met Gln Thr Phe Thr Phe Ser Ala Ser Glu
65   70   75   80

Asp Asn Met Glu Ser Lys Tyr Phe Glu His Val Glu Glu Ala Val Trp
                85   90   95

Ala Val Glu Val Leu Lys Glu Ser Asp Arg Pro Val Ala Val Thr Met
            100   105   110

Cys Ile Gly Pro Glu Gly Asp Met His Asp Ile Thr Pro Gly Glu Cys
        115   120   125

Ala Val Arg Leu Val Lys Ala Gly Ala Ser Ile Val Gly Val Asn Cys
    130   135   140

Arg Phe Gly Pro Asp Thr Ser Leu Lys Thr Met Glu Leu Met Lys Glu
145   150   155   160

Gly Leu Glu Trp Ala Gly Leu Lys Ala His Leu Met Val Gln Pro Leu
                165   170   175

Gly Phe His Ala Pro Asp Cys Gly Lys Glu Gly Phe Val Asp Leu Pro
            180   185   190

Glu Tyr Pro Phe Gly Leu Glu Ser Arg Val Ala Thr Arg Trp Asp Ile

```
        195                 200                 205

Gln Lys Tyr Ala Arg Glu Ala Tyr Asn Leu Gly Val Arg Tyr Ile Gly
    210                 215                 220

Gly Cys Cys Gly Phe Glu Pro Tyr His Ile Arg Ala Ile Ala Glu Glu
225                 230                 235                 240

Leu Ala Pro Glu Arg Gly Phe Leu Pro Pro Ala Ser Glu Lys His Gly
                245                 250                 255

Ser Trp Gly Ser Gly Leu Asp Met His Thr Lys Pro Trp Ile Arg Ala
            260                 265                 270

Arg Ala Arg Arg Glu Tyr Trp Glu Asn Leu Leu Pro Ala Ser Gly Arg
        275                 280                 285

Pro Phe Cys Pro Ser Leu Ser Lys Pro Asp Phe
    290                 295


<210> 9057
<211> 501
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1836; "

<220>
<221> source
<223> /note="Gene Symbol: BACE1; "

<220>
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<223> /note="Gene Name:
      beta-site APP-cleaving enzyme 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P56817; "

<220>
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<223> /note="ENSP ID: ENSP00000318585"

<400> 9057
Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
1               5                   10                  15
```

```
Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
            20                  25                  30

Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
        35                  40                  45

Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
    50                  55                  60

Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
65                  70                  75                  80

Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
                85                  90                  95

Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
            100                 105                 110

Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val
        115                 120                 125

Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
    130                 135                 140

Leu Val Ser Ile Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile
145                 150                 155                 160

Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp
                165                 170                 175

Glu Gly Ile Leu Gly Leu Ala Tyr Ala Glu Ile Ala Arg Pro Asp Asp
            180                 185                 190

Ser Leu Glu Pro Phe Phe Asp Ser Leu Val Lys Gln Thr His Val Pro
        195                 200                 205

Asn Leu Phe Ser Leu Gln Leu Cys Gly Ala Gly Phe Pro Leu Asn Gln
    210                 215                 220

Ser Glu Val Leu Ala Ser Val Gly Gly Ser Met Ile Ile Gly Gly Ile
225                 230                 235                 240
```

```
Asp His Ser Leu Tyr Thr Gly Ser Leu Trp Tyr Thr Pro Ile Arg Arg
                245                 250                 255

Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg Val Glu Ile Asn Gly Gln
            260                 265                 270

Asp Leu Lys Met Asp Cys Lys Glu Tyr Asn Tyr Asp Lys Ser Ile Val
        275                 280                 285

Asp Ser Gly Thr Thr Asn Leu Arg Leu Pro Lys Lys Val Phe Glu Ala
    290                 295                 300

Ala Val Lys Ser Ile Lys Ala Ala Ser Ser Thr Glu Lys Phe Pro Asp
305                 310                 315                 320

Gly Phe Trp Leu Gly Glu Gln Leu Val Cys Trp Gln Ala Gly Thr Thr
                325                 330                 335

Pro Trp Asn Ile Phe Pro Val Ile Ser Leu Tyr Leu Met Gly Glu Val
            340                 345                 350

Thr Asn Gln Ser Phe Arg Ile Thr Ile Leu Pro Gln Gln Tyr Leu Arg
        355                 360                 365

Pro Val Glu Asp Val Ala Thr Ser Gln Asp Asp Cys Tyr Lys Phe Ala
    370                 375                 380

Ile Ser Gln Ser Ser Thr Gly Thr Val Met Gly Ala Val Ile Met Glu
385                 390                 395                 400

Gly Phe Tyr Val Val Phe Asp Arg Ala Arg Lys Arg Ile Gly Phe Ala
                405                 410                 415

Val Ser Ala Cys His Val His Asp Glu Phe Arg Thr Ala Ala Val Glu
            420                 425                 430

Gly Pro Phe Val Thr Leu Asp Met Glu Asp Cys Gly Tyr Asn Ile Pro
        435                 440                 445

Gln Thr Asp Glu Ser Thr Leu Met Thr Ile Ala Tyr Val Met Ala Ala
    450                 455                 460

Ile Cys Ala Leu Phe Met Leu Pro Leu Cys Leu Met Val Cys Gln Trp
```

```
465                 470                 475                 480

Arg Cys Leu Arg Cys Leu Arg Gln Gln His Asp Asp Phe Ala Asp Asp
                485                 490                 495

Ile Ser Leu Leu Lys
            500


<210> 9058
<211> 432
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1836; "

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  P56817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402228"

<400> 9058
Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
1               5                   10                  15

Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
            20                  25                  30

Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
        35                  40                  45

Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
    50                  55                  60

Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
65                  70                  75                  80
```

```
Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
                85                  90                  95

Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
            100                 105                 110

Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val
        115                 120                 125

Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
    130                 135                 140

Leu Leu Cys Gly Ala Gly Phe Pro Leu Asn Gln Ser Glu Val Leu Ala
145                 150                 155                 160

Ser Val Gly Gly Ser Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr
                165                 170                 175

Thr Gly Ser Leu Trp Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu
            180                 185                 190

Val Ile Ile Val Arg Val Glu Ile Asn Gly Gln Asp Leu Lys Met Asp
        195                 200                 205

Cys Lys Glu Tyr Asn Tyr Asp Lys Ser Ile Val Asp Ser Gly Thr Thr
    210                 215                 220

Asn Leu Arg Leu Pro Lys Lys Val Phe Glu Ala Ala Val Lys Ser Ile
225                 230                 235                 240

Lys Ala Ala Ser Ser Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu Gly
                245                 250                 255

Glu Gln Leu Val Cys Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile Phe
            260                 265                 270

Pro Val Ile Ser Leu Tyr Leu Met Gly Glu Val Thr Asn Gln Ser Phe
        275                 280                 285

Arg Ile Thr Ile Leu Pro Gln Gln Tyr Leu Arg Pro Val Glu Asp Val
    290                 295                 300
```

```
Ala Thr Ser Gln Asp Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser Ser
305                 310                 315                 320

Thr Gly Thr Val Met Gly Ala Val Ile Met Glu Gly Phe Tyr Val Val
                325                 330                 335

Phe Asp Arg Ala Arg Lys Arg Ile Gly Phe Ala Val Ser Ala Cys His
            340                 345                 350

Val His Asp Glu Phe Arg Thr Ala Ala Val Glu Gly Pro Phe Val Thr
        355                 360                 365

Leu Asp Met Glu Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser
    370                 375                 380

Thr Leu Met Thr Ile Ala Tyr Val Met Ala Ala Ile Cys Ala Leu Phe
385                 390                 395                 400

Met Leu Pro Leu Cys Leu Met Val Cys Gln Trp Arg Cys Leu Arg Cys
                405                 410                 415

Leu Arg Gln Gln His Asp Asp Phe Ala Asp Asp Ile Ser Leu Leu Lys
            420                 425                 430


<210> 9059
<211> 457
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BACE1; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  P56817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403685"
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<400> 9059
Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
1 5 10 15

Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
20 25 30

Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
35 40 45

Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
50 55 60

Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
65 70 75 80

Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
85 90 95

Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
100 105 110

Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val
115 120 125

Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
130 135 140

Leu Pro Asp Asp Ser Leu Glu Pro Phe Phe Asp Ser Leu Val Lys Gln
145 150 155 160

Thr His Val Pro Asn Leu Phe Ser Leu Gln Leu Cys Gly Ala Gly Phe
165 170 175

Pro Leu Asn Gln Ser Glu Val Leu Ala Ser Val Gly Gly Ser Met Ile
180 185 190

Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu Trp Tyr Thr
195 200 205

Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg Val Glu
210 215 220

```
Ile Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr Asn Tyr Asp
225                 230                 235                 240

Lys Ser Ile Val Asp Ser Gly Thr Thr Asn Leu Arg Leu Pro Lys Lys
                245                 250                 255

Val Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser Ser Thr Glu
            260                 265                 270

Lys Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val Cys Trp Gln
        275                 280                 285

Ala Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser Leu Tyr Leu
    290                 295                 300

Met Gly Glu Val Thr Asn Gln Ser Phe Arg Ile Thr Ile Leu Pro Gln
305                 310                 315                 320

Gln Tyr Leu Arg Pro Val Glu Asp Val Ala Thr Ser Gln Asp Asp Cys
                325                 330                 335

Tyr Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val Met Gly Ala
            340                 345                 350

Val Ile Met Glu Gly Phe Tyr Val Val Phe Asp Arg Ala Arg Lys Arg
        355                 360                 365

Ile Gly Phe Ala Val Ser Ala Cys His Val His Asp Glu Phe Arg Thr
    370                 375                 380

Ala Ala Val Glu Gly Pro Phe Val Thr Leu Asp Met Glu Asp Cys Gly
385                 390                 395                 400

Tyr Asn Ile Pro Gln Thr Asp Glu Ser Thr Leu Met Thr Ile Ala Tyr
                405                 410                 415

Val Met Ala Ala Ile Cys Ala Leu Phe Met Leu Pro Leu Cys Leu Met
            420                 425                 430

Val Cys Gln Trp Arg Cys Leu Arg Cys Leu Arg Gln Gln His Asp Asp
        435                 440                 445
```

```
Phe Ala Asp Asp Ile Ser Leu Leu Lys
    450                 455


<210> 9060
<211> 376
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1836; "

<220>
<221> source
<223> /note="Gene Symbol: BACE1; "

<220>
<221> source
<223> /note="Gene Name:
      beta-site APP-cleaving enzyme 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P56817; "

<220>
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<223> /note="ENSP ID: ENSP00000422461"

<400> 9060
Met Val Pro Phe Ile Tyr Leu Gln Ala His Phe Thr Leu Cys Ser Gly
1               5                   10                  15


Trp Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val Tyr Val Pro Tyr
            20                  25                  30


Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp Leu Val Ser Ile
        35                  40                  45


Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile Ala Ala Ile Thr
    50                  55                  60


Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp Glu Gly Ile Leu
65                  70                  75                  80


Gly Leu Ala Tyr Ala Glu Ile Ala Arg Leu Cys Gly Ala Gly Phe Pro
                85                  90                  95


Leu Asn Gln Ser Glu Val Leu Ala Ser Val Gly Gly Ser Met Ile Ile
            100                 105                 110
```

```
Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu Trp Tyr Thr Pro
        115                 120                 125

Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg Val Glu Ile
    130                 135                 140

Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr Asn Tyr Asp Lys
145                 150                 155                 160

Ser Ile Val Asp Ser Gly Thr Thr Asn Leu Arg Leu Pro Lys Lys Val
                165                 170                 175

Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser Ser Thr Glu Lys
            180                 185                 190

Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val Cys Trp Gln Ala
        195                 200                 205

Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser Leu Tyr Leu Met
    210                 215                 220

Gly Glu Val Thr Asn Gln Ser Phe Arg Ile Thr Ile Leu Pro Gln Gln
225                 230                 235                 240

Tyr Leu Arg Pro Val Glu Asp Val Ala Thr Ser Gln Asp Asp Cys Tyr
                245                 250                 255

Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val Met Gly Ala Val
            260                 265                 270

Ile Met Glu Gly Phe Tyr Val Val Phe Asp Arg Ala Arg Lys Arg Ile
        275                 280                 285

Gly Phe Ala Val Ser Ala Cys His Val His Asp Glu Phe Arg Thr Ala
    290                 295                 300

Ala Val Glu Gly Pro Phe Val Thr Leu Asp Met Glu Asp Cys Gly Tyr
305                 310                 315                 320

Asn Ile Pro Gln Thr Asp Glu Ser Thr Leu Met Thr Ile Ala Tyr Val
                325                 330                 335
```

```
Met Ala Ala Ile Cys Ala Leu Phe Met Leu Pro Leu Cys Leu Met Val
            340                 345                 350

Cys Gln Trp Arg Cys Leu Arg Cys Leu Arg Gln Gln His Asp Asp Phe
        355                 360                 365

Ala Asp Asp Ile Ser Leu Leu Lys
    370                 375


<210> 9061
<211> 476
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1836; "

<220>
<221> source
<223> /note="Gene Symbol: BACE1; "

<220>
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<223> /note="Gene Name:
      beta-site APP-cleaving enzyme 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P56817; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424536"

<400> 9061
Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
1               5                   10                  15

Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
            20                  25                  30

Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
        35                  40                  45

Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
    50                  55                  60

Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
```

65 70 75 80

Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
85 90 95

Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
100 105 110

Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val
115 120 125

Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
130 135 140

Leu Val Ser Ile Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile
145 150 155 160

Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp
165 170 175

Glu Gly Ile Leu Gly Leu Ala Tyr Ala Glu Ile Ala Arg Leu Cys Gly
180 185 190

Ala Gly Phe Pro Leu Asn Gln Ser Glu Val Leu Ala Ser Val Gly Gly
195 200 205

Ser Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu
210 215 220

Trp Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val
225 230 235 240

Arg Val Glu Ile Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr
245 250 255

Asn Tyr Asp Lys Ser Ile Val Asp Ser Gly Thr Thr Asn Leu Arg Leu
260 265 270

Pro Lys Lys Val Phe Glu Ala Ala Val Lys Ser Ile Lys Ala Ala Ser
275 280 285

Ser Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu Gly Glu Gln Leu Val
290 295 300

```
Cys Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile Phe Pro Val Ile Ser
305                 310                 315                 320

Leu Tyr Leu Met Gly Glu Val Thr Asn Gln Ser Phe Arg Ile Thr Ile
                325                 330                 335

Leu Pro Gln Gln Tyr Leu Arg Pro Val Glu Asp Val Ala Thr Ser Gln
            340                 345                 350

Asp Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser Ser Thr Gly Thr Val
        355                 360                 365

Met Gly Ala Val Ile Met Glu Gly Phe Tyr Val Val Phe Asp Arg Ala
    370                 375                 380

Arg Lys Arg Ile Gly Phe Ala Val Ser Ala Cys His Val His Asp Glu
385                 390                 395                 400

Phe Arg Thr Ala Ala Val Glu Gly Pro Phe Val Thr Leu Asp Met Glu
                405                 410                 415

Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu Ser Thr Leu Met Thr
            420                 425                 430

Ile Ala Tyr Val Met Ala Ala Ile Cys Ala Leu Phe Met Leu Pro Leu
        435                 440                 445

Cys Leu Met Val Cys Gln Trp Arg Cys Leu Arg Cys Leu Arg Gln Gln
    450                 455                 460

His Asp Asp Phe Ala Asp Asp Ile Ser Leu Leu Lys
465                 470                 475


<210> 9062
<211> 467
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1836; "

<220>
<221> source
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<223> /note="Gene Symbol: BACE1; "

<220>
<221> source
<223> /note="Gene Name:
beta-site APP-cleaving enzyme 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431848"

<400> 9062

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Met Ala Gln Ala Leu Pro Trp Leu Leu Leu Trp Met Gly Ala Gly Val
1               5                  10                  15

Leu Pro Ala His Gly Thr Gln His Gly Ile Arg Leu Pro Leu Arg Ser
            20                  25                  30

Gly Leu Gly Gly Ala Pro Leu Gly Leu Arg Leu Pro Arg Glu Thr Asp
        35                  40                  45

Glu Glu Pro Glu Glu Pro Gly Arg Arg Gly Ser Phe Val Glu Met Val
    50                  55                  60

Asp Asn Leu Arg Gly Lys Ser Gly Gln Gly Tyr Tyr Val Glu Met Thr
65                  70                  75                  80

Val Gly Ser Pro Pro Gln Thr Leu Asn Ile Leu Val Asp Thr Gly Ser
                85                  90                  95

Ser Asn Phe Ala Val Gly Ala Ala Pro His Pro Phe Leu His Arg Tyr
            100                 105                 110

Tyr Gln Arg Gln Leu Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val
        115                 120                 125

Tyr Val Pro Tyr Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp
    130                 135                 140

Leu Val Ser Ile Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile
145                 150                 155                 160

Ala Ala Ile Thr Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp
                165                 170                 175

Glu Gly Ile Leu Gly Leu Ala Tyr Ala Glu Ile Ala Arg Pro Asp Asp
```

```
            180                 185                 190

Ser Leu Glu Pro Phe Phe Asp Ser Leu Val Lys Gln Thr His Val Pro
        195                 200                 205

Asn Leu Phe Ser Leu Gln Leu Cys Gly Ala Gly Phe Pro Leu Asn Gln
    210                 215                 220

Ser Glu Val Leu Ala Ser Val Gly Gly Ser Met Ile Ile Gly Gly Ile
225                 230                 235                 240

Asp His Ser Leu Tyr Thr Gly Ser Leu Trp Tyr Thr Pro Ile Arg Arg
                245                 250                 255

Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg Val Glu Ile Asn Gly Gln
            260                 265                 270

Asp Leu Lys Met Asp Cys Lys Glu Thr Glu Lys Phe Pro Asp Gly Phe
        275                 280                 285

Trp Leu Gly Glu Gln Leu Val Cys Trp Gln Ala Gly Thr Thr Pro Trp
    290                 295                 300

Asn Ile Phe Pro Val Ile Ser Leu Tyr Leu Met Gly Glu Val Thr Asn
305                 310                 315                 320

Gln Ser Phe Arg Ile Thr Ile Leu Pro Gln Gln Tyr Leu Arg Pro Val
                325                 330                 335

Glu Asp Val Ala Thr Ser Gln Asp Asp Cys Tyr Lys Phe Ala Ile Ser
            340                 345                 350

Gln Ser Ser Thr Gly Thr Val Met Gly Ala Val Ile Met Glu Gly Phe
        355                 360                 365

Tyr Val Val Phe Asp Arg Ala Arg Lys Arg Ile Gly Phe Ala Val Ser
    370                 375                 380

Ala Cys His Val His Asp Glu Phe Arg Thr Ala Ala Val Glu Gly Pro
385                 390                 395                 400

Phe Val Thr Leu Asp Met Glu Asp Cys Gly Tyr Asn Ile Pro Gln Thr
                405                 410                 415
```

Asp Glu Ser Thr Leu Met Thr Ile Ala Tyr Val Met Ala Ala Ile Cys
420 425 430

Ala Leu Phe Met Leu Pro Leu Cys Leu Met Val Cys Gln Trp Arg Cys
435 440 445

Leu Arg Cys Leu Arg Gln Gln His Asp Asp Phe Ala Asp Asp Ile Ser
450 455 460

Leu Leu Lys
465

<210> 9063
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1836; "

<220>
<221> source
<223> /note="Gene Symbol: BACE1; "

<220>
<221> source
<223> /note="Gene Name:
beta-site APP-cleaving enzyme 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434486"

<400> 9063
Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu Trp
1 5 10 15

Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg
20 25 30

Val Glu Ile Asn Gly Gln Asp Leu
35 40

<210> 9064
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1836; "

<220>
<221> source
<223> /note="Gene Symbol: BACE1; "

<220>
<221> source
<223> /note="Gene Name:
beta-site APP-cleaving enzyme 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475171"

<400> 9064
Met Ile Ile Gly Gly Ile Asp His Ser Leu Tyr Thr Gly Ser Leu Trp
1 5 10 15

Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr Glu Val Ile Ile Val Arg
20 25 30

Val Glu Ile Asn Gly Gln Asp Leu Lys Met Asp Cys Lys Glu Tyr Asn
35 40 45

Tyr Asp Lys
50

<210> 9065
<211> 401
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1836; "

<220>
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<223> /note="Gene Symbol: BACE1; "

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: P56817; "

<220>
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<400> 9065
Met Val Pro Phe Ile Tyr Leu Gln Ala His Phe Thr Leu Cys Ser Gly
1   5   10   15

Trp Ser Ser Thr Tyr Arg Asp Leu Arg Lys Gly Val Tyr Val Pro Tyr
            20   25   30

Thr Gln Gly Lys Trp Glu Gly Glu Leu Gly Thr Asp Leu Val Ser Ile
        35   40   45

Pro His Gly Pro Asn Val Thr Val Arg Ala Asn Ile Ala Ala Ile Thr
    50   55   60

Glu Ser Asp Lys Phe Phe Ile Asn Gly Ser Asn Trp Glu Gly Ile Leu
65   70   75   80

Gly Leu Ala Tyr Ala Glu Ile Ala Arg Pro Asp Asp Ser Leu Glu Pro
                85   90   95

Phe Phe Asp Ser Leu Val Lys Gln Thr His Val Pro Asn Leu Phe Ser
            100   105   110

Leu Gln Leu Cys Gly Ala Gly Phe Pro Leu Asn Gln Ser Glu Val Leu
        115   120   125

Ala Ser Val Gly Gly Ser Met Ile Ile Gly Gly Ile Asp His Ser Leu
    130   135   140

Tyr Thr Gly Ser Leu Trp Tyr Thr Pro Ile Arg Arg Glu Trp Tyr Tyr
145   150   155   160

Glu Val Ile Ile Val Arg Val Glu Ile Asn Gly Gln Asp Leu Lys Met
                165   170   175

Asp Cys Lys Glu Tyr Asn Tyr Asp Lys Ser Ile Val Asp Ser Gly Thr
            180   185   190

Thr Asn Leu Arg Leu Pro Lys Lys Val Phe Glu Ala Ala Val Lys Ser
        195   200   205

```
Ile Lys Ala Ala Ser Ser Thr Glu Lys Phe Pro Asp Gly Phe Trp Leu
    210                 215                 220

Gly Glu Gln Leu Val Cys Trp Gln Ala Gly Thr Thr Pro Trp Asn Ile
225                 230                 235                 240

Phe Pro Val Ile Ser Leu Tyr Leu Met Gly Glu Val Thr Asn Gln Ser
                245                 250                 255

Phe Arg Ile Thr Ile Leu Pro Gln Gln Tyr Leu Arg Pro Val Glu Asp
            260                 265                 270

Val Ala Thr Ser Gln Asp Asp Cys Tyr Lys Phe Ala Ile Ser Gln Ser
        275                 280                 285

Ser Thr Gly Thr Val Met Gly Ala Val Ile Met Glu Gly Phe Tyr Val
    290                 295                 300

Val Phe Asp Arg Ala Arg Lys Arg Ile Gly Phe Ala Val Ser Ala Cys
305                 310                 315                 320

His Val His Asp Glu Phe Arg Thr Ala Ala Val Glu Gly Pro Phe Val
                325                 330                 335

Thr Leu Asp Met Glu Asp Cys Gly Tyr Asn Ile Pro Gln Thr Asp Glu
            340                 345                 350

Ser Thr Leu Met Thr Ile Ala Tyr Val Met Ala Ala Ile Cys Ala Leu
        355                 360                 365

Phe Met Leu Pro Leu Cys Leu Met Val Cys Gln Trp Arg Cys Leu Arg
    370                 375                 380

Cys Leu Arg Gln Gln His Asp Asp Phe Ala Asp Asp Ile Ser Leu Leu
385                 390                 395                 400

Lys
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<210> 9066
<211> 468
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9Y5Z0; "

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<223> /note="ENSP ID: ENSP00000327528"

<400> 9066

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Met Gly Ala Leu Ala Arg Ala Leu Leu Leu Pro Leu Leu Ala Gln Trp
1               5                   10                  15


Leu Leu Arg Ala Ala Pro Glu Leu Ala Pro Ala Pro Phe Thr Leu Pro
            20                  25                  30


Leu Arg Val Ala Ala Ala Thr Asn Arg Val Val Ala Pro Thr Pro Gly
        35                  40                  45


Pro Gly Thr Pro Ala Glu Arg His Ala Asp Gly Leu Ala Leu Ala Leu
    50                  55                  60


Glu Pro Ala Leu Ala Ser Pro Ala Gly Ala Ala Asn Phe Leu Ala Met
65                  70                  75                  80


Val Asp Asn Leu Gln Gly Asp Ser Gly Arg Gly Tyr Tyr Leu Glu Met
                85                  90                  95


Leu Ile Gly Thr Pro Pro Gln Lys Leu Gln Ile Leu Val Asp Thr Gly
            100                 105                 110


Ser Ser Asn Phe Ala Val Ala Gly Thr Pro His Ser Tyr Ile Asp Thr
        115                 120                 125


Tyr Phe Asp Thr Glu Arg Ser Ser Thr Tyr Arg Ser Lys Gly Phe Asp
    130                 135                 140
```

```
Val Thr Val Lys Tyr Thr Gln Gly Ser Trp Thr Gly Phe Val Gly Glu
145                 150                 155                 160

Asp Leu Val Thr Ile Pro Lys Gly Phe Asn Thr Ser Phe Leu Val Asn
                165                 170                 175

Ile Ala Thr Ile Phe Glu Ser Glu Asn Phe Phe Leu Pro Gly Ile Lys
            180                 185                 190

Trp Asn Gly Ile Leu Gly Leu Ala Tyr Ala Thr Leu Ala Lys Pro Ser
        195                 200                 205

Ser Ser Leu Glu Thr Phe Phe Asp Ser Leu Val Thr Gln Ala Asn Ile
    210                 215                 220

Pro Asn Val Phe Ser Met Gln Met Cys Gly Ala Gly Leu Pro Val Ala
225                 230                 235                 240

Gly Ser Gly Thr Asn Gly Gly Ser Leu Val Leu Gly Gly Ile Glu Pro
                245                 250                 255

Ser Leu Tyr Lys Gly Asp Ile Trp Tyr Thr Pro Ile Lys Glu Glu Trp
            260                 265                 270

Tyr Tyr Gln Ile Glu Ile Leu Lys Leu Glu Ile Gly Gly Gln Ser Leu
        275                 280                 285

Asn Leu Asp Cys Arg Glu Tyr Asn Ala Asp Lys Ala Ile Val Asp Ser
    290                 295                 300

Gly Thr Thr Leu Leu Arg Leu Pro Gln Lys Val Phe Asp Ala Val Val
305                 310                 315                 320

Glu Ala Val Ala Arg Ala Ser Leu Leu Tyr Ile Gln Pro Met Met Gly
                325                 330                 335

Ala Gly Leu Asn Tyr Glu Cys Tyr Arg Phe Gly Ile Ser Pro Ser Thr
            340                 345                 350

Asn Ala Leu Val Ile Gly Ala Thr Val Met Glu Gly Phe Tyr Val Ile
        355                 360                 365
```

```
Phe Asp Arg Ala Gln Lys Arg Val Gly Phe Ala Ala Ser Pro Cys Ala
    370                 375                 380

Glu Ile Ala Gly Ala Ala Val Ser Glu Ile Ser Gly Pro Phe Ser Thr
385                 390                 395                 400

Glu Asp Val Ala Ser Asn Cys Val Pro Ala Gln Ser Leu Ser Glu Pro
                405                 410                 415

Ile Leu Trp Ile Val Ser Tyr Ala Leu Met Ser Val Cys Gly Ala Ile
            420                 425                 430

Leu Leu Val Leu Ile Val Leu Leu Leu Leu Pro Phe Arg Cys Gln Arg
        435                 440                 445

Arg Pro Arg Asp Pro Glu Val Val Asn Asp Glu Ser Ser Leu Val Arg
    450                 455                 460

His Arg Trp Lys
465
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<210> 9067
<211> 518
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000332979"

<400> 9067

```
Met Gly Ala Leu Ala Arg Ala Leu Leu Leu Pro Leu Leu Ala Gln Trp
1               5                   10                  15
```

```
Leu Leu Arg Ala Ala Pro Glu Leu Ala Pro Ala Pro Phe Thr Leu Pro
            20                  25                  30

Leu Arg Val Ala Ala Ala Thr Asn Arg Val Val Ala Pro Thr Pro Gly
        35                  40                  45

Pro Gly Thr Pro Ala Glu Arg His Ala Asp Gly Leu Ala Leu Ala Leu
    50                  55                  60

Glu Pro Ala Leu Ala Ser Pro Ala Gly Ala Ala Asn Phe Leu Ala Met
65                  70                  75                  80

Val Asp Asn Leu Gln Gly Asp Ser Gly Arg Gly Tyr Tyr Leu Glu Met
                85                  90                  95

Leu Ile Gly Thr Pro Pro Gln Lys Leu Gln Ile Leu Val Asp Thr Gly
            100                 105                 110

Ser Ser Asn Phe Ala Val Ala Gly Thr Pro His Ser Tyr Ile Asp Thr
        115                 120                 125

Tyr Phe Asp Thr Glu Arg Ser Ser Thr Tyr Arg Ser Lys Gly Phe Asp
    130                 135                 140

Val Thr Val Lys Tyr Thr Gln Gly Ser Trp Thr Gly Phe Val Gly Glu
145                 150                 155                 160

Asp Leu Val Thr Ile Pro Lys Gly Phe Asn Thr Ser Phe Leu Val Asn
                165                 170                 175

Ile Ala Thr Ile Phe Glu Ser Glu Asn Phe Phe Leu Pro Gly Ile Lys
            180                 185                 190

Trp Asn Gly Ile Leu Gly Leu Ala Tyr Ala Thr Leu Ala Lys Pro Ser
        195                 200                 205

Ser Ser Leu Glu Thr Phe Phe Asp Ser Leu Val Thr Gln Ala Asn Ile
    210                 215                 220

Pro Asn Val Phe Ser Met Gln Met Cys Gly Ala Gly Leu Pro Val Ala
225                 230                 235                 240
```

```
Gly Ser Gly Thr Asn Gly Gly Ser Leu Val Leu Gly Gly Ile Glu Pro
                245                 250                 255

Ser Leu Tyr Lys Gly Asp Ile Trp Tyr Thr Pro Ile Lys Glu Glu Trp
            260                 265                 270

Tyr Tyr Gln Ile Glu Ile Leu Lys Leu Glu Ile Gly Gly Gln Ser Leu
        275                 280                 285

Asn Leu Asp Cys Arg Glu Tyr Asn Ala Asp Lys Ala Ile Val Asp Ser
    290                 295                 300

Gly Thr Thr Leu Leu Arg Leu Pro Gln Lys Val Phe Asp Ala Val Val
305                 310                 315                 320

Glu Ala Val Ala Arg Ala Ser Leu Ile Pro Glu Phe Ser Asp Gly Phe
                325                 330                 335

Trp Thr Gly Ser Gln Leu Ala Cys Trp Thr Asn Ser Glu Thr Pro Trp
            340                 345                 350

Ser Tyr Phe Pro Lys Ile Ser Ile Tyr Leu Arg Asp Glu Asn Ser Ser
        355                 360                 365

Arg Ser Phe Arg Ile Thr Ile Leu Pro Gln Leu Tyr Ile Gln Pro Met
    370                 375                 380

Met Gly Ala Gly Leu Asn Tyr Glu Cys Tyr Arg Phe Gly Ile Ser Pro
385                 390                 395                 400

Ser Thr Asn Ala Leu Val Ile Gly Ala Thr Val Met Glu Gly Phe Tyr
                405                 410                 415

Val Ile Phe Asp Arg Ala Gln Lys Arg Val Gly Phe Ala Ala Ser Pro
            420                 425                 430

Cys Ala Glu Ile Ala Gly Ala Ala Val Ser Glu Ile Ser Gly Pro Phe
        435                 440                 445

Ser Thr Glu Asp Val Ala Ser Asn Cys Val Pro Ala Gln Ser Leu Ser
    450                 455                 460
```

```
Glu Pro Ile Leu Trp Ile Val Ser Tyr Ala Leu Met Ser Val Cys Gly
465                 470                 475                 480


Ala Ile Leu Leu Val Leu Ile Val Leu Leu Leu Pro Phe Arg Cys
                485                 490                 495


Gln Arg Arg Pro Arg Asp Pro Glu Val Val Asn Asp Glu Ser Ser Leu
            500                 505                 510


Val Arg His Arg Trp Lys
        515


<210> 9068
<211> 396
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1837; "

<220>
<221> source
<223> /note="Gene Symbol: BACE2; "

<220>
<221> source
<223> /note="Gene Name:
      beta-site APP-cleaving enzyme 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9Y5Z0; "

<220>
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<223> /note="ENSP ID: ENSP00000333854"

<400> 9068
Met Gly Ala Leu Ala Arg Ala Leu Leu Leu Pro Leu Leu Ala Gln Trp
1               5                   10                  15


Leu Leu Arg Ala Ala Pro Glu Leu Ala Pro Ala Pro Phe Thr Leu Pro
            20                  25                  30


Leu Arg Val Ala Ala Ala Thr Asn Arg Val Val Ala Pro Thr Pro Gly
        35                  40                  45


Pro Gly Thr Pro Ala Glu Arg His Ala Asp Gly Leu Ala Leu Ala Leu
    50                  55                  60
```

```
Glu Pro Ala Leu Ala Ser Pro Ala Gly Ala Ala Asn Phe Leu Ala Met
65                  70                  75                  80

Val Asp Asn Leu Gln Gly Asp Ser Gly Arg Gly Tyr Tyr Leu Glu Met
                85                  90                  95

Leu Ile Gly Thr Pro Pro Gln Lys Leu Gln Ile Leu Val Asp Thr Gly
            100                 105                 110

Ser Ser Asn Phe Ala Val Ala Gly Thr Pro His Ser Tyr Ile Asp Thr
        115                 120                 125

Tyr Phe Asp Thr Glu Arg Ser Ser Thr Tyr Arg Ser Lys Gly Phe Asp
    130                 135                 140

Val Thr Val Lys Tyr Thr Gln Gly Ser Trp Thr Gly Phe Val Gly Glu
145                 150                 155                 160

Asp Leu Val Thr Ile Pro Lys Gly Phe Asn Thr Ser Phe Leu Val Asn
                165                 170                 175

Ile Ala Thr Ile Phe Glu Ser Glu Asn Phe Phe Leu Pro Gly Ile Lys
            180                 185                 190

Trp Asn Gly Ile Leu Gly Leu Ala Tyr Ala Thr Leu Ala Lys Pro Ser
        195                 200                 205

Ser Ser Leu Glu Thr Phe Phe Asp Ser Leu Val Thr Gln Ala Asn Ile
    210                 215                 220

Pro Asn Val Phe Ser Met Gln Met Cys Gly Ala Gly Leu Pro Val Ala
225                 230                 235                 240

Gly Ser Gly Thr Asn Gly Gly Ser Leu Val Leu Gly Gly Ile Glu Pro
                245                 250                 255

Ser Leu Tyr Lys Gly Asp Ile Trp Tyr Thr Pro Ile Lys Glu Glu Trp
            260                 265                 270

Tyr Tyr Gln Ile Glu Ile Leu Lys Leu Glu Ile Gly Gly Gln Ser Leu
        275                 280                 285
```

```
Asn Leu Asp Cys Arg Glu Tyr Asn Ala Asp Lys Ala Ile Val Asp Ser
    290                 295                 300

Gly Thr Thr Leu Leu Arg Leu Pro Gln Lys Val Phe Asp Ala Val Val
305                 310                 315                 320

Glu Ala Val Ala Arg Ala Ser Leu Ile Pro Glu Phe Ser Asp Gly Phe
                325                 330                 335

Trp Thr Gly Ser Gln Leu Ala Cys Trp Thr Asn Ser Glu Thr Pro Trp
            340                 345                 350

Ser Tyr Phe Pro Lys Ile Ser Ile Tyr Leu Arg Asp Glu Asn Ser Ser
        355                 360                 365

Arg Ser Phe Arg Ile Thr Ile Leu Pro Gln Lys Leu Gln Val Leu Gln
    370                 375                 380

Cys Leu Lys Phe Pro Gly Leu Ser Gln Gln Arg Met
385                 390                 395


<210> 9069
<211> 191
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      beta-transducin repeat containing E3
      ubiquitin
      prt ligase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359202"

<400> 9069
Met Pro Arg Ser Leu Trp Leu Gly Cys Ser Ser Leu Ala Asp Ser Met
1               5                   10                  15
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```
Pro Ser Leu Arg Cys Leu Tyr Asn Pro Gly Thr Gly Ala Leu Thr Ala
            20                  25                  30

Phe Gln Asn Ser Ser Glu Arg Glu Asp Cys Asn Asn Gly Glu Pro Pro
        35                  40                  45

Arg Lys Ile Ile Pro Glu Lys Asn Ser Leu Arg Gln Thr Tyr Asn Ser
    50                  55                  60

Cys Ala Arg Leu Cys Leu Asn Gln Glu Thr Val Cys Leu Ala Ser Thr
65                  70                  75                  80

Ala Met Lys Thr Glu Asn Cys Val Ala Lys Thr Lys Leu Ala Asn Gly
                85                  90                  95

Thr Ser Ser Met Ile Val Pro Lys Gln Arg Lys Leu Ser Ala Ser Tyr
            100                 105                 110

Glu Lys Glu Lys Glu Leu Cys Val Lys Tyr Phe Glu Gln Trp Ser Glu
        115                 120                 125

Ser Asp Gln Val Glu Phe Val Glu His Leu Ile Ser Gln Met Cys His
    130                 135                 140

Tyr Gln His Gly His Ile Asn Ser Tyr Leu Lys Pro Met Leu Gln Arg
145                 150                 155                 160

Asp Phe Ile Thr Ala Leu Pro Ala Arg Gly Leu Asp His Ile Ala Glu
                165                 170                 175

Asn Ile Leu Ser Tyr Leu Asp Ala Lys Ser Leu Cys Ala Ala Glu
            180                 185                 190


<210> 9070
<211> 605
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
beta-transducin repeat containing E3
ubiquitin
prt ligase; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y297; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359206"

<400> 9070
Met Asp Pro Ala Glu Ala Val Leu Gln Glu Lys Ala Leu Lys Phe Met
1   5   10   15

Cys Ser Met Pro Arg Ser Leu Trp Leu Gly Cys Ser Ser Leu Ala Asp
            20   25   30

Ser Met Pro Ser Leu Arg Cys Leu Tyr Asn Pro Gly Thr Gly Ala Leu
        35   40   45

Thr Ala Phe Gln Asn Ser Ser Glu Arg Glu Asp Cys Asn Asn Gly Glu
    50   55   60

Pro Pro Arg Lys Ile Ile Pro Glu Lys Asn Ser Leu Arg Gln Thr Tyr
65   70   75   80

Asn Ser Cys Ala Arg Leu Cys Leu Asn Gln Glu Thr Val Cys Leu Ala
                85   90   95

Ser Thr Ala Met Lys Thr Glu Asn Cys Val Ala Lys Thr Lys Leu Ala
            100   105   110

Asn Gly Thr Ser Ser Met Ile Val Pro Lys Gln Arg Lys Leu Ser Ala
        115   120   125

Ser Tyr Glu Lys Glu Lys Glu Leu Cys Val Lys Tyr Phe Glu Gln Trp
    130   135   140

Ser Glu Ser Asp Gln Val Glu Phe Val Glu His Leu Ile Ser Gln Met
145   150   155   160

```
Cys His Tyr Gln His Gly His Ile Asn Ser Tyr Leu Lys Pro Met Leu
                165                 170                 175

Gln Arg Asp Phe Ile Thr Ala Leu Pro Ala Arg Gly Leu Asp His Ile
            180                 185                 190

Ala Glu Asn Ile Leu Ser Tyr Leu Asp Ala Lys Ser Leu Cys Ala Ala
        195                 200                 205

Glu Leu Val Cys Lys Glu Trp Tyr Arg Val Thr Ser Asp Gly Met Leu
    210                 215                 220

Trp Lys Lys Leu Ile Glu Arg Met Val Arg Thr Asp Ser Leu Trp Arg
225                 230                 235                 240

Gly Leu Ala Glu Arg Arg Gly Trp Gly Gln Tyr Leu Phe Lys Asn Lys
                245                 250                 255

Pro Pro Asp Gly Asn Ala Pro Pro Asn Ser Phe Tyr Arg Ala Leu Tyr
            260                 265                 270

Pro Lys Ile Ile Gln Asp Ile Glu Thr Ile Glu Ser Asn Trp Arg Cys
        275                 280                 285

Gly Arg His Ser Leu Gln Arg Ile His Cys Arg Ser Glu Thr Ser Lys
    290                 295                 300

Gly Val Tyr Cys Leu Gln Tyr Asp Asp Gln Lys Ile Val Ser Gly Leu
305                 310                 315                 320

Arg Asp Asn Thr Ile Lys Ile Trp Asp Lys Asn Thr Leu Glu Cys Lys
                325                 330                 335

Arg Ile Leu Thr Gly His Thr Gly Ser Val Leu Cys Leu Gln Tyr Asp
            340                 345                 350

Glu Arg Val Ile Ile Thr Gly Ser Ser Asp Ser Thr Val Arg Val Trp
        355                 360                 365

Asp Val Asn Thr Gly Glu Met Leu Asn Thr Leu Ile His His Cys Glu
    370                 375                 380

Ala Val Leu His Leu Arg Phe Asn Asn Gly Met Met Val Thr Cys Ser
```

385 390 395 400

Lys Asp Arg Ser Ile Ala Val Trp Asp Met Ala Ser Pro Thr Asp Ile
405 410 415

Thr Leu Arg Arg Val Leu Val Gly His Arg Ala Ala Val Asn Val Val
420 425 430

Asp Phe Asp Asp Lys Tyr Ile Val Ser Ala Ser Gly Asp Arg Thr Ile
435 440 445

Lys Val Trp Asn Thr Ser Thr Cys Glu Phe Val Arg Thr Leu Asn Gly
450 455 460

His Lys Arg Gly Ile Ala Cys Leu Gln Tyr Arg Asp Arg Leu Val Val
465 470 475 480

Ser Gly Ser Ser Asp Asn Thr Ile Arg Leu Trp Asp Ile Glu Cys Gly
485 490 495

Ala Cys Leu Arg Val Leu Glu Gly His Glu Glu Leu Val Arg Cys Ile
500 505 510

Arg Phe Asp Asn Lys Arg Ile Val Ser Gly Ala Tyr Asp Gly Lys Ile
515 520 525

Lys Val Trp Asp Leu Val Ala Ala Leu Asp Pro Arg Ala Pro Ala Gly
530 535 540

Thr Leu Cys Leu Arg Thr Leu Val Glu His Ser Gly Arg Val Phe Arg
545 550 555 560

Leu Gln Phe Asp Glu Phe Gln Ile Val Ser Ser Ser His Asp Asp Thr
565 570 575

Ile Leu Ile Trp Asp Phe Leu Asn Asp Pro Ala Ala Gln Ala Glu Pro
580 585 590

Pro Arg Ser Pro Ser Arg Thr Tyr Thr Tyr Ile Ser Arg
595 600 605

<210> 9071
<211> 579

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1838; "

<220>
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<220>
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beta-transducin repeat containing E3
ubiquitin
prt ligase; "

<220>
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<223> /note="ENSP ID: ENSP00000377088"

<400> 9071
Met Asp Pro Ala Glu Ala Val Leu Gln Glu Lys Ala Leu Lys Phe Met
1 5 10 15

Cys Ser Met Pro Arg Ser Leu Trp Leu Gly Cys Ser Ser Leu Ala Asp
20 25 30

Ser Met Pro Ser Leu Arg Cys Leu Tyr Asn Pro Gly Thr Gly Ala Leu
35 40 45

Thr Ala Phe Gln Thr Tyr Asn Ser Cys Ala Arg Leu Cys Leu Asn Gln
50 55 60

Glu Thr Val Cys Leu Ala Ser Thr Ala Met Lys Thr Glu Asn Cys Val
65 70 75 80

Ala Lys Thr Lys Leu Ala Asn Gly Thr Ser Ser Met Ile Val Pro Lys
85 90 95

Gln Arg Lys Leu Ser Ala Ser Tyr Glu Lys Glu Lys Glu Leu Cys Val
100 105 110

Lys Tyr Phe Glu Gln Trp Ser Glu Ser Asp Gln Val Glu Phe Val Glu
115 120 125

His Leu Ile Ser Gln Met Cys His Tyr Gln His Gly His Ile Asn Ser
130 135 140

```
Tyr Leu Lys Pro Met Leu Gln Arg Asp Phe Ile Thr Ala Leu Pro Ala
145                 150                 155                 160

Arg Gly Leu Asp His Ile Ala Glu Asn Ile Leu Ser Tyr Leu Asp Ala
                165                 170                 175

Lys Ser Leu Cys Ala Ala Glu Leu Val Cys Lys Glu Trp Tyr Arg Val
            180                 185                 190

Thr Ser Asp Gly Met Leu Trp Lys Lys Leu Ile Glu Arg Met Val Arg
        195                 200                 205

Thr Asp Ser Leu Trp Arg Gly Leu Ala Glu Arg Arg Gly Trp Gly Gln
    210                 215                 220

Tyr Leu Phe Lys Asn Lys Pro Pro Asp Gly Asn Ala Pro Pro Asn Ser
225                 230                 235                 240

Phe Tyr Arg Ala Leu Tyr Pro Lys Ile Ile Gln Asp Ile Glu Thr Ile
                245                 250                 255

Glu Ser Asn Trp Arg Cys Gly Arg His Ser Leu Gln Arg Ile His Cys
            260                 265                 270

Arg Ser Glu Thr Ser Lys Gly Val Tyr Cys Leu Gln Tyr Asp Asp Gln
        275                 280                 285

Lys Ile Val Ser Gly Leu Arg Asp Asn Thr Ile Lys Ile Trp Asp Lys
    290                 295                 300

Asn Thr Leu Glu Cys Lys Arg Ile Leu Thr Gly His Thr Gly Ser Val
305                 310                 315                 320

Leu Cys Leu Gln Tyr Asp Glu Arg Val Ile Ile Thr Gly Ser Ser Asp
                325                 330                 335

Ser Thr Val Arg Val Trp Asp Val Asn Thr Gly Glu Met Leu Asn Thr
            340                 345                 350

Leu Ile His His Cys Glu Ala Val Leu His Leu Arg Phe Asn Asn Gly
        355                 360                 365
```

```
Met Met Val Thr Cys Ser Lys Asp Arg Ser Ile Ala Val Trp Asp Met
    370                 375                 380

Ala Ser Pro Thr Asp Ile Thr Leu Arg Arg Val Leu Val Gly His Arg
385                 390                 395                 400

Ala Ala Val Asn Val Val Asp Phe Asp Asp Lys Tyr Ile Val Ser Ala
                405                 410                 415

Ser Gly Asp Arg Thr Ile Lys Val Trp Asn Thr Ser Thr Cys Glu Phe
            420                 425                 430

Val Arg Thr Leu Asn Gly His Lys Arg Gly Ile Ala Cys Leu Gln Tyr
        435                 440                 445

Arg Asp Arg Leu Val Val Ser Gly Ser Ser Asp Asn Thr Ile Arg Leu
    450                 455                 460

Trp Asp Ile Glu Cys Gly Ala Cys Leu Arg Val Leu Glu Gly His Glu
465                 470                 475                 480

Glu Leu Val Arg Cys Ile Arg Phe Asp Asn Lys Arg Ile Val Ser Gly
                485                 490                 495

Ala Tyr Asp Gly Lys Ile Lys Val Trp Asp Leu Val Ala Ala Leu Asp
            500                 505                 510

Pro Arg Ala Pro Ala Gly Thr Leu Cys Leu Arg Thr Leu Val Glu His
        515                 520                 525

Ser Gly Arg Val Phe Arg Leu Gln Phe Asp Glu Phe Gln Ile Val Ser
    530                 535                 540

Ser Ser His Asp Asp Thr Ile Leu Ile Trp Asp Phe Leu Asn Asp Pro
545                 550                 555                 560

Ala Ala Gln Ala Glu Pro Pro Arg Ser Pro Ser Arg Thr Tyr Thr Tyr
                565                 570                 575

Ile Ser Arg
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<210> 9072
<211> 569
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1838; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
beta-transducin repeat containing E3
ubiquitin
prt ligase; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y297; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385339"

<400> 9072

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Met Asp Pro Ala Glu Ala Val Leu Gln Glu Lys Ala Leu Lys Phe Met
1               5                  10                  15

Asn Ser Ser Glu Arg Glu Asp Cys Asn Asn Gly Glu Pro Pro Arg Lys
            20                  25                  30

Ile Ile Pro Glu Lys Asn Ser Leu Arg Gln Thr Tyr Asn Ser Cys Ala
        35                  40                  45

Arg Leu Cys Leu Asn Gln Glu Thr Val Cys Leu Ala Ser Thr Ala Met
    50                  55                  60

Lys Thr Glu Asn Cys Val Ala Lys Thr Lys Leu Ala Asn Gly Thr Ser
65                  70                  75                  80

Ser Met Ile Val Pro Lys Gln Arg Lys Leu Ser Ala Ser Tyr Glu Lys
                85                  90                  95

Glu Lys Glu Leu Cys Val Lys Tyr Phe Glu Gln Trp Ser Glu Ser Asp
            100                 105                 110
```

```
Gln Val Glu Phe Val Glu His Leu Ile Ser Gln Met Cys His Tyr Gln
        115                 120                 125

His Gly His Ile Asn Ser Tyr Leu Lys Pro Met Leu Gln Arg Asp Phe
    130                 135                 140

Ile Thr Ala Leu Pro Ala Arg Gly Leu Asp His Ile Ala Glu Asn Ile
145                 150                 155                 160

Leu Ser Tyr Leu Asp Ala Lys Ser Leu Cys Ala Ala Glu Leu Val Cys
                165                 170                 175

Lys Glu Trp Tyr Arg Val Thr Ser Asp Gly Met Leu Trp Lys Lys Leu
            180                 185                 190

Ile Glu Arg Met Val Arg Thr Asp Ser Leu Trp Arg Gly Leu Ala Glu
        195                 200                 205

Arg Arg Gly Trp Gly Gln Tyr Leu Phe Lys Asn Lys Pro Pro Asp Gly
    210                 215                 220

Asn Ala Pro Pro Asn Ser Phe Tyr Arg Ala Leu Tyr Pro Lys Ile Ile
225                 230                 235                 240

Gln Asp Ile Glu Thr Ile Glu Ser Asn Trp Arg Cys Gly Arg His Ser
                245                 250                 255

Leu Gln Arg Ile His Cys Arg Ser Glu Thr Ser Lys Gly Val Tyr Cys
            260                 265                 270

Leu Gln Tyr Asp Asp Gln Lys Ile Val Ser Gly Leu Arg Asp Asn Thr
        275                 280                 285

Ile Lys Ile Trp Asp Lys Asn Thr Leu Glu Cys Lys Arg Ile Leu Thr
    290                 295                 300

Gly His Thr Gly Ser Val Leu Cys Leu Gln Tyr Asp Glu Arg Val Ile
305                 310                 315                 320

Ile Thr Gly Ser Ser Asp Ser Thr Val Arg Val Trp Asp Val Asn Thr
                325                 330                 335

Gly Glu Met Leu Asn Thr Leu Ile His His Cys Glu Ala Val Leu His
```

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            340                 345                 350

Leu Arg Phe Asn Asn Gly Met Met Val Thr Cys Ser Lys Asp Arg Ser
        355                 360                 365

Ile Ala Val Trp Asp Met Ala Ser Pro Thr Asp Ile Thr Leu Arg Arg
    370                 375                 380

Val Leu Val Gly His Arg Ala Ala Val Asn Val Val Asp Phe Asp Asp
385                 390                 395                 400

Lys Tyr Ile Val Ser Ala Ser Gly Asp Arg Thr Ile Lys Val Trp Asn
                405                 410                 415

Thr Ser Thr Cys Glu Phe Val Arg Thr Leu Asn Gly His Lys Arg Gly
            420                 425                 430

Ile Ala Cys Leu Gln Tyr Arg Asp Arg Leu Val Val Ser Gly Ser Ser
        435                 440                 445

Asp Asn Thr Ile Arg Leu Trp Asp Ile Glu Cys Gly Ala Cys Leu Arg
    450                 455                 460

Val Leu Glu Gly His Glu Glu Leu Val Arg Cys Ile Arg Phe Asp Asn
465                 470                 475                 480

Lys Arg Ile Val Ser Gly Ala Tyr Asp Gly Lys Ile Lys Val Trp Asp
                485                 490                 495

Leu Val Ala Ala Leu Asp Pro Arg Ala Pro Ala Gly Thr Leu Cys Leu
            500                 505                 510

Arg Thr Leu Val Glu His Ser Gly Arg Val Phe Arg Leu Gln Phe Asp
        515                 520                 525

Glu Phe Gln Ile Val Ser Ser Ser His Asp Asp Thr Ile Leu Ile Trp
    530                 535                 540

Asp Phe Leu Asn Asp Pro Ala Ala Gln Ala Glu Pro Pro Arg Ser Pro
545                 550                 555                 560

Ser Arg Thr Tyr Thr Tyr Ile Ser Arg
                565
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<210> 9073
<211> 241
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
BH3
interacting
domain death agonist; "

<220>
<221> source
<223> /note="Uniprot ID: P55957; "

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<223> /note="ENSP ID: ENSP00000318822"

<400> 9073
Met Cys Ser Gly Ala Gly Val Met Met Ala Arg Trp Ala Ala Arg Gly
1   5   10   15

Arg Ala Gly Trp Arg Ser Thr Val Arg Ile Leu Ser Pro Leu Gly His
            20   25   30

Cys Glu Pro Gly Val Ser Arg Ser Cys Arg Ala Ala Gln Ala Met Asp
        35   40   45

Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile Thr Asn
    50   55   60

Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser Phe Arg
65   70   75   80

Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala Pro Gln
                85   90   95

Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser Ser His
            100   105   110

```
Ser Arg Leu Gly Arg Ile Glu Ala Asp Ser Glu Ser Gln Glu Asp Ile
        115                 120                 125

Ile Arg Asn Ile Ala Arg His Leu Ala Gln Val Gly Asp Ser Met Asp
    130                 135                 140

Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln Leu Arg
145                 150                 155                 160

Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala Thr Ala
                165                 170                 175

Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys Glu Lys
            180                 185                 190

Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala Ser His
        195                 200                 205

Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn Phe Ile
    210                 215                 220

Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn Gly Met
225                 230                 235                 240

Asp
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<210> 9074
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000344594"

<400> 9074
Met Asp Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile
1   5   10   15

Thr Asn Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser
            20   25   30

Phe Arg Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala
        35   40   45

Pro Gln Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser
    50   55   60

Ser His Ser Arg Leu Gly Arg Ile Glu Ala Gly Ala Ser Asp Asn Asn
65   70   75   80

Thr Ala Ser Ala Glu Glu Glu Thr Glu Ala Ala Gly Ser Val Ala Val
                85   90   95

Glu Arg Gly Leu His Gly Ala Ala Thr Val Ile Leu Lys Val Lys Lys
            100   105   110

Thr Ser Ser Gly Ile Leu Pro Gly Thr Ser Pro Arg Ser Gly Thr Ala
        115   120   125

Trp Thr Val Ala Ser Leu Arg Ala Trp
    130   135

<210> 9075
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<220>
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domain death agonist; "

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<223> /note="Uniprot ID: P55957; "

<220>
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<223> /note="ENSP ID: ENSP00000382667"

<400> 9075
Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
1 5 10 15

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
20 25 30

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
35 40 45

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
50 55 60

Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
65 70 75 80

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
85 90 95

Gly Met Asp

<210> 9076
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1839; "

<220>
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<223> /note="Gene Symbol: BID; "

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<223> /note="Gene Name:
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interacting
domain death agonist; "

<220>
<221> source
<223> /note="Uniprot ID: P55957; "

<220>
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<223> /note="ENSP ID: ENSP00000382669"

<400> 9076
Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
1 5 10 15

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
20 25 30

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
35 40 45

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
50 55 60

Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
65 70 75 80

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
85 90 95

Gly Met Asp

<210> 9077
<211> 195
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1839; "

<220>
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<223> /note="Gene Symbol: BID; "

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<223> /note="Gene Name:
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interacting
domain death agonist; "

<220>
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<223> /note="Uniprot ID: P55957; "

<220>
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<400> 9077

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Met Asp Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile
1               5                  10                  15

Thr Asn Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser
            20                  25                  30

Phe Arg Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala
        35                  40                  45

Pro Gln Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser
    50                  55                  60

Ser His Ser Arg Leu Gly Arg Ile Glu Ala Asp Ser Glu Ser Gln Glu
65                  70                  75                  80

Asp Ile Ile Arg Asn Ile Ala Arg His Leu Ala Gln Val Gly Asp Ser
                85                  90                  95

Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
            100                 105                 110

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
        115                 120                 125

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
    130                 135                 140

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
145                 150                 155                 160
```

```
Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
                165                 170                 175

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
            180                 185                 190

Gly Met Asp
        195


<210> 9078
<211> 195
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: BID; "

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      interacting
      domain death agonist; "

<220>
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<223> /note="Uniprot ID:  P55957; "

<220>
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<223> /note="ENSP ID: ENSP00000449236"

<400> 9078
Met Asp Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile
1               5                   10                  15

Thr Asn Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser
            20                  25                  30

Phe Arg Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala
        35                  40                  45

Pro Gln Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser
    50                  55                  60
```

```
Ser His Ser Arg Leu Gly Arg Ile Glu Ala Asp Ser Glu Ser Gln Glu
65                  70                  75                  80

Asp Ile Ile Arg Asn Ile Ala Arg His Leu Ala Gln Val Gly Asp Ser
                85                  90                  95

Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
            100                 105                 110

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
        115                 120                 125

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
    130                 135                 140

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
145                 150                 155                 160

Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
                165                 170                 175

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
            180                 185                 190

Gly Met Asp
        195


<210> 9079
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1839; "

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      interacting
      domain death agonist; "
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<220>
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<223> /note="Uniprot ID: P55957; "

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<223> /note="ENSP ID: ENSP00000477773"

<400> 9079
Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
1   5   10   15

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
            20   25   30

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
        35   40   45

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
    50   55   60

Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
65   70   75   80

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
                85   90   95

Gly Met Asp

<210> 9080
<211> 195
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1839; "

<220>
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      interacting
      domain death agonist; "

<220>
<221> source
<223> /note="Uniprot ID: P55957; "

<220>
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<223> /note="ENSP ID: ENSP00000480414"

<400> 9080
Met Asp Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile
1   5   10   15

Thr Asn Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser
            20   25   30

Phe Arg Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala
        35   40   45

Pro Gln Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser
    50   55   60

Ser His Ser Arg Leu Gly Arg Ile Glu Ala Asp Ser Glu Ser Gln Glu
65   70   75   80

Asp Ile Ile Arg Asn Ile Ala Arg His Leu Ala Gln Val Gly Asp Ser
                85   90   95

Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
            100   105   110

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
        115   120   125

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
    130   135   140

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
145   150   155   160

Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
                165   170   175

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
            180   185   190

Gly Met Asp
195

<210> 9081
<211> 122
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1839; "

<220>
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<223> /note="Gene Symbol: BID; "

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<223> /note="Gene Name:
BH3
interacting
domain death agonist; "

<220>
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<223> /note="ENSP ID: ENSP00000481991"

<400> 9081
Met Asp Cys Glu Val Asn Asn Gly Ser Ser Leu Arg Asp Glu Cys Ile
1 5 10 15

Thr Asn Leu Leu Val Phe Gly Phe Leu Gln Ser Cys Ser Asp Asn Ser
20 25 30

Phe Arg Arg Glu Leu Asp Ala Leu Gly His Glu Leu Pro Val Leu Ala
35 40 45

Pro Gln Trp Glu Gly Tyr Asp Glu Leu Gln Thr Asp Gly Asn Arg Ser
50 55 60

Ser His Ser Arg Leu Gly Arg Ile Glu Ala Gly Ala Ser Asp Asn Asn
65 70 75 80

Thr Ala Ser Ala Glu Glu Glu Thr Glu Ala Ala Gly Ser Val Ala Val
85 90 95

Glu Arg Gly Leu His Gly Ala Ala Thr Val Val Leu Gly Gln Gly Gln
100 105 110

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His Gly Gly Cys Ala Pro Glu Glu Glu Asp
        115                 120


<210> 9082
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1839; "

<220>
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<223> /note="Gene Symbol: BID; "

<220>
<221> source
<223> /note="Gene Name:
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      interacting
      domain death agonist; "

<220>
<221> source
<223> /note="Uniprot ID:  P55957; "

<220>
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<223> /note="ENSP ID: ENSP00000483534"

<400> 9082
Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
1               5                   10                  15


Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
            20                  25                  30


Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
        35                  40                  45


Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
    50                  55                  60


Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
65                  70                  75                  80


Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
                85                  90                  95
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Gly Met Asp

<210> 9083
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1839; "

<220>
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<223> /note="Gene Symbol: BID; "

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<223> /note="Gene Name:
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interacting
domain death agonist; "

<220>
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<223> /note="Uniprot ID: P55957; "

<220>
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<223> /note="ENSP ID: ENSP00000483709"

<400> 9083
Met Asp Arg Ser Ile Pro Pro Gly Leu Val Asn Gly Leu Ala Leu Gln
1   5   10   15

Leu Arg Asn Thr Ser Arg Ser Glu Glu Asp Arg Asn Arg Asp Leu Ala
            20   25   30

Thr Ala Leu Glu Gln Leu Leu Gln Ala Tyr Pro Arg Asp Met Glu Lys
        35   40   45

Glu Lys Thr Met Leu Val Leu Ala Leu Leu Leu Ala Lys Lys Val Ala
    50   55   60

Ser His Thr Pro Ser Leu Leu Arg Asp Val Phe His Thr Thr Val Asn
65   70   75   80

Phe Ile Asn Gln Asn Leu Arg Thr Tyr Val Arg Ser Leu Ala Arg Asn
                85   90   95

Gly Met Asp

<210> 9084
<211> 108
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BLID; "

<220>
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<223> /note="Gene Name:
BH3-like motif containing, cell death inducer; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IZY5; "

<220>
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<223> /note="ENSP ID: ENSP00000453153"

<400> 9084
Met Val Thr Leu Leu Pro Ile Glu Gly Gln Glu Ile His Phe Phe Glu
1   5   10   15

Ile Leu Glu Ser Glu Cys Val Leu Tyr Thr Gly Trp Ile Glu Arg Ala
            20   25   30

Ser Gly Ser Ser Ile Tyr Pro Glu Ala Lys Ala Arg Leu Pro Leu Glu
        35   40   45

Ala Leu Leu Gly Ser Asn Lys Glu Pro Met Leu Pro Lys Glu Thr Val
    50   55   60

Leu Ser Leu Lys Arg Tyr Asn Leu Gly Ser Ser Ala Met Lys Arg Asn
65   70   75   80

Val Pro Gly His Val Leu Gln Arg Pro Ser Tyr Leu Thr Arg Ile Gln
                85   90   95

Val Thr Leu Leu Cys Asn Ser Ser Ala Glu Ala Leu
            100   105

<210> 9085
<211> 975
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BICD1; "

<220>
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<223> /note="Gene Name:
bicaudal D homolog 1 (Drosophila); "

<220>
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<223> /note="Uniprot ID: Q96G01; "

<220>
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<223> /note="ENSP ID: ENSP00000281474"

<400> 9085
Met Ala Ala Glu Glu Val Leu Gln Thr Val Asp His Tyr Lys Thr Glu
1   5   10   15

Ile Glu Arg Leu Thr Lys Glu Leu Thr Glu Thr Thr His Glu Lys Ile
            20   25   30

Gln Ala Ala Glu Tyr Gly Leu Val Val Leu Glu Glu Lys Leu Thr Leu
        35   40   45

Lys Gln Gln Tyr Asp Glu Leu Glu Ala Glu Tyr Asp Ser Leu Lys Gln
    50   55   60

Glu Leu Glu Gln Leu Lys Glu Ala Phe Gly Gln Ser Phe Ser Ile His
65   70   75   80

Arg Lys Val Ala Glu Asp Gly Glu Thr Arg Glu Glu Thr Leu Leu Gln
                85   90   95

Glu Ser Ala Ser Lys Glu Ala Tyr Tyr Leu Gly Lys Ile Leu Glu Met
            100   105   110

```
Gln Asn Glu Leu Lys Gln Ser Arg Ala Val Val Thr Asn Val Gln Ala
        115                 120                 125

Glu Asn Glu Arg Leu Thr Ala Val Val Gln Asp Leu Lys Glu Asn Asn
    130                 135                 140

Glu Met Val Glu Leu Gln Arg Ile Arg Met Lys Asp Glu Ile Arg Glu
145                 150                 155                 160

Tyr Lys Phe Arg Glu Ala Arg Leu Leu Gln Asp Tyr Thr Glu Leu Glu
                165                 170                 175

Glu Glu Asn Ile Thr Leu Gln Lys Leu Val Ser Thr Leu Lys Gln Asn
            180                 185                 190

Gln Val Glu Tyr Glu Gly Leu Lys His Glu Ile Lys Arg Phe Glu Glu
        195                 200                 205

Glu Thr Val Leu Leu Asn Ser Gln Leu Glu Asp Ala Ile Arg Leu Lys
    210                 215                 220

Glu Ile Ala Glu His Gln Leu Glu Glu Ala Leu Glu Thr Leu Lys Asn
225                 230                 235                 240

Glu Arg Glu Gln Lys Asn Asn Leu Arg Lys Glu Leu Ser Gln Tyr Ile
                245                 250                 255

Ser Leu Asn Asp Asn His Ile Ser Ile Ser Val Asp Gly Leu Lys Phe
            260                 265                 270

Ala Glu Asp Gly Ser Glu Pro Asn Asn Asp Asp Lys Met Asn Gly His
        275                 280                 285

Ile His Gly Pro Leu Val Lys Leu Asn Gly Asp Tyr Arg Thr Pro Thr
    290                 295                 300

Leu Arg Lys Gly Glu Ser Leu Asn Pro Val Ser Asp Leu Phe Ser Glu
305                 310                 315                 320

Leu Asn Ile Ser Glu Ile Gln Lys Leu Lys Gln Gln Leu Met Gln Val
                325                 330                 335

Glu Arg Glu Lys Ala Ile Leu Leu Ala Asn Leu Gln Glu Ser Gln Thr
```

```
            340                 345                 350

Gln Leu Glu His Thr Lys Gly Ala Leu Thr Glu Gln His Glu Arg Val
        355                 360                 365

His Arg Leu Thr Glu His Val Asn Ala Met Arg Gly Leu Gln Ser Ser
    370                 375                 380

Lys Glu Leu Lys Ala Glu Leu Asp Gly Glu Lys Gly Arg Asp Ser Gly
385                 390                 395                 400

Glu Glu Ala His Asp Tyr Glu Val Asp Ile Asn Gly Leu Glu Ile Leu
                405                 410                 415

Glu Cys Lys Tyr Arg Val Ala Val Thr Glu Val Ile Asp Leu Lys Ala
            420                 425                 430

Glu Ile Lys Ala Leu Lys Glu Lys Tyr Asn Lys Ser Val Glu Asn Tyr
        435                 440                 445

Thr Asp Glu Lys Ala Lys Tyr Glu Ser Lys Ile Gln Met Tyr Asp Glu
    450                 455                 460

Gln Val Thr Ser Leu Glu Lys Thr Thr Lys Glu Ser Gly Glu Lys Met
465                 470                 475                 480

Ala His Met Glu Lys Glu Leu Gln Lys Met Thr Ser Ile Ala Asn Glu
                485                 490                 495

Asn His Ser Thr Leu Asn Thr Ala Gln Asp Glu Leu Val Thr Phe Ser
            500                 505                 510

Glu Glu Leu Ala Gln Leu Tyr His His Val Cys Leu Cys Asn Asn Glu
        515                 520                 525

Thr Pro Asn Arg Val Met Leu Asp Tyr Tyr Arg Gln Ser Arg Val Thr
    530                 535                 540

Arg Ser Gly Ser Leu Lys Gly Pro Asp Asp Pro Arg Gly Leu Leu Ser
545                 550                 555                 560

Pro Arg Leu Ala Arg Arg Gly Val Ser Ser Pro Val Glu Thr Arg Thr
                565                 570                 575
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Ser Ser Glu Pro Val Ala Lys Glu Ser Thr Glu Ala Ser Lys Glu Pro
580 585 590

Ser Pro Thr Lys Thr Pro Thr Ile Ser Pro Val Ile Thr Ala Pro Pro
595 600 605

Ser Ser Pro Val Leu Asp Thr Ser Asp Ile Arg Lys Glu Pro Met Asn
610 615 620

Ile Tyr Asn Leu Asn Ala Ile Ile Arg Asp Gln Ile Lys His Leu Gln
625 630 635 640

Lys Ala Val Asp Arg Ser Leu Gln Leu Ser Arg Gln Arg Ala Ala Ala
645 650 655

Arg Glu Leu Ala Pro Met Ile Asp Lys Asp Lys Glu Ala Leu Met Glu
660 665 670

Glu Ile Leu Lys Leu Lys Ser Leu Leu Ser Thr Lys Arg Glu Gln Ile
675 680 685

Ala Thr Leu Arg Ala Val Leu Lys Ala Asn Lys Gln Thr Ala Glu Val
690 695 700

Ala Leu Ala Asn Leu Lys Asn Lys Tyr Glu Asn Glu Lys Ala Met Val
705 710 715 720

Thr Glu Thr Met Thr Lys Leu Arg Asn Glu Leu Lys Ala Leu Lys Glu
725 730 735

Asp Ala Ala Thr Phe Ser Ser Leu Arg Ala Met Phe Ala Thr Arg Cys
740 745 750

Asp Glu Tyr Val Thr Gln Leu Asp Glu Met Gln Arg Gln Leu Ala Ala
755 760 765

Ala Glu Asp Glu Lys Lys Thr Leu Asn Thr Leu Leu Arg Met Ala Ile
770 775 780

Gln Gln Lys Leu Ala Leu Thr Gln Arg Leu Glu Asp Leu Glu Phe Asp
785 790 795 800

```
His Glu Gln Ser Arg Arg Ser Lys Gly Lys Leu Gly Lys Ser Lys Ile
                805                 810                 815

Gly Ser Pro Lys Val Ser Gly Glu Ala Ser Val Thr Val Pro Thr Ile
            820                 825                 830

Asp Thr Tyr Leu Leu His Ser Gln Gly Pro Gln Thr Pro Asn Ile Arg
        835                 840                 845

Val Ser Ser Gly Thr Gln Arg Lys Arg Gln Phe Ser Pro Ser Leu Cys
    850                 855                 860

Asp Gln Ser Arg Pro Arg Thr Ser Gly Ala Ser Tyr Leu Gln Asn Leu
865                 870                 875                 880

Leu Arg Val Pro Pro Asp Pro Thr Ser Thr Glu Ser Phe Leu Leu Lys
                885                 890                 895

Gly Pro Pro Ser Met Ser Glu Phe Ile Gln Gly His Arg Leu Ser Lys
            900                 905                 910

Glu Lys Arg Leu Thr Val Ala Pro Pro Asp Cys Gln Gln Pro Ala Ala
        915                 920                 925

Ser Val Pro Pro Gln Cys Ser Gln Leu Ala Gly Arg Gln Asp Cys Pro
    930                 935                 940

Thr Val Ser Pro Asp Thr Ala Leu Pro Glu Glu Gln Pro His Ser Ser
945                 950                 955                 960

Ser Gln Cys Ala Pro Leu His Cys Leu Ser Lys Pro Pro His Pro
                965                 970                 975


<210> 9086
<211> 827
<212> PRT
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<220>
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<400> 9086

```
Met Ala Ala Glu Glu Val Leu Gln Thr Val Asp His Tyr Lys Thr Glu
1               5                  10                  15

Ile Glu Arg Leu Thr Lys Glu Leu Thr Glu Thr Thr His Glu Lys Ile
            20                  25                  30

Gln Ala Ala Glu Tyr Gly Leu Val Val Leu Glu Glu Lys Leu Thr Leu
        35                  40                  45

Lys Gln Gln Tyr Asp Glu Leu Glu Ala Glu Tyr Asp Ser Leu Lys Gln
    50                  55                  60

Glu Leu Glu Gln Leu Lys Glu Ala Phe Gly Gln Ser Phe Ser Ile His
65                  70                  75                  80

Arg Lys Val Ala Glu Asp Gly Glu Thr Arg Glu Glu Thr Leu Leu Gln
                85                  90                  95

Glu Ser Ala Ser Lys Glu Ala Tyr Tyr Leu Gly Lys Ile Leu Glu Met
            100                 105                 110

Gln Asn Glu Leu Lys Gln Ser Arg Ala Val Val Thr Asn Val Gln Ala
        115                 120                 125

Glu Asn Glu Arg Leu Thr Ala Val Val Gln Asp Leu Lys Glu Asn Asn
    130                 135                 140

Glu Met Val Glu Leu Gln Arg Ile Arg Met Lys Asp Glu Ile Arg Glu
145                 150                 155                 160

Tyr Lys Phe Arg Glu Ala Arg Leu Leu Gln Asp Tyr Thr Glu Leu Glu
                165                 170                 175

Glu Glu Asn Ile Thr Leu Gln Lys Leu Val Ser Thr Leu Lys Gln Asn
            180                 185                 190
```

```
Gln Val Glu Tyr Glu Gly Leu Lys His Glu Ile Lys Arg Phe Glu Glu
        195                 200                 205

Glu Thr Val Leu Leu Asn Ser Gln Leu Glu Asp Ala Ile Arg Leu Lys
    210                 215                 220

Glu Ile Ala Glu His Gln Leu Glu Glu Ala Leu Glu Thr Leu Lys Asn
225                 230                 235                 240

Glu Arg Glu Gln Lys Asn Asn Leu Arg Lys Glu Leu Ser Gln Tyr Ile
                245                 250                 255

Ser Leu Asn Asp Asn His Ile Ser Ile Ser Val Asp Gly Leu Lys Phe
            260                 265                 270

Ala Glu Asp Gly Ser Glu Pro Asn Asn Asp Asp Lys Met Asn Gly His
        275                 280                 285

Ile His Gly Pro Leu Val Lys Leu Asn Gly Asp Tyr Arg Thr Pro Thr
    290                 295                 300

Leu Arg Lys Gly Glu Ser Leu Asn Pro Val Ser Asp Leu Phe Ser Glu
305                 310                 315                 320

Leu Asn Ile Ser Glu Ile Gln Lys Leu Lys Gln Gln Leu Met Gln Val
                325                 330                 335

Glu Arg Glu Lys Ala Ile Leu Leu Ala Asn Leu Gln Glu Ser Gln Thr
            340                 345                 350

Gln Leu Glu His Thr Lys Gly Ala Leu Thr Glu Gln His Glu Arg Val
        355                 360                 365

His Arg Leu Thr Glu His Val Asn Ala Met Arg Gly Leu Gln Ser Ser
    370                 375                 380

Lys Glu Leu Lys Ala Glu Leu Asp Gly Glu Lys Gly Arg Asp Ser Gly
385                 390                 395                 400

Glu Glu Ala His Asp Tyr Glu Val Asp Ile Asn Gly Leu Glu Ile Leu
                405                 410                 415
```

```
Glu Cys Lys Tyr Arg Val Ala Val Thr Glu Val Ile Asp Leu Lys Ala
            420                 425                 430

Glu Ile Lys Ala Leu Lys Glu Lys Tyr Asn Lys Ser Val Glu Asn Tyr
        435                 440                 445

Thr Asp Glu Lys Ala Lys Tyr Glu Ser Lys Ile Gln Met Tyr Asp Glu
    450                 455                 460

Gln Val Thr Ser Leu Glu Lys Thr Thr Lys Glu Ser Gly Glu Lys Met
465                 470                 475                 480

Ala His Met Glu Lys Glu Leu Gln Lys Met Thr Ser Ile Ala Asn Glu
                485                 490                 495

Asn His Ser Thr Leu Asn Thr Ala Gln Asp Glu Leu Val Thr Phe Ser
            500                 505                 510

Glu Glu Leu Ala Gln Leu Tyr His His Val Cys Leu Cys Asn Asn Glu
        515                 520                 525

Thr Pro Asn Arg Val Met Leu Asp Tyr Tyr Arg Gln Ser Arg Val Thr
    530                 535                 540

Arg Ser Gly Ser Leu Lys Gly Pro Asp Asp Pro Arg Gly Leu Leu Ser
545                 550                 555                 560

Pro Arg Leu Ala Arg Arg Gly Val Ser Ser Pro Val Glu Thr Arg Thr
                565                 570                 575

Ser Ser Glu Pro Val Ala Lys Glu Ser Thr Glu Ala Ser Lys Glu Pro
            580                 585                 590

Ser Pro Thr Lys Thr Pro Thr Ile Ser Pro Val Ile Thr Ala Pro Pro
        595                 600                 605

Ser Ser Pro Val Leu Asp Thr Ser Asp Ile Arg Lys Glu Pro Met Asn
    610                 615                 620

Ile Tyr Asn Leu Asn Ala Ile Ile Arg Asp Gln Ile Lys His Leu Gln
625                 630                 635                 640
```

```
Lys Ala Val Asp Arg Ser Leu Gln Leu Ser Arg Gln Arg Ala Ala Ala
                645                 650                 655

Arg Glu Leu Ala Pro Met Ile Asp Lys Asp Lys Glu Ala Leu Met Glu
            660                 665                 670

Glu Ile Leu Lys Leu Lys Ser Leu Leu Ser Thr Lys Arg Glu Gln Ile
        675                 680                 685

Ala Thr Leu Arg Ala Val Leu Lys Ala Asn Lys Gln Thr Ala Glu Val
    690                 695                 700

Ala Leu Ala Asn Leu Lys Asn Lys Tyr Glu Asn Glu Lys Ala Met Val
705                 710                 715                 720

Thr Glu Thr Met Thr Lys Leu Arg Asn Glu Leu Lys Ala Leu Lys Glu
                725                 730                 735

Asp Ala Ala Thr Phe Ser Ser Leu Arg Ala Met Phe Ala Thr Arg Cys
            740                 745                 750

Asp Glu Tyr Val Thr Gln Leu Asp Glu Met Gln Arg Gln Leu Ala Ala
        755                 760                 765

Ala Glu Asp Glu Lys Lys Thr Leu Asn Thr Leu Leu Arg Met Ala Ile
    770                 775                 780

Gln Gln Lys Leu Ala Leu Thr Gln Arg Leu Glu Asp Leu Glu Phe Asp
785                 790                 795                 800

His Glu Gln Ser Arg Arg Ser Lys Gly Lys Leu Gly Lys Ser Lys Ile
                805                 810                 815

Gly Ser Pro Lys Thr Ile Phe Thr Phe Pro Leu
            820                 825


<210> 9087
<211> 835
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<223> /note="Uniprot ID: Q96G01; "

<220>
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<400> 9087
Met Ala Ala Glu Glu Val Leu Gln Thr Val Asp His Tyr Lys Thr Glu
1 5 10 15

Ile Glu Arg Leu Thr Lys Glu Leu Thr Glu Thr Thr His Glu Lys Ile
20 25 30

Gln Ala Ala Glu Tyr Gly Leu Val Val Leu Glu Glu Lys Leu Thr Leu
35 40 45

Lys Gln Gln Tyr Asp Glu Leu Glu Ala Glu Tyr Asp Ser Leu Lys Gln
50 55 60

Glu Leu Glu Gln Leu Lys Glu Ala Phe Gly Gln Ser Phe Ser Ile His
65 70 75 80

Arg Lys Val Ala Glu Asp Gly Glu Thr Arg Glu Glu Thr Leu Leu Gln
85 90 95

Glu Ser Ala Ser Lys Glu Ala Tyr Tyr Leu Gly Lys Ile Leu Glu Met
100 105 110

Gln Asn Glu Leu Lys Gln Ser Arg Ala Val Val Thr Asn Val Gln Ala
115 120 125

Glu Asn Glu Arg Leu Thr Ala Val Val Gln Asp Leu Lys Glu Asn Asn
130 135 140

Glu Met Val Glu Leu Gln Arg Ile Arg Met Lys Asp Glu Ile Arg Glu
145 150 155 160

```
Tyr Lys Phe Arg Glu Ala Arg Leu Leu Gln Asp Tyr Thr Glu Leu Glu
                165                 170                 175

Glu Glu Asn Ile Thr Leu Gln Lys Leu Val Ser Thr Leu Lys Gln Asn
            180                 185                 190

Gln Val Glu Tyr Glu Gly Leu Lys His Glu Ile Lys Arg Phe Glu Glu
        195                 200                 205

Glu Thr Val Leu Leu Asn Ser Gln Leu Glu Asp Ala Ile Arg Leu Lys
    210                 215                 220

Glu Ile Ala Glu His Gln Leu Glu Glu Ala Leu Glu Thr Leu Lys Asn
225                 230                 235                 240

Glu Arg Glu Gln Lys Asn Asn Leu Arg Lys Glu Leu Ser Gln Tyr Ile
                245                 250                 255

Ser Leu Asn Asp Asn His Ile Ser Ile Ser Val Asp Gly Leu Lys Phe
            260                 265                 270

Ala Glu Asp Gly Ser Glu Pro Asn Asn Asp Asp Lys Met Asn Gly His
        275                 280                 285

Ile His Gly Pro Leu Val Lys Leu Asn Gly Asp Tyr Arg Thr Pro Thr
    290                 295                 300

Leu Arg Lys Gly Glu Ser Leu Asn Pro Val Ser Asp Leu Phe Ser Glu
305                 310                 315                 320

Leu Asn Ile Ser Glu Ile Gln Lys Leu Lys Gln Gln Leu Met Gln Val
                325                 330                 335

Glu Arg Glu Lys Ala Ile Leu Leu Ala Asn Leu Gln Glu Ser Gln Thr
            340                 345                 350

Gln Leu Glu His Thr Lys Gly Ala Leu Thr Glu Gln His Glu Arg Val
        355                 360                 365

His Arg Leu Thr Glu His Val Asn Ala Met Arg Gly Leu Gln Ser Ser
    370                 375                 380
```

```
Lys Glu Leu Lys Ala Glu Leu Asp Gly Glu Lys Gly Arg Asp Ser Gly
385                 390                 395                 400

Glu Glu Ala His Asp Tyr Glu Val Asp Ile Asn Gly Leu Glu Ile Leu
                405                 410                 415

Glu Cys Lys Tyr Arg Val Ala Val Thr Glu Val Ile Asp Leu Lys Ala
            420                 425                 430

Glu Ile Lys Ala Leu Lys Glu Lys Tyr Asn Lys Ser Val Glu Asn Tyr
        435                 440                 445

Thr Asp Glu Lys Ala Lys Tyr Glu Ser Lys Ile Gln Met Tyr Asp Glu
    450                 455                 460

Gln Val Thr Ser Leu Glu Lys Thr Thr Lys Glu Ser Gly Glu Lys Met
465                 470                 475                 480

Ala His Met Glu Lys Glu Leu Gln Lys Met Thr Ser Ile Ala Asn Glu
                485                 490                 495

Asn His Ser Thr Leu Asn Thr Ala Gln Asp Glu Leu Val Thr Phe Ser
            500                 505                 510

Glu Glu Leu Ala Gln Leu Tyr His His Val Cys Leu Cys Asn Asn Glu
        515                 520                 525

Thr Pro Asn Arg Val Met Leu Asp Tyr Tyr Arg Gln Ser Arg Val Thr
    530                 535                 540

Arg Ser Gly Ser Leu Lys Gly Pro Asp Asp Pro Arg Gly Leu Leu Ser
545                 550                 555                 560

Pro Arg Leu Ala Arg Arg Gly Val Ser Ser Pro Val Glu Thr Arg Thr
                565                 570                 575

Ser Ser Glu Pro Val Ala Lys Glu Ser Thr Glu Ala Ser Lys Glu Pro
            580                 585                 590

Ser Pro Thr Lys Thr Pro Thr Ile Ser Pro Val Ile Thr Ala Pro Pro
        595                 600                 605

Ser Ser Pro Val Leu Asp Thr Ser Asp Ile Arg Lys Glu Pro Met Asn
```

610 615 620

Ile Tyr Asn Leu Asn Ala Ile Ile Arg Asp Gln Ile Lys His Leu Gln
625 630 635 640

Lys Ala Val Asp Arg Ser Leu Gln Leu Ser Arg Gln Arg Ala Ala Ala
645 650 655

Arg Glu Leu Ala Pro Met Ile Asp Lys Asp Lys Glu Ala Leu Met Glu
660 665 670

Glu Ile Leu Lys Leu Lys Ser Leu Leu Ser Thr Lys Arg Glu Gln Ile
675 680 685

Ala Thr Leu Arg Ala Val Leu Lys Ala Asn Lys Gln Thr Ala Glu Val
690 695 700

Ala Leu Ala Asn Leu Lys Asn Lys Tyr Glu Asn Glu Lys Ala Met Val
705 710 715 720

Thr Glu Thr Met Thr Lys Leu Arg Asn Glu Leu Lys Ala Leu Lys Glu
725 730 735

Asp Ala Ala Thr Phe Ser Ser Leu Arg Ala Met Phe Ala Thr Arg Cys
740 745 750

Asp Glu Tyr Val Thr Gln Leu Asp Glu Met Gln Arg Gln Leu Ala Ala
755 760 765

Ala Glu Asp Glu Lys Lys Thr Leu Asn Thr Leu Leu Arg Met Ala Ile
770 775 780

Gln Gln Lys Leu Ala Leu Thr Gln Arg Leu Glu Asp Leu Glu Phe Asp
785 790 795 800

His Glu Gln Ser Arg Arg Ser Lys Gly Lys Leu Gly Lys Ser Lys Ile
805 810 815

Gly Ser Pro Lys Ile Val Ser Ser Leu Leu Pro Pro Tyr Arg His Ser
820 825 830

Ala His Asn
835

<210> 9088
<211> 93
<212> PRT
<213> Homo sapiens

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bicaudal D homolog 1 (Drosophila); "

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<223> /note="ENSP ID: ENSP00000447238"

<400> 9088
Met Ala Ala Glu Glu Val Leu Gln Thr Val Asp His Tyr Lys Thr Glu
1 5 10 15

Ile Glu Arg Leu Thr Lys Glu Leu Thr Glu Thr Thr His Glu Lys Ile
20 25 30

Gln Ala Ala Glu Tyr Gly Leu Val Val Leu Glu Glu Lys Leu Thr Leu
35 40 45

Lys Gln Gln Tyr Asp Glu Leu Glu Ala Glu Tyr Asp Ser Leu Lys Gln
50 55 60

Glu Leu Glu Gln Leu Lys Glu Gly Pro Leu Leu Leu Lys Asp Val Ile
65 70 75 80

Tyr Asp Ile Leu Asn Gln Leu Ala Phe Gln Phe Ser Val
85 90

<210> 9089
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1841; "

<220>
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<223> /note="Gene Symbol: BICD1; "

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<223> /note="Gene Name:
bicaudal D homolog 1 (Drosophila); "

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<223> /note="ENSP ID: ENSP00000447663"

<400> 9089
Met Ala Ala Glu Glu Val Leu Gln Thr Val Asp His Tyr Lys Thr Glu
1 5 10 15

Ile Glu Arg Leu Thr Lys Glu Leu Thr Glu Thr Thr His Glu Lys Ile
20 25 30

Gln Ala Ala Glu Tyr Gly Leu Val Val Leu Glu Glu Lys Leu Thr Leu
35 40 45

Lys Gln Gln Tyr Asp Glu Leu Glu Ala Glu Tyr Asp Ser Leu Lys Gln
50 55 60

Glu Leu Glu Gln Leu Lys Glu Gly Pro Leu Leu Val Arg Glu Asp
65 70 75

<210> 9090
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: Q96G01; "

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<223> /note="ENSP ID: ENSP00000448933"

<400> 9090
Met Ala Ala Glu Glu Val Leu Gln Thr Val Asp His Tyr Lys Thr Glu
1   5   10   15

Ile Glu Arg Leu Thr Lys Glu Leu Thr Glu Thr Thr His Glu Lys Ile
            20   25   30

Gln Ala Ala Glu Tyr Gly Leu Val Val Leu Glu Glu Lys Leu Thr Leu
        35   40   45

Lys Gln Gln Tyr Asp Glu Leu Glu Ala Glu Tyr Asp Ser Leu Lys Gln
    50   55   60

Glu Leu Glu Gln Leu Lys Glu Val Ser Cys Leu Ser Pro Leu Pro Phe
65   70   75   80

Leu Ala Leu Thr Pro Pro Thr Arg Lys Ala His Ser Ser
                85   90

<210> 9091
<211> 69
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<221> source
<223> /note="ENSP ID: ENSP00000475837"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9091
Xaa Ser Arg Gln Arg Ala Ala Ala Arg Glu Leu Ala Pro Met Ile Asp
1 5 10 15

Lys Asp Lys Glu Ala Leu Met Glu Glu Ile Leu Lys Leu Lys Ser Leu
20 25 30

Leu Ser Thr Lys Arg Glu Gln Ile Ala Thr Leu Arg Ala Val Leu Lys
35 40 45

Ala Asn Lys Gln Ala Gln Cys Leu Leu Met Lys Ser Val Asn Ala Tyr
50 55 60

Glu Ala Pro Ser Ile
65

<210> 9092
<211> 173
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1841; "

<220>
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<223> /note="Gene Symbol: BICD1; "

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<223> /note="Gene Name:
bicaudal D homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481877"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9092
Xaa Ala Glu Val Ala Leu Ala Asn Leu Lys Asn Lys Tyr Glu Asn Glu
1 5 10 15

Lys Ala Met Val Thr Glu Thr Met Thr Lys Leu Arg Asn Glu Leu Lys
20 25 30

```
Ala Leu Lys Glu Asp Ala Ala Thr Phe Ser Ser Leu Arg Ala Met Phe
        35                  40                  45

Ala Thr Arg Cys Asp Glu Tyr Val Thr Gln Leu Asp Glu Met Gln Arg
    50                  55                  60

Gln Leu Ala Ala Ala Glu Asp Glu Lys Lys Thr Leu Asn Thr Leu Leu
65                  70                  75                  80

Arg Met Ala Ile Gln Gln Lys Leu Ala Leu Thr Gln Arg Leu Glu Asp
                85                  90                  95

Leu Glu Phe Asp His Glu Gln Ser Arg Arg Ser Lys Gly Lys Leu Gly
            100                 105                 110

Lys Ser Lys Ile Gly Ser Pro Lys Val Ser Gly Glu Ala Ser Val Thr
        115                 120                 125

Val Pro Thr Ile Asp Thr Tyr Leu Leu His Ser Gln Gly Pro Gln Thr
    130                 135                 140

Pro Asn Ile Arg Val Ser Ser Gly Thr Gln Arg Lys Arg Tyr Ala Cys
145                 150                 155                 160

Ser Asp Leu His Ser Thr Val Gln Trp Pro Asp Phe Ser
                165                 170
```

<210> 9093
<211> 855
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: BICD2; "

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<223> /note="Gene Name:
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<223> /note="Uniprot ID: Q8TD16; "

<220>
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<223> /note="ENSP ID: ENSP00000349351"

<400> 9093

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Met Ser Ala Pro Ser Glu Glu Glu Glu Tyr Ala Arg Leu Val Met Glu
1               5                  10                  15

Ala Gln Pro Glu Trp Leu Arg Ala Glu Val Lys Arg Leu Ser His Glu
            20                  25                  30

Leu Ala Glu Thr Thr Arg Glu Lys Ile Gln Ala Ala Glu Tyr Gly Leu
        35                  40                  45

Ala Val Leu Glu Glu Lys His Gln Leu Lys Leu Gln Phe Glu Glu Leu
    50                  55                  60

Glu Val Asp Tyr Glu Ala Ile Arg Ser Glu Met Glu Gln Leu Lys Glu
65                  70                  75                  80

Ala Phe Gly Gln Ala His Thr Asn His Lys Lys Val Ala Ala Asp Gly
                85                  90                  95

Glu Ser Arg Glu Glu Ser Leu Ile Gln Glu Ser Ala Ser Lys Glu Gln
            100                 105                 110

Tyr Tyr Val Arg Lys Val Leu Glu Leu Gln Thr Glu Leu Lys Gln Leu
        115                 120                 125

Arg Asn Val Leu Thr Asn Thr Gln Ser Glu Asn Glu Arg Leu Ala Ser
    130                 135                 140

Val Ala Gln Glu Leu Lys Glu Ile Asn Gln Asn Val Glu Ile Gln Arg
145                 150                 155                 160

Gly Arg Leu Arg Asp Asp Ile Lys Glu Tyr Lys Phe Arg Glu Ala Arg
                165                 170                 175

Leu Leu Gln Asp Tyr Ser Glu Leu Glu Glu Glu Asn Ile Ser Leu Gln
            180                 185                 190

Lys Gln Val Ser Val Leu Arg Gln Asn Gln Val Glu Phe Glu Gly Leu
        195                 200                 205
```

```
Lys His Glu Ile Lys Arg Leu Glu Glu Glu Thr Glu Tyr Leu Asn Ser
    210                 215                 220

Gln Leu Glu Asp Ala Ile Arg Leu Lys Glu Ile Ser Glu Arg Gln Leu
225                 230                 235                 240

Glu Glu Ala Leu Glu Thr Leu Lys Thr Glu Arg Glu Gln Lys Asn Ser
                245                 250                 255

Leu Arg Lys Glu Leu Ser His Tyr Met Ser Ile Asn Asp Ser Phe Tyr
            260                 265                 270

Thr Ser His Leu His Val Ser Leu Asp Gly Leu Lys Phe Ser Asp Asp
        275                 280                 285

Ala Ala Glu Pro Asn Asn Asp Ala Glu Ala Leu Val Asn Gly Phe Glu
    290                 295                 300

His Gly Gly Leu Ala Lys Leu Pro Leu Asp Asn Lys Thr Ser Thr Pro
305                 310                 315                 320

Lys Lys Glu Gly Leu Ala Pro Pro Ser Pro Ser Leu Val Ser Asp Leu
                325                 330                 335

Leu Ser Glu Leu Asn Ile Ser Glu Ile Gln Lys Leu Lys Gln Gln Leu
            340                 345                 350

Met Gln Met Glu Arg Glu Lys Ala Gly Leu Leu Ala Thr Leu Gln Asp
        355                 360                 365

Thr Gln Lys Gln Leu Glu His Thr Arg Gly Ser Leu Ser Glu Gln Gln
    370                 375                 380

Glu Lys Val Thr Arg Leu Thr Glu Asn Leu Ser Ala Leu Arg Arg Leu
385                 390                 395                 400

Gln Ala Ser Lys Glu Arg Gln Thr Ala Leu Asp Asn Glu Lys Asp Arg
                405                 410                 415

Asp Ser His Glu Asp Gly Asp Tyr Tyr Glu Val Asp Ile Asn Gly Pro
            420                 425                 430
```

```
Glu Ile Leu Ala Cys Lys Tyr His Val Ala Val Ala Glu Ala Gly Glu
        435                 440                 445

Leu Arg Glu Gln Leu Lys Ala Leu Arg Ser Thr His Glu Ala Arg Glu
    450                 455                 460

Ala Gln His Ala Glu Glu Lys Gly Arg Tyr Glu Ala Glu Gly Gln Ala
465                 470                 475                 480

Leu Thr Glu Lys Val Ser Leu Leu Glu Lys Ala Ser Arg Gln Asp Arg
                485                 490                 495

Glu Leu Leu Ala Arg Leu Glu Lys Glu Leu Lys Lys Val Ser Asp Val
            500                 505                 510

Ala Gly Glu Thr Gln Gly Ser Leu Ser Val Ala Gln Asp Glu Leu Val
        515                 520                 525

Thr Phe Ser Glu Glu Leu Ala Asn Leu Tyr His His Val Cys Met Cys
    530                 535                 540

Asn Asn Glu Thr Pro Asn Arg Val Met Leu Asp Tyr Tyr Arg Glu Gly
545                 550                 555                 560

Gln Gly Gly Ala Gly Arg Thr Ser Pro Gly Gly Arg Thr Ser Pro Glu
                565                 570                 575

Ala Arg Gly Arg Arg Ser Pro Ile Leu Leu Pro Lys Gly Leu Leu Ala
            580                 585                 590

Pro Glu Ala Gly Arg Ala Asp Gly Gly Thr Gly Asp Ser Ser Pro Ser
        595                 600                 605

Pro Gly Ser Ser Leu Pro Ser Pro Leu Ser Asp Pro Arg Arg Glu Pro
    610                 615                 620

Met Asn Ile Tyr Asn Leu Ile Ala Ile Ile Arg Asp Gln Ile Lys His
625                 630                 635                 640

Leu Gln Ala Ala Val Asp Arg Thr Thr Glu Leu Ser Arg Gln Arg Ile
                645                 650                 655
```

```
Ala Ser Gln Glu Leu Gly Pro Ala Val Asp Lys Asp Lys Glu Ala Leu
            660                 665                 670

Met Glu Glu Ile Leu Lys Leu Lys Ser Leu Leu Ser Thr Lys Arg Glu
        675                 680                 685

Gln Ile Thr Thr Leu Arg Thr Val Leu Lys Ala Asn Lys Gln Thr Ala
    690                 695                 700

Glu Val Ala Leu Ala Asn Leu Lys Ser Lys Tyr Glu Asn Glu Lys Ala
705                 710                 715                 720

Met Val Thr Glu Thr Met Met Lys Leu Arg Asn Glu Leu Lys Ala Leu
                725                 730                 735

Lys Glu Asp Ala Ala Thr Phe Ser Ser Leu Arg Ala Met Phe Ala Thr
            740                 745                 750

Arg Cys Asp Glu Tyr Ile Thr Gln Leu Asp Glu Met Gln Arg Gln Leu
        755                 760                 765

Ala Ala Ala Glu Asp Glu Lys Lys Thr Leu Asn Ser Leu Leu Arg Met
    770                 775                 780

Ala Ile Gln Gln Lys Leu Ala Leu Thr Gln Arg Leu Glu Leu Leu Glu
785                 790                 795                 800

Leu Asp His Glu Gln Thr Arg Arg Gly Arg Ala Lys Ala Ala Pro Lys
                805                 810                 815

Thr Lys Pro Ala Thr Pro Ser Val Ser His Thr Cys Ala Cys Ala Ser
            820                 825                 830

Asp Arg Ala Glu Gly Thr Gly Leu Ala Asn Gln Val Phe Cys Ser Glu
        835                 840                 845

Lys His Ser Ile Tyr Cys Asp
    850                 855
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<210> 9094
<211> 824
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000364662"

<400> 9094

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Met Ser Ala Pro Ser Glu Glu Glu Glu Tyr Ala Arg Leu Val Met Glu
1               5                  10                  15

Ala Gln Pro Glu Trp Leu Arg Ala Glu Val Lys Arg Leu Ser His Glu
            20                  25                  30

Leu Ala Glu Thr Thr Arg Glu Lys Ile Gln Ala Ala Glu Tyr Gly Leu
        35                  40                  45

Ala Val Leu Glu Glu Lys His Gln Leu Lys Leu Gln Phe Glu Glu Leu
    50                  55                  60

Glu Val Asp Tyr Glu Ala Ile Arg Ser Glu Met Glu Gln Leu Lys Glu
65                  70                  75                  80

Ala Phe Gly Gln Ala His Thr Asn His Lys Lys Val Ala Ala Asp Gly
                85                  90                  95

Glu Ser Arg Glu Glu Ser Leu Ile Gln Glu Ser Ala Ser Lys Glu Gln
            100                 105                 110

Tyr Tyr Val Arg Lys Val Leu Glu Leu Gln Thr Glu Leu Lys Gln Leu
        115                 120                 125

Arg Asn Val Leu Thr Asn Thr Gln Ser Glu Asn Glu Arg Leu Ala Ser
    130                 135                 140
```

```
Val Ala Gln Glu Leu Lys Glu Ile Asn Gln Asn Val Glu Ile Gln Arg
145                 150                 155                 160

Gly Arg Leu Arg Asp Asp Ile Lys Glu Tyr Lys Phe Arg Glu Ala Arg
                165                 170                 175

Leu Leu Gln Asp Tyr Ser Glu Leu Glu Glu Glu Asn Ile Ser Leu Gln
            180                 185                 190

Lys Gln Val Ser Val Leu Arg Gln Asn Gln Val Glu Phe Glu Gly Leu
        195                 200                 205

Lys His Glu Ile Lys Arg Leu Glu Glu Glu Thr Glu Tyr Leu Asn Ser
    210                 215                 220

Gln Leu Glu Asp Ala Ile Arg Leu Lys Glu Ile Ser Glu Arg Gln Leu
225                 230                 235                 240

Glu Glu Ala Leu Glu Thr Leu Lys Thr Glu Arg Glu Gln Lys Asn Ser
                245                 250                 255

Leu Arg Lys Glu Leu Ser His Tyr Met Ser Ile Asn Asp Ser Phe Tyr
            260                 265                 270

Thr Ser His Leu His Val Ser Leu Asp Gly Leu Lys Phe Ser Asp Asp
        275                 280                 285

Ala Ala Glu Pro Asn Asn Asp Ala Glu Ala Leu Val Asn Gly Phe Glu
    290                 295                 300

His Gly Gly Leu Ala Lys Leu Pro Leu Asp Asn Lys Thr Ser Thr Pro
305                 310                 315                 320

Lys Lys Glu Gly Leu Ala Pro Pro Ser Pro Ser Leu Val Ser Asp Leu
                325                 330                 335

Leu Ser Glu Leu Asn Ile Ser Glu Ile Gln Lys Leu Lys Gln Gln Leu
            340                 345                 350

Met Gln Met Glu Arg Glu Lys Ala Gly Leu Leu Ala Thr Leu Gln Asp
        355                 360                 365
```

```
Thr Gln Lys Gln Leu Glu His Thr Arg Gly Ser Leu Ser Glu Gln Gln
    370                 375                 380

Glu Lys Val Thr Arg Leu Thr Glu Asn Leu Ser Ala Leu Arg Arg Leu
385                 390                 395                 400

Gln Ala Ser Lys Glu Arg Gln Thr Ala Leu Asp Asn Glu Lys Asp Arg
                405                 410                 415

Asp Ser His Glu Asp Gly Asp Tyr Tyr Glu Val Asp Ile Asn Gly Pro
            420                 425                 430

Glu Ile Leu Ala Cys Lys Tyr His Val Ala Val Ala Glu Ala Gly Glu
        435                 440                 445

Leu Arg Glu Gln Leu Lys Ala Leu Arg Ser Thr His Glu Ala Arg Glu
    450                 455                 460

Ala Gln His Ala Glu Glu Lys Gly Arg Tyr Glu Ala Glu Gly Gln Ala
465                 470                 475                 480

Leu Thr Glu Lys Val Ser Leu Leu Glu Lys Ala Ser Arg Gln Asp Arg
                485                 490                 495

Glu Leu Leu Ala Arg Leu Glu Lys Glu Leu Lys Lys Val Ser Asp Val
            500                 505                 510

Ala Gly Glu Thr Gln Gly Ser Leu Ser Val Ala Gln Asp Glu Leu Val
        515                 520                 525

Thr Phe Ser Glu Glu Leu Ala Asn Leu Tyr His His Val Cys Met Cys
    530                 535                 540

Asn Asn Glu Thr Pro Asn Arg Val Met Leu Asp Tyr Tyr Arg Glu Gly
545                 550                 555                 560

Gln Gly Gly Ala Gly Arg Thr Ser Pro Gly Gly Arg Thr Ser Pro Glu
                565                 570                 575

Ala Arg Gly Arg Arg Ser Pro Ile Leu Leu Pro Lys Gly Leu Leu Ala
            580                 585                 590

Pro Glu Ala Gly Arg Ala Asp Gly Gly Thr Gly Asp Ser Ser Pro Ser
```

595 600 605

Pro Gly Ser Ser Leu Pro Ser Pro Leu Ser Asp Pro Arg Arg Glu Pro
610 615 620

Met Asn Ile Tyr Asn Leu Ile Ala Ile Ile Arg Asp Gln Ile Lys His
625 630 635 640

Leu Gln Ala Ala Val Asp Arg Thr Thr Glu Leu Ser Arg Gln Arg Ile
645 650 655

Ala Ser Gln Glu Leu Gly Pro Ala Val Asp Lys Asp Lys Glu Ala Leu
660 665 670

Met Glu Glu Ile Leu Lys Leu Lys Ser Leu Leu Ser Thr Lys Arg Glu
675 680 685

Gln Ile Thr Thr Leu Arg Thr Val Leu Lys Ala Asn Lys Gln Thr Ala
690 695 700

Glu Val Ala Leu Ala Asn Leu Lys Ser Lys Tyr Glu Asn Glu Lys Ala
705 710 715 720

Met Val Thr Glu Thr Met Met Lys Leu Arg Asn Glu Leu Lys Ala Leu
725 730 735

Lys Glu Asp Ala Ala Thr Phe Ser Ser Leu Arg Ala Met Phe Ala Thr
740 745 750

Arg Cys Asp Glu Tyr Ile Thr Gln Leu Asp Glu Met Gln Arg Gln Leu
755 760 765

Ala Ala Ala Glu Asp Glu Lys Lys Thr Leu Asn Ser Leu Leu Arg Met
770 775 780

Ala Ile Gln Gln Lys Leu Ala Leu Thr Gln Arg Leu Glu Leu Leu Glu
785 790 795 800

Leu Asp His Glu Gln Thr Arg Arg Gly Arg Ala Lys Ala Ala Pro Lys
805 810 815

Thr Lys Pro Ala Thr Pro Ser Leu
820

<210> 9095
<211> 506
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1843; "

<220>
<221> source
<223> /note="Gene Symbol: BICC1; "

<220>
<221> source
<223> /note="Gene Name:
BicC family RNA binding
prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263103"

<400> 9095

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Met Glu Gln Leu Asp Val Phe Ile Ser Ile Lys Pro Lys Pro Lys Gln
1               5                  10                  15

Pro Ser Lys Ser Val Ile Val Lys Ser Val Glu Arg Asn Ala Leu Asn
            20                  25                  30

Met Tyr Glu Ala Arg Lys Cys Leu Leu Gly Leu Glu Ser Ser Gly Val
        35                  40                  45

Thr Ile Ala Thr Ser Pro Ser Pro Ala Ser Cys Pro Ala Gly Leu Ala
    50                  55                  60

Cys Pro Ser Leu Asp Ile Leu Ala Ser Ala Gly Leu Gly Leu Thr Gly
65                  70                  75                  80

Leu Gly Leu Leu Gly Pro Thr Thr Leu Ser Leu Asn Thr Ser Thr Thr
                85                  90                  95

Pro Asn Ser Leu Leu Asn Ala Leu Asn Ser Ser Val Ser Pro Leu Gln
            100                 105                 110

Ser Pro Ser Ser Gly Thr Pro Ser Pro Thr Leu Trp Ala Pro Pro Leu
        115                 120                 125
```

```
Ala Asn Thr Ser Ser Ala Thr Gly Phe Ser Ala Ile Pro His Leu Met
    130                 135                 140

Ile Pro Ser Thr Ala Gln Ala Thr Leu Thr Asn Ile Leu Leu Ser Gly
145                 150                 155                 160

Val Pro Thr Tyr Gly His Thr Ala Pro Ser Pro Pro Pro Gly Leu Thr
                165                 170                 175

Pro Val Asp Val His Ile Asn Ser Met Gln Thr Glu Gly Lys Lys Ile
            180                 185                 190

Ser Ala Ala Leu Asn Gly His Ala Gln Ser Pro Asp Ile Lys Tyr Gly
        195                 200                 205

Ala Ile Ser Thr Ser Ser Leu Gly Glu Lys Val Leu Ser Ala Asn His
    210                 215                 220

Gly Asp Pro Ser Ile Gln Thr Ser Gly Ser Glu Gln Thr Ser Pro Lys
225                 230                 235                 240

Ser Ser Pro Thr Glu Gly Cys Asn Asp Ala Phe Val Glu Val Gly Met
                245                 250                 255

Pro Arg Ser Pro Ser His Ser Gly Asn Ala Gly Asp Leu Lys Gln Met
            260                 265                 270

Met Cys Pro Ser Lys Val Ser Cys Ala Lys Arg Gln Thr Val Glu Leu
        275                 280                 285

Leu Gln Gly Thr Lys Asn Ser His Leu His Ser Thr Asp Arg Leu Leu
    290                 295                 300

Ser Asp Pro Glu Leu Ser Ala Thr Glu Ser Pro Leu Ala Asp Lys Lys
305                 310                 315                 320

Ala Pro Gly Ser Glu Arg Ala Ala Glu Arg Ala Ala Ala Ala Gln Gln
                325                 330                 335

Asn Ser Glu Arg Ala His Leu Ala Pro Arg Ser Ser Tyr Val Asn Met
            340                 345                 350
```

```
Gln Ala Phe Asp Tyr Glu Gln Lys Lys Leu Leu Ala Thr Lys Ala Met
        355                 360                 365

Leu Lys Lys Pro Val Val Thr Glu Val Arg Thr Pro Thr Asn Thr Trp
    370                 375                 380

Ser Gly Leu Gly Phe Ser Lys Ser Met Pro Ala Glu Thr Ile Lys Glu
385                 390                 395                 400

Leu Arg Arg Ala Asn His Val Ser Tyr Lys Pro Thr Met Thr Thr Thr
                405                 410                 415

Tyr Glu Gly Ser Ser Met Ser Leu Ser Arg Ser Asn Ser Arg Glu His
            420                 425                 430

Leu Gly Gly Gly Ser Glu Ser Asp Asn Trp Arg Asp Arg Asn Gly Ile
        435                 440                 445

Gly Pro Gly Ser His Ser Glu Phe Ala Ala Ser Ile Gly Ser Pro Lys
    450                 455                 460

Arg Lys Gln Asn Lys Ser Ser Glu Arg Cys Val Leu Cys Thr Leu Leu
465                 470                 475                 480

Gly Ile Pro Arg Leu Glu Cys Val Tyr Leu Gly Trp Ser Ile Thr Asp
                485                 490                 495

Cys Gly Leu Ser Asp Phe Lys Cys Leu Val
            500                 505
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<210> 9096
<211> 974
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1843; "

<220>
<221> source
<223> /note="Gene Symbol: BICC1; "

<220>
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<223> /note="Gene Name:
BicC family RNA binding

prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H694; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362993"

<400> 9096
Met Ala Ala Gln Gly Glu Pro Gly Tyr Leu Ala Ala Gln Ser Asp Pro
1   5   10   15

Gly Ser Asn Ser Glu Arg Ser Thr Asp Ser Pro Val Pro Gly Ser Glu
            20   25   30

Asp Asp Leu Val Ala Gly Ala Thr Leu His Ser Pro Glu Trp Ser Glu
        35   40   45

Glu Arg Phe Arg Val Asp Arg Lys Lys Leu Glu Ala Met Leu Gln Ala
    50   55   60

Ala Ala Glu Gly Lys Gly Arg Ser Gly Glu Asp Phe Phe Gln Lys Ile
65   70   75   80

Met Glu Glu Thr Asn Thr Gln Ile Ala Trp Pro Ser Lys Leu Lys Ile
                85   90   95

Gly Ala Lys Ser Lys Lys Asp Pro His Ile Lys Val Ser Gly Lys Lys
            100   105   110

Glu Asp Val Lys Glu Ala Lys Glu Met Ile Met Ser Val Leu Asp Thr
        115   120   125

Lys Ser Asn Arg Val Thr Leu Lys Met Asp Val Ser His Thr Glu His
    130   135   140

Ser His Val Ile Gly Lys Gly Gly Asn Asn Ile Lys Lys Val Met Glu
145   150   155   160

Glu Thr Gly Cys His Ile His Phe Pro Asp Ser Asn Arg Asn Asn Gln
                165   170   175

Ala Glu Lys Ser Asn Gln Val Ser Ile Ala Gly Gln Pro Ala Gly Val
            180   185   190

```
Glu Ser Ala Arg Val Arg Ile Arg Glu Leu Leu Pro Leu Val Leu Met
        195                 200                 205

Phe Glu Leu Pro Ile Ala Gly Ile Leu Gln Pro Val Pro Asp Pro Asn
    210                 215                 220

Ser Pro Ser Ile Gln His Ile Ser Gln Thr Tyr Asn Ile Ser Val Ser
225                 230                 235                 240

Phe Lys Gln Arg Ser Arg Met Tyr Gly Ala Thr Val Ile Val Arg Gly
                245                 250                 255

Ser Gln Asn Asn Thr Ser Ala Val Lys Glu Gly Thr Ala Met Leu Leu
            260                 265                 270

Glu His Leu Ala Gly Ser Leu Ala Ser Ala Ile Pro Val Ser Thr Gln
        275                 280                 285

Leu Asp Ile Ala Ala Gln His His Leu Phe Met Met Gly Arg Asn Gly
    290                 295                 300

Ser Asn Ile Lys His Ile Met Gln Arg Thr Gly Ala Gln Ile His Phe
305                 310                 315                 320

Pro Asp Pro Ser Asn Pro Gln Lys Lys Ser Thr Val Tyr Leu Gln Gly
                325                 330                 335

Thr Ile Glu Ser Val Cys Leu Ala Arg Gln Tyr Leu Met Gly Cys Leu
            340                 345                 350

Pro Leu Val Leu Met Phe Asp Met Lys Glu Glu Ile Glu Val Asp Pro
        355                 360                 365

Gln Phe Ile Ala Gln Leu Met Glu Gln Leu Asp Val Phe Ile Ser Ile
    370                 375                 380

Lys Pro Lys Pro Lys Gln Pro Ser Lys Ser Val Ile Val Lys Ser Val
385                 390                 395                 400

Glu Arg Asn Ala Leu Asn Met Tyr Glu Ala Arg Lys Cys Leu Leu Gly
                405                 410                 415
```

```
Leu Glu Ser Ser Gly Val Thr Ile Ala Thr Ser Pro Ser Pro Ala Ser
            420                 425                 430

Cys Pro Ala Gly Leu Ala Cys Pro Ser Leu Asp Ile Leu Ala Ser Ala
        435                 440                 445

Gly Leu Gly Leu Thr Gly Leu Gly Leu Leu Gly Pro Thr Thr Leu Ser
    450                 455                 460

Leu Asn Thr Ser Thr Thr Pro Asn Ser Leu Leu Asn Ala Leu Asn Ser
465                 470                 475                 480

Ser Val Ser Pro Leu Gln Ser Pro Ser Ser Gly Thr Pro Ser Pro Thr
                485                 490                 495

Leu Trp Ala Pro Pro Leu Ala Asn Thr Ser Ser Ala Thr Gly Phe Ser
            500                 505                 510

Ala Ile Pro His Leu Met Ile Pro Ser Thr Ala Gln Ala Thr Leu Thr
        515                 520                 525

Asn Ile Leu Leu Ser Gly Val Pro Thr Tyr Gly His Thr Ala Pro Ser
    530                 535                 540

Pro Pro Pro Gly Leu Thr Pro Val Asp Val His Ile Asn Ser Met Gln
545                 550                 555                 560

Thr Glu Gly Lys Lys Ile Ser Ala Ala Leu Asn Gly His Ala Gln Ser
                565                 570                 575

Pro Asp Ile Lys Tyr Gly Ala Ile Ser Thr Ser Ser Leu Gly Glu Lys
            580                 585                 590

Val Leu Ser Ala Asn His Gly Asp Pro Ser Ile Gln Thr Ser Gly Ser
        595                 600                 605

Glu Gln Thr Ser Pro Lys Ser Ser Pro Thr Glu Gly Cys Asn Asp Ala
    610                 615                 620

Phe Val Glu Val Gly Met Pro Arg Ser Pro Ser His Ser Gly Asn Ala
625                 630                 635                 640
```

```
Gly Asp Leu Lys Gln Met Met Cys Pro Ser Lys Val Ser Cys Ala Lys
                645                 650                 655

Arg Gln Thr Val Glu Leu Leu Gln Gly Thr Lys Asn Ser His Leu His
            660                 665                 670

Ser Thr Asp Arg Leu Leu Ser Asp Pro Glu Leu Ser Ala Thr Glu Ser
        675                 680                 685

Pro Leu Ala Asp Lys Lys Ala Pro Gly Ser Glu Arg Ala Ala Glu Arg
    690                 695                 700

Ala Ala Ala Ala Gln Gln Asn Ser Glu Arg Ala His Leu Ala Pro Arg
705                 710                 715                 720

Ser Ser Tyr Val Asn Met Gln Ala Phe Asp Tyr Glu Gln Lys Lys Leu
                725                 730                 735

Leu Ala Thr Lys Ala Met Leu Lys Lys Pro Val Val Thr Glu Val Arg
            740                 745                 750

Thr Pro Thr Asn Thr Trp Ser Gly Leu Gly Phe Ser Lys Ser Met Pro
        755                 760                 765

Ala Glu Thr Ile Lys Glu Leu Arg Arg Ala Asn His Val Ser Tyr Lys
    770                 775                 780

Pro Thr Met Thr Thr Thr Tyr Glu Gly Ser Ser Met Ser Leu Ser Arg
785                 790                 795                 800

Ser Asn Ser Arg Glu His Leu Gly Gly Gly Ser Glu Ser Asp Asn Trp
                805                 810                 815

Arg Asp Arg Asn Gly Ile Gly Pro Gly Ser His Ser Glu Phe Ala Ala
            820                 825                 830

Ser Ile Gly Ser Pro Lys Arg Lys Gln Asn Lys Ser Thr Glu His Tyr
        835                 840                 845

Leu Ser Ser Ser Asn Tyr Met Asp Cys Ile Ser Ser Leu Thr Gly Ser
    850                 855                 860

Asn Gly Cys Asn Leu Asn Ser Ser Phe Lys Gly Ser Asp Leu Pro Glu
```

```
865                 870                 875                 880

Leu Phe Ser Lys Leu Gly Leu Gly Lys Tyr Thr Asp Val Phe Gln Gln
                885                 890                 895

Gln Glu Ile Asp Leu Gln Thr Phe Leu Thr Leu Thr Asp Gln Asp Leu
            900                 905                 910

Lys Glu Leu Gly Ile Thr Thr Phe Gly Ala Arg Arg Lys Met Leu Leu
        915                 920                 925

Ala Ile Ser Glu Leu Asn Lys Asn Arg Arg Lys Leu Phe Glu Ser Pro
    930                 935                 940

Asn Ala Arg Thr Ser Phe Leu Glu Gly Gly Ala Ser Gly Arg Leu Pro
945                 950                 955                 960

Arg Gln Tyr His Ser Asp Ile Ala Ser Val Ser Gly Arg Trp
                965                 970


<210> 9097
<211> 450
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
      bifunctional
      apoptosis regulator; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NZS9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261658"

<400> 9097
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1               5                   10                  15
```

```
Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
            20                  25                  30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
        35                  40                  45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
    50                  55                  60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65                  70                  75                  80

Pro Lys Val Ser Ile Leu Leu Arg Asp Ala Ile Glu Lys Leu Phe Pro
                85                  90                  95

Asp Ala Ile Arg Leu Arg Phe Glu Asp Ile Gln Gln Asn Asn Asp Ile
            100                 105                 110

Val Gln Ser Leu Ala Ala Phe Gln Lys Tyr Gly Asn Asp Gln Ile Pro
        115                 120                 125

Leu Ala Pro Asn Thr Gly Arg Ala Asn Gln Gln Met Gly Gly Gly Phe
    130                 135                 140

Phe Ser Gly Val Leu Thr Ala Leu Thr Gly Val Ala Val Val Leu Leu
145                 150                 155                 160

Val Tyr His Trp Ser Ser Arg Glu Ser Glu His Asp Leu Leu Val His
                165                 170                 175

Lys Ala Val Ala Lys Trp Thr Ala Glu Glu Val Val Leu Trp Leu Glu
            180                 185                 190

Gln Leu Gly Pro Trp Ala Ser Leu Tyr Arg Glu Arg Phe Leu Ser Glu
        195                 200                 205

Arg Val Asn Gly Arg Leu Leu Leu Thr Leu Thr Glu Glu Glu Phe Ser
    210                 215                 220

Lys Thr Pro Tyr Thr Ile Glu Asn Ser Ser His Arg Arg Ala Ile Leu
225                 230                 235                 240
```

Met Glu Leu Glu Arg Val Lys Ala Leu Gly Val Lys Pro Pro Gln Asn
245 250 255

Leu Trp Glu Tyr Lys Ala Val Asn Pro Gly Arg Ser Leu Phe Leu Leu
260 265 270

Tyr Ala Leu Lys Ser Ser Pro Arg Leu Ser Leu Leu Tyr Leu Tyr Leu
275 280 285

Phe Asp Tyr Thr Asp Thr Phe Leu Pro Phe Ile His Thr Ile Cys Pro
290 295 300

Leu Gln Glu Asp Ser Ser Gly Glu Asp Ile Val Thr Lys Leu Leu Asp
305 310 315 320

Leu Lys Glu Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu Val Lys Tyr
325 330 335

Ser Phe Leu Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp Asp Trp Leu
340 345 350

Glu Val His Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn Ala Met Leu
355 360 365

Leu Ser Val Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp Ser Arg Ser
370 375 380

Glu Leu Lys Thr Val Pro Gln Arg Met Trp Ser His Phe Trp Lys Val
385 390 395 400

Ser Thr Gln Gly Leu Phe Val Ala Met Phe Trp Pro Leu Ile Pro Gln
405 410 415

Phe Val Cys Asn Cys Leu Phe Tyr Trp Ala Leu Tyr Phe Asn Pro Ile
420 425 430

Ile Asn Ile Asp Leu Val Val Lys Glu Leu Arg Arg Leu Glu Thr Gln
435 440 445

Val Leu
450

<210> 9098
<211> 325
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
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<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454476"

<400> 9098
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1 5 10 15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
20 25 30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
35 40 45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
50 55 60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65 70 75 80

Pro Lys Val Ser Ile Leu Leu Arg Leu Leu Leu Thr Leu Thr Glu Glu
85 90 95

Glu Phe Ser Lys Thr Pro Tyr Thr Ile Glu Asn Ser Ser His Arg Arg
100 105 110

Ala Ile Leu Met Glu Leu Glu Arg Val Lys Ala Leu Gly Val Lys Pro
115 120 125

Pro Gln Asn Leu Trp Glu Tyr Lys Ala Val Asn Pro Gly Arg Ser Leu

130 135 140

Phe Leu Leu Tyr Ala Leu Lys Ser Ser Pro Arg Leu Ser Leu Leu Tyr
145 150 155 160

Leu Tyr Leu Phe Asp Tyr Thr Asp Thr Phe Leu Pro Phe Ile His Thr
165 170 175

Ile Cys Pro Leu Gln Glu Asp Ser Ser Gly Glu Asp Ile Val Thr Lys
180 185 190

Leu Leu Asp Leu Lys Glu Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu
195 200 205

Val Lys Tyr Ser Phe Leu Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp
210 215 220

Asp Trp Leu Glu Val His Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn
225 230 235 240

Ala Met Leu Leu Ser Val Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp
245 250 255

Ser Arg Ser Glu Leu Lys Thr Val Pro Gln Arg Met Trp Ser His Phe
260 265 270

Trp Lys Val Ser Thr Gln Gly Leu Phe Val Ala Met Phe Trp Pro Leu
275 280 285

Ile Pro Gln Phe Val Cys Asn Cys Leu Phe Tyr Trp Ala Leu Tyr Phe
290 295 300

Asn Pro Ile Ile Asn Ile Asp Leu Val Val Lys Glu Leu Arg Arg Leu
305 310 315 320

Glu Thr Gln Val Leu
325

<210> 9099
<211> 102
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454606"

<400> 9099
Leu Tyr Leu Phe Asp Tyr Thr Asp Thr Phe Leu Pro Phe Ile His Thr
1 5 10 15

Ile Cys Pro Leu Gln Glu Asp Ser Ser Gly Glu Asp Ile Val Thr Lys
20 25 30

Leu Leu Asp Leu Lys Glu Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu
35 40 45

Val Lys Tyr Ser Phe Leu Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp
50 55 60

Asp Trp Leu Glu Val His Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn
65 70 75 80

Ala Met Leu Leu Ser Val Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp
85 90 95

Ser Arg Ser Glu Leu Lys
100

<210> 9100
<211> 89
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1844; "

<220>
<221> source

<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455428"

<400> 9100
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1 5 10 15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
20 25 30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
35 40 45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
50 55 60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65 70 75 80

Pro Lys Val Ser Ile Leu Leu Arg Leu
85

<210> 9101
<211> 109
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000456358"

<400> 9101
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1   5   10   15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
            20   25   30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
        35   40   45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
    50   55   60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65   70   75   80

Pro Lys Val Ser Ile Leu Leu Arg Asp Ala Ile Glu Lys Leu Phe Pro
                85   90   95

Asp Ala Ile Arg Leu Arg Phe Glu Asp Ile Gln Gln Asn
            100   105

<210> 9102
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456869"

<220>

<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9102

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Xaa Gly Gly Gly Phe Phe Ser Gly Val Leu Thr Ala Leu Thr Gly Val
1               5                  10                  15

Ala Ala Val Asn Pro Gly Arg Ser Leu Phe Leu Leu Tyr Ala Leu Lys
            20                  25                  30

Ser Ser Pro Arg Leu Ser Leu Leu Tyr Leu Tyr Leu Phe Asp Tyr Thr
        35                  40                  45

Asp Thr Phe Leu Pro Phe Ile His Thr Ile Cys Pro Leu Gln Glu Asp
    50                  55                  60

Ser Ser Gly Glu Asp Ile Val Thr Lys Leu Leu Asp Leu Lys Glu Pro
65                  70                  75                  80

Thr Trp Lys Gln Trp Arg Glu Phe Leu Val Lys Tyr Ser Phe Leu Pro
                85                  90                  95

Tyr Gln Leu Ile Ala Glu Phe Ala Trp Asp Trp Leu Glu Val His Tyr
            100                 105                 110

Trp Thr Ser Arg Phe Leu Ile Ile Asn Ala Met Leu Leu Ser Val Leu
        115                 120                 125

Glu Leu Phe Ser Phe Trp Arg Ile Trp Ser Arg Ser Glu Leu Lys Thr
    130                 135                 140

Val Pro Gln Arg Met Trp Ser His Phe Trp Lys Val Ser Thr Gln Gly
145                 150                 155                 160

Leu Phe Val Ala Met Phe Trp Pro Leu Ile Pro Gln Phe Val Cys Asn
                165                 170                 175

Cys Leu Phe Tyr Trp Ala Leu Tyr Phe Asn Pro Ile Ile Asn Ile Asp
            180                 185                 190

Leu Val Val Lys Glu Leu Arg Arg Leu Glu Thr Gln Val Leu
        195                 200                 205
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<210> 9103
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457165"

<400> 9103
Asp Ser Ser Gly Glu Asp Ile Val Thr Lys Leu Leu Asp Leu Lys Glu
1 5 10 15

Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu Val Lys Tyr Ser Phe Leu
20 25 30

Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp Asp Trp Leu Glu Val His
35 40 45

Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn Ala Met Leu Leu Ser Val
50 55 60

Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp Ser Arg Ser Glu Leu Asn
65 70 75 80

Val Asn Thr Ala Gly Val Arg Cys His Leu Gly Arg Gln Ala Leu Gln
85 90 95

Lys

<210> 9104
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457561"

<400> 9104
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1 5 10 15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
20 25 30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
35 40 45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
50 55 60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65 70 75 80

Pro Lys Val Ser Ile Leu Leu Arg Trp Ser Cys Ser Ser Ile Thr Gly
85 90 95

Ala Ala Gly Asn Leu Asn Thr Thr Ser Trp Ser Thr Arg Leu Trp Pro
100 105 110

Asn Gly Arg Arg Lys Lys Leu Ser Ser Gly Trp Ser Ser Trp Ala Leu
115 120 125

Gly His Leu Phe Thr Gly Lys Gly Phe Tyr Leu Asn Glu
130 135 140

<210> 9105
<211> 450

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BFAR; "

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<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
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<223> /note="Uniprot ID: Q9NZS9; "

<220>
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<223> /note="ENSP ID: ENSP00000478190"

<400> 9105
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1   5   10   15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
            20   25   30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
        35   40   45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
    50   55   60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65   70   75   80

Pro Lys Val Ser Ile Leu Leu Arg Asp Ala Ile Glu Lys Leu Phe Pro
                85   90   95

Asp Ala Ile Arg Leu Arg Phe Glu Asp Ile Gln Gln Asn Asn Asp Ile
            100   105   110

Val Gln Ser Leu Ala Ala Phe Gln Lys Tyr Gly Asn Asp Gln Ile Pro
        115   120   125

```
Leu Ala Pro Asn Thr Gly Arg Ala Asn Gln Gln Met Gly Gly Gly Phe
    130                 135                 140

Phe Ser Gly Val Leu Thr Ala Leu Thr Gly Val Ala Val Val Leu Leu
145                 150                 155                 160

Val Tyr His Trp Ser Ser Arg Glu Ser Glu His Asp Leu Leu Val His
                165                 170                 175

Lys Ala Val Ala Lys Trp Thr Ala Glu Glu Val Val Leu Trp Leu Glu
            180                 185                 190

Gln Leu Gly Pro Trp Ala Ser Leu Tyr Arg Glu Arg Phe Leu Ser Glu
        195                 200                 205

Arg Val Asn Gly Arg Leu Leu Leu Thr Leu Thr Glu Glu Glu Phe Ser
    210                 215                 220

Lys Thr Pro Tyr Thr Ile Glu Asn Ser Ser His Arg Arg Ala Ile Leu
225                 230                 235                 240

Met Glu Leu Glu Arg Val Lys Ala Leu Gly Val Lys Pro Pro Gln Asn
                245                 250                 255

Leu Trp Glu Tyr Lys Ala Val Asn Pro Gly Arg Ser Leu Phe Leu Leu
            260                 265                 270

Tyr Ala Leu Lys Ser Ser Pro Arg Leu Ser Leu Leu Tyr Leu Tyr Leu
        275                 280                 285

Phe Asp Tyr Thr Asp Thr Phe Leu Pro Phe Ile His Thr Ile Cys Pro
    290                 295                 300

Leu Gln Glu Asp Ser Ser Gly Glu Asp Ile Val Thr Lys Leu Leu Asp
305                 310                 315                 320

Leu Lys Glu Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu Val Lys Tyr
                325                 330                 335

Ser Phe Leu Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp Asp Trp Leu
            340                 345                 350
```

```
Glu Val His Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn Ala Met Leu
        355                 360                 365

Leu Ser Val Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp Ser Arg Ser
    370                 375                 380

Glu Leu Lys Thr Val Pro Gln Arg Met Trp Ser His Phe Trp Lys Val
385                 390                 395                 400

Ser Thr Gln Gly Leu Phe Val Ala Met Phe Trp Pro Leu Ile Pro Gln
                405                 410                 415

Phe Val Cys Asn Cys Leu Phe Tyr Trp Ala Leu Tyr Phe Asn Pro Ile
            420                 425                 430

Ile Asn Ile Asp Leu Val Val Lys Glu Leu Arg Arg Leu Glu Thr Gln
        435                 440                 445

Val Leu
    450


<210> 9106
<211> 213
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<223> /note="Gene Name:
      bifunctional
      apoptosis regulator; "

<220>
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<223> /note="ENSP ID: ENSP00000481225"

<400> 9106
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1               5                   10                  15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
```

20 25 30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
35 40 45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
50 55 60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65 70 75 80

Pro Lys Val Ser Ile Leu Leu Arg Asp Ala Ile Glu Lys Leu Phe Pro
85 90 95

Asp Ala Ile Arg Leu Arg Phe Glu Asp Ile Gln Gln Asn Asn Asp Ile
100 105 110

Val Gln Ser Leu Ala Ala Phe Gln Lys Tyr Gly Asn Asp Gln Ile Pro
115 120 125

Leu Ala Pro Asn Thr Gly Arg Ala Asn Gln Gln Met Gly Gly Gly Phe
130 135 140

Phe Ser Gly Val Leu Thr Ala Leu Thr Gly Val Ala Val Val Leu Leu
145 150 155 160

Val Tyr His Trp Ser Ser Arg Glu Ser Glu His Asp Leu Leu Val His
165 170 175

Lys Ala Val Ala Lys Trp Thr Ala Glu Glu Val Val Leu Trp Leu Glu
180 185 190

Gln Leu Gly Pro Trp Ala Ser Leu Tyr Arg Glu Arg Phe Leu Ser Glu
195 200 205

Arg Val Asn Gly Arg
210

<210> 9107
<211> 325
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1844; "

<220>
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<223> /note="Gene Symbol: BFAR; "

<220>
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<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
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<223> /note="ENSP ID: ENSP00000487878"

<400> 9107

```
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1               5                  10                  15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
            20                  25                  30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
        35                  40                  45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
    50                  55                  60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65                  70                  75                  80

Pro Lys Val Ser Ile Leu Leu Arg Leu Leu Leu Thr Leu Thr Glu Glu
                85                  90                  95

Glu Phe Ser Lys Thr Pro Tyr Thr Ile Glu Asn Ser Ser His Arg Arg
            100                 105                 110

Ala Ile Leu Met Glu Leu Glu Arg Val Lys Ala Leu Gly Val Lys Pro
        115                 120                 125

Pro Gln Asn Leu Trp Glu Tyr Lys Ala Val Asn Pro Gly Arg Ser Leu
    130                 135                 140

Phe Leu Leu Tyr Ala Leu Lys Ser Ser Pro Arg Leu Ser Leu Leu Tyr
145                 150                 155                 160
```

```
Leu Tyr Leu Phe Asp Tyr Thr Asp Thr Phe Leu Pro Phe Ile His Thr
                165                 170                 175

Ile Cys Pro Leu Gln Glu Asp Ser Ser Gly Glu Asp Ile Val Thr Lys
            180                 185                 190

Leu Leu Asp Leu Lys Glu Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu
        195                 200                 205

Val Lys Tyr Ser Phe Leu Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp
    210                 215                 220

Asp Trp Leu Glu Val His Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn
225                 230                 235                 240

Ala Met Leu Leu Ser Val Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp
                245                 250                 255

Ser Arg Ser Glu Leu Lys Thr Val Pro Gln Arg Met Trp Ser His Phe
            260                 265                 270

Trp Lys Val Ser Thr Gln Gly Leu Phe Val Ala Met Phe Trp Pro Leu
        275                 280                 285

Ile Pro Gln Phe Val Cys Asn Cys Leu Phe Tyr Trp Ala Leu Tyr Phe
    290                 295                 300

Asn Pro Ile Ile Asn Ile Asp Leu Val Val Lys Glu Leu Arg Arg Leu
305                 310                 315                 320

Glu Thr Gln Val Leu
                325


<210> 9108
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "
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<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487995"

<400> 9108
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1 5 10 15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
20 25 30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
35 40 45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
50 55 60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65 70 75 80

Pro Lys Val Ser Ile Leu Leu Arg Leu
85

<210> 9109
<211> 213
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000488076"

<400> 9109

```
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1               5                  10                  15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
            20                  25                  30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
        35                  40                  45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
    50                  55                  60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65                  70                  75                  80

Pro Lys Val Ser Ile Leu Leu Arg Asp Ala Ile Glu Lys Leu Phe Pro
                85                  90                  95

Asp Ala Ile Arg Leu Arg Phe Glu Asp Ile Gln Gln Asn Asn Asp Ile
            100                 105                 110

Val Gln Ser Leu Ala Ala Phe Gln Lys Tyr Gly Asn Asp Gln Ile Pro
        115                 120                 125

Leu Ala Pro Asn Thr Gly Arg Ala Asn Gln Gln Met Gly Gly Gly Phe
    130                 135                 140

Phe Ser Gly Val Leu Thr Ala Leu Thr Gly Val Ala Val Val Leu Leu
145                 150                 155                 160

Val Tyr His Trp Ser Ser Arg Glu Ser Glu His Asp Leu Leu Val His
                165                 170                 175

Lys Ala Val Ala Lys Trp Thr Ala Glu Glu Val Val Leu Trp Leu Glu
            180                 185                 190

Gln Leu Gly Pro Trp Ala Ser Leu Tyr Arg Glu Arg Phe Leu Ser Glu
        195                 200                 205

Arg Val Asn Gly Arg
    210
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<210> 9110
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
bifunctional
apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488143"

<400> 9110
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1 5 10 15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
20 25 30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
35 40 45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
50 55 60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65 70 75 80

Pro Lys Val Ser Ile Leu Leu Arg Trp Ser Cys Ser Ser Ile Thr Gly
85 90 95

Ala Ala Gly Asn Leu Asn Thr Thr Ser Trp Ser Thr Arg Leu Trp Pro
100 105 110

Asn Gly Arg Arg Lys Lys Leu Ser Ser Gly Trp Ser Ser Trp Ala Leu
115 120 125

```
Gly His Leu Phe Thr Gly Lys Gly Phe Tyr Leu Asn Glu
    130                 135                 140


<210> 9111
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
      bifunctional
      apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488487"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9111
Xaa Gly Gly Gly Phe Phe Ser Gly Val Leu Thr Ala Leu Thr Gly Val
1               5                   10                  15


Ala Ala Val Asn Pro Gly Arg Ser Leu Phe Leu Leu Tyr Ala Leu Lys
            20                  25                  30


Ser Ser Pro Arg Leu Ser Leu Leu Tyr Leu Tyr Leu Phe Asp Tyr Thr
        35                  40                  45


Asp Thr Phe Leu Pro Phe Ile His Thr Ile Cys Pro Leu Gln Glu Asp
    50                  55                  60


Ser Ser Gly Glu Asp Ile Val Thr Lys Leu Leu Asp Leu Lys Glu Pro
65                  70                  75                  80


Thr Trp Lys Gln Trp Arg Glu Phe Leu Val Lys Tyr Ser Phe Leu Pro
                85                  90                  95
```

```
Tyr Gln Leu Ile Ala Glu Phe Ala Trp Asp Trp Leu Glu Val His Tyr
            100                 105                 110

Trp Thr Ser Arg Phe Leu Ile Ile Asn Ala Met Leu Leu Ser Val Leu
        115                 120                 125

Glu Leu Phe Ser Phe Trp Arg Ile Trp Ser Arg Ser Glu Leu Lys Thr
    130                 135                 140

Val Pro Gln Arg Met Trp Ser His Phe Trp Lys Val Ser Thr Gln Gly
145                 150                 155                 160

Leu Phe Val Ala Met Phe Trp Pro Leu Ile Pro Gln Phe Val Cys Asn
                165                 170                 175

Cys Leu Phe Tyr Trp Ala Leu Tyr Phe Asn Pro Ile Ile Asn Ile Asp
            180                 185                 190

Leu Val Val Lys Glu Leu Arg Arg Leu Glu Thr Gln Val Leu
        195                 200                 205


<210> 9112
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
      bifunctional
      apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488492"

<400> 9112
Asp Ser Ser Gly Glu Asp Ile Val Thr Lys Leu Leu Asp Leu Lys Glu
1               5                   10                  15
```

```
Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu Val Lys Tyr Ser Phe Leu
            20                  25                  30

Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp Asp Trp Leu Glu Val His
        35                  40                  45

Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn Ala Met Leu Leu Ser Val
    50                  55                  60

Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp Ser Arg Ser Glu Leu Asn
65                  70                  75                  80

Val Asn Thr Ala Gly Val Arg Cys His Leu Gly Arg Gln Ala Leu Gln
                85                  90                  95

Lys


<210> 9113
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
      bifunctional
      apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488540"

<400> 9113
Leu Tyr Leu Phe Asp Tyr Thr Asp Thr Phe Leu Pro Phe Ile His Thr
1               5                   10                  15

Ile Cys Pro Leu Gln Glu Asp Ser Ser Gly Glu Asp Ile Val Thr Lys
            20                  25                  30
```

```
Leu Leu Asp Leu Lys Glu Pro Thr Trp Lys Gln Trp Arg Glu Phe Leu
        35                  40                  45

Val Lys Tyr Ser Phe Leu Pro Tyr Gln Leu Ile Ala Glu Phe Ala Trp
    50                  55                  60

Asp Trp Leu Glu Val His Tyr Trp Thr Ser Arg Phe Leu Ile Ile Asn
65                  70                  75                  80

Ala Met Leu Leu Ser Val Leu Glu Leu Phe Ser Phe Trp Arg Ile Trp
                85                  90                  95

Ser Arg Ser Glu Leu Lys
            100


<210> 9114
<211> 109
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1844; "

<220>
<221> source
<223> /note="Gene Symbol: BFAR; "

<220>
<221> source
<223> /note="Gene Name:
      bifunctional
      apoptosis regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488837"

<400> 9114
Met Glu Glu Pro Gln Lys Ser Tyr Val Asn Thr Met Asp Leu Glu Arg
1               5                   10                  15

Asp Glu Pro Leu Lys Ser Thr Gly Pro Gln Ile Ser Val Ser Glu Phe
            20                  25                  30

Ser Cys His Cys Cys Tyr Asp Ile Leu Val Asn Pro Thr Thr Leu Asn
        35                  40                  45

Cys Gly His Ser Phe Cys Arg His Cys Leu Ala Leu Trp Trp Ala Ser
```

```
    50                  55                  60

Ser Lys Lys Thr Glu Cys Pro Glu Cys Arg Glu Lys Trp Glu Gly Phe
65                  70                  75                  80

Pro Lys Val Ser Ile Leu Leu Arg Asp Ala Ile Glu Lys Leu Phe Pro
                85                  90                  95

Asp Ala Ile Arg Leu Arg Phe Glu Asp Ile Gln Gln Asn
            100                 105


<210> 9115
<211> 368
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1845; "

<220>
<221> source
<223> /note="Gene Symbol: BGN; "

<220>
<221> source
<223> /note="Gene Name:
      biglycan; "

<220>
<221> source
<223> /note="Uniprot ID:  P21810; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000327336"

<400> 9115
Met Trp Pro Leu Trp Arg Leu Val Ser Leu Leu Ala Leu Ser Gln Ala
1               5                   10                  15

Leu Pro Phe Glu Gln Arg Gly Phe Trp Asp Phe Thr Leu Asp Asp Gly
            20                  25                  30

Pro Phe Met Met Asn Asp Glu Glu Ala Ser Gly Ala Asp Thr Ser Gly
        35                  40                  45

Val Leu Asp Pro Asp Ser Val Thr Pro Thr Tyr Ser Ala Met Cys Pro
    50                  55                  60
```

```
Phe Gly Cys His Cys His Leu Arg Val Val Gln Cys Ser Asp Leu Gly
65                  70                  75                  80

Leu Lys Ser Val Pro Lys Glu Ile Ser Pro Asp Thr Thr Leu Leu Asp
                85                  90                  95

Leu Gln Asn Asn Asp Ile Ser Glu Leu Arg Lys Asp Asp Phe Lys Gly
            100                 105                 110

Leu Gln His Leu Tyr Ala Leu Val Leu Val Asn Asn Lys Ile Ser Lys
        115                 120                 125

Ile His Glu Lys Ala Phe Ser Pro Leu Arg Lys Leu Gln Lys Leu Tyr
    130                 135                 140

Ile Ser Lys Asn His Leu Val Glu Ile Pro Pro Asn Leu Pro Ser Ser
145                 150                 155                 160

Leu Val Glu Leu Arg Ile His Asp Asn Arg Ile Arg Lys Val Pro Lys
                165                 170                 175

Gly Val Phe Ser Gly Leu Arg Asn Met Asn Cys Ile Glu Met Gly Gly
            180                 185                 190

Asn Pro Leu Glu Asn Ser Gly Phe Glu Pro Gly Ala Phe Asp Gly Leu
        195                 200                 205

Lys Leu Asn Tyr Leu Arg Ile Ser Glu Ala Lys Leu Thr Gly Ile Pro
    210                 215                 220

Lys Asp Leu Pro Glu Thr Leu Asn Glu Leu His Leu Asp His Asn Lys
225                 230                 235                 240

Ile Gln Ala Ile Glu Leu Glu Asp Leu Leu Arg Tyr Ser Lys Leu Tyr
                245                 250                 255

Arg Leu Gly Leu Gly His Asn Gln Ile Arg Met Ile Glu Asn Gly Ser
            260                 265                 270

Leu Ser Phe Leu Pro Thr Leu Arg Glu Leu His Leu Asp Asn Asn Lys
        275                 280                 285
```

```
Leu Ala Arg Val Pro Ser Gly Leu Pro Asp Leu Lys Leu Leu Gln Val
    290                 295                 300

Val Tyr Leu His Ser Asn Asn Ile Thr Lys Val Gly Val Asn Asp Phe
305                 310                 315                 320

Cys Pro Met Gly Phe Gly Val Lys Arg Ala Tyr Tyr Asn Gly Ile Ser
                325                 330                 335

Leu Phe Asn Asn Pro Val Pro Tyr Trp Glu Val Gln Pro Ala Thr Phe
            340                 345                 350

Arg Cys Val Thr Asp Arg Leu Ala Ile Gln Phe Gly Asn Tyr Lys Lys
        355                 360                 365


<210> 9116
<211> 238
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1845; "

<220>
<221> source
<223> /note="Gene Symbol: BGN; "

<220>
<221> source
<223> /note="Gene Name:
      biglycan; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402525"

<400> 9116
Met Trp Pro Leu Trp Arg Leu Val Ser Leu Leu Ala Leu Ser Gln Ala
1               5                   10                  15

Leu Pro Phe Glu Gln Arg Gly Phe Trp Asp Phe Thr Leu Asp Asp Gly
            20                  25                  30

Pro Phe Met Met Asn Asp Glu Glu Ala Ser Gly Ala Asp Thr Ser Gly
        35                  40                  45

Val Leu Asp Pro Asp Ser Val Thr Pro Thr Tyr Ser Ala Met Cys Pro
    50                  55                  60
```

```
Phe Gly Cys His Cys His Leu Arg Val Val Gln Cys Ser Asp Leu Gly
65                  70                  75                  80

Leu Lys Ser Val Pro Lys Glu Ile Ser Pro Asp Thr Thr Leu Leu Asp
                85                  90                  95

Leu Gln Asn Asn Asp Ile Ser Glu Leu Arg Lys Asp Asp Phe Lys Gly
            100                 105                 110

Leu Gln His Leu Tyr Val Arg Ser Trp Glu Glu Pro Ala Gly Leu Gln
        115                 120                 125

Gln Arg Ala Gly Val Arg Ala Leu Val Leu Val Asn Asn Lys Ile Ser
    130                 135                 140

Lys Ile His Glu Lys Ala Phe Ser Pro Leu Arg Lys Leu Gln Lys Leu
145                 150                 155                 160

Tyr Ile Ser Lys Asn His Leu Val Glu Ile Pro Pro Asn Leu Pro Ser
                165                 170                 175

Ser Leu Val Glu Leu Arg Ile His Asp Asn Arg Ile Arg Lys Val Pro
            180                 185                 190

Lys Gly Val Phe Ser Gly Leu Arg Asn Met Asn Cys Ile Glu Met Gly
        195                 200                 205

Gly Asn Pro Leu Glu Asn Ser Gly Phe Glu Pro Gly Ala Phe Asp Gly
    210                 215                 220

Leu Lys Leu Asn Tyr Leu Arg Ile Ser Glu Ala Lys Leu Thr
225                 230                 235


<210> 9117
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1846; "

<220>
<221> source
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<223> /note="Gene Symbol: BAAT; "

<220>
<221> source
<223> /note="Gene Name:
bile acid CoA:amino acid N-acyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID: Q14032; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000259407"

<400> 9117

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Met Ile Gln Leu Thr Ala Thr Pro Val Ser Ala Leu Val Asp Glu Pro
1               5                  10                  15

Val His Ile Arg Ala Thr Gly Leu Ile Pro Phe Gln Met Val Ser Phe
            20                  25                  30

Gln Ala Ser Leu Glu Asp Glu Asn Gly Asp Met Phe Tyr Ser Gln Ala
        35                  40                  45

His Tyr Arg Ala Asn Glu Phe Gly Glu Val Asp Leu Asn His Ala Ser
    50                  55                  60

Ser Leu Gly Gly Asp Tyr Met Gly Val His Pro Met Gly Leu Phe Trp
65                  70                  75                  80

Ser Leu Lys Pro Glu Lys Leu Leu Thr Arg Leu Leu Lys Arg Asp Val
                85                  90                  95

Met Asn Arg Pro Phe Gln Val Gln Val Lys Leu Tyr Asp Leu Glu Leu
            100                 105                 110

Ile Val Asn Asn Lys Val Ala Ser Ala Pro Lys Ala Ser Leu Thr Leu
        115                 120                 125

Glu Arg Trp Tyr Val Ala Pro Gly Val Thr Arg Ile Lys Val Arg Glu
    130                 135                 140

Gly Arg Leu Arg Gly Ala Leu Phe Leu Pro Pro Gly Glu Gly Leu Phe
145                 150                 155                 160

Pro Gly Val Ile Asp Leu Phe Gly Gly Leu Gly Gly Leu Leu Glu Phe
```

```
                165                 170                 175

Arg Ala Ser Leu Leu Ala Ser Arg Gly Phe Ala Ser Leu Ala Leu Ala
            180                 185                 190

Tyr His Asn Tyr Glu Asp Leu Pro Arg Lys Pro Glu Val Thr Asp Leu
        195                 200                 205

Glu Tyr Phe Glu Glu Ala Ala Asn Phe Leu Leu Arg His Pro Lys Val
    210                 215                 220

Phe Gly Ser Gly Val Gly Val Val Ser Val Cys Gln Gly Val Gln Ile
225                 230                 235                 240

Gly Leu Ser Met Ala Ile Tyr Leu Lys Gln Val Thr Ala Thr Val Leu
                245                 250                 255

Ile Asn Gly Thr Asn Phe Pro Phe Gly Ile Pro Gln Val Tyr His Gly
            260                 265                 270

Gln Ile His Gln Pro Leu Pro His Ser Ala Gln Leu Ile Ser Thr Asn
        275                 280                 285

Ala Leu Gly Leu Leu Glu Leu Tyr Arg Thr Phe Glu Thr Thr Gln Val
    290                 295                 300

Gly Ala Ser Gln Tyr Leu Phe Pro Ile Glu Glu Ala Gln Gly Gln Phe
305                 310                 315                 320

Leu Phe Ile Val Gly Glu Gly Asp Lys Thr Ile Asn Ser Lys Ala His
                325                 330                 335

Ala Glu Gln Ala Ile Gly Gln Leu Lys Arg His Gly Lys Asn Asn Trp
            340                 345                 350

Thr Leu Leu Ser Tyr Pro Gly Ala Gly His Leu Ile Glu Pro Pro Tyr
        355                 360                 365

Ser Pro Leu Cys Cys Ala Ser Thr Thr His Asp Leu Arg Leu His Trp
    370                 375                 380

Gly Gly Glu Val Ile Pro His Ala Ala Ala Gln Glu His Ala Trp Lys
385                 390                 395                 400
```

```
Glu Ile Gln Arg Phe Leu Arg Lys His Leu Ile Pro Asp Val Thr Ser
                405                 410                 415


Gln Leu
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<210> 9118
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1846; "

<220>
<221> source
<223> /note="Gene Symbol: BAAT; "

<220>
<221> source
<223> /note="Gene Name:
bile acid CoA:amino acid N-acyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID: Q14032; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378491"

<400> 9118

```
Met Ile Gln Leu Thr Ala Thr Pro Val Ser Ala Leu Val Asp Glu Pro
1               5                   10                  15


Val His Ile Arg Ala Thr Gly Leu Ile Pro Phe Gln Met Val Ser Phe
            20                  25                  30


Gln Ala Ser Leu Glu Asp Glu Asn Gly Asp Met Phe Tyr Ser Gln Ala
        35                  40                  45


His Tyr Arg Ala Asn Glu Phe Gly Glu Val Asp Leu Asn His Ala Ser
    50                  55                  60


Ser Leu Gly Gly Asp Tyr Met Gly Val His Pro Met Gly Leu Phe Trp
65                  70                  75                  80
```

```
Ser Leu Lys Pro Glu Lys Leu Leu Thr Arg Leu Leu Lys Arg Asp Val
                85                  90                  95

Met Asn Arg Pro Phe Gln Val Gln Val Lys Leu Tyr Asp Leu Glu Leu
            100                 105                 110

Ile Val Asn Asn Lys Val Ala Ser Ala Pro Lys Ala Ser Leu Thr Leu
        115                 120                 125

Glu Arg Trp Tyr Val Ala Pro Gly Val Thr Arg Ile Lys Val Arg Glu
    130                 135                 140

Gly Arg Leu Arg Gly Ala Leu Phe Leu Pro Pro Gly Glu Gly Leu Phe
145                 150                 155                 160

Pro Gly Val Ile Asp Leu Phe Gly Gly Leu Gly Gly Leu Leu Glu Phe
                165                 170                 175

Arg Ala Ser Leu Leu Ala Ser Arg Gly Phe Ala Ser Leu Ala Leu Ala
            180                 185                 190

Tyr His Asn Tyr Glu Asp Leu Pro Arg Lys Pro Glu Val Thr Asp Leu
        195                 200                 205

Glu Tyr Phe Glu Glu Ala Ala Asn Phe Leu Leu Arg His Pro Lys Val
    210                 215                 220

Phe Gly Ser Gly Val Gly Val Val Ser Val Cys Gln Gly Val Gln Ile
225                 230                 235                 240

Gly Leu Ser Met Ala Ile Tyr Leu Lys Gln Val Thr Ala Thr Val Leu
                245                 250                 255

Ile Asn Gly Thr Asn Phe Pro Phe Gly Ile Pro Gln Val Tyr His Gly
            260                 265                 270

Gln Ile His Gln Pro Leu Pro His Ser Ala Gln Leu Ile Ser Thr Asn
        275                 280                 285

Ala Leu Gly Leu Leu Glu Leu Tyr Arg Thr Phe Glu Thr Thr Gln Val
    290                 295                 300

Gly Ala Ser Gln Tyr Leu Phe Pro Ile Glu Glu Ala Gln Gly Gln Phe
```

```
305                 310                 315                 320

Leu Phe Ile Val Gly Glu Gly Asp Lys Thr Ile Asn Ser Lys Ala His
                325                 330                 335

Ala Glu Gln Ala Ile Gly Gln Leu Lys Arg His Gly Lys Asn Asn Trp
            340                 345                 350

Thr Leu Leu Ser Tyr Pro Gly Ala Gly His Leu Ile Glu Pro Pro Tyr
        355                 360                 365

Ser Pro Leu Cys Cys Ala Ser Thr Thr His Asp Leu Arg Leu His Trp
    370                 375                 380

Gly Gly Glu Val Ile Pro His Ala Ala Ala Gln Glu His Ala Trp Lys
385                 390                 395                 400

Glu Ile Gln Arg Phe Leu Arg Lys His Leu Ile Pro Asp Val Thr Ser
                405                 410                 415

Gln Leu
```

<210> 9119
<211> 418
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1846; "

<220>
<221> source
<223> /note="Gene Symbol: BAAT; "

<220>
<221> source
<223> /note="Gene Name:
bile acid CoA:amino acid N-acyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID: Q14032; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484063"

<400> 9119
Met Ile Gln Leu Thr Ala Thr Pro Val Ser Ala Leu Val Asp Glu Pro
1 5 10 15

Val His Ile Arg Ala Thr Gly Leu Ile Pro Phe Gln Met Val Ser Phe
20 25 30

Gln Ala Ser Leu Glu Asp Glu Asn Gly Asp Met Phe Tyr Ser Gln Ala
35 40 45

His Tyr Arg Ala Asn Glu Phe Gly Glu Val Asp Leu Asn His Ala Ser
50 55 60

Ser Leu Gly Gly Asp Tyr Met Gly Val His Pro Met Gly Leu Phe Trp
65 70 75 80

Ser Leu Lys Pro Glu Lys Leu Leu Thr Arg Leu Leu Lys Arg Asp Val
85 90 95

Met Asn Arg Pro Phe Gln Val Gln Val Lys Leu Tyr Asp Leu Glu Leu
100 105 110

Ile Val Asn Asn Lys Val Ala Ser Ala Pro Lys Ala Ser Leu Thr Leu
115 120 125

Glu Arg Trp Tyr Val Ala Pro Gly Val Thr Arg Ile Lys Val Arg Glu
130 135 140

Gly Arg Leu Arg Gly Ala Leu Phe Leu Pro Pro Gly Glu Gly Leu Phe
145 150 155 160

Pro Gly Val Ile Asp Leu Phe Gly Gly Leu Gly Gly Leu Leu Glu Phe
165 170 175

Arg Ala Ser Leu Leu Ala Ser Arg Gly Phe Ala Ser Leu Ala Leu Ala
180 185 190

Tyr His Asn Tyr Glu Asp Leu Pro Arg Lys Pro Glu Val Thr Asp Leu
195 200 205

Glu Tyr Phe Glu Glu Ala Ala Asn Phe Leu Leu Arg His Pro Lys Val
210 215 220

```
Phe Gly Ser Gly Val Gly Val Val Ser Val Cys Gln Gly Val Gln Ile
225                 230                 235                 240

Gly Leu Ser Met Ala Ile Tyr Leu Lys Gln Val Thr Ala Thr Val Leu
                245                 250                 255

Ile Asn Gly Thr Asn Phe Pro Phe Gly Ile Pro Gln Val Tyr His Gly
            260                 265                 270

Gln Ile His Gln Pro Leu Pro His Ser Ala Gln Leu Ile Ser Thr Asn
        275                 280                 285

Ala Leu Gly Leu Leu Glu Leu Tyr Arg Thr Phe Glu Thr Thr Gln Val
    290                 295                 300

Gly Ala Ser Gln Tyr Leu Phe Pro Ile Glu Glu Ala Gln Gly Gln Phe
305                 310                 315                 320

Leu Phe Ile Val Gly Glu Gly Asp Lys Thr Ile Asn Ser Lys Ala His
                325                 330                 335

Ala Glu Gln Ala Ile Gly Gln Leu Lys Arg His Gly Lys Asn Asn Trp
            340                 345                 350

Thr Leu Leu Ser Tyr Pro Gly Ala Gly His Leu Ile Glu Pro Pro Tyr
        355                 360                 365

Ser Pro Leu Cys Cys Ala Ser Thr Thr His Asp Leu Arg Leu His Trp
    370                 375                 380

Gly Gly Glu Val Ile Pro His Ala Ala Ala Gln Glu His Ala Trp Lys
385                 390                 395                 400

Glu Ile Gln Arg Phe Leu Arg Lys His Leu Ile Pro Asp Val Thr Ser
                405                 410                 415

Gln Leu
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<210> 9120
<211> 296
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1847; "

<220>
<221> source
<223> /note="Gene Symbol: BLVRA; "

<220>
<221> source
<223> /note="Gene Name:
biliverdin reductase A; "

<220>
<221> source
<223> /note="Uniprot ID: P53004; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265523"

<400> 9120
Met Asn Ala Glu Pro Glu Arg Lys Phe Gly Val Val Val Val Gly Val
1   5   10   15

Gly Arg Ala Gly Ser Val Arg Met Arg Asp Leu Arg Asn Pro His Pro
            20   25   30

Ser Ser Ala Phe Leu Asn Leu Ile Gly Phe Val Ser Arg Arg Glu Leu
        35   40   45

Gly Ser Ile Asp Gly Val Gln Gln Ile Ser Leu Glu Asp Ala Leu Ser
    50   55   60

Ser Gln Glu Val Glu Val Ala Tyr Ile Cys Ser Glu Ser Ser Ser His
65   70   75   80

Glu Asp Tyr Ile Arg Gln Phe Leu Asn Ala Gly Lys His Val Leu Val
                85   90   95

Glu Tyr Pro Met Thr Leu Ser Leu Ala Ala Ala Gln Glu Leu Trp Glu
            100   105   110

Leu Ala Glu Gln Lys Gly Lys Val Leu His Glu Glu His Val Glu Leu
        115   120   125

Leu Met Glu Glu Phe Ala Phe Leu Lys Lys Glu Val Val Gly Lys Asp
    130   135   140

```
Leu Leu Lys Gly Ser Leu Leu Phe Thr Ala Gly Pro Leu Glu Glu Glu
145                 150                 155                 160

Arg Phe Gly Phe Pro Ala Phe Ser Gly Ile Ser Arg Leu Thr Trp Leu
                165                 170                 175

Val Ser Leu Phe Gly Glu Leu Ser Leu Val Ser Ala Thr Leu Glu Glu
            180                 185                 190

Arg Lys Glu Asp Gln Tyr Met Lys Met Thr Val Cys Leu Glu Thr Glu
        195                 200                 205

Lys Lys Ser Pro Leu Ser Trp Ile Glu Glu Lys Gly Pro Gly Leu Lys
    210                 215                 220

Arg Asn Arg Tyr Leu Ser Phe His Phe Lys Ser Gly Ser Leu Glu Asn
225                 230                 235                 240

Val Pro Asn Val Gly Val Asn Lys Asn Ile Phe Leu Lys Asp Gln Asn
                245                 250                 255

Ile Phe Val Gln Lys Leu Leu Gly Gln Phe Ser Glu Lys Glu Leu Ala
            260                 265                 270

Ala Glu Lys Lys Arg Ile Leu His Cys Leu Gly Leu Ala Glu Glu Ile
        275                 280                 285

Gln Lys Tyr Cys Cys Ser Arg Lys
    290                 295


<210> 9121
<211> 296
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1847; "

<220>
<221> source
<223> /note="Gene Symbol: BLVRA; "

<220>
<221> source
<223> /note="Gene Name:
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biliverdin reductase A; "

<220>
<221> source
<223> /note="Uniprot ID: P53004; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385757"

<400> 9121

```
Met Asn Ala Glu Pro Glu Arg Lys Phe Gly Val Val Val Val Gly Val
1               5                  10                  15

Gly Arg Ala Gly Ser Val Arg Met Arg Asp Leu Arg Asn Pro His Pro
            20                  25                  30

Ser Ser Ala Phe Leu Asn Leu Ile Gly Phe Val Ser Arg Arg Glu Leu
        35                  40                  45

Gly Ser Ile Asp Gly Val Gln Gln Ile Ser Leu Glu Asp Ala Leu Ser
    50                  55                  60

Ser Gln Glu Val Glu Val Ala Tyr Ile Cys Ser Glu Ser Ser Ser His
65                  70                  75                  80

Glu Asp Tyr Ile Arg Gln Phe Leu Asn Ala Gly Lys His Val Leu Val
                85                  90                  95

Glu Tyr Pro Met Thr Leu Ser Leu Ala Ala Ala Gln Glu Leu Trp Glu
            100                 105                 110

Leu Ala Glu Gln Lys Gly Lys Val Leu His Glu Glu His Val Glu Leu
        115                 120                 125

Leu Met Glu Glu Phe Ala Phe Leu Lys Lys Glu Val Val Gly Lys Asp
    130                 135                 140

Leu Leu Lys Gly Ser Leu Leu Phe Thr Ala Gly Pro Leu Glu Glu Glu
145                 150                 155                 160

Arg Phe Gly Phe Pro Ala Phe Ser Gly Ile Ser Arg Leu Thr Trp Leu
                165                 170                 175

Val Ser Leu Phe Gly Glu Leu Ser Leu Val Ser Ala Thr Leu Glu Glu
            180                 185                 190
```

```
Arg Lys Glu Asp Gln Tyr Met Lys Met Thr Val Cys Leu Glu Thr Glu
        195                 200                 205

Lys Lys Ser Pro Leu Ser Trp Ile Glu Glu Lys Gly Pro Gly Leu Lys
    210                 215                 220

Arg Asn Arg Tyr Leu Ser Phe His Phe Lys Ser Gly Ser Leu Glu Asn
225                 230                 235                 240

Val Pro Asn Val Gly Val Asn Lys Asn Ile Phe Leu Lys Asp Gln Asn
                245                 250                 255

Ile Phe Val Gln Lys Leu Leu Gly Gln Phe Ser Glu Lys Glu Leu Ala
            260                 265                 270

Ala Glu Lys Lys Arg Ile Leu His Cys Leu Gly Leu Ala Glu Glu Ile
        275                 280                 285

Gln Lys Tyr Cys Cys Ser Arg Lys
    290                 295
```

<210> 9122
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1847; "

<220>
<221> source
<223> /note="Gene Symbol: BLVRA; "

<220>
<221> source
<223> /note="Gene Name:
biliverdin reductase A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412005"

<400> 9122

```
Met Asn Ala Glu Pro Glu Arg Lys Phe Gly Val Val Val Val Gly Val
1               5                   10                  15
```

```
Gly Arg Ala Gly Ser Val Arg Met Arg Asp Leu Arg Asn Pro His Pro
            20                  25                  30

Ser Ser Ala Phe Leu Asn Leu Ile Gly Phe Val Ser Arg Arg Glu Leu
        35                  40                  45

Gly Ser Ile Asp Gly Val Gln Gln Ile Ser Leu Glu Asp Ala Leu Ser
    50                  55                  60

Ser Gln Glu Val Glu Val Ala Tyr Ile Cys Ser Glu Ser Ser Ser His
65                  70                  75                  80

Glu Asp Tyr Ile Arg Gln Phe Leu Asn Ala Gly Lys His Val Leu Val
                85                  90                  95

Glu Tyr Pro Met Thr Leu
            100


<210> 9123
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1848; "

<220>
<221> source
<223> /note="Gene Symbol: BLVRB; "

<220>
<221> source
<223> /note="Gene Name:
      biliverdin reductase B; "

<220>
<221> source
<223> /note="Uniprot ID:  P30043; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263368"

<400> 9123
Met Ala Val Lys Lys Ile Ala Ile Phe Gly Ala Thr Gly Gln Thr Gly
1               5                   10                  15

Leu Thr Thr Leu Ala Gln Ala Val Gln Ala Gly Tyr Glu Val Thr Val
            20                  25                  30
```

```
Leu Val Arg Asp Ser Ser Arg Leu Pro Ser Glu Gly Pro Arg Pro Ala
        35                  40                  45

His Val Val Val Gly Asp Val Leu Gln Ala Ala Asp Val Asp Lys Thr
    50                  55                  60

Val Ala Gly Gln Asp Ala Val Ile Val Leu Leu Gly Thr Arg Asn Asp
65                  70                  75                  80

Leu Ser Pro Thr Thr Val Met Ser Glu Gly Ala Arg Asn Ile Val Ala
                85                  90                  95

Ala Met Lys Ala His Gly Val Asp Lys Val Val Ala Cys Thr Ser Ala
            100                 105                 110

Phe Leu Leu Trp Asp Pro Thr Lys Val Pro Pro Arg Leu Gln Ala Val
        115                 120                 125

Thr Asp Asp His Ile Arg Met His Lys Val Leu Arg Glu Ser Gly Leu
    130                 135                 140

Lys Tyr Val Ala Val Met Pro Pro His Ile Gly Asp Gln Pro Leu Thr
145                 150                 155                 160

Gly Ala Tyr Thr Val Thr Leu Asp Gly Arg Gly Pro Ser Arg Val Ile
                165                 170                 175

Ser Lys His Asp Leu Gly His Phe Met Leu Arg Cys Leu Thr Thr Asp
            180                 185                 190

Glu Tyr Asp Gly His Ser Thr Tyr Pro Ser His Gln Tyr Gln
        195                 200                 205
```

<210> 9124
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1848; "

<220>
<221> source

<223> /note="Gene Symbol: BLVRB; "

<220>
<221> source
<223> /note="Gene Name:
biliverdin reductase B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470619"

<400> 9124

Met	Ala	Val	Lys	Lys	Ile	Ala	Ile	Phe	Gly	Ala	Thr	Gly	Gln	Thr	Gly
1				5				10					15		
Leu	Thr	Thr	Leu	Ala	Gln	Ala	Val	Gln	Ala	Gly	Tyr	Glu	Val	Thr	Val
			20					25				30			
Leu	Val	Arg	Asp	Ser	Ser	Arg	Leu	Pro	Ser	Glu	Gly	Pro	Arg	Pro	Ala
		35					40					45			
His	Val	Val	Val	Gly	Asp	Val	Leu	Gln	Ala	Ala	Asp	Val	Asp	Lys	Thr
	50					55					60				
Val	Ala	Gly	Gln	Asp	Ala	Val	Ile	Val	Leu	Leu	Gly	Thr	Arg	Asn	Asp
65					70					75					80
Leu	Ser	Pro	Thr	Thr	Val	Met	Ser	Glu	Gly	Ala	Arg	Asn	Ile	Val	Ala
				85					90					95	
Ala	Met	Lys	Ala	His	Gly	Val	Asp	Lys	Val	Val	Ala	Cys	Thr	Ser	Gly
			100					105					110		
Gly	Trp	Trp	Asp	His	Gly	Gly	Gly	Ala	Glu	Leu	Gly	Gly	Thr	Gly	Glu
		115					120					125			
Ala	Ala	Gln	Gly	Pro	Leu	Lys	Gly	Asp	Ala	Glu	Ala	Ile	Pro	Cys	Tyr
	130					135					140				
Cys	Ala	Phe	Thr	Glu	His	Gln	Leu	Cys	Ala						
145					150										

<210> 9125
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1848; "

<220>
<221> source
<223> /note="Gene Symbol: BLVRB; "

<220>
<221> source
<223> /note="Gene Name:
biliverdin reductase B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000471720"

<400> 9125

```
Met Ala Val Lys Lys Ile Ala Ile Phe Gly Ala Thr Gly Gln Thr Gly
1               5                  10                  15

Leu Thr Thr Leu Ala Gln Ala Val Gln Ala Gly Tyr Glu Val Thr Val
            20                  25                  30

Leu Val Arg Asp Ser Ser Arg Leu Pro Ser Glu Gly Pro Arg Pro Ala
        35                  40                  45

His Val Val Val Gly Asp Val Leu Gln Ala Ala Asp Val Asp Lys Thr
    50                  55                  60

Val Ala Gly Gln Asp Ala Val Ile Val Leu Leu Gly Thr Arg Asn Asp
65                  70                  75                  80

Leu Ser Pro Thr Thr Val Met Ser Glu Gly Ala Arg Asn Ile Val Ala
                85                  90                  95

Ala Met Lys Ala His Gly Val Asp Lys Val Val Ala Cys Thr Ser Gly
            100                 105                 110

Asp Gln Pro Leu Thr Gly Ala Tyr Thr Val Thr Leu Asp Gly Arg Gly
        115                 120                 125

Pro Ser Arg Val Ile Ser Lys His Asp Leu Gly His Phe Met Leu Arg
    130                 135                 140

Cys Leu Thr Thr Asp Glu Tyr Asp Gly His Ser Thr Tyr Pro Ser His
145                 150                 155                 160
```

Gln Tyr Gln

<210> 9126
<211> 132
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1849; "

<220>
<221> source
<223> /note="Gene Symbol: BSPH1; "

<220>
<221> source
<223> /note="Gene Name:
binder of sperm prt homolog 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q075Z2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000341762"

<400> 9126
Met Gly Ser Leu Met Leu Leu Phe Val Glu Thr Thr Arg Asn Ser Ser
1   5   10   15

Ala Cys Ile Phe Pro Val Ile Leu Asn Glu Leu Ser Ser Thr Val Glu
            20   25   30

Thr Ile Thr His Phe Pro Glu Val Thr Asp Gly Glu Cys Val Phe Pro
        35   40   45

Phe His Tyr Lys Asn Gly Thr Tyr Tyr Asp Cys Ile Lys Ser Lys Ala
    50   55   60

Arg His Lys Trp Cys Ser Leu Asn Lys Thr Tyr Glu Gly Tyr Trp Lys
65   70   75   80

Phe Cys Ser Ala Glu Asp Phe Ala Asn Cys Val Phe Pro Phe Trp Tyr
                85   90   95

Arg Arg Leu Ile Tyr Trp Glu Cys Thr Asp Asp Gly Glu Ala Phe Gly

```
            100                 105                 110

Lys Lys Trp Cys Ser Leu Thr Lys Asn Phe Asn Lys Asp Arg Ile Trp
        115                 120                 125

Lys Tyr Cys Glu
    130


<210> 9127
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1850; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S1; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446619"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9127
Xaa Ser Phe Arg Ser Arg Arg Gly Pro Gly Val Pro Ser Pro Gln Pro
1               5                   10                  15

Asp Val Thr Met Leu Ser Arg Leu Leu Lys Glu His Gln Ala Lys Gln
            20                  25                  30

Asn Glu Arg Lys Glu Leu Gln Val Trp Pro Arg Pro Thr
        35                  40                  45


<210> 9128
<211> 153
<212> PRT
<213> Homo sapiens
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<220>
<221> source
<223> /note="Payload ID: 1850; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S1; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 1; "

<220>
<221> source
<223> /note="Uniprot ID: P78537; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447537"

<400> 9128
Met Ala Pro Gly Ser Arg Gly Glu Arg Ser Ser Phe Arg Ser Arg Arg
1   5   10   15

Gly Pro Gly Val Pro Ser Pro Gln Pro Asp Val Thr Met Leu Ser Arg
            20   25   30

Leu Leu Lys Glu His Gln Ala Lys Gln Asn Glu Arg Lys Glu Leu Gln
        35   40   45

Glu Lys Arg Arg Arg Glu Ala Ile Thr Ala Ala Thr Cys Leu Thr Glu
    50   55   60

Ala Leu Val Asp His Leu Asn Val Gly Val Ala Gln Ala Tyr Met Asn
65   70   75   80

Gln Arg Lys Leu Asp His Glu Val Lys Thr Leu Gln Val Gln Ala Ala
                85   90   95

Gln Phe Ala Lys Gln Thr Gly Gln Trp Ile Gly Met Val Glu Asn Phe
            100   105   110

Asn Gln Ala Leu Lys Glu Ile Gly Asp Val Glu Asn Trp Ala Arg Ser
        115   120   125

Ile Glu Leu Asp Met Arg Thr Ile Ala Thr Ala Leu Glu Tyr Val Tyr

130 135 140

Lys Gly Gln Leu Gln Ser Ala Pro Ser
145 150

<210> 9129
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1850; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S1; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448171"

<400> 9129
Met Asn Gln Arg Lys Leu Asp His Glu Val Lys Thr Leu Gln Val Gln
1 5 10 15

Ala Ala Gln Phe Ala Lys Gln Thr Gly Gln Trp Ile Gly Met Val Glu
20 25 30

Asn Phe Asn Gln Ala Leu Lys Val Gly His Thr Pro Tyr Leu Thr Thr
35 40 45

Pro Ile Leu Gly Pro His Trp Leu Pro Pro Val Arg Leu Pro Gln Val
50 55 60

<210> 9130
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1850; "

<220>

<221> source
<223> /note="Gene Symbol: BLOC1S1; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448605"

<400> 9130
Met Asn Gln Arg Lys Leu Asp His Glu Val Lys Thr Leu Gln Val Gln
1 5 10 15

Ala Ala Gln Phe Ala Lys Gln Thr Gly Gln Trp Ile Gly Met Val Glu
20 25 30

Asn Phe Asn Gln Ala Leu Lys Glu Ile Gly Asp Val Glu Asn Trp Ala
35 40 45

Arg Ser Ile Glu Leu Asp Met Arg Thr Ile Ala Thr Ala Leu Glu Tyr
50 55 60

Val Tyr Lys Gly Gln Leu Gln Ser Ala Pro Ser
65 70 75

<210> 9131
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1850; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S1; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450218"

<400> 9131
Met Asn Gln Arg Lys Leu Asp His Glu Val Lys Thr Leu Gln Val Gln
1   5   10   15

Ala Ala Gln Phe Ala Lys Gln Thr Gly Gln Trp Ile Gly Met Val Glu
            20   25   30

Asn Phe Asn Gln Ala Leu Lys Glu Ile Gly Asp Val Glu Asn Trp Ala
        35   40   45

Arg Ser Ile Glu Leu Asp Met Arg Thr Ile Ala Thr Ala Leu Glu Tyr
    50   55   60

Val Tyr Lys Gly Gln Leu Gln Ser Ala Pro Ser
65   70   75

<210> 9132
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1850; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S1; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450328"

<400> 9132
Met Ala Pro Gly Ser Arg Gly Glu Arg Ser Ser Phe Arg Ser Arg Arg
1   5   10   15

Gly Pro Gly Val Pro Ser Pro Gln Pro Asp Val Thr Met Leu Ser Arg
            20   25   30

Leu Leu Lys Glu His Gln Ala Lys Gln Asn Glu Arg Lys Glu Leu Gln
        35   40   45

```
Glu Lys Arg Arg Arg Glu Ala Ile Thr Ala Ala Thr Cys Leu Thr Glu
    50                  55                  60

Ala Leu Val Asp His Leu Asn Val Gly Val Ala Gln Ala Tyr Met Asn
65                  70                  75                  80

Gln Arg Lys Leu Asp His Glu Val Lys Thr Leu Gln Val Gln Ala Ala
                85                  90                  95

Gln Phe Ala Lys Gln Thr Gly Gln Trp Ile Gly Met Val Glu Asn Phe
            100                 105                 110

Asn Gln Ala Leu Lys Val Gly His Thr Pro Tyr Leu Thr Thr Pro Ile
        115                 120                 125

Leu Gly Pro His Trp Leu Pro Pro Val Arg Leu Pro Gln Val
    130                 135                 140
```

<210> 9133
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1851; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S2; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q6QNY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359398"

<400> 9133

```
Met Ala Ala Ala Ala Glu Gly Val Leu Ala Thr Arg Ser Asp Glu Pro
1               5                   10                  15

Ala Arg Asp Asp Ala Ala Val Glu Thr Ala Glu Glu Ala Lys Glu Pro
```

```
            20                  25                  30

Ala Glu Ala Asp Ile Thr Glu Leu Cys Arg Asp Met Phe Ser Lys Met
        35                  40                  45

Ala Thr Tyr Leu Thr Gly Glu Leu Thr Ala Thr Ser Glu Asp Tyr Lys
    50                  55                  60

Leu Leu Glu Asn Met Asn Lys Leu Thr Ser Leu Lys Tyr Leu Glu Met
65                  70                  75                  80

Lys Asp Ile Ala Ile Asn Ile Ser Arg Asn Leu Lys Asp Leu Asn Gln
                85                  90                  95

Lys Tyr Ala Gly Leu Gln Pro Tyr Leu Asp Gln Ile Asn Val Ile Glu
            100                 105                 110

Glu Gln Val Ala Ala Leu Glu Gln Ala Ala Tyr Lys Leu Asp Ala Tyr
        115                 120                 125

Ser Lys Lys Leu Glu Ala Lys Tyr Lys Lys Leu Glu Lys Arg
    130                 135                 140


<210> 9134
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1851; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S2; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6QNY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410865"
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<400> 9134
Met Phe Ser Lys Met Ala Thr Tyr Leu Thr Gly Glu Leu Thr Ala Thr
1 5 10 15

Ser Glu Asp Tyr Lys Leu Leu Glu Asn Met Asn Lys Leu Thr Ser Leu
20 25 30

Lys Tyr Leu Glu Met Lys Asp Ile Ala Ile Asn Ile Ser Arg Asn Leu
35 40 45

Lys Asp Leu Asn Gln Lys Tyr Ala Gly Leu Gln Pro Tyr Leu Asp Gln
50 55 60

Ile Asn Val Ile Glu Glu Gln Val Ala Ala Leu Glu Gln Ala Ala Tyr
65 70 75 80

Lys Leu Asp Ala Tyr Ser Lys Lys Leu Glu Ala Lys Tyr Lys Lys Leu
85 90 95

Glu Lys Arg

<210> 9135
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1851; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S2; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464387"

<400> 9135
Cys Arg Asp Met Phe Ser Lys Met Ala Thr Tyr Leu Thr Gly Glu Leu
1 5 10 15

```
Thr Ala Thr Ser Glu Asp Tyr Lys Leu Leu Glu Asn Met Asn Lys Leu
            20                  25                  30

Thr Ser Leu Lys Tyr Leu Glu Met Lys Asp Ile Ala Ile Asn Ile Ser
        35                  40                  45

Arg Asn Leu Lys Asp Leu Asn Gln Lys Tyr Ala Gly Leu Gln Pro Tyr
    50                  55                  60

Leu Asp Gln Ile Asn Val Ile Glu Glu Gln Val Ala Ala Leu Glu Gln
65                  70                  75                  80

Ala Ala Tyr Lys Leu Asp Ala Tyr Ser Lys Lys Leu Gly Asn Arg Phe
                85                  90                  95

Tyr Phe Cys Phe Asp Val Ile Lys Thr Ala Ser Cys Gln His Ile Leu
            100                 105                 110

Ser Lys His Asn Ser
        115


<210> 9136
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1851; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S2; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6QNY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481847"

<400> 9136
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```
Met Phe Ser Lys Met Ala Thr Tyr Leu Thr Gly Glu Leu Thr Ala Thr
1               5                   10                  15

Ser Glu Asp Tyr Lys Leu Leu Glu Asn Met Asn Lys Leu Thr Ser Leu
            20                  25                  30

Lys Tyr Leu Glu Met Lys Asp Ile Ala Ile Asn Ile Ser Arg Asn Leu
        35                  40                  45

Lys Asp Leu Asn Gln Lys Tyr Ala Gly Leu Gln Pro Tyr Leu Asp Gln
    50                  55                  60

Ile Asn Val Ile Glu Glu Gln Val Ala Ala Leu Glu Gln Ala Ala Tyr
65                  70                  75                  80

Lys Leu Asp Ala Tyr Ser Lys Lys Leu Glu Ala Lys Tyr Lys Lys Leu
                85                  90                  95

Glu Lys Arg
```

<210> 9137
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1851; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S2; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484340"

<400> 9137

```
Met Arg Leu Pro Arg Lys Ser Leu Glu Val Ala Thr Ser Glu Asp Tyr
1               5                   10                  15

Lys Leu Leu Glu Asn Met Asn Lys Leu Thr Ser Leu Lys Tyr Leu Glu
```

```
            20                  25                  30

Met Lys Asp Ile Ala Ile Asn Ile Ser Arg Asn Leu Lys Asp Leu Asn
        35                  40                  45

Gln Lys Tyr Ala Gly Leu Gln Pro Tyr Leu Asp Gln Ile Asn Val Ile
    50                  55                  60

Glu Glu Gln Val Ala Ala Leu Glu Gln Ala Ala Tyr Lys Leu Asp Ala
65                  70                  75                  80

Tyr Ser Lys Lys Leu Glu Ala Lys Tyr Lys Lys Leu Glu Lys Arg
                85                  90                  95


<210> 9138
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1852; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S3; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6QNY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393840"

<400> 9138
Met Ala Ser Gln Gly Arg Arg Arg Arg Pro Leu Arg Arg Pro Glu Thr
1               5                   10                  15

Val Val Pro Gly Glu Ala Thr Glu Thr Asp Ser Glu Arg Ser Ala Ser
            20                  25                  30

Ser Ser Glu Glu Glu Glu Leu Tyr Leu Gly Pro Ser Gly Pro Thr Arg
        35                  40                  45
```

```
Gly Arg Pro Thr Gly Leu Arg Val Ala Gly Glu Ala Ala Glu Thr Asp
    50                  55                  60

Ser Glu Pro Glu Pro Glu Pro Glu Pro Thr Ala Ala Pro Arg Asp Leu
65                  70                  75                  80

Pro Pro Leu Val Val Gln Arg Glu Ser Ala Glu Glu Ala Trp Gly Thr
                85                  90                  95

Glu Glu Ala Pro Ala Pro Ala Pro Ala Arg Ser Leu Leu Gln Leu Arg
            100                 105                 110

Leu Ala Glu Ser Gln Ala Arg Leu Asp His Asp Val Ala Ala Ala Val
        115                 120                 125

Ser Gly Val Tyr Arg Arg Ala Gly Arg Asp Val Ala Ala Leu Ala Ser
    130                 135                 140

Arg Leu Ala Ala Ala Gln Ala Ala Gly Leu Ala Ala Ala His Ser Val
145                 150                 155                 160

Arg Leu Ala Arg Gly Asp Leu Cys Ala Leu Ala Glu Arg Leu Asp Ile
                165                 170                 175

Val Ala Gly Cys Arg Leu Leu Pro Asp Ile Arg Gly Val Pro Gly Thr
            180                 185                 190

Glu Pro Glu Lys Asp Pro Gly Pro Arg Ala
        195                 200
```

<210> 9139
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1852; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S3; "

<220>
<221> source

<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466798"

<400> 9139
Ala Ala Ala Val Ser Gly Val Tyr Arg Arg Ala Gly Arg Asp Val Ala
1 5 10 15

Ala Leu Ala Ser Arg Leu Ala Ala Ala Gln Ala Ala Gly Leu Ala Ala
20 25 30

Ala His Ser Val Arg Leu Ala Arg Gly Asp Leu Cys Ala Leu Ala Glu
35 40 45

Arg Leu Asp Ile Val Ala Gly Cys Arg Leu Leu Pro Asp Ile Arg Gly
50 55 60

Val Pro Gly Thr Glu Pro Glu Lys Asp Pro Gly Pro Arg Ala
65 70 75

<210> 9140
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1852; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S3; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q6QNY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468281"

<400> 9140

```
Met Ala Ser Gln Gly Arg Arg Arg Arg Pro Leu Arg Arg Pro Glu Thr
1               5                   10                  15

Val Val Pro Gly Glu Ala Thr Glu Thr Asp Ser Glu Arg Ser Ala Ser
            20                  25                  30

Ser Ser Glu Glu Glu Glu Leu Tyr Leu Gly Pro Ser Gly Pro Thr Arg
        35                  40                  45

Gly Arg Pro Thr Gly Leu Arg Val Ala Gly Glu Ala Ala Glu Thr Asp
    50                  55                  60

Ser Glu Pro Glu Pro Glu Pro Glu Pro Thr Ala Ala Pro Arg Asp Leu
65                  70                  75                  80

Pro Pro Leu Val Val Gln Arg Glu Ser Ala Glu Glu Ala Trp Gly Thr
                85                  90                  95

Glu Glu Ala Pro Ala Pro Ala Pro Ala Arg Ser Leu Leu Gln Leu Arg
            100                 105                 110

Leu Ala Glu Ser Gln Ala Arg Leu Asp His Asp Val Ala Ala Ala Val
        115                 120                 125

Ser Gly Val Tyr Arg Arg Ala Gly Arg Asp Val Ala Ala Leu Ala Ser
    130                 135                 140

Arg Leu Ala Ala Ala Gln Ala Ala Gly Leu Ala Ala Ala His Ser Val
145                 150                 155                 160

Arg Leu Ala Arg Gly Asp Leu Cys Ala Leu Ala Glu Arg Leu Asp Ile
                165                 170                 175

Val Ala Gly Cys Arg Leu Leu Pro Asp Ile Arg Gly Val Pro Gly Thr
            180                 185                 190

Glu Pro Glu Lys Asp Pro Gly Pro Arg Ala
        195                 200
```

<210> 9141
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1853; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S4; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 4, cappuccino; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NUP1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318128"

<400> 9141
Met Glu Gly Ser Phe Ser Asp Gly Gly Ala Leu Pro Glu Gly Leu Ala
1   5   10   15

Glu Glu Ala Glu Pro Gln Gly Ala Ala Trp Ser Gly Asp Ser Gly Thr
            20   25   30

Val Ser Gln Ser His Ser Ser Ala Ser Gly Pro Trp Glu Asp Glu Gly
        35   40   45

Ala Glu Asp Gly Ala Pro Gly Arg Asp Leu Pro Leu Leu Arg Arg Ala
    50   55   60

Ala Ala Gly Tyr Ala Ala Cys Leu Leu Pro Gly Ala Gly Ala Arg Pro
65   70   75   80

Glu Val Glu Ala Leu Asp Ala Ser Leu Glu Asp Leu Leu Thr Arg Val
                85   90   95

Asp Glu Phe Val Gly Met Leu Asp Met Leu Arg Gly Asp Ser Ser His
            100   105   110

Val Val Ser Glu Gly Val Pro Arg Ile His Ala Lys Ala Ala Glu Met
        115   120   125

Arg Arg Ile Tyr Ser Arg Ile Asp Arg Leu Glu Ala Phe Val Arg Met
    130   135   140

```
Val Gly Gly Arg Val Ala Arg Met Glu Glu Gln Val Thr Lys Ala Glu
145                 150                 155                 160


Ala Glu Leu Gly Thr Phe Pro Arg Ala Phe Lys Lys Leu Leu His Thr
                165                 170                 175


Met Asn Val Pro Ser Leu Phe Ser Lys Ser Ala Pro Ser Arg Pro Gln
            180                 185                 190


Gln Ala Gly Tyr Glu Ala Pro Val Leu Phe Arg Thr Glu Asp Tyr Phe
        195                 200                 205


Pro Cys Cys Ser Glu Arg Pro Gln Leu
    210                 215


<210> 9142
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1854; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S5; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 5,
      muted; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000244777"

<400> 9142
Met Ser Gly Gly Gly Thr Glu Thr Pro Val Gly Cys Glu Ala Ala Pro
1               5                   10                  15


Gly Gly Gly Ser Lys Lys Arg Asp Ser Leu Gly Thr Ala Gly Ser Ala
            20                  25                  30


His Leu Ile Ile Lys Asp Leu Gly Glu Ile His Ser Arg Leu Leu Asp
        35                  40                  45
```

```
His Arg Pro Val Ile Gln Gly Glu Thr Arg Tyr Phe Val Lys Glu Phe
    50                  55                  60

Glu Glu Lys Arg Gly Leu Arg Glu Met Arg Val Leu Glu Asn Leu Lys
65                  70                  75                  80

Asn Met Ile His Glu Thr Asn Glu His Thr Leu Pro Lys Cys Arg Asp
                85                  90                  95

Thr Met Arg Asp Ser Leu Ser Gln Val Leu Gln Arg Tyr Glu Glu Leu
            100                 105                 110

Ser Cys
```

<210> 9143
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1854; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S5; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 5,
muted; "

<220>
<221> source
<223> /note="Uniprot ID: Q8TDH9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380598"

<400> 9143

```
Met Ser Gly Gly Gly Thr Glu Thr Pro Val Gly Cys Glu Ala Ala Pro
1               5                   10                  15

Gly Gly Gly Ser Lys Lys Arg Asp Ser Leu Gly Thr Ala Gly Ser Ala
            20                  25                  30
```

```
His Leu Ile Ile Lys Asp Leu Gly Glu Ile His Ser Arg Leu Leu Asp
        35                  40                  45

His Arg Pro Val Ile Gln Gly Glu Thr Arg Tyr Phe Val Lys Glu Phe
    50                  55                  60

Glu Glu Lys Arg Gly Leu Arg Glu Met Arg Val Leu Glu Asn Leu Lys
65                  70                  75                  80

Asn Met Ile His Glu Thr Asn Glu His Thr Leu Pro Lys Cys Arg Asp
                85                  90                  95

Thr Met Arg Asp Ser Leu Ser Gln Val Leu Gln Arg Leu Gln Ala Ala
            100                 105                 110

Asn Asp Ser Val Cys Arg Leu Gln Gln Arg Glu Gln Glu Arg Lys Lys
        115                 120                 125

Ile His Ser Asp His Leu Val Ala Ser Glu Lys Gln His Met Leu Gln
    130                 135                 140

Trp Asp Asn Phe Met Lys Glu Gln Pro Asn Lys Arg Ala Glu Val Asp
145                 150                 155                 160

Glu Glu His Arg Lys Ala Met Glu Arg Leu Lys Glu Gln Tyr Ala Glu
                165                 170                 175

Met Glu Lys Asp Leu Ala Lys Phe Ser Thr Phe
            180                 185
```

<210> 9144
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1854; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S5; "

<220>
<221> source

<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 5,
muted; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445215"

<400> 9144
Met Ser Gly Gly Gly Thr Glu Thr Pro Val Gly Cys Glu Ala Ala Pro
1 5 10 15

Gly Gly Gly Ser Lys Lys Arg Asp Ser Leu Gly Thr Ala Gly Ser Ala
20 25 30

His Leu Ile Ile Lys Asp Leu Gly Glu Ile His Ser Arg Leu Leu Asp
35 40 45

His Arg Pro Val Ile Gln Gly Glu Thr Arg Tyr Phe Val Lys Glu Phe
50 55 60

Glu Cys Lys Gln Leu Met Thr Gln Ser Val Asp Ser Asn Arg Gly Asn
65 70 75 80

Arg Asn Glu Lys Arg Phe Ile Val Thr Thr
85 90

<210> 9145
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1854; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S5; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 5,
muted; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486019"

<400> 9145
Met Ser Gly Gly Gly Thr Glu Thr Pro Val Gly Cys Glu Ala Ala Pro
1   5   10   15

Gly Gly Gly Ser Lys Lys Arg Asp Ser Leu Gly Thr Ala Gly Ser Ala
            20   25   30

His Leu Ile Ile Lys Asp Leu Gly Glu Ile His Ser Arg Leu Leu Asp
        35   40   45

His Arg Pro Val Ile Gln Gly Glu Thr Arg Tyr Phe Val Lys Glu Phe
    50   55   60

Glu Asn Glu Asp
65

<210> 9146
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UL45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000220531"

<400> 9146
Met Ser Val Pro Gly Pro Ser Ser Pro Asp Gly Ala Leu Thr Arg Pro
1   5   10   15

Pro Tyr Cys Leu Glu Ala Gly Glu Pro Thr Pro Gly Leu Ser Asp Thr
            20   25   30

```
Ser Pro Asp Glu Gly Leu Ile Glu Asp Leu Thr Ile Glu Asp Lys Ala
        35                  40                  45

Val Glu Gln Leu Ala Glu Gly Leu Leu Ser His Tyr Leu Pro Asp Leu
    50                  55                  60

Gln Arg Ser Lys Gln Ala Leu Gln Glu Leu Thr Gln Asn Gln Val Val
65                  70                  75                  80

Leu Leu Asp Thr Leu Glu Gln Glu Ile Ser Lys Phe Lys Glu Cys His
                85                  90                  95

Ser Met Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His
            100                 105                 110

Ala Lys Leu Val Asn Ile Arg Lys Glu Met Leu Met Leu His Glu Lys
        115                 120                 125

Thr Ser Lys Leu Lys Lys Arg Ala Leu Lys Leu Gln Gln Lys Arg Gln
    130                 135                 140

Lys Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe Glu Arg
145                 150                 155                 160

Glu Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg Met
                165                 170
```

<210> 9147
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454438"

<400> 9147
Met Ser Val Pro Gly Pro Ser Ser Pro Asp Gly Ala Leu Thr Arg Pro
1   5   10   15

Pro Tyr Cys Leu Glu Ala Gly Glu Pro Thr Pro Glu Pro Ser Cys Ile
            20   25   30

Val Arg His Thr Gly Thr Arg Asp Phe Lys Ile
        35   40

<210> 9148
<211> 46
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454537"

<400> 9148
Met Leu Asp Ile Asn Ala Leu Lys Arg Ala Leu Lys Leu Gln Gln Lys
1   5   10   15

Arg Gln Lys Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe
            20   25   30

Glu Arg Glu Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg Met
        35   40   45

<210> 9149
<211> 86

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454638"

<400> 9149
Met Ser Val Pro Gly Pro Ser Ser Pro Asp Gly Ala Leu Thr Arg Pro
1 5 10 15

Pro Tyr Cys Leu Glu Ala Gly Glu Pro Thr Pro Gly Leu Ser Asp Thr
20 25 30

Ser Pro Asp Glu Gly Leu Ile Glu Asp Leu Thr Ile Glu Asp Lys Ala
35 40 45

Val Glu Gln Leu Ala Glu Gly Leu Leu Ser His Tyr Leu Pro Asp Leu
50 55 60

Gln Arg Ser Lys Gln Ala Leu Gln Glu Leu Thr Leu Leu Arg Leu Asn
65 70 75 80

Thr Ile Met Pro Ser Trp
85

<210> 9150
<211> 21
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>

<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454715"

<400> 9150
Met Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His Ala
1 5 10 15

Lys Leu Val Asn Ile
20

<210> 9151
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454803"

<400> 9151
Met Gln Lys Ser Ser Ile Lys Tyr Trp Gln Thr Glu Ser Ser Ser Thr
1 5 10 15

Ser Lys Ser Leu Ser Thr Met Ile Lys Gln Asn Gln Val Val Leu Leu
20 25 30

Asp Thr Leu Glu Gln Glu Ile Ser Lys Phe Lys Glu Cys His Ser Met

```
        35                  40                  45

Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His Ala Lys
    50                  55                  60

Leu Val Asn Ile Arg Lys Glu Met Leu Met Leu His Glu Lys Thr Ser
65                  70                  75                  80

Lys Leu Lys Lys Arg Ala Leu Lys Leu Gln Gln Lys Arg Gln Lys Glu
                85                  90                  95

Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe Glu Arg Glu Lys
            100                 105                 110

Gln
```

<210> 9152
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455021"

<400> 9152

```
Met Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His Ala
1               5                   10                  15

Lys Leu Val Asn Ile Arg Lys Glu Met Leu Met Leu His Glu Lys Thr
            20                  25                  30

Ser Lys Leu Lys Lys Arg Ala Leu Lys Leu Gln Gln Lys Arg Gln Lys
```

```
        35                  40                  45

Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe Glu Arg Glu
    50                  55                  60

Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg Met
65                  70                  75


<210> 9153
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
      biogenesis of lysosomal organelles complex-1,
      subunit 6,
      pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455439"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9153
Xaa Leu Gly Thr Gly Leu Ser Asp Thr Ser Pro Asp Glu Gly Leu Ile
1               5                   10                  15

Glu Asp Leu Thr Ile Glu Asp Lys Ala Val Glu Gln Leu Ala Glu Gly
            20                  25                  30

Leu Leu Ser His Tyr Leu Pro Asp Leu Gln Arg Ser Lys Gln Ala Leu
        35                  40                  45

Gln Glu Leu Thr Thr Lys Leu Tyr Cys
    50                  55
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<210> 9154
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455599"

<400> 9154
Met Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His Ala
1 5 10 15

Lys Leu Val Asn Ile Arg Lys Glu Met Leu Met Leu His Glu Lys Thr
20 25 30

Ser Lys Leu Lys Lys Arg Ala Leu Lys Leu Gln Gln Lys Arg Gln Lys
35 40 45

Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe Glu Arg Glu
50 55 60

Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg Met
65 70 75

<210> 9155
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source

<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456067"

<400> 9155

```
Met Ser Val Pro Gly Pro Ser Ser Pro Asp Gly Ala Leu Thr Arg Pro
1               5                  10                  15


Pro Tyr Cys Leu Glu Ala Gly Glu Pro Thr Pro Ala Phe Phe Lys Ile
            20                  25                  30


Phe Arg Gln Asn Gln Val Val Leu Leu Asp Thr Leu Glu Gln Glu Ile
        35                  40                  45


Ser Lys Phe Lys Glu Cys His Ser Met Leu Asp Ile Asn Ala Leu Phe
    50                  55                  60


Ala Glu Ala Lys His Tyr His Ala Lys Leu Val Asn Ile Arg Lys Glu
65                  70                  75                  80


Met Leu Met Leu His Glu Lys Thr Ser Lys Leu Lys Lys Arg Ala Leu
                85                  90                  95


Lys Leu Gln Gln Lys Arg Gln Lys Glu Glu Leu Glu Arg Glu Gln Gln
            100                 105                 110


Arg Glu Lys Glu Phe Glu Arg Glu Lys Gln Leu Thr Ala Arg Pro Ala
        115                 120                 125


Lys Arg Met
    130
```

<210> 9156
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456152"

<400> 9156
Met Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His Ala
1 5 10 15

Lys Leu Val Asn Ile Arg Lys Glu Met Leu Met Leu His Glu Lys Thr
20 25 30

Ser Lys Leu Lys Lys Arg Ala Leu Lys Leu Gln Gln Lys Arg Gln Lys
35 40 45

Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe Glu Arg Glu
50 55 60

Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg Met
65 70 75

<210> 9157
<211> 80
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UL45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456624"

<400> 9157
Met Ser Val Pro Gly Pro Ser Ser Pro Asp Gly Ala Leu Thr Arg Pro
1   5   10   15

Pro Tyr Cys Leu Glu Ala Gly Glu Pro Thr Pro Gly Leu Ser Asp Thr
            20   25   30

Ser Pro Asp Glu Gly Leu Ile Glu Asp Leu Thr Ile Glu Asp Lys Ala
        35   40   45

Val Glu Gln Leu Ala Glu Gly Leu Leu Ser His Tyr Leu Pro Asp Leu
    50   55   60

Gln Arg Ser Lys Gln Ala Leu Gln Glu Leu Thr Thr Lys Leu Tyr Cys
65   70   75   80

<210> 9158
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456851"

<400> 9158
Met Gly Gly Thr Glu Val Pro Arg Gly Ser Phe Val Leu Gly Val Gln
1   5   10   15

```
Leu Lys Ala Val Asp Gly Glu Ala Ile Leu Ser Leu Cys Val Asp Ser
            20                  25                  30

Gly Leu Ser Asp Thr Ser Pro Asp Glu Gly Leu Ile Glu Asp Leu Thr
        35                  40                  45

Ile Glu Asp Lys Ala Val Glu Gln Leu Ala Glu Gly Leu Leu Ser His
    50                  55                  60

Tyr Leu Pro Asp Leu Gln Arg Ser Lys Gln Ala Leu Gln Glu Leu Thr
65                  70                  75                  80

Gln Asn Gln Val Val Leu Leu Asp Thr Leu Glu Gln Glu Ile Ser Lys
                85                  90                  95

Phe Lys Glu Cys His Ser Met Leu Asp Ile Asn Ala Leu Phe Ala Glu
            100                 105                 110

Ala Lys His Tyr His Ala Lys Leu Val Asn Ile Arg Lys Glu Met Leu
        115                 120                 125

Met Leu His Glu Lys Thr Ser Lys Leu Lys Lys Arg Ala Leu Lys Leu
    130                 135                 140

Gln Gln Lys Arg Gln Lys Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu
145                 150                 155                 160

Lys Glu Phe Glu Arg Glu Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg
                165                 170                 175

Met
```

<210> 9159
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source

<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457077"

<400> 9159
Met Leu Asp Ile Asn Ala Leu Phe Ala Glu Ala Lys His Tyr His Ala
1 5 10 15

Lys Leu Val Asn Ile Arg Lys Glu Met Leu Met Leu His Glu Lys Thr
20 25 30

Ser Lys Leu Lys Lys Arg Ala Leu Lys Leu Gln Gln Lys Arg Gln Lys
35 40 45

Glu Glu Leu Glu Arg Glu Gln Gln Arg Glu Lys Glu Phe Glu Arg Glu
50 55 60

Lys Gln Leu Thr Ala Arg Pro Ala Lys Arg Met
65 70 75

<210> 9160
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1855; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S6; "

<220>
<221> source
<223> /note="Gene Name:
biogenesis of lysosomal organelles complex-1,
subunit 6,
pallidin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457478"

<400> 9160
Met Ser Val Pro Gly Pro Ser Ser Pro Asp Gly Ala Leu Thr Arg Pro
1   5   10   15

Pro Tyr Cys Leu Glu Ala Gly Glu Pro Thr Pro Gly Leu Ser Asp Thr
            20   25   30

Ser Pro Asp Glu Gly Leu Ile Glu Asp Leu Thr Ile Glu Asp Lys Ala
        35   40   45

Val Glu Gln Leu Ala Glu Gly Leu Leu Ser His Tyr Leu Pro Asp Leu
    50   55   60

Gln Arg Ser Lys Gln Ala Leu Gln Glu Leu Thr Leu Asp Leu Lys Tyr
65   70   75   80

Asp Val Glu Tyr Pro
                85

<210> 9161
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1856; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1; "

<220>
<221> source
<223> /note="Gene Name:
      biorientation of chromosomes in cell division 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96IK1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000285908"

<400> 9161
Met Ala Asp Gly Gly Gly Gly Gly Gly Thr Gly Ala Val Gly Gly Gly
1   5   10   15

```
Gly Thr Ser Gln Ala Ser Ala Gly Ala Ala Thr Gly Ala Thr Gly Ala
            20                  25                  30

Ser Gly Gly Gly Gly Pro Ile Asn Pro Ala Ser Leu Pro Pro Gly Asp
        35                  40                  45

Pro Gln Leu Ile Ala Leu Ile Val Glu Gln Leu Lys Ser Arg Gly Leu
    50                  55                  60

Phe Asp Ser Phe Arg Arg Asp Cys Leu Ala Asp Val Asp Thr Lys Pro
65                  70                  75                  80

Ala Tyr Gln Asn Leu Arg Gln Lys Val Asp Asn Phe Val Ser Thr His
                85                  90                  95

Leu Asp Lys Gln Glu Trp Asn Pro Thr Met Asn Lys Asn Gln Leu Arg
            100                 105                 110

Asn Gly Leu Arg Gln Ser Val Val Gln Ile Arg Gln Thr Pro Phe Glu
        115                 120                 125

Ser
```

<210> 9162
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1856; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1; "

<220>
<221> source
<223> /note="Gene Name:
biorientation of chromosomes in cell division 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96IK1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000309644"

<400> 9162
Met Ala Asp Gly Gly Gly Gly Gly Gly Thr Gly Ala Val Gly Gly Gly
1 5 10 15

Gly Thr Ser Gln Ala Ser Ala Gly Ala Ala Thr Gly Ala Thr Gly Ala
20 25 30

Ser Gly Gly Gly Gly Pro Ile Asn Pro Ala Ser Leu Pro Pro Gly Asp
35 40 45

Pro Gln Leu Ile Ala Leu Ile Val Glu Gln Leu Lys Ser Arg Gly Leu
50 55 60

Phe Asp Ser Phe Arg Arg Asp Cys Leu Ala Asp Val Asp Thr Lys Pro
65 70 75 80

Ala Tyr Gln Asn Leu Arg Gln Lys Val Asp Asn Phe Val Ser Thr His
85 90 95

Leu Asp Lys Gln Glu Trp Asn Pro Thr Met Asn Lys Asn Gln Leu Arg
100 105 110

Asn Gly Leu Arg Gln Ser Val Val Gln Ser Gly Met Leu Glu Ala Gly
115 120 125

Val Asp Arg Ile Ile Ser Gln Val Val Asp Pro Lys Leu Asn His Ile
130 135 140

Phe Arg Pro Gln Ile Glu Arg Ala Ile His Glu Phe Leu Ala Ala Gln
145 150 155 160

Lys Lys Ala Ala Val Pro Ala Pro Pro Pro Glu Pro Glu Gly Gln Asp
165 170 175

Pro Pro Ala Pro Ser Gln Asp Thr Ser
180 185

<210> 9163
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1856; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1; "

<220>
<221> source
<223> /note="Gene Name:
biorientation of chromosomes in cell division 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417641"

<400> 9163
Met Asn Lys Asn Gln Leu Arg Asn Gly Leu Arg Gln Ser Val Val Gln
1 5 10 15

Ser Gly Met Leu Glu Ala Gly Val Asp Arg Ile Ile Ser Gln Val Val
20 25 30

Asp Pro Lys Leu Asn His Ile Phe Arg
35 40

<210> 9164
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1856; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1; "

<220>
<221> source
<223> /note="Gene Name:
biorientation of chromosomes in cell division 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420005"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9164

Xaa Leu Ala Leu Leu Gly Pro Ala Gly Ala Val Ala Pro Ser Thr Arg
1   5   10   15

Pro Arg Cys Leu Pro Ala Thr Arg Ser Ser Ser Leu Ser Ser Trp Ser
            20   25   30

Ser Ser Arg Ala Gly Ala Phe Leu Thr Ala Ser Ala Gly Thr Ala Trp
        35   40   45

Pro Thr Trp Thr Pro Arg Ser Gly Met Leu Glu Ala Gly Val Asp Arg
    50   55   60

Ile Ile Ser Gln Val Val Asp Pro Lys Leu Asn His Ile Phe Arg Pro
65   70   75   80

Gln Ile Glu Arg Ala Ile His Glu Phe Leu Ala Ala Gln Lys Lys Ala
                85   90   95

Ala Val Pro Ala Pro Pro Pro Glu Pro Glu Gly Gln Asp Pro Pro Ala
            100   105   110

Pro Ser Gln Asp Thr Ser
        115

<210> 9165
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1856; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1; "

<220>
<221> source
<223> /note="Gene Name:
      biorientation of chromosomes in cell division 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420337"

<400> 9165
Met Ala Asp Gly Gly Gly Gly Gly Gly Thr Gly Ala Val Gly Gly Gly
1   5   10   15

```
Gly Thr Ser Gln Ala Ser Ala Gly Ala Ala Thr Gly Ala Thr Gly Ala
            20                  25                  30

Ser Gly Gly Gly Gly Pro Ile Asn Pro Ala Ser Leu Pro Pro Gly Asp
        35                  40                  45

Pro Gln Leu Ile Ala Leu Ile Val Glu Gln Leu Lys Ser Arg Gly Leu
    50                  55                  60

Phe Asp Ser Phe Arg Arg Asp Cys Leu Ala Asp Val Asp Thr Lys Asn
65                  70                  75                  80

Thr Pro Asp Thr Phe
                85


<210> 9166
<211> 3051
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1857; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1L1; "

<220>
<221> source
<223> /note="Gene Name:
      biorientation of chromosomes in cell division
      1-like 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NFC6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000040738"

<400> 9166
Met Ala Thr Asn Pro Gln Pro Gln Pro Pro Pro Pro Ala Pro Pro Pro
1               5                   10                  15

Pro Pro Pro Gln Pro Gln Pro Gln Pro Pro Pro Pro Pro Pro Gly Pro
            20                  25                  30
```

```
Gly Ala Gly Pro Gly Ala Gly Gly Ala Gly Gly Ala Gly Ala Gly Ala
        35                  40                  45

Gly Asp Pro Gln Leu Val Ala Met Ile Val Asn His Leu Lys Ser Gln
    50                  55                  60

Gly Leu Phe Asp Gln Phe Arg Arg Asp Cys Leu Ala Asp Val Asp Thr
65                  70                  75                  80

Lys Pro Ala Tyr Gln Asn Leu Arg Gln Arg Val Asp Asn Phe Val Ala
                85                  90                  95

Asn His Leu Ala Thr His Thr Trp Ser Pro His Leu Asn Lys Asn Gln
            100                 105                 110

Leu Arg Asn Asn Ile Arg Gln Gln Val Leu Lys Ser Gly Met Leu Glu
        115                 120                 125

Ser Gly Ile Asp Arg Ile Ile Ser Gln Val Val Asp Pro Lys Ile Asn
    130                 135                 140

His Thr Phe Arg Pro Gln Val Glu Lys Ala Val His Glu Phe Leu Ala
145                 150                 155                 160

Thr Leu Asn His Lys Glu Glu Gly Ser Gly Asn Thr Ala Pro Asp Asp
                165                 170                 175

Glu Lys Pro Asp Thr Ser Leu Ile Thr Gln Gly Val Pro Thr Pro Gly
            180                 185                 190

Pro Ser Ala Asn Val Ala Asn Asp Ala Met Ser Ile Leu Glu Thr Ile
        195                 200                 205

Thr Ser Leu Asn Gln Glu Ala Ser Ala Ala Arg Ala Ser Thr Glu Thr
    210                 215                 220

Ser Asn Ala Lys Thr Ser Glu Arg Ala Ser Lys Lys Leu Pro Ser Gln
225                 230                 235                 240

Pro Thr Thr Asp Thr Ser Thr Asp Lys Glu Arg Thr Ser Glu Asp Met
                245                 250                 255
```

```
Ala Asp Lys Glu Lys Ser Thr Ala Asp Ser Gly Gly Glu Gly Leu Glu
            260                 265                 270

Thr Ala Pro Lys Ser Glu Glu Phe Ser Asp Leu Pro Cys Pro Val Glu
        275                 280                 285

Glu Ile Lys Asn Tyr Thr Lys Glu His Asn Asn Leu Ile Leu Leu Asn
    290                 295                 300

Lys Asp Val Gln Gln Glu Ser Ser Glu Gln Lys Asn Lys Ser Thr Asp
305                 310                 315                 320

Lys Gly Glu Lys Lys Pro Asp Ser Asn Glu Lys Gly Glu Arg Lys Lys
                325                 330                 335

Glu Lys Lys Glu Lys Thr Glu Lys Lys Phe Asp His Ser Lys Lys Ser
            340                 345                 350

Glu Asp Thr Gln Lys Val Lys Asp Glu Lys Gln Ala Lys Glu Lys Glu
        355                 360                 365

Val Glu Ser Leu Lys Leu Pro Ser Glu Lys Asn Ser Asn Lys Ala Lys
    370                 375                 380

Thr Val Glu Gly Thr Lys Glu Asp Phe Ser Leu Ile Asp Ser Asp Val
385                 390                 395                 400

Asp Gly Leu Thr Asp Ile Thr Val Ser Ser Val His Thr Ser Asp Leu
                405                 410                 415

Ser Ser Phe Glu Glu Asp Thr Glu Glu Glu Val Val Thr Ser Asp Ser
            420                 425                 430

Met Glu Glu Gly Glu Ile Thr Ser Asp Asp Glu Glu Lys Asn Lys Gln
        435                 440                 445

Asn Lys Thr Lys Thr Gln Thr Ser Asp Ser Ser Glu Gly Lys Thr Lys
    450                 455                 460

Ser Val Arg His Ala Tyr Val His Lys Pro Tyr Leu Tyr Ser Lys Tyr
465                 470                 475                 480

Tyr Ser Asp Ser Asp Asp Glu Leu Thr Val Glu Gln Arg Arg Gln Ser
```

```
                485                 490                 495

Ile Ala Lys Glu Lys Glu Glu Arg Leu Leu Arg Arg Gln Ile Asn Arg
            500                 505                 510

Glu Lys Leu Glu Glu Lys Arg Lys Gln Lys Ala Glu Lys Thr Lys Ser
        515                 520                 525

Ser Lys Thr Lys Gly Gln Gly Arg Ser Ser Val Asp Leu Glu Glu Ser
    530                 535                 540

Ser Thr Lys Ser Leu Glu Pro Lys Ala Ala Arg Ile Lys Glu Val Leu
545                 550                 555                 560

Lys Glu Arg Lys Val Leu Glu Lys Lys Val Ala Leu Ser Lys Lys Arg
                565                 570                 575

Lys Lys Asp Ser Arg Asn Val Glu Glu Asn Ser Lys Lys Lys Gln Gln
            580                 585                 590

Tyr Glu Glu Asp Ser Lys Glu Thr Leu Lys Thr Ser Glu His Cys Glu
        595                 600                 605

Lys Glu Lys Ile Ser Ser Ser Lys Glu Leu Lys His Val His Ala Lys
    610                 615                 620

Ser Glu Pro Ser Lys Pro Ala Arg Arg Leu Ser Glu Ser Leu His Val
625                 630                 635                 640

Val Asp Glu Asn Lys Asn Glu Ser Lys Leu Glu Arg Glu His Lys Arg
                645                 650                 655

Arg Thr Ser Thr Pro Val Ile Met Glu Gly Val Gln Glu Glu Thr Asp
            660                 665                 670

Thr Arg Asp Val Lys Arg Gln Val Glu Arg Ser Glu Ile Cys Thr Glu
        675                 680                 685

Glu Pro Gln Lys Gln Lys Ser Thr Leu Lys Asn Glu Lys His Leu Lys
    690                 695                 700

Lys Asp Asp Ser Glu Thr Pro His Leu Lys Ser Leu Leu Lys Lys Glu
705                 710                 715                 720
```

Val Lys Ser Ser Lys Glu Lys Pro Glu Arg Glu Lys Thr Pro Ser Glu
725 730 735

Asp Lys Leu Ser Val Lys His Lys Tyr Lys Gly Asp Cys Met His Lys
740 745 750

Thr Gly Asp Glu Thr Glu Leu His Ser Ser Glu Lys Gly Leu Lys Val
755 760 765

Glu Glu Asn Ile Gln Lys Gln Ser Gln Gln Thr Lys Leu Ser Ser Asp
770 775 780

Asp Lys Thr Glu Arg Lys Ser Lys His Arg Asn Glu Arg Lys Leu Ser
785 790 795 800

Val Leu Gly Lys Asp Gly Lys Pro Val Ser Glu Tyr Ile Ile Lys Thr
805 810 815

Asp Glu Asn Val Arg Lys Glu Asn Asn Lys Lys Glu Arg Arg Leu Ser
820 825 830

Ala Glu Lys Thr Lys Ala Glu His Lys Ser Arg Arg Ser Ser Asp Ser
835 840 845

Lys Ile Gln Lys Asp Ser Leu Gly Ser Lys Gln His Gly Ile Thr Leu
850 855 860

Gln Arg Arg Ser Glu Ser Tyr Ser Glu Asp Lys Cys Asp Met Asp Ser
865 870 875 880

Thr Asn Met Asp Ser Asn Leu Lys Pro Glu Glu Val Val His Lys Glu
885 890 895

Lys Arg Arg Thr Lys Ser Leu Leu Glu Glu Lys Leu Val Leu Lys Ser
900 905 910

Lys Ser Lys Thr Gln Gly Lys Gln Val Lys Val Val Glu Thr Glu Leu
915 920 925

Gln Glu Gly Ala Thr Lys Gln Ala Thr Thr Pro Lys Pro Asp Lys Glu
930 935 940

```
Lys Asn Thr Glu Glu Asn Asp Ser Glu Lys Gln Arg Lys Ser Lys Val
945                 950                 955                 960

Glu Asp Lys Pro Phe Glu Glu Thr Gly Val Glu Pro Val Leu Glu Thr
                965                 970                 975

Ala Ser Ser Ser Ala His Ser Thr Gln Lys Asp Ser Ser His Arg Ala
            980                 985                 990

Lys Leu Pro Leu Ala Lys Glu Lys  Tyr Lys Ser Asp Lys  Asp Ser
Thr
        995                 1000                1005

Ser Thr  Arg Leu Glu Arg Lys  Leu Ser Asp Gly His  Lys Ser Arg
    1010                1015                1020

Ser Leu  Lys His Ser Ser Lys  Asp Ile Lys Lys Lys  Asp Glu Asn
    1025                1030                1035

Lys Ser  Asp Asp Lys Asp Gly  Lys Glu Val Asp Ser  Ser His Glu
    1040                1045                1050

Lys Ala  Arg Gly Asn Ser Ser  Leu Met Glu Lys Lys  Leu Ser Arg
    1055                1060                1065

Arg Leu  Cys Glu Asn Arg Arg  Gly Ser Leu Ser Gln  Glu Met Ala
    1070                1075                1080

Lys Gly  Glu Glu Lys Leu Ala  Ala Asn Thr Leu Ser  Thr Pro Ser
    1085                1090                1095

Gly Ser  Ser Leu Gln Arg Pro  Lys Lys Ser Gly Asp  Met Thr Leu
    1100                1105                1110

Ile Pro  Glu Gln Glu Pro Met  Glu Ile Asp Ser Glu  Pro Gly Val
    1115                1120                1125

Glu Asn  Val Phe Glu Val Ser  Lys Thr Gln Asp Asn  Arg Asn Asn
    1130                1135                1140

Asn Ser  Gln Gln Asp Ile Asp  Ser Glu Asn Met Lys  Gln Lys Thr
    1145                1150                1155
```

```
Ser Ala  Thr Val Gln Lys Asp  Glu Leu Arg Thr Cys  Thr Ala Asp
    1160                1165                1170

Ser Lys  Ala Thr Ala Pro Ala  Tyr Lys Pro Gly Arg  Gly Thr Gly
    1175                1180                1185

Val Asn  Ser Asn Ser Glu Lys  His Ala Asp His Arg  Ser Thr Leu
    1190                1195                1200

Thr Lys  Lys Met His Ile Gln  Ser Ala Val Ser Lys  Met Asn Pro
    1205                1210                1215

Gly Glu  Lys Glu Pro Ile His  Arg Gly Thr Thr Glu  Val Asn Ile
    1220                1225                1230

Asp Ser  Glu Thr Val His Arg  Met Leu Leu Ser Ala  Pro Ser Glu
    1235                1240                1245

Asn Asp  Arg Val Gln Lys Asn  Leu Lys Asn Thr Ala  Ala Glu Glu
    1250                1255                1260

His Val  Ala Gln Gly Asp Ala  Thr Leu Glu His Ser  Thr Asn Leu
    1265                1270                1275

Asp Ser  Ser Pro Ser Leu Ser  Ser Val Thr Val Val  Pro Leu Arg
    1280                1285                1290

Glu Ser  Tyr Asp Pro Asp Val  Ile Pro Leu Phe Asp  Lys Arg Thr
    1295                1300                1305

Val Leu  Glu Gly Ser Thr Ala  Ser Thr Ser Pro Ala  Asp His Ser
    1310                1315                1320

Ala Leu  Pro Asn Gln Ser Leu  Thr Val Arg Glu Ser  Glu Val Leu
    1325                1330                1335

Lys Thr  Ser Asp Ser Lys Glu  Gly Gly Glu Gly Phe  Thr Val Asp
    1340                1345                1350

Thr Pro  Ala Lys Ala Ser Ile  Thr Ser Lys Arg His  Ile Pro Glu
    1355                1360                1365
```

```
Ala His  Gln Ala Thr Leu Leu  Asp Gly Lys Gln Gly  Lys Val Ile
    1370                1375                1380

Met Pro  Leu Gly Ser Lys Leu  Thr Gly Val Ile Val  Glu Asn Glu
    1385                1390                1395

Asn Ile  Thr Lys Glu Gly Gly  Leu Val Asp Met Ala  Lys Lys Glu
    1400                1405                1410

Asn Asp  Leu Asn Ala Glu Pro  Asn Leu Lys Gln Thr  Ile Lys Ala
    1415                1420                1425

Thr Val  Glu Asn Gly Lys Lys  Asp Gly Ile Ala Val  Asp His Val
    1430                1435                1440

Val Gly  Leu Asn Thr Glu Lys  Tyr Ala Glu Thr Val  Lys Leu Lys
    1445                1450                1455

His Lys  Arg Ser Pro Gly Lys  Val Lys Asp Ile Ser  Ile Asp Val
    1460                1465                1470

Glu Arg  Arg Asn Glu Asn Ser  Glu Val Asp Thr Ser  Ala Gly Ser
    1475                1480                1485

Gly Ser  Ala Pro Ser Val Leu  His Gln Arg Asn Gly  Gln Thr Glu
    1490                1495                1500

Asp Val  Ala Thr Gly Pro Arg  Arg Ala Glu Lys Thr  Ser Val Ala
    1505                1510                1515

Thr Ser  Thr Glu Gly Lys Asp  Lys Asp Val Thr Leu  Ser Pro Val
    1520                1525                1530

Lys Ala  Gly Pro Ala Thr Thr  Thr Ser Ser Glu Thr  Arg Gln Ser
    1535                1540                1545

Glu Val  Ala Leu Pro Cys Thr  Ser Ile Glu Ala Asp  Glu Gly Leu
    1550                1555                1560

Ile Ile  Gly Thr His Ser Arg  Asn Asn Pro Leu His  Val Gly Ala
    1565                1570                1575

Glu Ala  Ser Glu Cys Thr Val  Phe Ala Ala Ala Glu  Glu Gly Gly
```

1580 1585 1590

Ala Val Val Thr Glu Gly Phe Ala Glu Ser Glu Thr Phe Leu Thr
1595 1600 1605

Ser Thr Lys Glu Gly Glu Ser Gly Glu Cys Ala Val Ala Glu Ser
1610 1615 1620

Glu Asp Arg Ala Ala Asp Leu Leu Ala Val His Ala Val Lys Ile
1625 1630 1635

Glu Ala Asn Val Asn Ser Val Val Thr Glu Glu Lys Asp Asp Ala
1640 1645 1650

Val Thr Ser Ala Gly Ser Glu Glu Lys Cys Asp Gly Ser Leu Ser
1655 1660 1665

Arg Asp Ser Glu Ile Val Glu Gly Thr Ile Thr Phe Ile Ser Glu
1670 1675 1680

Val Glu Ser Asp Gly Ala Val Thr Ser Ala Gly Thr Glu Ile Arg
1685 1690 1695

Ala Gly Ser Ile Ser Ser Glu Glu Val Asp Gly Ser Gln Gly Asn
1700 1705 1710

Met Met Arg Met Gly Pro Lys Lys Glu Thr Glu Gly Thr Val Thr
1715 1720 1725

Cys Thr Gly Ala Glu Gly Arg Ser Asp Asn Phe Val Ile Cys Ser
1730 1735 1740

Val Thr Gly Ala Gly Pro Arg Glu Glu Arg Met Val Thr Gly Ala
1745 1750 1755

Gly Val Val Leu Gly Asp Asn Asp Ala Pro Pro Gly Thr Ser Ala
1760 1765 1770

Ser Gln Glu Gly Asp Gly Ser Val Asn Asp Gly Thr Glu Gly Glu
1775 1780 1785

Ser Ala Val Thr Ser Thr Gly Ile Thr Glu Asp Gly Glu Gly Pro
1790 1795 1800

```
Ala Ser  Cys Thr Gly Ser Glu  Asp Ser Ser Glu Gly  Phe Ala Ile
    1805                1810                1815

Ser Ser  Glu Ser Glu Glu Asn  Gly Glu Ser Ala Met  Asp Ser Thr
    1820                1825                1830

Val Ala  Lys Glu Gly Thr Asn  Val Pro Leu Val Ala  Ala Gly Pro
    1835                1840                1845

Cys Asp  Asp Glu Gly Ile Val  Thr Ser Thr Gly Ala  Lys Glu Glu
    1850                1855                1860

Asp Glu  Glu Gly Glu Asp Val  Val Thr Ser Thr Gly  Arg Gly Asn
    1865                1870                1875

Glu Ile  Gly His Ala Ser Thr  Cys Thr Gly Leu Gly  Glu Glu Ser
    1880                1885                1890

Glu Gly  Val Leu Ile Cys Glu  Ser Ala Glu Gly Asp  Ser Gln Ile
    1895                1900                1905

Gly Thr  Val Val Glu His Val  Glu Ala Glu Ala Gly  Ala Ala Ile
    1910                1915                1920

Met Asn  Ala Asn Glu Asn Asn  Val Asp Ser Met Ser  Gly Thr Glu
    1925                1930                1935

Lys Gly  Ser Lys Asp Thr Asp  Ile Cys Ser Ser Ala  Lys Gly Ile
    1940                1945                1950

Val Glu  Ser Ser Val Thr Ser  Ala Val Ser Gly Lys  Asp Glu Val
    1955                1960                1965

Thr Pro  Val Pro Gly Gly Cys  Glu Gly Pro Met Thr  Ser Ala Ala
    1970                1975                1980

Ser Asp  Gln Ser Asp Ser Gln  Leu Glu Lys Val Glu  Asp Thr Thr
    1985                1990                1995

Ile Ser  Thr Gly Leu Val Gly  Gly Ser Tyr Asp Val  Leu Val Ser
    2000                2005                2010
```

Gly Glu Val Pro Glu Cys Glu Val Ala His Thr Ser Pro Ser Glu
2015 2020 2025

Lys Glu Asp Glu Asp Ile Ile Thr Ser Val Glu Asn Glu Glu Cys
2030 2035 2040

Asp Gly Leu Met Ala Thr Thr Ala Ser Gly Asp Ile Thr Asn Gln
2045 2050 2055

Asn Ser Leu Ala Gly Gly Lys Asn Gln Gly Lys Val Leu Ile Ile
2060 2065 2070

Ser Thr Ser Thr Thr Asn Asp Tyr Thr Pro Gln Val Ser Ala Ile
2075 2080 2085

Thr Asp Val Glu Gly Gly Leu Ser Asp Ala Leu Arg Thr Glu Glu
2090 2095 2100

Asn Met Glu Gly Thr Arg Val Thr Thr Glu Glu Phe Glu Ala Pro
2105 2110 2115

Met Pro Ser Ala Val Ser Gly Asp Asp Ser Gln Leu Thr Ala Ser
2120 2125 2130

Arg Ser Glu Glu Lys Asp Glu Cys Ala Met Ile Ser Thr Ser Ile
2135 2140 2145

Gly Glu Glu Phe Glu Leu Pro Ile Ser Ser Ala Thr Thr Ile Lys
2150 2155 2160

Cys Ala Glu Ser Leu Gln Pro Val Ala Ala Ala Val Glu Glu Arg
2165 2170 2175

Ala Thr Gly Pro Val Leu Ile Ser Thr Ala Asp Phe Glu Gly Pro
2180 2185 2190

Met Pro Ser Ala Pro Pro Glu Ala Glu Ser Pro Leu Ala Ser Thr
2195 2200 2205

Ser Lys Glu Glu Lys Asp Glu Cys Ala Leu Ile Ser Thr Ser Ile
2210 2215 2220

Ala Glu Glu Cys Glu Ala Ser Val Ser Gly Val Val Val Glu Ser
2225 2230 2235

Glu Asn Glu Arg Ala Gly Thr Val Met Glu Glu Lys Asp Gly Ser
2240 2245 2250

Gly Ile Ile Ser Thr Ser Ser Val Glu Asp Cys Glu Gly Pro Val
2255 2260 2265

Ser Ser Ala Val Pro Gln Glu Glu Gly Asp Pro Ser Val Thr Pro
2270 2275 2280

Ala Glu Glu Met Gly Asp Thr Ala Met Ile Ser Thr Ser Thr Ser
2285 2290 2295

Glu Gly Cys Glu Ala Val Met Ile Gly Ala Val Leu Gln Asp Glu
2300 2305 2310

Asp Arg Leu Thr Ile Thr Arg Val Glu Asp Leu Ser Asp Ala Ala
2315 2320 2325

Ile Ile Ser Thr Ser Thr Ala Glu Cys Met Pro Ile Ser Ala Ser
2330 2335 2340

Ile Asp Arg His Glu Glu Asn Gln Leu Thr Ala Asp Asn Pro Glu
2345 2350 2355

Gly Asn Gly Asp Leu Ser Ala Thr Glu Val Ser Lys His Lys Val
2360 2365 2370

Pro Met Pro Ser Leu Ile Ala Glu Asn Asn Cys Arg Cys Pro Gly
2375 2380 2385

Pro Val Arg Gly Gly Lys Glu Pro Gly Pro Val Leu Ala Val Ser
2390 2395 2400

Thr Glu Glu Gly His Asn Gly Pro Ser Val His Lys Pro Ser Ala
2405 2410 2415

Gly Gln Gly His Pro Ser Ala Val Cys Ala Glu Lys Glu Glu Lys
2420 2425 2430

His Gly Lys Glu Cys Pro Glu Ile Gly Pro Phe Ala Gly Arg Gly

2435 2440 2445

Gln Lys Glu Ser Thr Leu His Leu Ile Asn Ala Glu Glu Lys Asn
2450 2455 2460

Val Leu Leu Asn Ser Leu Gln Lys Glu Asp Lys Ser Pro Glu Thr
2465 2470 2475

Gly Thr Ala Gly Gly Ser Ser Thr Ala Ser Tyr Ser Ala Gly Arg
2480 2485 2490

Gly Leu Glu Gly Asn Ala Asn Ser Pro Ala His Leu Arg Gly Pro
2495 2500 2505

Glu Gln Thr Ser Gly Gln Thr Ala Lys Asp Pro Ser Val Ser Ile
2510 2515 2520

Arg Tyr Leu Ala Ala Val Asn Thr Gly Ala Ile Lys Ala Asp Asp
2525 2530 2535

Met Pro Pro Val Gln Gly Thr Val Ala Glu His Ser Phe Leu Pro
2540 2545 2550

Ala Glu Gln Gln Gly Ser Glu Asp Asn Leu Lys Thr Ser Thr Thr
2555 2560 2565

Lys Cys Ile Thr Gly Gln Glu Ser Lys Ile Ala Pro Ser His Thr
2570 2575 2580

Met Ile Pro Pro Ala Thr Tyr Ser Val Ala Leu Leu Ala Pro Lys
2585 2590 2595

Cys Glu Gln Asp Leu Thr Ile Lys Asn Asp Tyr Ser Gly Lys Trp
2600 2605 2610

Thr Asp Gln Ala Ser Ala Glu Lys Thr Gly Asp Asp Asn Ser Thr
2615 2620 2625

Arg Lys Ser Phe Pro Glu Glu Gly Asp Ile Met Val Thr Val Ser
2630 2635 2640

Ser Glu Glu Asn Val Cys Asp Ile Gly Asn Glu Glu Ser Pro Leu
2645 2650 2655

```
Asn Val  Leu Gly Gly Leu Lys  Leu Lys Ala Asn Leu  Lys Met Glu
    2660                2665                2670

Ala Tyr  Val Pro Ser Glu Glu  Glu Lys Asn Gly Glu  Ile Leu Ala
    2675                2680                2685

Pro Pro  Glu Ser Leu Cys Gly  Gly Lys Pro Ser Gly  Ile Ala Glu
    2690                2695                2700

Leu Gln  Arg Glu Pro Leu Leu  Val Asn Glu Ser Leu  Asn Val Glu
    2705                2710                2715

Asn Ser  Gly Phe Arg Thr Asn  Glu Glu Ile His Ser  Glu Ser Tyr
    2720                2725                2730

Asn Lys  Gly Glu Ile Ser Ser  Gly Arg Lys Asp Asn  Ala Glu Ala
    2735                2740                2745

Ile Ser  Gly His Ser Val Glu  Ala Asp Pro Lys Glu  Val Glu Glu
    2750                2755                2760

Glu Glu  Arg His Met Pro Lys  Arg Lys Arg Lys Gln  His Tyr Leu
    2765                2770                2775

Ser Ser  Glu Asp Glu Pro Asp  Asp Asn Pro Asp Val  Leu Asp Ser
    2780                2785                2790

Arg Ile  Glu Thr Ala Gln Arg  Gln Cys Pro Glu Thr  Glu Pro His
    2795                2800                2805

Asp Thr  Lys Glu Glu Asn Ser  Arg Asp Leu Glu Glu  Leu Pro Lys
    2810                2815                2820

Thr Ser  Ser Glu Thr Asn Ser  Thr Thr Ser Arg Val  Met Glu Glu
    2825                2830                2835

Lys Asp  Glu Tyr Ser Ser Ser  Glu Thr Thr Gly Glu  Lys Pro Glu
    2840                2845                2850

Gln Asn  Asp Asp Asp Thr Ile  Lys Ser Gln Glu Glu  Asp Gln Pro
    2855                2860                2865
```

```
Ile Ile  Ile Lys Arg Lys Arg  Gly Arg Pro Arg Lys  Tyr Pro Val
    2870                2875                2880

Glu Thr  Thr Leu Lys Met Lys  Asp Asp Ser Lys Thr  Asp Thr Gly
    2885                2890                2895

Ile Val  Thr Val Glu Gln Ser  Pro Ser Ser Ser Lys  Leu Lys Val
    2900                2905                2910

Met Gln  Thr Asp Glu Ser Asn  Lys Glu Thr Ala Asn  Leu Gln Glu
    2915                2920                2925

Arg Ser  Ile Ser Asn Asp Asp  Gly Glu Glu Lys Ile  Val Thr Ser
    2930                2935                2940

Val Arg  Arg Arg Gly Arg Lys  Pro Lys Arg Ser Leu  Thr Val Ser
    2945                2950                2955

Asp Asp  Ala Glu Ser Ser Glu  Pro Glu Arg Lys Arg  Gln Lys Ser
    2960                2965                2970

Val Ser  Asp Pro Val Glu Asp  Lys Lys Glu Gln Glu  Ser Asp Glu
    2975                2980                2985

Glu Glu  Glu Glu Glu Glu Glu  Asp Glu Pro Ser Gly  Ala Thr Thr
    2990                2995                3000

Arg Ser  Thr Thr Arg Ser Glu  Ala Gln Arg Ser Lys  Thr Gln Leu
    3005                3010                3015

Ser Pro  Ser Ile Lys Arg Lys  Arg Glu Val Ser Pro  Pro Gly Ala
    3020                3025                3030

Arg Thr  Arg Gly Gln Gln Arg  Val Glu Glu Ala Pro  Val Lys Lys
    3035                3040                3045

Ala Lys  Arg
    3050
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<210> 9167
<211> 93
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1857; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1L1; "

<220>
<221> source
<223> /note="Gene Name:
biorientation of chromosomes in cell division
1-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420541"

<400> 9167
Met Ala Thr Asn Pro Gln Pro Gln Pro Pro Pro Pro Ala Pro Pro Pro
1 5 10 15

Pro Pro Pro Gln Pro Gln Pro Gln Pro Pro Pro Pro Pro Pro Gly Pro
20 25 30

Gly Ala Gly Pro Gly Ala Gly Gly Ala Gly Gly Ala Gly Ala Gly Ala
35 40 45

Gly Asp Pro Gln Leu Val Ala Met Ile Val Asn His Leu Lys Ser Gln
50 55 60

Gly Leu Phe Asp Gln Phe Arg Arg Asp Cys Leu Ala Asp Val Asp Thr
65 70 75 80

Lys Ser Leu Ala Leu Ser Pro Gly Trp Asn Ala Met Ala
85 90

<210> 9168
<211> 207
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1857; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1L1; "

<220>
<221> source
<223> /note="Gene Name:
biorientation of chromosomes in cell division
1-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425492"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9168
Xaa Ser Lys Thr Asp Thr Gly Ile Val Thr Val Glu Gln Ser Pro Ser
1 5 10 15

Ser Ser Lys Leu Lys Val Met Gln Thr Asp Glu Ser Asn Lys Glu Thr
20 25 30

Ala Asn Leu Gln Glu Arg Ser Ile Ser Asn Asp Asp Gly Glu Glu Lys
35 40 45

Ile Val Thr Ser Val Arg Arg Arg Gly Arg Lys Pro Lys Arg Ser Leu
50 55 60

Thr Val Ser Asp Asp Ala Glu Ser Ser Glu Pro Glu Arg Lys Arg Gln
65 70 75 80

Lys Ser Val Ser Asp Pro Val Glu Asp Lys Lys Glu Gln Glu Ser Asp
85 90 95

Glu Glu Glu Glu Glu Glu Glu Glu Asp Glu Pro Ser Gly Ala Thr Thr
100 105 110

Arg Ser Thr Thr Arg Ser Glu Ala Gln Arg Lys Gln His Ser Lys Pro
115 120 125

Ser Ala Arg Ala Thr Ser Lys Leu Gly Ser Pro Asp Thr Val Ser Pro
130 135 140

Arg Asn Arg Gln Lys Leu Ala Lys Glu Lys Leu Pro Thr Ser Glu Lys
145 150 155 160

```
Val Ser Asn Ser Pro Pro Leu Gly Arg Ser Lys Thr Gln Leu Ser Pro
                165                 170                 175

Ser Ile Lys Arg Lys Arg Glu Val Ser Pro Pro Gly Ala Arg Thr Arg
            180                 185                 190

Gly Gln Gln Arg Val Glu Glu Ala Pro Val Lys Lys Ala Lys Arg
        195                 200                 205


<210> 9169
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1858; "

<220>
<221> source
<223> /note="Gene Symbol: BOD1L2; "

<220>
<221> source
<223> /note="Gene Name:
      biorientation of chromosomes in cell division
      1-like 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IYS8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467843"

<400> 9169
Met Ala Asp Gly Gly Gly Gly Gly Ser Gly Gly Ala Gly Pro Ala Ser
1               5                   10                  15

Thr Arg Ala Ser Gly Gly Gly Gly Pro Ile Asn Pro Ala Ser Leu Pro
            20                  25                  30

Pro Gly Asp Pro Gln Leu Ile Ala Ile Ile Val Gly Gln Leu Lys Ser
        35                  40                  45

Arg Gly Leu Phe Asp Ser Phe Arg Arg Asp Cys Lys Ala Asp Val Asp
    50                  55                  60

Thr Lys Pro Ala Tyr Gln Asn Leu Ser Gln Lys Ala Asp Asn Phe Val
```

65 70 75 80

Ser Thr His Leu Asp Lys Gln Glu Trp Asn Pro Pro Ala Asn Asp Asn
85 90 95

Gln Leu His Asp Gly Leu Arg Gln Ser Val Val Gln Ser Gly Arg Ser
100 105 110

Glu Ala Gly Val Asp Arg Ile Ser Ser Gln Val Val Asp Pro Lys Leu
115 120 125

Asn His Ile Phe Arg Pro Gln Ile Glu Gln Ile Ile His Glu Phe Leu
130 135 140

Val Ala Gln Lys Glu Ala Ala Val Pro Ala Leu Pro Pro Glu Pro Glu
145 150 155 160

Gly Gln Asp Pro Pro Ala Pro Ser Gln Asp Thr Ser
165 170

<210> 9170
<211> 543
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
<221> source
<223> /note="Gene Name:
biotinidase; "

<220>
<221> source
<223> /note="Uniprot ID: P43251; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000306477"

<400> 9170
Met Ala His Ala His Ile Gln Gly Gly Arg Arg Ala Lys Ser Arg Phe
1 5 10 15

```
Val Val Cys Ile Met Ser Gly Ala Arg Ser Lys Leu Ala Leu Phe Leu
            20                  25                  30

Cys Gly Cys Tyr Val Val Ala Leu Gly Ala His Thr Gly Glu Glu Ser
        35                  40                  45

Val Ala Asp His His Glu Ala Glu Tyr Tyr Val Ala Ala Val Tyr Glu
    50                  55                  60

His Pro Ser Ile Leu Ser Leu Asn Pro Leu Ala Leu Ile Ser Arg Gln
65                  70                  75                  80

Glu Ala Leu Glu Leu Met Asn Gln Asn Leu Asp Ile Tyr Glu Gln Gln
                85                  90                  95

Val Met Thr Ala Ala Gln Lys Asp Val Gln Ile Ile Val Phe Pro Glu
            100                 105                 110

Asp Gly Ile His Gly Phe Asn Phe Thr Arg Thr Ser Ile Tyr Pro Phe
        115                 120                 125

Leu Asp Phe Met Pro Ser Pro Gln Val Val Arg Trp Asn Pro Cys Leu
    130                 135                 140

Glu Pro His Arg Phe Asn Asp Thr Glu Val Leu Gln Arg Leu Ser Cys
145                 150                 155                 160

Met Ala Ile Arg Gly Asp Met Phe Leu Val Ala Asn Leu Gly Thr Lys
                165                 170                 175

Glu Pro Cys His Ser Ser Asp Pro Arg Cys Pro Lys Asp Gly Arg Tyr
            180                 185                 190

Gln Phe Asn Thr Asn Val Val Phe Ser Asn Asn Gly Thr Leu Val Asp
        195                 200                 205

Arg Tyr Arg Lys His Asn Leu Tyr Phe Glu Ala Ala Phe Asp Val Pro
    210                 215                 220

Leu Lys Val Asp Leu Ile Thr Phe Asp Thr Pro Phe Ala Gly Arg Phe
225                 230                 235                 240
```

```
Gly Ile Phe Thr Cys Phe Asp Ile Leu Phe Phe Asp Pro Ala Ile Arg
                245                 250                 255

Val Leu Arg Asp Tyr Lys Val Lys His Val Val Tyr Pro Thr Ala Trp
            260                 265                 270

Met Asn Gln Leu Pro Leu Leu Ala Ala Ile Glu Ile Gln Lys Ala Phe
        275                 280                 285

Ala Val Ala Phe Gly Ile Asn Val Leu Ala Ala Asn Val His His Pro
    290                 295                 300

Val Leu Gly Met Thr Gly Ser Gly Ile His Thr Pro Leu Glu Ser Phe
305                 310                 315                 320

Trp Tyr His Asp Met Glu Asn Pro Lys Ser His Leu Ile Ile Ala Gln
                325                 330                 335

Val Ala Lys Asn Pro Val Gly Leu Ile Gly Ala Glu Asn Ala Thr Gly
            340                 345                 350

Glu Thr Asp Pro Ser His Ser Lys Phe Leu Lys Ile Leu Ser Gly Asp
        355                 360                 365

Pro Tyr Cys Glu Lys Asp Ala Gln Glu Val His Cys Asp Glu Ala Thr
    370                 375                 380

Lys Trp Asn Val Asn Ala Pro Pro Thr Phe His Ser Glu Met Met Tyr
385                 390                 395                 400

Asp Asn Phe Thr Leu Val Pro Val Trp Gly Lys Glu Gly Tyr Leu His
                405                 410                 415

Val Cys Ser Asn Gly Leu Cys Cys Tyr Leu Leu Tyr Glu Arg Pro Thr
            420                 425                 430

Leu Ser Lys Glu Leu Tyr Ala Leu Gly Val Phe Asp Gly Leu His Thr
        435                 440                 445

Val His Gly Thr Tyr Tyr Ile Gln Val Cys Ala Leu Val Arg Cys Gly
    450                 455                 460

Gly Leu Gly Phe Asp Thr Cys Gly Gln Glu Ile Thr Glu Ala Thr Gly
```

```
465                 470                 475                 480

Ile Phe Glu Phe His Leu Trp Gly Asn Phe Ser Thr Ser Tyr Ile Phe
                485                 490                 495

Pro Leu Phe Leu Thr Ser Gly Met Thr Leu Glu Val Pro Asp Gln Leu
            500                 505                 510

Gly Trp Glu Asn Asp His Tyr Phe Leu Arg Lys Ser Arg Leu Ser Ser
        515                 520                 525

Gly Leu Val Thr Ala Ala Leu Tyr Gly Arg Leu Tyr Glu Arg Asp
    530                 535                 540


<210> 9171
<211> 523
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
<221> source
<223> /note="Gene Name:
      biotinidase; "

<220>
<221> source
<223> /note="Uniprot ID:  P43251; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373288"

<400> 9171
Met Ser Gly Ala Arg Ser Lys Leu Ala Leu Phe Leu Cys Gly Cys Tyr
1               5                   10                  15

Val Val Ala Leu Gly Ala His Thr Gly Glu Glu Ser Val Ala Asp His
            20                  25                  30

His Glu Ala Glu Tyr Tyr Val Ala Ala Val Tyr Glu His Pro Ser Ile
        35                  40                  45
```

```
Leu Ser Leu Asn Pro Leu Ala Leu Ile Ser Arg Gln Glu Ala Leu Glu
    50                  55                  60

Leu Met Asn Gln Asn Leu Asp Ile Tyr Glu Gln Gln Val Met Thr Ala
65                  70                  75                  80

Ala Gln Lys Asp Val Gln Ile Ile Val Phe Pro Glu Asp Gly Ile His
                85                  90                  95

Gly Phe Asn Phe Thr Arg Thr Ser Ile Tyr Pro Phe Leu Asp Phe Met
            100                 105                 110

Pro Ser Pro Gln Val Val Arg Trp Asn Pro Cys Leu Glu Pro His Arg
        115                 120                 125

Phe Asn Asp Thr Glu Val Leu Gln Arg Leu Ser Cys Met Ala Ile Arg
    130                 135                 140

Gly Asp Met Phe Leu Val Ala Asn Leu Gly Thr Lys Glu Pro Cys His
145                 150                 155                 160

Ser Ser Asp Pro Arg Cys Pro Lys Asp Gly Arg Tyr Gln Phe Asn Thr
                165                 170                 175

Asn Val Val Phe Ser Asn Asn Gly Thr Leu Val Asp Arg Tyr Arg Lys
            180                 185                 190

His Asn Leu Tyr Phe Glu Ala Ala Phe Asp Val Pro Leu Lys Val Asp
        195                 200                 205

Leu Ile Thr Phe Asp Thr Pro Phe Ala Gly Arg Phe Gly Ile Phe Thr
    210                 215                 220

Cys Phe Asp Ile Leu Phe Phe Asp Pro Ala Ile Arg Val Leu Arg Asp
225                 230                 235                 240

Tyr Lys Val Lys His Val Val Tyr Pro Thr Ala Trp Met Asn Gln Leu
                245                 250                 255

Pro Leu Leu Ala Ala Ile Glu Ile Gln Lys Ala Phe Ala Val Ala Phe
            260                 265                 270
```

```
Gly Ile Asn Val Leu Ala Ala Asn Val His His Pro Val Leu Gly Met
        275                 280                 285

Thr Gly Ser Gly Ile His Thr Pro Leu Glu Ser Phe Trp Tyr His Asp
    290                 295                 300

Met Glu Asn Pro Lys Ser His Leu Ile Ile Ala Gln Val Ala Lys Asn
305                 310                 315                 320

Pro Val Gly Leu Ile Gly Ala Glu Asn Ala Thr Gly Glu Thr Asp Pro
                325                 330                 335

Ser His Ser Lys Phe Leu Lys Ile Leu Ser Gly Asp Pro Tyr Cys Glu
            340                 345                 350

Lys Asp Ala Gln Glu Val His Cys Asp Glu Ala Thr Lys Trp Asn Val
        355                 360                 365

Asn Ala Pro Pro Thr Phe His Ser Glu Met Met Tyr Asp Asn Phe Thr
    370                 375                 380

Leu Val Pro Val Trp Gly Lys Glu Gly Tyr Leu His Val Cys Ser Asn
385                 390                 395                 400

Gly Leu Cys Cys Tyr Leu Leu Tyr Glu Arg Pro Thr Leu Ser Lys Glu
                405                 410                 415

Leu Tyr Ala Leu Gly Val Phe Asp Gly Leu His Thr Val His Gly Thr
            420                 425                 430

Tyr Tyr Ile Gln Val Cys Ala Leu Val Arg Cys Gly Gly Leu Gly Phe
        435                 440                 445

Asp Thr Cys Gly Gln Glu Ile Thr Glu Ala Thr Gly Ile Phe Glu Phe
    450                 455                 460

His Leu Trp Gly Asn Phe Ser Thr Ser Tyr Ile Phe Pro Leu Phe Leu
465                 470                 475                 480

Thr Ser Gly Met Thr Leu Glu Val Pro Asp Gln Leu Gly Trp Glu Asn
                485                 490                 495

Asp His Tyr Phe Leu Arg Lys Ser Arg Leu Ser Ser Gly Leu Val Thr
```

500 505 510

Ala Ala Leu Tyr Gly Arg Leu Tyr Glu Arg Asp
515 520

<210> 9172
<211> 545
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
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<223> /note="Gene Name:
biotinidase; "

<220>
<221> source
<223> /note="Uniprot ID: P43251; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388212"

<400> 9172
Met Pro Glu Gly Gly Gly Thr Ser Arg Arg Leu Leu Pro Met Gln Ser
1 5 10 15

Arg Phe Val Val Cys Ile Met Ser Gly Ala Arg Ser Lys Leu Ala Leu
20 25 30

Phe Leu Cys Gly Cys Tyr Val Val Ala Leu Gly Ala His Thr Gly Glu
35 40 45

Glu Ser Val Ala Asp His His Glu Ala Glu Tyr Tyr Val Ala Ala Val
50 55 60

Tyr Glu His Pro Ser Ile Leu Ser Leu Asn Pro Leu Ala Leu Ile Ser
65 70 75 80

Arg Gln Glu Ala Leu Glu Leu Met Asn Gln Asn Leu Asp Ile Tyr Glu
85 90 95

```
Gln Gln Val Met Thr Ala Ala Gln Lys Asp Val Gln Ile Ile Val Phe
            100                 105                 110

Pro Glu Asp Gly Ile His Gly Phe Asn Phe Thr Arg Thr Ser Ile Tyr
        115                 120                 125

Pro Phe Leu Asp Phe Met Pro Ser Pro Gln Val Val Arg Trp Asn Pro
    130                 135                 140

Cys Leu Glu Pro His Arg Phe Asn Asp Thr Glu Val Leu Gln Arg Leu
145                 150                 155                 160

Ser Cys Met Ala Ile Arg Gly Asp Met Phe Leu Val Ala Asn Leu Gly
                165                 170                 175

Thr Lys Glu Pro Cys His Ser Ser Asp Pro Arg Cys Pro Lys Asp Gly
            180                 185                 190

Arg Tyr Gln Phe Asn Thr Asn Val Val Phe Ser Asn Asn Gly Thr Leu
        195                 200                 205

Val Asp Arg Tyr Arg Lys His Asn Leu Tyr Phe Glu Ala Ala Phe Asp
    210                 215                 220

Val Pro Leu Lys Val Asp Leu Ile Thr Phe Asp Thr Pro Phe Ala Gly
225                 230                 235                 240

Arg Phe Gly Ile Phe Thr Cys Phe Asp Ile Leu Phe Phe Asp Pro Ala
                245                 250                 255

Ile Arg Val Leu Arg Asp Tyr Lys Val Lys His Val Val Tyr Pro Thr
            260                 265                 270

Ala Trp Met Asn Gln Leu Pro Leu Leu Ala Ala Ile Glu Ile Gln Lys
        275                 280                 285

Ala Phe Ala Val Ala Phe Gly Ile Asn Val Leu Ala Ala Asn Val His
    290                 295                 300

His Pro Val Leu Gly Met Thr Gly Ser Gly Ile His Thr Pro Leu Glu
305                 310                 315                 320
```

```
Ser Phe Trp Tyr His Asp Met Glu Asn Pro Lys Ser His Leu Ile Ile
                325                 330                 335

Ala Gln Val Ala Lys Asn Pro Val Gly Leu Ile Gly Ala Glu Asn Ala
            340                 345                 350

Thr Gly Glu Thr Asp Pro Ser His Ser Lys Phe Leu Lys Ile Leu Ser
        355                 360                 365

Gly Asp Pro Tyr Cys Glu Lys Asp Ala Gln Glu Val His Cys Asp Glu
    370                 375                 380

Ala Thr Lys Trp Asn Val Asn Ala Pro Pro Thr Phe His Ser Glu Met
385                 390                 395                 400

Met Tyr Asp Asn Phe Thr Leu Val Pro Val Trp Gly Lys Glu Gly Tyr
                405                 410                 415

Leu His Val Cys Ser Asn Gly Leu Cys Cys Tyr Leu Leu Tyr Glu Arg
            420                 425                 430

Pro Thr Leu Ser Lys Glu Leu Tyr Ala Leu Gly Val Phe Asp Gly Leu
        435                 440                 445

His Thr Val His Gly Thr Tyr Tyr Ile Gln Val Cys Ala Leu Val Arg
    450                 455                 460

Cys Gly Gly Leu Gly Phe Asp Thr Cys Gly Gln Glu Ile Thr Glu Ala
465                 470                 475                 480

Thr Gly Ile Phe Glu Phe His Leu Trp Gly Asn Phe Ser Thr Ser Tyr
                485                 490                 495

Ile Phe Pro Leu Phe Leu Thr Ser Gly Met Thr Leu Glu Val Pro Asp
            500                 505                 510

Gln Leu Gly Trp Glu Asn Asp His Tyr Phe Leu Arg Lys Ser Arg Leu
        515                 520                 525

Ser Ser Gly Leu Val Thr Ala Ala Leu Tyr Gly Arg Leu Tyr Glu Arg
    530                 535                 540

Asp
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545

<210> 9173
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
<221> source
<223> /note="Gene Name:
biotinidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394277"

<400> 9173
Met Ser Gly Ala Arg Ser Lys Leu Ala Leu Phe Leu Cys Gly Cys Tyr
1 5 10 15

Val Val Ala Leu Gly Ala His Thr Gly Glu Glu Ser Val Ala Asp His
20 25 30

His Glu Ala Glu Tyr Tyr Val Ala Ala Val Tyr Glu His Pro Ser Ile
35 40 45

Leu Ser Leu Asn Pro Leu Ala Leu Ile Ser Arg Gln Glu Ala Leu Glu
50 55 60

Leu Met Asn Gln Asn Leu Asp Ile Tyr Glu Gln Gln Val Met Thr Ala
65 70 75 80

Ala Gln Lys Asp Val Gln Ile Ile Val Phe Pro Glu Asp Gly Ile His
85 90 95

Gly Phe Asn Phe Thr Arg Thr Ser Ile Tyr Pro Phe Leu Asp Phe Met
100 105 110

Pro Ser Pro Gln Val Val Arg Trp Asn Pro Cys Leu Glu Pro His Arg
115 120 125

```
Phe Asn Asp Thr Glu Val Leu Gln Arg Leu Ser Cys Met Ala Ile Arg
    130                 135                 140

Gly Asp Met Phe Leu Val Ala Asn Leu Gly Thr Lys Glu Pro Cys His
145                 150                 155                 160

Ser Ser Asp Pro Arg Cys Pro Lys Asp Gly Arg Tyr Gln Phe Asn Thr
                165                 170                 175

Asn Val Val Phe Ser Asn Asn Gly Thr Leu Val Asp Arg Tyr Arg Lys
            180                 185                 190

His Asn Leu Tyr Phe Glu Ala Ala Phe Asp Val Pro Leu Lys Val Asp
        195                 200                 205

Leu Ile Thr Phe Asp Thr Pro Phe Ala Gly Arg Phe Gly Ile Phe Thr
    210                 215                 220

Cys Phe Asp Ile Leu Phe Phe Asp Pro Ala Ile Arg Val Leu Arg Asp
225                 230                 235                 240

Tyr Lys Val Lys His Val Val Tyr Pro Thr Ala
                245                 250


<210> 9174
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
<221> source
<223> /note="Gene Name:
      biotinidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397113"

<400> 9174
Met Ser Gly Ala Arg Ser Lys Leu Ala Leu Phe Leu Cys Gly Cys Tyr
```

```
1               5                   10                  15

Val Val Ala Leu Gly Ala His Thr Gly Glu Glu Ser Val Ala Asp His
            20                  25                  30

His Glu Ala Glu Tyr Tyr Val Ala Ala Val Tyr Glu His Pro Ser Ile
        35                  40                  45

Leu Ser Leu Asn Pro Leu Ala Leu Ile Ser
    50                  55
```

<210> 9175
<211> 545
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
<221> source
<223> /note="Gene Name:
biotinidase; "

<220>
<221> source
<223> /note="Uniprot ID: P43251; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400995"

<400> 9175

```
Met Ala Arg Lys Glu Thr Gln Leu Ile Ile Lys Met Asn His Leu Ala
1               5                   10                  15

Arg Phe Val Val Cys Ile Met Ser Gly Ala Arg Ser Lys Leu Ala Leu
            20                  25                  30

Phe Leu Cys Gly Cys Tyr Val Val Ala Leu Gly Ala His Thr Gly Glu
        35                  40                  45

Glu Ser Val Ala Asp His His Glu Ala Glu Tyr Tyr Val Ala Ala Val
    50                  55                  60
```

```
Tyr Glu His Pro Ser Ile Leu Ser Leu Asn Pro Leu Ala Leu Ile Ser
65                  70                  75                  80

Arg Gln Glu Ala Leu Glu Leu Met Asn Gln Asn Leu Asp Ile Tyr Glu
                85                  90                  95

Gln Gln Val Met Thr Ala Ala Gln Lys Asp Val Gln Ile Ile Val Phe
            100                 105                 110

Pro Glu Asp Gly Ile His Gly Phe Asn Phe Thr Arg Thr Ser Ile Tyr
        115                 120                 125

Pro Phe Leu Asp Phe Met Pro Ser Pro Gln Val Val Arg Trp Asn Pro
    130                 135                 140

Cys Leu Glu Pro His Arg Phe Asn Asp Thr Glu Val Leu Gln Arg Leu
145                 150                 155                 160

Ser Cys Met Ala Ile Arg Gly Asp Met Phe Leu Val Ala Asn Leu Gly
                165                 170                 175

Thr Lys Glu Pro Cys His Ser Ser Asp Pro Arg Cys Pro Lys Asp Gly
            180                 185                 190

Arg Tyr Gln Phe Asn Thr Asn Val Val Phe Ser Asn Asn Gly Thr Leu
        195                 200                 205

Val Asp Arg Tyr Arg Lys His Asn Leu Tyr Phe Glu Ala Ala Phe Asp
    210                 215                 220

Val Pro Leu Lys Val Asp Leu Ile Thr Phe Asp Thr Pro Phe Ala Gly
225                 230                 235                 240

Arg Phe Gly Ile Phe Thr Cys Phe Asp Ile Leu Phe Phe Asp Pro Ala
                245                 250                 255

Ile Arg Val Leu Arg Asp Tyr Lys Val Lys His Val Val Tyr Pro Thr
            260                 265                 270

Ala Trp Met Asn Gln Leu Pro Leu Leu Ala Ala Ile Glu Ile Gln Lys
        275                 280                 285
```

```
Ala Phe Ala Val Ala Phe Gly Ile Asn Val Leu Ala Ala Asn Val His
    290                 295                 300

His Pro Val Leu Gly Met Thr Gly Ser Gly Ile His Thr Pro Leu Glu
305                 310                 315                 320

Ser Phe Trp Tyr His Asp Met Glu Asn Pro Lys Ser His Leu Ile Ile
                325                 330                 335

Ala Gln Val Ala Lys Asn Pro Val Gly Leu Ile Gly Ala Glu Asn Ala
            340                 345                 350

Thr Gly Glu Thr Asp Pro Ser His Ser Lys Phe Leu Lys Ile Leu Ser
        355                 360                 365

Gly Asp Pro Tyr Cys Glu Lys Asp Ala Gln Glu Val His Cys Asp Glu
    370                 375                 380

Ala Thr Lys Trp Asn Val Asn Ala Pro Pro Thr Phe His Ser Glu Met
385                 390                 395                 400

Met Tyr Asp Asn Phe Thr Leu Val Pro Val Trp Gly Lys Glu Gly Tyr
                405                 410                 415

Leu His Val Cys Ser Asn Gly Leu Cys Cys Tyr Leu Leu Tyr Glu Arg
            420                 425                 430

Pro Thr Leu Ser Lys Glu Leu Tyr Ala Leu Gly Val Phe Asp Gly Leu
        435                 440                 445

His Thr Val His Gly Thr Tyr Tyr Ile Gln Val Cys Ala Leu Val Arg
    450                 455                 460

Cys Gly Gly Leu Gly Phe Asp Thr Cys Gly Gln Glu Ile Thr Glu Ala
465                 470                 475                 480

Thr Gly Ile Phe Glu Phe His Leu Trp Gly Asn Phe Ser Thr Ser Tyr
                485                 490                 495

Ile Phe Pro Leu Phe Leu Thr Ser Gly Met Thr Leu Glu Val Pro Asp
            500                 505                 510

Gln Leu Gly Trp Glu Asn Asp His Tyr Phe Leu Arg Lys Ser Arg Leu
```

515 520 525

Ser Ser Gly Leu Val Thr Ala Ala Leu Tyr Gly Arg Leu Tyr Glu Arg
530 535 540

Asp
545

<210> 9176
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1859; "

<220>
<221> source
<223> /note="Gene Symbol: BTD; "

<220>
<221> source
<223> /note="Gene Name:
biotinidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403775"

<400> 9176
Met Thr Leu Ala Pro Asp Thr Cys Ser Ser Leu Arg Ser Ala Lys Leu
1 5 10 15

Leu Ser Gly Ile Phe His Arg Lys Ala Leu Ser Thr His Ala Ala Gly
20 25 30

Lys Gln Ala Glu Ser Ser Ser Lys Ala Asn Ala Lys Ser Ala Ala Arg
35 40 45

His Leu Trp Tyr Cys Thr Ser Asp Gly Gln Glu Gly Asn Gln Leu Pro
50 55 60

<210> 9177
<211> 194
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369726"

<400> 9177

```
Met Pro Arg Asn Leu Leu Tyr Ser Leu Leu Ser Ser His Leu Ser Pro
1               5                  10                  15

His Phe Ser Thr Ser Val Thr Ser Ala Lys Val Ala Val Asn Gly Val
            20                  25                  30

Gln Leu His Tyr Gln Gln Thr Gly Glu Gly Asp His Ala Val Leu Leu
        35                  40                  45

Leu Pro Gly Met Leu Gly Ser Gly Glu Thr Asp Phe Gly Pro Gln Leu
    50                  55                  60

Lys Asn Leu Asn Lys Lys Leu Phe Thr Val Val Ala Trp Asp Pro Arg
65                  70                  75                  80

Gly Tyr Gly His Ser Arg Pro Pro Asp Arg Asp Phe Pro Ala Asp Phe
                85                  90                  95

Phe Glu Arg Asp Ala Lys Asp Ala Val Asp Leu Met Lys Ala Leu Lys
            100                 105                 110

Phe Lys Lys Val Ser Leu Leu Gly Trp Ser Asp Gly Gly Ile Thr Ala
        115                 120                 125

Leu Ile Ala Ala Ala Lys Tyr Pro Ser Tyr Ile His Lys Met Val Ile
    130                 135                 140

Trp Gly Ala Asn Ala Tyr Val Thr Asp Glu Asp Ser Met Ile Tyr Glu
145                 150                 155                 160
```

Gly Ile Arg Asp Val Ser Lys Trp Ser Glu Arg Thr Arg Lys Pro Leu
165 170 175

Glu Ala Leu Tyr Gly Trp Ser Leu Thr Leu Ser Pro Gly Trp Asn Ala
180 185 190

Met Ala

<210> 9178
<211> 274
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="Uniprot ID: Q86WA6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369734"

<400> 9178
Met Pro Arg Asn Leu Leu Tyr Ser Leu Leu Ser Ser His Leu Ser Pro
1 5 10 15

His Phe Ser Thr Ser Val Thr Ser Ala Lys Val Ala Val Asn Gly Val
20 25 30

Gln Leu His Tyr Gln Gln Thr Gly Glu Gly Asp His Ala Val Leu Leu
35 40 45

Leu Pro Gly Met Leu Gly Ser Gly Glu Thr Asp Phe Gly Pro Gln Leu
50 55 60

Lys Asn Leu Asn Lys Lys Leu Phe Thr Val Val Ala Trp Asp Pro Arg

65 70 75 80

Gly Tyr Gly His Ser Arg Pro Pro Asp Arg Asp Phe Pro Ala Asp Phe
85 90 95

Phe Glu Arg Asp Ala Lys Asp Ala Val Asp Leu Met Lys Ala Leu Lys
100 105 110

Phe Lys Lys Val Ser Leu Leu Gly Trp Ser Asp Gly Gly Ile Thr Ala
115 120 125

Leu Ile Ala Ala Ala Lys Tyr Pro Ser Tyr Ile His Lys Met Val Ile
130 135 140

Trp Gly Ala Asn Ala Tyr Val Thr Asp Glu Asp Ser Met Ile Tyr Glu
145 150 155 160

Gly Ile Arg Asp Val Ser Lys Trp Ser Glu Arg Thr Arg Lys Pro Leu
165 170 175

Glu Ala Leu Tyr Gly Tyr Asp Tyr Phe Ala Arg Thr Cys Glu Lys Trp
180 185 190

Val Asp Gly Ile Arg Gln Phe Lys His Leu Pro Asp Gly Asn Ile Cys
195 200 205

Arg His Leu Leu Pro Arg Val Gln Cys Pro Ala Leu Ile Val His Gly
210 215 220

Glu Lys Asp Pro Leu Val Pro Arg Phe His Ala Asp Phe Ile His Lys
225 230 235 240

His Val Lys Gly Ser Arg Leu His Leu Met Pro Glu Gly Lys His Asn
245 250 255

Leu His Leu Arg Phe Ala Asp Glu Phe Asn Lys Leu Ala Glu Asp Phe
260 265 270

Leu Gln

<210> 9179
<211> 291

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="Uniprot ID: Q86WA6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369739"

<400> 9179
Met Val Ala Val Leu Gly Gly Arg Gly Val Leu Arg Leu Arg Leu Leu
1   5   10   15

Leu Ser Ala Leu Lys Pro Gly Ile His Val Pro Arg Ala Gly Pro Ala
            20   25   30

Ala Ala Phe Gly Thr Ser Val Thr Ser Ala Lys Val Ala Val Asn Gly
        35   40   45

Val Gln Leu His Tyr Gln Gln Thr Gly Glu Gly Asp His Ala Val Leu
    50   55   60

Leu Leu Pro Gly Met Leu Gly Ser Gly Glu Thr Asp Phe Gly Pro Gln
65   70   75   80

Leu Lys Asn Leu Asn Lys Lys Leu Phe Thr Val Val Ala Trp Asp Pro
                85   90   95

Arg Gly Tyr Gly His Ser Arg Pro Pro Asp Arg Asp Phe Pro Ala Asp
            100   105   110

Phe Phe Glu Arg Asp Ala Lys Asp Ala Val Asp Leu Met Lys Ala Leu
        115   120   125

```
Lys Phe Lys Lys Val Ser Leu Leu Gly Trp Ser Asp Gly Gly Ile Thr
    130                 135                 140

Ala Leu Ile Ala Ala Ala Lys Tyr Pro Ser Tyr Ile His Lys Met Val
145                 150                 155                 160

Ile Trp Gly Ala Asn Ala Tyr Val Thr Asp Glu Asp Ser Met Ile Tyr
                165                 170                 175

Glu Gly Ile Arg Asp Val Ser Lys Trp Ser Glu Arg Thr Arg Lys Pro
            180                 185                 190

Leu Glu Ala Leu Tyr Gly Tyr Asp Tyr Phe Ala Arg Thr Cys Glu Lys
        195                 200                 205

Trp Val Asp Gly Ile Arg Gln Phe Lys His Leu Pro Asp Gly Asn Ile
    210                 215                 220

Cys Arg His Leu Leu Pro Arg Val Gln Cys Pro Ala Leu Ile Val His
225                 230                 235                 240

Gly Glu Lys Asp Pro Leu Val Pro Arg Phe His Ala Asp Phe Ile His
                245                 250                 255

Lys His Val Lys Gly Ser Arg Leu His Leu Met Pro Glu Gly Lys His
            260                 265                 270

Asn Leu His Leu Arg Phe Ala Asp Glu Phe Asn Lys Leu Ala Glu Asp
        275                 280                 285

Phe Leu Gln
    290


<210> 9180
<211> 274
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "
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<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="Uniprot ID: Q86WA6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000390472"

<400> 9180
Met Pro Arg Asn Leu Leu Tyr Ser Leu Leu Ser Ser His Leu Ser Pro
1   5   10   15

His Phe Ser Thr Ser Val Thr Ser Ala Lys Val Ala Val Asn Gly Val
            20   25   30

Gln Leu His Tyr Gln Gln Thr Gly Glu Gly Asp His Ala Val Leu Leu
        35   40   45

Leu Pro Gly Met Leu Gly Ser Gly Glu Thr Asp Phe Gly Pro Gln Leu
    50   55   60

Lys Asn Leu Asn Lys Lys Leu Phe Thr Val Val Ala Trp Asp Pro Arg
65   70   75   80

Gly Tyr Gly His Ser Arg Pro Pro Asp Arg Asp Phe Pro Ala Asp Phe
                85   90   95

Phe Glu Arg Asp Ala Lys Asp Ala Val Asp Leu Met Lys Ala Leu Lys
            100   105   110

Phe Lys Lys Val Ser Leu Leu Gly Trp Ser Asp Gly Gly Ile Thr Ala
        115   120   125

Leu Ile Ala Ala Ala Lys Tyr Pro Ser Tyr Ile His Lys Met Val Ile
    130   135   140

Trp Gly Ala Asn Ala Tyr Val Thr Asp Glu Asp Ser Met Ile Tyr Glu
145   150   155   160

Gly Ile Arg Asp Val Ser Lys Trp Ser Glu Arg Thr Arg Lys Pro Leu

```
                165                 170                 175

Glu Ala Leu Tyr Gly Tyr Asp Tyr Phe Ala Arg Thr Cys Glu Lys Trp
            180                 185                 190

Val Asp Gly Ile Arg Gln Phe Lys His Leu Pro Asp Gly Asn Ile Cys
        195                 200                 205

Arg His Leu Leu Pro Arg Val Gln Cys Pro Ala Leu Ile Val His Gly
    210                 215                 220

Glu Lys Asp Pro Leu Val Pro Arg Phe His Ala Asp Phe Ile His Lys
225                 230                 235                 240

His Val Lys Gly Ser Arg Leu His Leu Met Pro Glu Gly Lys His Asn
                245                 250                 255

Leu His Leu Arg Phe Ala Asp Glu Phe Asn Lys Leu Ala Glu Asp Phe
            260                 265                 270

Leu Gln
```

<210> 9181
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394072"

<400> 9181
```
Met Val Ala Val Leu Gly Gly Arg Gly Val Leu Arg Leu Arg Leu Leu
1               5                   10                  15
```

Leu Ser Ala Leu Lys Pro Gly Ile His Val Pro Arg Ala Gly Pro Ala
            20   25   30

Ala Ala Phe Gly Asn Gln Pro Glu Pro Glu Tyr Arg
        35   40

<210> 9182
<211> 29
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
      biphenyl hydrolase-like (serine
      hydrolase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395744"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9182
Xaa Ala Leu Ile Val His Gly Glu Lys Asp Pro Leu Val Pro Arg Phe
1   5   10   15

His Ala Asp Phe Ile His Lys His Val Lys Gly Ser Arg
            20   25

<210> 9183
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396637"

<400> 9183
Met Val Ala Val Leu Gly Gly Arg Gly Val Leu Arg Leu Arg Leu Leu
1 5 10 15

Leu Ser Ala Leu Lys Pro Gly Ile His Val Pro Arg Ala Gly Pro Ala
20 25 30

Ala Ala Phe Gly Asn Gln Pro Glu Pro Glu Tyr Arg
35 40

<210> 9184
<211> 211
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1860; "

<220>
<221> source
<223> /note="Gene Symbol: BPHL; "

<220>
<221> source
<223> /note="Gene Name:
biphenyl hydrolase-like (serine
hydrolase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413762"

<400> 9184
Met Val Ala Val Leu Gly Gly Arg Gly Val Leu Arg Leu Arg Leu Leu
1 5 10 15

Leu Ser Ala Leu Lys Pro Gly Ile His Val Pro Arg Ala Gly Pro Ala
20 25 30

```
Ala Ala Phe Gly Thr Ser Val Thr Ser Ala Lys Val Ala Val Asn Gly
        35                  40                  45

Val Gln Leu His Tyr Gln Gln Thr Gly Glu Gly Asp His Ala Val Leu
    50                  55                  60

Leu Leu Pro Gly Met Leu Gly Ser Gly Glu Thr Asp Phe Gly Pro Gln
65                  70                  75                  80

Leu Lys Asn Leu Asn Lys Lys Leu Phe Thr Val Val Ala Trp Asp Pro
                85                  90                  95

Arg Gly Tyr Gly His Ser Arg Pro Pro Asp Arg Asp Phe Pro Ala Asp
            100                 105                 110

Phe Phe Glu Arg Asp Ala Lys Asp Ala Val Asp Leu Met Lys Ala Leu
        115                 120                 125

Lys Phe Lys Lys Val Ser Leu Leu Gly Trp Ser Asp Gly Gly Ile Thr
    130                 135                 140

Ala Leu Ile Ala Ala Ala Lys Tyr Pro Ser Tyr Ile His Lys Met Val
145                 150                 155                 160

Ile Trp Gly Ala Asn Ala Tyr Val Thr Asp Glu Asp Ser Met Ile Tyr
                165                 170                 175

Glu Gly Ile Arg Asp Val Ser Lys Trp Ser Glu Arg Thr Arg Lys Pro
            180                 185                 190

Leu Glu Ala Leu Tyr Gly Trp Ser Leu Thr Leu Ser Pro Gly Trp Asn
        195                 200                 205

Ala Met Ala
    210
```

<210> 9185
<211> 1385
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1861; "

<220>
<221> source
<223> /note="Gene Symbol: BIVM-ERCC5; "

<220>
<221> source
<223> /note="Gene Name:
BIVM-ERCC5 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473384"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9185
Xaa Gln Gly Ala Val Lys Ser Phe Cys Thr Ser Ala Ser Gly Ala Pro
1 5 10 15

Leu Gly Pro Lys Gly Asp Gly His Tyr Pro Trp Ser Cys Pro Val Thr
20 25 30

His Thr Arg Glu Lys Ile Tyr Ala Ile Cys Ser Asp Tyr Ala Phe Leu
35 40 45

Asn Gln Ala Thr Ser Ile Tyr Lys Thr Pro Asn Pro Ser Arg Ser Pro
50 55 60

Cys Leu Pro Asp Ser Thr Ser Leu Ser Ala Gly Asn Asn Ser Ser Arg
65 70 75 80

Tyr Ile Gly Ile Pro Thr Ser Thr Ser Glu Ile Ile Tyr Asn Glu Glu
85 90 95

Asn Ser Leu Glu Asn Leu Ser Asn Ser Leu Gly Lys Leu Pro Leu Ala
100 105 110

Trp Glu Ile Asp Lys Ser Glu Phe Asp Gly Val Thr Thr Asn Ser Lys
115 120 125

His Lys Ser Gly Asn Ala Lys Lys Gln Val Ser Lys Arg Lys Thr Ser
130 135 140

```
Asp Lys Lys Gly Arg Tyr Gln Lys Glu Cys Pro Gln His Ser Pro Leu
145                 150                 155                 160

Glu Asp Ile Lys Gln Arg Lys Val Leu Asp Leu Arg Arg Trp Tyr Cys
                165                 170                 175

Ile Ser Arg Pro Gln Tyr Lys Thr Ser Cys Gly Ile Ser Ser Leu Ile
            180                 185                 190

Ser Cys Trp Asn Phe Leu Tyr Ser Thr Met Gly Ala Gly Asn Leu Pro
        195                 200                 205

Pro Ile Thr Gln Glu Glu Ala Leu His Ile Leu Gly Phe Gln Pro Pro
    210                 215                 220

Phe Glu Asp Ile Arg Phe Gly Pro Phe Thr Gly Asn Thr Thr Leu Met
225                 230                 235                 240

Arg Trp Phe Arg Gln Ile Asn Asp His Phe His Val Lys Gly Cys Ser
                245                 250                 255

Tyr Val Leu Tyr Lys Pro His Gly Lys Asn Lys Thr Ala Gly Glu Thr
            260                 265                 270

Ala Ser Gly Ala Leu Ser Lys Leu Thr Arg Gly Leu Lys Asp Glu Ser
        275                 280                 285

Leu Ala Tyr Ile Tyr His Cys Gln Asn His Tyr Phe Cys Pro Ile Gly
    290                 295                 300

Phe Glu Ala Thr Pro Val Lys Ala Asn Lys Ala Phe Ser Arg Gly Pro
305                 310                 315                 320

Leu Ser Pro Gln Glu Val Glu Tyr Trp Ile Leu Ile Gly Glu Ser Ser
                325                 330                 335

Arg Lys His Pro Ala Ile His Cys Lys Lys Trp Ala Asp Ile Val Thr
            340                 345                 350

Asp Leu Asn Thr Gln Asn Pro Glu Tyr Leu Asp Ile Arg His Leu Glu
        355                 360                 365
```

```
Arg Gly Leu Gln Tyr Arg Lys Thr Lys Lys Val Gly Gly Asn Leu His
    370                 375                 380

Cys Ile Ile Ala Phe Gln Arg Leu Asn Trp Gln Arg Phe Gly Leu Trp
385                 390                 395                 400

Asn Phe Pro Phe Gly Thr Ile Arg Gln Glu Ser Gln Pro Pro Thr His
                405                 410                 415

Ala Gln Gly Ile Ala Lys Ser Glu Ser Glu Asp Asn Ile Ser Lys Lys
            420                 425                 430

Gln His Gly Arg Leu Gly Arg Ser Phe Ser Ala Ser Phe His Gln Asp
        435                 440                 445

Ser Ala Trp Lys Lys Met Ser Asn Ile Ser Ile Trp Leu Asn Gln Ala
    450                 455                 460

Leu Lys Gly Val Arg Asp Arg His Gly Asn Ser Ile Glu Asn Pro His
465                 470                 475                 480

Leu Leu Thr Leu Phe His Arg Leu Cys Lys Leu Leu Phe Phe Arg Ile
                485                 490                 495

Arg Pro Ile Phe Val Phe Asp Gly Asp Ala Pro Leu Leu Lys Lys Gln
            500                 505                 510

Thr Leu Val Lys Arg Arg Gln Arg Lys Asp Leu Ala Ser Ser Asp Ser
        515                 520                 525

Arg Lys Thr Thr Glu Lys Leu Leu Lys Thr Phe Leu Lys Arg Gln Ala
    530                 535                 540

Ile Lys Thr Ala Phe Arg Ser Lys Arg Asp Glu Ala Leu Pro Ser Leu
545                 550                 555                 560

Thr Gln Val Arg Arg Glu Asn Asp Leu Tyr Val Leu Pro Pro Leu Gln
                565                 570                 575

Glu Glu Glu Lys His Ser Ser Glu Glu Glu Asp Glu Lys Glu Trp Gln
            580                 585                 590

Glu Arg Met Asn Gln Lys Gln Ala Leu Gln Glu Glu Phe Phe His Asn
```

595 600 605

Pro Gln Ala Ile Asp Ile Glu Ser Glu Asp Phe Ser Ser Leu Pro Pro
610 615 620

Glu Val Lys His Glu Ile Leu Thr Asp Met Lys Glu Phe Thr Lys Arg
625 630 635 640

Arg Arg Thr Leu Phe Glu Ala Met Pro Glu Glu Ser Asp Asp Phe Ser
645 650 655

Gln Tyr Gln Leu Lys Gly Leu Leu Lys Lys Asn Tyr Leu Asn Gln His
660 665 670

Ile Glu His Val Gln Lys Glu Met Asn Gln Gln His Ser Gly His Ile
675 680 685

Arg Arg Gln Tyr Glu Asp Glu Gly Gly Phe Leu Lys Glu Val Glu Ser
690 695 700

Arg Arg Val Val Ser Glu Asp Thr Ser His Tyr Ile Leu Ile Lys Gly
705 710 715 720

Ile Gln Ala Lys Thr Val Ala Glu Val Asp Ser Glu Ser Leu Pro Ser
725 730 735

Ser Ser Lys Met His Gly Met Ser Phe Asp Val Lys Ser Ser Pro Cys
740 745 750

Glu Lys Leu Lys Thr Glu Lys Glu Pro Asp Ala Thr Pro Pro Ser Pro
755 760 765

Arg Thr Leu Leu Ala Met Gln Ala Ala Leu Leu Gly Ser Ser Ser Glu
770 775 780

Glu Glu Leu Glu Ser Glu Asn Arg Arg Gln Ala Arg Gly Arg Asn Ala
785 790 795 800

Pro Ala Ala Val Asp Glu Gly Ser Ile Ser Pro Arg Thr Leu Ser Ala
805 810 815

Ile Lys Arg Ala Leu Asp Asp Asp Glu Asp Val Lys Val Cys Ala Gly
820 825 830

```
Asp Asp Val Gln Thr Gly Gly Pro Gly Ala Glu Glu Met Arg Ile Asn
        835                 840                 845

Ser Ser Thr Glu Asn Ser Asp Glu Gly Leu Lys Val Arg Asp Gly Lys
    850                 855                 860

Gly Ile Pro Phe Thr Ala Thr Leu Ala Ser Ser Ser Val Asn Ser Ala
865                 870                 875                 880

Glu Glu His Val Ala Ser Thr Asn Glu Gly Arg Glu Pro Thr Asp Ser
                885                 890                 895

Val Pro Lys Glu Gln Met Ser Leu Val His Val Gly Thr Glu Ala Phe
            900                 905                 910

Pro Ile Ser Asp Glu Ser Met Ile Lys Asp Arg Lys Asp Arg Leu Pro
        915                 920                 925

Leu Glu Ser Ala Val Val Arg His Ser Asp Ala Pro Gly Leu Pro Asn
    930                 935                 940

Gly Arg Glu Leu Thr Pro Ala Ser Pro Thr Cys Thr Asn Ser Val Ser
945                 950                 955                 960

Lys Asn Glu Thr His Ala Glu Val Leu Glu Gln Gln Asn Glu Leu Cys
                965                 970                 975

Pro Tyr Glu Ser Lys Phe Asp Ser Ser Leu Leu Ser Ser Asp Asp Glu
            980                 985                 990

Thr Lys Cys Lys Pro Asn Ser Ala  Ser Glu Val Ile Gly  Pro Val
Ser
        995                 1000                1005

Leu Gln  Glu Thr Ser Ser Ile  Val Ser Val Pro Ser  Glu Ala Val
    1010                1015                1020

Asp Asn  Val Glu Asn Val Val  Ser Phe Asn Ala Lys  Glu His Glu
    1025                1030                1035

Asn Phe  Leu Glu Thr Ile Gln  Glu Gln Gln Thr Thr  Glu Ser Ala
    1040                1045                1050
```

```
Gly Gln  Asp Leu Ile Ser Ile  Pro Lys Ala Val Glu  Pro Met Glu
    1055                1060                1065

Ile Asp  Ser Glu Glu Ser Glu  Ser Asp Gly Ser Phe  Ile Glu Val
    1070                1075                1080

Gln Ser  Val Ile Ser Asp Glu  Glu Leu Gln Ala Glu  Phe Pro Glu
    1085                1090                1095

Thr Ser  Lys Pro Pro Ser Glu  Gln Gly Glu Glu Glu  Leu Val Gly
    1100                1105                1110

Thr Arg  Glu Gly Glu Ala Pro  Ala Glu Ser Glu Ser  Leu Leu Arg
    1115                1120                1125

Asp Asn  Ser Glu Arg Asp Asp  Val Asp Gly Glu Pro  Gln Glu Ala
    1130                1135                1140

Glu Lys  Asp Ala Glu Asp Ser  Leu His Glu Trp Gln  Asp Ile Asn
    1145                1150                1155

Leu Glu  Glu Leu Glu Thr Leu  Glu Ser Asn Leu Leu  Ala Gln Gln
    1160                1165                1170

Asn Ser  Leu Lys Ala Gln Lys  Gln Gln Gln Glu Arg  Ile Ala Ala
    1175                1180                1185

Thr Val  Thr Gly Gln Met Phe  Leu Glu Ser Gln Glu  Leu Leu Arg
    1190                1195                1200

Leu Phe  Gly Ile Pro Tyr Ile  Gln Ala Pro Met Glu  Ala Glu Ala
    1205                1210                1215

Gln Cys  Ala Ile Leu Asp Leu  Thr Asp Gln Thr Ser  Gly Thr Ile
    1220                1225                1230

Thr Asp  Asp Ser Asp Ile Trp  Leu Phe Gly Ala Arg  His Val Tyr
    1235                1240                1245

Arg Asn  Phe Phe Asn Lys Asn  Lys Phe Val Glu Tyr  Tyr Gln Tyr
    1250                1255                1260
```

```
Val Asp  Phe His Asn Gln Leu  Gly Leu Asp Arg Asn  Lys Leu Ile
    1265                1270                1275

Asn Leu  Ala Tyr Leu Leu Gly  Ser Asp Tyr Thr Glu  Gly Ile Pro
    1280                1285                1290

Thr Val  Gly Cys Val Thr Ala  Met Glu Ile Leu Asn  Glu Phe Pro
    1295                1300                1305

Gly His  Gly Leu Glu Pro Leu  Leu Lys Phe Ser Glu  Trp Trp His
    1310                1315                1320

Glu Ala  Gln Lys Asn Pro Lys  Ile Arg Pro Asn Pro  His Asp Thr
    1325                1330                1335

Lys Val  Lys Lys Lys Leu Arg  Thr Leu Gln Leu Thr  Pro Gly Phe
    1340                1345                1350

Pro Asn  Pro Ala Val Ala Glu  Ala Tyr Leu Lys Pro  Val Val Asp
    1355                1360                1365

Asp Ser  Lys Gly Ser Phe Leu  Trp Gly Lys Pro Asp  Leu Asp Lys
    1370                1375                1380

Ile Arg
    1385


<210> 9186
<211> 87
<212> PRT
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<220>
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<223> /note="Payload ID: 1862; "

<220>
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<220>
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<223> /note="Gene Name:
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      associated prt; "

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<221> source
<223> /note="Uniprot ID: P62952; "

<220>
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<400> 9186
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1   5   10   15

Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20   25   30

Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35   40   45

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50   55   60

Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65   70   75   80

Asp Pro Gly Val Val Gly Thr
                85

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<212> PRT
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<220>
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<223> /note="ENSP ID: ENSP00000380320"

<400> 9187
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1   5   10   15

Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20   25   30

Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35   40   45

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50   55   60

Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65   70   75   80

Asp Pro Gly Val Val Gly Thr
                85

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<220>
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<400> 9188
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1   5   10   15

```
Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20                  25                  30

Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35                  40                  45

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50                  55                  60

Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65                  70                  75                  80

Asp Pro Gly Val Val Gly Thr
                85
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<400> 9189

```
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1               5                   10                  15

Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20                  25                  30
```

```
Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35                  40                  45


Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50                  55                  60


Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65                  70                  75                  80


Asp Pro Gly Val Val Gly Thr
                85


<210> 9190
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<400> 9190
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1               5                   10                  15


Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20                  25                  30


Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35                  40                  45
```

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50   55   60

Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65   70   75   80

Asp Pro Gly Val Val Gly Thr
                85

<210> 9191
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<220>
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<400> 9191
Met Tyr Cys Leu Gln Trp Leu
1   5

<210> 9192
<211> 62
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<213> Homo sapiens

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associated prt; "

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<400> 9192
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1   5   10   15

Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20   25   30

Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35   40   45

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp
    50   55   60

<210> 9193
<211> 87
<212> PRT
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<400> 9193
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1   5   10   15

Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20   25   30

```
Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35                  40                  45

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50                  55                  60

Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65                  70                  75                  80

Asp Pro Gly Val Val Gly Thr
                85
```

<210> 9194
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<400> 9194

```
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1               5                   10                  15

Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20                  25                  30

Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35                  40                  45

Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50                  55                  60
```

```
Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser
65                  70                  75


<210> 9195
<211> 87
<212> PRT
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<220>
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<400> 9195
Met Tyr Cys Leu Gln Trp Leu Leu Pro Val Leu Leu Ile Pro Lys Pro
1               5                   10                  15


Leu Asn Pro Ala Leu Trp Phe Ser His Ser Met Phe Met Gly Phe Tyr
            20                  25                  30


Leu Leu Ser Phe Leu Leu Glu Arg Lys Pro Cys Thr Ile Cys Ala Leu
        35                  40                  45


Val Phe Leu Ala Ala Leu Phe Leu Ile Cys Tyr Ser Cys Trp Gly Asn
    50                  55                  60


Cys Phe Leu Tyr His Cys Ser Asp Ser Pro Leu Pro Glu Ser Ala His
65                  70                  75                  80


Asp Pro Gly Val Val Gly Thr
                85
```

<210> 9196
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<223> /note="Gene Symbol: BLMH; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q13867; "

<220>
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<400> 9196
Met Ser Ser Ser Gly Leu Asn Ser Glu Lys Val Ala Ala Leu Ile Gln
1   5   10   15

Lys Leu Asn Ser Asp Pro Gln Phe Val Leu Ala Gln Asn Val Gly Thr
            20   25   30

Thr His Asp Leu Leu Asp Ile Cys Leu Lys Arg Ala Thr Val Gln Arg
        35   40   45

Ala Gln His Val Phe Gln His Ala Val Pro Gln Glu Gly Lys Pro Ile
    50   55   60

Thr Asn Gln Lys Ser Ser Gly Arg Cys Trp Ile Phe Ser Cys Leu Asn
65   70   75   80

Val Met Arg Leu Pro Phe Met Lys Lys Leu Asn Ile Glu Glu Phe Glu
                85   90   95

Phe Ser Gln Ser Tyr Leu Phe Phe Trp Asp Lys Val Glu Arg Cys Tyr
            100   105   110

Phe Phe Leu Ser Ala Phe Val Asp Thr Ala Gln Arg Lys Glu Pro Glu
        115   120   125

```
Asp Gly Arg Leu Val Gln Phe Leu Leu Met Asn Pro Ala Asn Asp Gly
    130                 135                 140

Gly Gln Trp Asp Met Leu Val Asn Ile Val Glu Lys Tyr Gly Val Ile
145                 150                 155                 160

Pro Lys Lys Cys Phe Pro Glu Ser Tyr Thr Thr Glu Ala Thr Arg Arg
                165                 170                 175

Met Asn Asp Ile Leu Asn His Lys Met Arg Glu Phe Cys Ile Arg Leu
            180                 185                 190

Arg Asn Leu Val His Ser Gly Ala Thr Lys Gly Glu Ile Ser Ala Thr
        195                 200                 205

Gln Asp Val Met Met Glu Glu Ile Phe Arg Val Val Cys Ile Cys Leu
    210                 215                 220

Gly Asn Pro Pro Glu Thr Phe Thr Trp Glu Tyr Arg Asp Lys Asp Lys
225                 230                 235                 240

Asn Tyr Gln Lys Ile Gly Pro Ile Thr Pro Leu Glu Phe Tyr Arg Glu
                245                 250                 255

His Val Lys Pro Leu Phe Asn Met Glu Asp Lys Ile Cys Leu Val Asn
            260                 265                 270

Asp Pro Arg Pro Gln His Lys Tyr Asn Lys Leu Tyr Thr Val Glu Tyr
        275                 280                 285

Leu Ser Asn Met Val Gly Gly Arg Lys Thr Leu Tyr Asn Asn Gln Pro
    290                 295                 300

Ile Asp Phe Leu Lys Lys Met Val Ala Ala Ser Ile Lys Asp Gly Glu
305                 310                 315                 320

Ala Val Trp Phe Gly Cys Asp Val Gly Lys His Phe Asn Ser Lys Leu
                325                 330                 335

Gly Leu Ser Asp Met Asn Leu Tyr Asp His Glu Leu Val Phe Gly Val
            340                 345                 350
```

```
Ser Leu Lys Asn Met Asn Lys Ala Glu Arg Leu Thr Phe Gly Glu Ser
        355                 360                 365

Leu Met Thr His Ala Met Thr Phe Thr Ala Val Ser Glu Lys Asp Asp
    370                 375                 380

Gln Asp Gly Ala Phe Thr Lys Trp Arg Val Glu Asn Ser Trp Gly Glu
385                 390                 395                 400

Asp His Gly His Lys Gly Tyr Leu Cys Met Thr Asp Glu Trp Phe Ser
                405                 410                 415

Glu Tyr Val Tyr Glu Val Val Val Asp Arg Lys His Val Pro Glu Glu
            420                 425                 430

Val Leu Ala Val Leu Glu Gln Glu Pro Ile Ile Leu Pro Ala Trp Asp
        435                 440                 445

Pro Met Gly Ala Leu Ala Glu
    450                 455


<210> 9197
<211> 71
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<220>
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<400> 9197
Met Ser Ser Ser Gly Leu Asn Ser Glu Lys Val Ala Ala Leu Ile Gln
1               5                   10                  15

Lys Leu Asn Ser Asp Pro Gln Phe Val Leu Ala Gln Asn Val Gly Thr
```

```
            20                  25                  30

Thr His Asp Leu Leu Asp Ile Cys Leu Lys Arg Ala Thr Val Gln Arg
        35                  40                  45

Ala Gln His Val Phe Gln His Ala Val Pro Gln Glu Gly Lys Pro Ile
    50                  55                  60

Thr Asn Gln Lys Ser Ser Gly
65                  70


<210> 9198
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<220>
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<400> 9198
Val Asp Thr Ala Gln Arg Lys Glu Pro Glu Asp Gly Arg Leu Val Gln
1               5                   10                  15

Phe Leu Leu Met Asn Pro Ala Asn Asp Gly Gly Gln Trp Asp Met Leu
            20                  25                  30

Val Asn Ile Val Glu Lys Tyr Gly Val Ile Pro Lys Lys Cys Phe Pro
        35                  40                  45

Glu Ser Tyr Thr Thr Glu Ala Thr Arg Arg Met Asn Asp Ile Leu Asn
    50                  55                  60

His Lys Met Arg Glu Phe Cys Ile Arg Leu Arg Asn Leu Val His Ser
65                  70                  75                  80
```

```
Gly Ala Thr Lys Gly Glu Ile Ser Ala Thr Gln Asp Val Met Met Glu
                85                  90                  95

Glu Ile Phe Arg Val Val Cys Ile Cys Leu Gly Asn Pro Pro Glu Thr
            100                 105                 110

Phe Thr Trp Glu Tyr Arg Asp Lys Asp Lys Asn Tyr Gln Lys Ile Gly
        115                 120                 125

Pro Ile Thr Pro Leu Glu Phe Tyr Arg Glu His Val Lys Pro Leu Phe
    130                 135                 140

Asn Met Glu Asp Lys Val Val Asn Asp Pro Arg Pro Gln His Lys Tyr
145                 150                 155                 160

Asn Lys Leu Tyr Thr Val Glu Tyr Leu Ser Asn Met Val Gly Gly Arg
                165                 170                 175

Lys Thr Leu Tyr Asn Asn Gln Pro Ile Asp Phe Leu Lys Lys Met Val
            180                 185                 190

Ala Ala Ser Ile Lys Asp Gly Glu Ala Val Trp Phe Gly Cys Asp Val
        195                 200                 205

Gly Lys His Phe Asn Ser Lys Leu Gly Leu Ser Asp Met Asn Leu Tyr
    210                 215                 220

Asp His Glu Leu Val Phe Gly Val Ser Leu Lys Asn Met Asn Lys Ala
225                 230                 235                 240

Glu Arg Leu Thr Phe Gly Glu Ser Leu Met Thr His Ala Met Thr Phe
                245                 250                 255

Thr Ala Val Ser Glu Lys
            260
```

<210> 9199
<211> 67
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<220>
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<400> 9199
Met Arg Leu Pro Phe Met Lys Lys Leu Asn Ile Glu Glu Phe Glu Phe
1 5 10 15

Ser Gln Ser Tyr Leu Phe Phe Trp Asp Lys Val Glu Arg Cys Tyr Phe
20 25 30

Phe Leu Ser Ala Phe Val Asp Thr Ala Gln Arg Lys Glu Pro Glu Asp
35 40 45

Gly Arg Leu Val Gln Phe Leu Leu Met Asn Pro Ala Asn Asp Gly Gly
50 55 60

Gln Trp Asp
65

<210> 9200
<211> 93
<212> PRT
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<223> /note="Gene Name:
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<220>
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<400> 9200
Met Ser Ser Ser Gly Leu Asn Ser Glu Lys Val Ala Ala Leu Ile Gln
1   5   10   15

Lys Leu Asn Ser Asp Pro Gln Phe Val Leu Ala Gln Asn Val Gly Thr
            20   25   30

Thr His Asp Leu Leu Asp Ile Cys Leu Lys Arg Ala Thr Val Gln Arg
        35   40   45

Ala Gln His Val Phe Gln His Ala Val Pro Gln Glu Gly Lys Pro Ile
    50   55   60

Thr Asn Gln Lys Ser Ser Gly Val Gly Phe His Phe Ser His Thr Phe
65   70   75   80

Leu Asp Leu Pro Asp Ser Val Pro Phe Trp Cys Leu Ile
                85   90

<210> 9201
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<220>
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<220>
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<400> 9201
Met Arg Leu Arg Arg Leu Asn Ser Glu Lys Val Ala Ala Leu Ile Gln
1   5   10   15

Lys Leu Asn Ser Asp Pro Gln Phe Val Leu Ala Gln Asn Val Gly Thr
            20   25   30

Thr His Asp Leu Leu Asp Ile Cys Leu Lys Arg Ala Thr Val Gln Arg

```
        35                  40                  45

Ala Gln His Val Phe Gln His Ala Val Pro Gln Glu Gly Lys Pro Ile
    50                  55                  60

Thr Asn Gln Lys Ser Ser Gly Arg Cys Trp Ile Phe Ser Cys Leu Asn
65                  70                  75                  80

Val Met Arg Leu Pro Phe Met Lys Lys Leu Asn Ile Glu Glu Phe Glu
                85                  90                  95

Phe Ser Gln Ser Tyr Leu Phe Phe Trp Asp Lys Val Glu Arg Cys Tyr
            100                 105                 110

Phe Phe Leu Ser Ala Phe Val Asp Thr Ala Gln Arg Lys Glu Pro Glu
        115                 120                 125

Asp Gly Arg Leu Val Gln Phe Leu Leu Met Asn Pro Ala Asn Asp Gly
    130                 135                 140

Gly Gln Trp Asp Met Leu Val Asn Ile Val Glu Lys Tyr Gly Val Ile
145                 150                 155                 160

Pro Lys Lys Cys Phe Pro Glu Ser Tyr Thr Thr Glu Ala Thr Arg Arg
                165                 170                 175

Met Asn Asp Ile Leu Asn His Lys Met Arg Glu Phe Cys Ile Arg Leu
            180                 185                 190

Arg Asn Leu Val His Ser Gly Ala Thr Lys Gly Glu Ile Ser Ala Thr
        195                 200                 205

Gln Asp Val Met Met Glu Glu Ile Phe Arg Val Val Cys Ile Cys Leu
    210                 215                 220

Gly Asn Pro Pro Glu Thr Phe Thr Trp Glu Tyr Arg Asp Lys Asp Lys
225                 230                 235                 240

Asn Tyr Gln Lys Ile Gly Pro Ile Thr Pro Leu Glu Phe Tyr Arg Glu
                245                 250                 255

His Val Lys Pro Leu Phe Asn Met Glu Asp Lys Val Val Asn Asp Pro
            260                 265                 270
```

```
Arg Pro Gln His Lys Tyr Asn Lys Leu Tyr Thr Val Glu Tyr Leu Ser
        275                 280                 285

Asn Met Val Gly Gly Arg Lys Thr Leu Tyr Asn Asn Gln Pro Ile Asp
    290                 295                 300

Phe Leu Lys Lys Met Val Ala Ala Ser Ile Lys Asp Gly Glu
305                 310                 315

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<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000468681"

<400> 9202
Met Asn Asp Ile Leu Asn His Lys Met Arg Glu Phe Cys Ile Arg Leu
1               5                   10                  15

Arg Asn Leu Val His Ser Gly Ala Thr Lys Gly Glu Ile Ser Ala Thr
            20                  25                  30

Gln Asp Val Met Met Glu Glu Ile Phe Arg Val Val Cys Ile Cys Leu
        35                  40                  45

Gly Asn Pro Pro Glu Thr Phe Thr Trp Glu Tyr Arg Asp Lys Asp Lys
    50                  55                  60

Asn Tyr Gln Lys Ile Gly Pro Ile Thr Pro Leu Glu Phe Tyr Arg Glu
65                  70                  75                  80
```

```
His Val Lys Pro Leu Phe Asn Met Glu Asp Lys Ile Cys Leu Val Asn
                85                  90                  95

Asp Pro Arg Pro Gln His Lys Tyr Asn Lys Leu Tyr Thr Val Glu Tyr
            100                 105                 110

Leu Ser Asn Met Val Gly Gly Arg Lys Thr Leu Tyr Asn Asn Gln Pro
        115                 120                 125

Ile Asp Phe Leu Lys Lys Met Val Ala Ala Ser Ile Lys Asp Gly Glu
    130                 135                 140

Ala Val Trp Phe Gly Cys Asp Val Gly Lys His Phe Asn Ser Lys Leu
145                 150                 155                 160

Gly Leu Ser Asp Met Asn Leu Tyr Asp His Glu Leu Val Phe Gly Val
                165                 170                 175

Ser Leu Lys Asn Met Asn Lys Ala Glu Arg Leu Thr Phe Gly Glu Ser
            180                 185                 190

Leu Met Thr His Ala Met Thr Phe Thr Ala Val Ser Glu Lys Asp Asp
        195                 200                 205

Gln Asp Gly Ala Phe Thr Lys Trp Arg Val Glu Asn Ser Trp Gly Glu
    210                 215                 220

Asp His Gly His Lys Gly Glu
225                 230


<210> 9203
<211> 505
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1864; "

<220>
<221> source
<223> /note="Gene Symbol: BLK; "

<220>
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<223> /note="Gene Name:
      BLK proto-oncogene, Src family tyr kinase; "
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<220>
<221> source
<223> /note="Uniprot ID: P51451; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000259089"

<400> 9203
Met Gly Leu Val Ser Ser Lys Lys Pro Asp Lys Glu Lys Pro Ile Lys
1   5   10   15

Glu Lys Asp Lys Gly Gln Trp Ser Pro Leu Lys Val Ser Ala Gln Asp
            20   25   30

Lys Asp Ala Pro Pro Leu Pro Pro Leu Val Val Phe Asn His Leu Thr
        35   40   45

Pro Pro Pro Pro Asp Glu His Leu Asp Glu Asp Lys His Phe Val Val
    50   55   60

Ala Leu Tyr Asp Tyr Thr Ala Met Asn Asp Arg Asp Leu Gln Met Leu
65   70   75   80

Lys Gly Glu Lys Leu Gln Val Leu Lys Gly Thr Gly Asp Trp Trp Leu
                85   90   95

Ala Arg Ser Leu Val Thr Gly Arg Glu Gly Tyr Val Pro Ser Asn Phe
            100   105   110

Val Ala Arg Val Glu Ser Leu Glu Met Glu Arg Trp Phe Phe Arg Ser
        115   120   125

Gln Gly Arg Lys Glu Ala Glu Arg Gln Leu Leu Ala Pro Ile Asn Lys
    130   135   140

Ala Gly Ser Phe Leu Ile Arg Glu Ser Glu Thr Asn Lys Gly Ala Phe
145   150   155   160

Ser Leu Ser Val Lys Asp Val Thr Thr Gln Gly Glu Leu Ile Lys His
                165   170   175

Tyr Lys Ile Arg Cys Leu Asp Glu Gly Gly Tyr Tyr Ile Ser Pro Arg
            180   185   190

```
Ile Thr Phe Pro Ser Leu Gln Ala Leu Val Gln His Tyr Ser Lys Lys
        195                 200                 205

Gly Asp Gly Leu Cys Gln Arg Leu Thr Leu Pro Cys Val Arg Pro Ala
    210                 215                 220

Pro Gln Asn Pro Trp Ala Gln Asp Glu Trp Glu Ile Pro Arg Gln Ser
225                 230                 235                 240

Leu Arg Leu Val Arg Lys Leu Gly Ser Gly Gln Phe Gly Glu Val Trp
                245                 250                 255

Met Gly Tyr Tyr Lys Asn Asn Met Lys Val Ala Ile Lys Thr Leu Lys
            260                 265                 270

Glu Gly Thr Met Ser Pro Glu Ala Phe Leu Gly Glu Ala Asn Val Met
        275                 280                 285

Lys Ala Leu Gln His Glu Arg Leu Val Arg Leu Tyr Ala Val Val Thr
    290                 295                 300

Lys Glu Pro Ile Tyr Ile Val Thr Glu Tyr Met Ala Arg Gly Cys Leu
305                 310                 315                 320

Leu Asp Phe Leu Lys Thr Asp Glu Gly Ser Arg Leu Ser Leu Pro Arg
                325                 330                 335

Leu Ile Asp Met Ser Ala Gln Ile Ala Glu Gly Met Ala Tyr Ile Glu
            340                 345                 350

Arg Met Asn Ser Ile His Arg Asp Leu Arg Ala Ala Asn Ile Leu Val
        355                 360                 365

Ser Glu Ala Leu Cys Cys Lys Ile Ala Asp Phe Gly Leu Ala Arg Ile
    370                 375                 380

Ile Asp Ser Glu Tyr Thr Ala Gln Glu Gly Ala Lys Phe Pro Ile Lys
385                 390                 395                 400

Trp Thr Ala Pro Glu Ala Ile His Phe Gly Val Phe Thr Ile Lys Ala
                405                 410                 415
```

```
Asp Val Trp Ser Phe Gly Val Leu Leu Met Glu Val Val Thr Tyr Gly
            420                 425                 430

Arg Val Pro Tyr Pro Gly Met Ser Asn Pro Glu Val Ile Arg Asn Leu
        435                 440                 445

Glu Arg Gly Tyr Arg Met Pro Arg Pro Asp Thr Cys Pro Pro Glu Leu
    450                 455                 460

Tyr Arg Gly Val Ile Ala Glu Cys Trp Arg Ser Arg Pro Glu Glu Arg
465                 470                 475                 480

Pro Thr Phe Glu Phe Leu Gln Ser Val Leu Glu Asp Phe Tyr Thr Ala
                485                 490                 495

Thr Glu Arg Gln Tyr Glu Leu Gln Pro
            500                 505


<210> 9204
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1864; "

<220>
<221> source
<223> /note="Gene Symbol: BLK; "

<220>
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<223> /note="Gene Name:
      BLK proto-oncogene, Src family tyr kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433663"

<400> 9204
Met Asn Asp Arg Asp Leu Gln Met Leu Lys Gly Glu Lys Leu Gln Val
1               5                   10                  15

Leu Lys Gly Thr Gly Asp Trp Trp Leu Ala Arg Ser Leu Val Thr Gly
            20                  25                  30

Arg Glu Gly Tyr Val Pro Ser Asn Phe Val Ala Arg Val Glu Ser Leu
        35                  40                  45
```

```
Glu Met Glu Arg Trp Phe Phe Arg Ser Gln Gly Arg Lys Glu Ala Glu
    50                  55                  60

Arg Gln Leu Leu Ala Pro Ile Asn Lys Ala Gly Ser Phe Leu Ile Arg
65                  70                  75                  80

Glu Ser Glu Thr Asn Lys Gly Ala Phe Ser Leu Ser Val Lys Asp Val
                85                  90                  95

Thr Thr Gln Gly Glu Leu Ile Lys His Tyr Lys Ile Arg Cys Leu Asp
            100                 105                 110

Glu Gly Gly Tyr Tyr Ile Ser Pro Arg Ile Thr Phe Pro Ser Leu Gln
        115                 120                 125

Ala Leu Val Gln His Tyr Ser Lys Lys Gly Asp Gly Leu Cys Gln Arg
    130                 135                 140

Leu Thr Leu Pro Cys Val Arg Pro Ala Pro Gln Asn Pro Trp Ala Gln
145                 150                 155                 160

Asp Glu Trp Glu Ile Pro Arg Gln Ser Leu Arg Leu Val Arg Lys Leu
                165                 170                 175

Gly Ser Gly Gln Phe Gly Glu Val Trp Met Gly Tyr Tyr Lys Asn Asn
            180                 185                 190

Met Lys Val Ala Ile Lys Thr Leu Lys Glu Gly Thr Met Ser Pro Glu
        195                 200                 205

Ala Phe Leu Gly Glu Ala Asn Val Met Lys Ala Leu Gln His Glu Arg
    210                 215                 220

Leu Val Arg Leu Tyr Ala Val Val Thr Lys Glu Pro Ile Tyr Ile Val
225                 230                 235                 240

Thr Glu Tyr Met Ala Arg Gly Cys Leu Leu Asp Phe Leu Lys Thr Asp
                245                 250                 255

Glu Gly Ser Arg Leu Ser Leu Pro Arg Leu Ile Asp Met Ser Ala Gln
            260                 265                 270
```

```
Ile Ala Glu Gly Met Ala Tyr Ile Glu Arg Met Asn Ser Ile His Arg
        275                 280                 285

Asp Leu Arg Ala Ala Asn Ile Leu Val Ser Glu Ala Leu Cys Cys Lys
    290                 295                 300

Ile Ala Asp Phe Gly Leu Ala Arg Ile Ile Asp Ser Glu Tyr Thr Ala
305                 310                 315                 320

Gln Glu Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ala Ile
                325                 330                 335

His Phe Gly Val Phe Thr Ile Lys Ala Asp Val Trp Ser Phe Gly Val
            340                 345                 350

Leu Leu Met Glu Val Val Thr Tyr Gly Arg Val Pro Tyr Pro Gly Met
        355                 360                 365

Ser Asn Pro Glu Val Ile Arg Asn Leu Glu Arg Gly Tyr Arg Met Pro
    370                 375                 380

Arg Pro Asp Thr Cys Pro Pro Glu Leu Tyr Arg Gly Val Ile Ala Glu
385                 390                 395                 400

Cys Trp Arg Ser Arg Pro Glu Glu Arg Pro Thr Phe Glu Phe Leu Gln
                405                 410                 415

Ser Val Leu Glu Asp Phe Tyr Thr Ala Thr Glu Arg Gln Tyr Glu Leu
            420                 425                 430

Gln Pro
```

<210> 9205
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1865; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS5; "

<220>
<221> source
<223> /note="Gene Name:
BLOC-1 related complex
subunit 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q969J3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000298571"

<400> 9205

```
Met Gly Ser Glu Gln Ser Ser Glu Ala Glu Ser Arg Pro Asn Asp Leu
1               5                   10                  15


Asn Ser Ser Gly Leu Leu Ser Gly Gln Thr Ser Pro Thr Asn Ala Lys
            20                  25                  30


Leu Glu Lys Leu Asp Ser Gln Gln Val Leu Gln Leu Cys Leu Arg Tyr
        35                  40                  45


Gln Asp His Leu His Gln Cys Ala Glu Ala Val Ala Phe Asp Gln Asn
    50                  55                  60


Ala Leu Val Lys Arg Ile Lys Glu Met Asp Leu Ser Val Glu Thr Leu
65                  70                  75                  80


Phe Ser Phe Met Gln Glu Arg Gln Lys Arg Tyr Ala Lys Tyr Ala Glu
                85                  90                  95


Gln Ile Gln Lys Val Asn Glu Met Ser Ala Ile Leu Arg Arg Ile Gln
            100                 105                 110


Met Gly Ile Asp Gln Thr Val Pro Leu Leu Asp Arg Leu Asn Ser Met
        115                 120                 125


Leu Pro Glu Gly Glu Arg Leu Glu Pro Phe Ser Met Lys Pro Asp Arg
    130                 135                 140


Glu Leu Arg Leu
145
```

<210> 9206

<211> 196
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1865; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS5; "

<220>
<221> source
<223> /note="Gene Name:
BLOC-1 related complex
subunit 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q969J3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000321546"

<400> 9206
Met Gly Ser Glu Gln Ser Ser Glu Ala Glu Ser Arg Pro Asn Asp Leu
1   5   10   15

Asn Ser Ser Val Thr Pro Ser Pro Ala Lys His Arg Ala Lys Met Asp
            20   25   30

Asp Ile Val Val Val Ala Gln Gly Ser Gln Ala Ser Arg Asn Val Ser
        35   40   45

Asn Asp Pro Asp Val Ile Lys Leu Gln Glu Ile Pro Thr Phe Gln Pro
    50   55   60

Leu Leu Lys Gly Leu Leu Ser Gly Gln Thr Ser Pro Thr Asn Ala Lys
65   70   75   80

Leu Glu Lys Leu Asp Ser Gln Gln Val Leu Gln Leu Cys Leu Arg Tyr
                85   90   95

Gln Asp His Leu His Gln Cys Ala Glu Ala Val Ala Phe Asp Gln Asn
            100   105   110

Ala Leu Val Lys Arg Ile Lys Glu Met Asp Leu Ser Val Glu Thr Leu
        115   120   125

```
Phe Ser Phe Met Gln Glu Arg Gln Lys Arg Tyr Ala Lys Tyr Ala Glu
    130                 135                 140

Gln Ile Gln Lys Val Asn Glu Met Ser Ala Ile Leu Arg Arg Ile Gln
145                 150                 155                 160

Met Gly Ile Asp Gln Thr Val Pro Leu Leu Asp Arg Leu Asn Ser Met
                165                 170                 175

Leu Pro Glu Gly Glu Arg Leu Glu Pro Phe Ser Met Lys Pro Asp Arg
            180                 185                 190

Glu Leu Arg Leu
        195


<210> 9207
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1865; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS5; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443023"

<400> 9207
Met Thr Pro Ser Pro Ala Lys His Arg Ala Lys Met Asp Asp Ile Val
1               5                   10                  15

Val Val Ala Gln Gly Ser Gln Ala Ser Arg Asn Val Ser Asn Asp Pro
            20                  25                  30

Asp Val Ile Lys Leu Gln Glu Ile Pro Thr Phe Gln Pro Leu Leu Lys
        35                  40                  45
```

```
Gly Leu Leu Ser Gly Gln Thr Ser Pro Thr Asn Ala Lys Leu Glu Lys
    50                  55                  60

Leu Asp Ser Gln Gln Val Leu Gln Leu Cys Leu Arg Tyr Gln Asp His
65                  70                  75                  80

Leu His Gln Cys Ala Glu Ala Val Ala Phe Asp Gln Asn Ala Leu Val
                85                  90                  95

Lys Arg Ile Lys Glu Met Asp Leu Ser Val Glu Thr Leu Phe Ser Phe
            100                 105                 110

Met Gln Glu Arg Gln Lys Arg Tyr Ala Lys Tyr Ala Glu Gln Ile Gln
        115                 120                 125

Lys Val Asn Glu Met Ser Ala Ile Leu Arg Arg Ile Gln Met Gly Ile
    130                 135                 140

Asp Gln Thr Val Pro Leu Leu Asp Arg Leu Asn Ser Met Leu Pro Glu
145                 150                 155                 160

Gly Glu Arg Leu Glu Pro Phe Ser Met Lys Pro Asp Arg Glu Leu Arg
                165                 170                 175

Leu
```

<210> 9208
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1865; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS5; "

<220>
<221> source
<223> /note="Gene Name:
BLOC-1 related complex
subunit 5; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000485829"

<400> 9208
Met Thr Pro Ser Pro Ala Lys His Arg Ala Lys Met Asp Asp Ile Val
1 5 10 15

Val Val Ala Gln Gly Ser Gln Ala Ser Arg Asn Val Ser Asn Asp Pro
20 25 30

Asp Val Ile Lys Leu Gln Glu Ile Pro Thr Phe Gln Pro Leu Leu Lys
35 40 45

Gly Leu Leu Ser Gly Gln Thr Ser Pro Thr Asn Ala Lys Leu Glu Lys
50 55 60

Leu Asp Ser Gln Gln Val Leu Gln Leu Cys Leu Arg Tyr Gln Asp His
65 70 75 80

Leu His Gln Cys Ala Glu Ala Val Ala Phe Asp Gln Asn Ala Leu Val
85 90 95

Lys Arg Ile Lys Glu Met Asp Leu Ser Val Glu Thr Leu Phe Ser Phe
100 105 110

Met Gln Glu Arg Gln Lys Arg Tyr Ala Lys Tyr Ala Glu Gln Ile Gln
115 120 125

Lys Val Asn Glu Met Ser Ala Ile Leu Arg Arg Ile Gln Met Gly Ile
130 135 140

Asp Gln Thr Val Pro Leu Leu Asp Arg Leu Asn Ser Met Leu Pro Glu
145 150 155 160

Gly Glu Arg Leu Glu Pro Phe Ser Met Lys Pro Asp Arg Glu Leu Arg
165 170 175

Leu

<210> 9209
<211> 196
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1865; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS5; "

<220>
<221> source
<223> /note="Gene Name:
BLOC-1 related complex
subunit 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486120"

<400> 9209
Met Gly Ser Glu Gln Ser Ser Glu Ala Glu Ser Arg Pro Asn Asp Leu
1 5 10 15

Asn Ser Ser Val Thr Pro Ser Pro Ala Lys His Arg Ala Lys Met Asp
20 25 30

Asp Ile Val Val Val Ala Gln Gly Ser Gln Ala Ser Arg Asn Val Ser
35 40 45

Asn Asp Pro Asp Val Ile Lys Leu Gln Glu Ile Pro Thr Phe Gln Pro
50 55 60

Leu Leu Lys Gly Leu Leu Ser Gly Gln Thr Ser Pro Thr Asn Ala Lys
65 70 75 80

Leu Glu Lys Leu Asp Ser Gln Gln Val Leu Gln Leu Cys Leu Arg Tyr
85 90 95

Gln Asp His Leu His Gln Cys Ala Glu Ala Val Ala Phe Asp Gln Asn
100 105 110

Ala Leu Val Lys Arg Ile Lys Glu Met Asp Leu Ser Val Glu Thr Leu
115 120 125

Phe Ser Phe Met Gln Glu Arg Gln Lys Arg Tyr Ala Lys Tyr Ala Glu
130 135 140

Gln Ile Gln Lys Val Asn Glu Met Ser Ala Ile Leu Arg Arg Ile Gln
145 150 155 160

```
Met Gly Ile Asp Gln Thr Val Pro Leu Leu Asp Arg Leu Asn Ser Met
                165                 170                 175

Leu Pro Glu Gly Glu Arg Leu Glu Pro Phe Ser Met Lys Pro Asp Arg
            180                 185                 190

Glu Leu Arg Leu
        195


<210> 9210
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1865; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS5; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486584"

<400> 9210
Met Gly Ser Glu Gln Ser Ser Glu Ala Glu Ser Arg Pro Asn Asp Leu
1               5                   10                  15

Asn Ser Ser Gly Leu Leu Ser Gly Gln Thr Ser Pro Thr Asn Ala Lys
            20                  25                  30

Leu Glu Lys Leu Asp Ser Gln Gln Val Leu Gln Leu Cys Leu Arg Tyr
        35                  40                  45

Gln Asp His Leu His Gln Cys Ala Glu Ala Val Ala Phe Asp Gln Asn
    50                  55                  60

Ala Leu Val Lys Arg Ile Lys Glu Met Asp Leu Ser Val Glu Thr Leu
65                  70                  75                  80
```

```
Phe Ser Phe Met Gln Glu Arg Gln Lys Arg Tyr Ala Lys Tyr Ala Glu
                85                  90                  95

Gln Ile Gln Lys Val Asn Glu Met Ser Ala Ile Leu Arg Arg Ile Gln
            100                 105                 110

Met Gly Ile Asp Gln Thr Val Pro Leu Leu Asp Arg Leu Asn Ser Met
        115                 120                 125

Leu Pro Glu Gly Glu Arg Leu Glu Pro Phe Ser Met Lys Pro Asp Arg
    130                 135                 140

Glu Leu Arg Leu
145
```

<210> 9211
<211> 357
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1866; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS6; "

<220>
<221> source
<223> /note="Gene Name:
BLOC-1 related complex
subunit 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q96GS4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373669"

<400> 9211

```
Met Glu Ser Ser Arg Gly Arg Pro Gly Pro Glu Thr Asp Leu Leu Ala
1               5                   10                  15

Val Ala Glu His Gln Ala Leu Val Phe Gly Gly Gly Pro Gly Arg Thr
            20                  25                  30
```

```
Ser Ser Glu Pro Pro Ala Gly Leu Arg Val Ser Gly Glu Glu Glu Thr
        35                  40                  45

Glu Asn Val Gly Gly Ala Asn Arg His Pro Arg Thr Ser Pro Lys Thr
    50                  55                  60

Ser Ser Cys Gly Val Val His Arg Pro Glu Arg Glu Ala Leu Glu Asn
65                  70                  75                  80

Glu Pro Gly Pro Gln Gly Thr Leu Ser Gly Ala Gly Ser Arg Arg Gly
                85                  90                  95

Ala Pro Gly Ala Glu His Glu Pro Ser Leu Ser Ser Arg His Lys Asn
            100                 105                 110

Pro Ala Pro Pro Glu Gly Lys Pro Ser Ser Gly Arg Asp Cys Arg Arg
        115                 120                 125

Gly Gly Pro Gly Gly Gly Met Asp Val Glu Gln Gln Glu Glu Glu Asp
    130                 135                 140

Asn Asp Glu Glu Ala Ala Ala Gly Ser Arg Ala Gly Arg Ser Phe Ser
145                 150                 155                 160

Ser Arg Leu Gln Asp Ser Arg Ser Leu Asp Gly Leu Ser Glu Ala Cys
                165                 170                 175

Gly Gly Ala Gly Ser Ser Gly Ser Ala Glu Ser Gly Ala Gly Gly Gly
            180                 185                 190

Arg Arg Ala Thr Ile Ser Ser Pro Leu Glu Leu Glu Gly Thr Val Ser
        195                 200                 205

Arg His Gly Asp Leu Thr His Phe Val Ala Asn Asn Leu Gln Leu Lys
    210                 215                 220

Ile Arg Leu Ser Gly Ala Pro Pro Pro Pro Pro Ser Ala Pro Ala Arg
225                 230                 235                 240

Pro Cys Pro Ala Pro Ala Pro Thr Pro Thr Pro Ala Ile Pro Pro Ile
                245                 250                 255

Asp Pro Glu Val Leu Arg Asp Leu Glu Arg Leu Ser Arg Glu Leu Gly
```

```
            260                 265                 270

Gly Arg Val Asp Arg Leu Leu Arg Gly Leu Gly Gly Ala Val Gln Glu
        275                 280                 285

Leu Thr Ala Leu Ser Val Gly Cys Ile Gln Thr Tyr Arg Asp Ala Val
    290                 295                 300

Asp Ser Leu Gly Glu Ala Val Asp Met Ser Ile Lys Gly Met Tyr Thr
305                 310                 315                 320

Leu Leu Ala Arg Cys Glu Glu Leu Glu Arg Ala Leu Gln Pro Val Gln
                325                 330                 335

Gly Leu Ala Arg Gln Val Arg Asp Ile Arg Arg Thr Leu Glu Val Leu
            340                 345                 350

Glu Ala Leu Cys Lys
        355


<210> 9212
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1867; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS7; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 7; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96B45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000342331"

<400> 9212
Met Met Ala Thr Gly Thr Pro Glu Ser Gln Ala Arg Phe Gly Gln Ser
1               5                   10                  15
```

```
Val Lys Gly Leu Leu Thr Glu Lys Val Thr Thr Cys Gly Thr Asp Val
            20                  25                  30

Ile Ala Leu Thr Lys Gln Val Leu Lys Gly Ser Arg Ser Ser Glu Leu
        35                  40                  45

Leu Gly Gln Ala Ala Arg Asn Met Val Leu Gln Glu Asp Ala Ile Leu
    50                  55                  60

His Ser Glu Asp Ser Leu Arg Lys Met Ala Ile Ile Thr Thr His Leu
65                  70                  75                  80

Gln Tyr Gln Gln Glu Ala Ile Gln Lys Asn Val Glu Gln Ser Ser Asp
                85                  90                  95

Leu Gln Asp Gln Leu Asn His Leu Leu Lys
            100                 105


<210> 9213
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1867; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS7; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 7; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96B45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358899"

<400> 9213
Met Met Ala Thr Gly Thr Pro Glu Ser Gln Ala Arg Phe Gly Gln Ser
1               5                   10                  15
```

```
Val Lys Gly Leu Leu Thr Glu Lys Val Thr Thr Cys Gly Thr Asp Val
            20                  25                  30

Ile Ala Leu Thr Lys Gln Val Leu Lys Gly Ser Arg Ser Ser Glu Leu
        35                  40                  45

Leu Gly Gln Ala Ala Arg Asn Met Val Leu Gln Glu Asp Ala Ile Leu
    50                  55                  60

His Ser Glu Asp Ser Leu Arg Lys Met Ala Ile Ile Thr Thr His Leu
65                  70                  75                  80

Gln Tyr Gln Gln Glu Ala Ile Gln Lys Asn Val Glu Gln Ser Ser Asp
                85                  90                  95

Leu Gln Asp Gln Leu Asn His Leu Leu Lys
            100                 105


<210> 9214
<211> 109
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1868; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS8; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 8; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96FH0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424833"

<400> 9214
Met Glu Glu Pro Glu Met Gln Leu Lys Gly Lys Lys Val Thr Asp Lys
1               5                   10                  15
```

```
Phe Thr Glu Ser Val Tyr Val Leu Ala Asn Glu Pro Ser Val Ala Leu
            20                  25                  30

Tyr Arg Leu Gln Glu His Val Arg Arg Ser Leu Pro Glu Leu Ala Gln
        35                  40                  45

His Lys Ala Asp Met Gln Arg Trp Glu Glu Gln Ser Gln Gly Ala Ile
    50                  55                  60

Tyr Thr Val Glu Tyr Ala Cys Ser Ala Val Lys Asn Leu Val Asp Ser
65                  70                  75                  80

Ser Val Tyr Phe Arg Ser Val Glu Gly Leu Leu Lys Gln Ala Ile Ser
                85                  90                  95

Ile Arg Asp His Met Asn Ala Ser Ala Gln Gly His Arg
            100                 105


<210> 9215
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1868; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS8; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 8; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96FH0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425864"

<400> 9215
Met Glu Glu Pro Glu Met Gln Leu Lys Gly Lys Lys Val Thr Asp Lys
1               5                   10                  15

Phe Thr Glu Ser Val Tyr Val Leu Ala Asn Glu Pro Ser Val Ala Leu
```

```
            20                  25                  30

Tyr Arg Leu Gln Glu His Val Arg Arg Ser Leu Pro Glu Leu Ala Gln
        35                  40                  45

His Lys Ala Asp Met Gln Arg Trp Glu Glu Gln Ser Gln Gly Ala Ile
    50                  55                  60

Tyr Thr Val Glu Tyr Ala Cys Ser Ala Val Lys Asn Leu Val Asp Ser
65                  70                  75                  80

Ser Val Tyr Phe Arg Ser Val Glu Gly Leu Leu Lys Gln Ala Ile Ser
                85                  90                  95

Ile Arg Asp His Met Asn Ala Ser Ala Gln Gly His Ser Pro Glu Glu
            100                 105                 110

Pro Pro Pro Pro Ser Ser Ala
        115


<210> 9216
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1868; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS8; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467140"

<400> 9216
Ala Asp Met Gln Arg Trp Glu Glu Gln Ser Gln Gly Ala Ile Tyr Thr
1               5                   10                  15

Val Glu Tyr Ala Cys Ser Ala Val Lys Asn Leu Val Asp Ser Ser Val
            20                  25                  30
```

```
Tyr Phe Arg Ser Val Glu Gly Leu Leu Lys Gln Ala Ile Ser Ile Arg
        35                  40                  45

Asp His Met Asn Ala Ser Ala Gln Gly His Ser Pro Glu Glu Pro Pro
    50                  55                  60

Pro Pro Ser Ser Ala
65
```

<210> 9217
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1868; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS8; "

<220>
<221> source
<223> /note="Gene Name:
BLOC-1 related complex
subunit 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q96FH0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467744"

<400> 9217

```
Met Glu Glu Pro Glu Met Gln Leu Lys Gly Lys Lys Val Thr Asp Lys
1               5                  10                  15

Phe Thr Glu Ser Val Tyr Val Leu Ala Asn Glu Pro Ser Val Ala Leu
            20                  25                  30

Tyr Arg Leu Gln Glu His Val Arg Arg Ser Leu Pro Glu Leu Ala Gln
        35                  40                  45

His Lys Ala Asp Met Gln Arg Trp Glu Glu Gln Ser Gln Gly Ala Ile
    50                  55                  60
```

```
Tyr Thr Val Glu Tyr Ala Cys Ser Ala Val Lys Asn Leu Val Asp Ser
65                  70                  75                  80

Ser Val Tyr Phe Arg Ser Val Glu Gly Leu Leu Lys Gln Ala Ile Ser
                85                  90                  95

Ile Arg Asp His Met Asn Ala Ser Ala Gln Gly His Ser Pro Glu Glu
            100                 105                 110

Pro Pro Pro Pro Ser Ser Ala
        115


<210> 9218
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1868; "

<220>
<221> source
<223> /note="Gene Symbol: BORCS8; "

<220>
<221> source
<223> /note="Gene Name:
      BLOC-1 related complex
      subunit 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475370"

<400> 9218
Met Pro Val Pro Arg Ala Thr Ala Arg Arg Asn His Pro Arg Pro Pro
1               5                   10                  15

Gln Pro Asp Pro Gly Arg Asp Ser Gly Pro Pro Ser Leu Arg Gln Pro
            20                  25                  30

Arg Asp Gly Val Ser Pro Cys Trp Leu Gly Trp Ser Gln Thr Pro Glu
        35                  40                  45

Leu Val Ile Leu Pro Pro Gln Pro Pro Lys Val Leu Gly Leu
    50                  55                  60
```

<210> 9219
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1869; "

<220>
<221> source
<223> /note="Gene Symbol: BLOC1S5-TXNDC5; "

<220>
<221> source
<223> /note="Gene Name:
BLOC1S5-TXNDC5 readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454697"

<400> 9219

```
Gly Thr Glu Thr Pro Val Gly Cys Glu Ala Ala Pro Gly Gly Gly Ser
1               5                   10                  15

Lys Lys Arg Asp Ser Leu Gly Thr Ala Gly Ser Ala His Leu Ile Ile
            20                  25                  30

Lys Asp Leu Gly Glu Ile His Ser Arg Leu Leu Asp His Arg Pro Val
        35                  40                  45

Ile Gln Gly Glu Thr Arg Tyr Phe Val Lys Glu Phe Glu Glu Lys Arg
    50                  55                  60

Gly Leu Arg Glu Met Arg Val Leu Glu Asn Leu Lys Asn Met Ile His
65                  70                  75                  80

Glu Thr Asn Glu His Thr Leu Pro Lys Cys Arg Asp Thr Met Arg Asp
                85                  90                  95

Ser Leu Ser Gln Val Leu Gln Arg Leu Gln Ala Ala Asn Asp Ser Val
            100                 105                 110

Cys Arg Leu Gln Gln Arg Glu Gln Glu Arg Lys Lys Val Trp Thr Leu
        115                 120                 125

Pro Ala Ala Ala Ala Asp Leu Glu
    130                 135
```

<210> 9220
<211> 746
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1870; "

<220>
<221> source
<223> /note="Gene Symbol: BOP1; "

<220>
<221> source
<223> /note="Gene Name:
block of proliferation 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q14137; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455106"

<400> 9220
Met Ala Gly Ser Arg Gly Ala Gly Arg Thr Ala Ala Pro Ser Val Arg
1   5   10   15

Pro Glu Lys Arg Arg Ser Glu Pro Glu Leu Glu Pro Glu Pro Glu Pro
            20   25   30

Glu Pro Pro Leu Leu Cys Thr Ser Pro Leu Ser His Ser Thr Gly Ser
        35   40   45

Asp Ser Gly Val Ser Asp Ser Glu Glu Ser Val Phe Ser Gly Leu Glu
    50   55   60

Asp Ser Gly Ser Asp Ser Ser Glu Asp Asp Asp Glu Gly Asp Glu Glu
65   70   75   80

Gly Glu Asp Gly Ala Leu Asp Asp Glu Gly His Ser Gly Ile Lys Lys
                85   90   95

Thr Thr Glu Glu Gln Val Gln Ala Ser Thr Pro Cys Pro Arg Thr Glu
            100   105   110

```
Met Ala Ser Ala Arg Ile Gly Asp Glu Tyr Ala Glu Asp Ser Ser Asp
        115                 120                 125

Glu Glu Asp Ile Arg Asn Thr Val Gly Asn Val Pro Leu Glu Trp Tyr
    130                 135                 140

Asp Asp Phe Pro His Val Gly Tyr Asp Leu Asp Gly Arg Arg Ile Tyr
145                 150                 155                 160

Lys Pro Leu Arg Thr Arg Asp Glu Leu Asp Gln Phe Leu Asp Lys Met
                165                 170                 175

Asp Asp Pro Asp Tyr Trp Arg Thr Val Gln Asp Pro Met Thr Gly Arg
            180                 185                 190

Asp Leu Arg Leu Thr Asp Glu Gln Val Ala Leu Val Arg Arg Leu Gln
        195                 200                 205

Ser Gly Gln Phe Gly Asp Val Gly Phe Asn Pro Tyr Glu Pro Ala Val
    210                 215                 220

Asp Phe Phe Ser Gly Asp Val Met Ile His Pro Val Thr Asn Arg Pro
225                 230                 235                 240

Ala Asp Lys Arg Ser Phe Ile Pro Ser Leu Val Glu Lys Glu Lys Val
                245                 250                 255

Ser Arg Met Val His Ala Ile Lys Met Gly Trp Ile Gln Pro Arg Arg
            260                 265                 270

Pro Arg Asp Pro Thr Pro Ser Phe Tyr Asp Leu Trp Ala Gln Glu Asp
        275                 280                 285

Pro Asn Ala Val Leu Gly Arg His Lys Met His Val Pro Ala Pro Lys
    290                 295                 300

Leu Ala Leu Pro Gly His Ala Glu Ser Tyr Asn Pro Pro Pro Glu Tyr
305                 310                 315                 320

Leu Leu Ser Glu Glu Glu Arg Leu Ala Trp Glu Gln Gln Glu Pro Gly
                325                 330                 335

Glu Arg Lys Leu Ser Phe Leu Pro Arg Lys Phe Pro Ser Leu Arg Ala
```

```
            340                 345                 350

Val Pro Ala Tyr Gly Arg Phe Ile Gln Glu Arg Phe Glu Arg Cys Leu
        355                 360                 365

Asp Leu Tyr Leu Cys Pro Arg Gln Arg Lys Met Arg Val Asn Val Asp
    370                 375                 380

Pro Glu Asp Leu Ile Pro Lys Leu Pro Arg Pro Arg Asp Leu Gln Pro
385                 390                 395                 400

Phe Pro Thr Cys Gln Ala Leu Val Tyr Arg Gly His Ser Asp Leu Val
                405                 410                 415

Arg Cys Leu Ser Val Ser Pro Gly Gly Gln Trp Leu Val Ser Gly Ser
            420                 425                 430

Asp Asp Gly Ser Leu Arg Leu Trp Glu Val Ala Thr Ala Arg Cys Val
        435                 440                 445

Arg Thr Val Pro Val Gly Gly Val Val Lys Ser Val Ala Trp Asn Pro
    450                 455                 460

Ser Pro Ala Val Cys Leu Val Ala Ala Ala Val Glu Asp Ser Val Leu
465                 470                 475                 480

Leu Leu Asn Pro Ala Leu Gly Asp Arg Leu Val Ala Gly Ser Thr Asp
                485                 490                 495

Gln Leu Leu Ser Ala Phe Val Pro Pro Glu Glu Pro Pro Leu Gln Pro
            500                 505                 510

Ala Arg Trp Leu Glu Ala Ser Glu Glu Glu Arg Gln Val Gly Leu Arg
        515                 520                 525

Leu Arg Ile Cys His Gly Lys Pro Val Thr Gln Val Thr Trp His Gly
    530                 535                 540

Arg Gly Asp Tyr Leu Ala Val Val Leu Ala Thr Gln Gly His Thr Gln
545                 550                 555                 560

Val Leu Ile His Gln Leu Ser Arg Arg Arg Ser Gln Ser Pro Phe Arg
                565                 570                 575
```

```
Arg Ser His Gly Gln Val Gln Arg Val Ala Phe His Pro Ala Arg Pro
            580                 585                 590

Phe Leu Leu Val Ala Ser Gln Arg Ser Val Arg Leu Tyr His Leu Leu
        595                 600                 605

Arg Gln Glu Leu Thr Lys Lys Leu Met Pro Asn Cys Lys Trp Val Ser
    610                 615                 620

Ser Leu Ala Val His Pro Ala Gly Asp Asn Val Ile Cys Gly Ser Tyr
625                 630                 635                 640

Asp Ser Lys Leu Val Trp Phe Asp Leu Asp Leu Ser Thr Lys Pro Tyr
                645                 650                 655

Arg Met Leu Arg His His Lys Lys Ala Leu Arg Ala Val Ala Phe His
            660                 665                 670

Pro Arg Tyr Pro Leu Phe Ala Ser Gly Ser Asp Asp Gly Ser Val Ile
        675                 680                 685

Val Cys His Gly Met Val Tyr Asn Asp Leu Leu Gln Asn Pro Leu Leu
    690                 695                 700

Val Pro Val Lys Val Leu Lys Gly His Val Leu Thr Arg Asp Leu Gly
705                 710                 715                 720

Val Leu Asp Val Ile Phe His Pro Thr Gln Pro Trp Val Phe Ser Ser
                725                 730                 735

Gly Ala Asp Gly Thr Val Arg Leu Phe Thr
            740                 745


<210> 9221
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1870; "

<220>
<221> source
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<223> /note="Gene Symbol: BOP1; "

<220>
<221> source
<223> /note="Gene Name:
block of proliferation 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456082"

<400> 9221

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Met Ala Gly Ser Arg Gly Ala Gly Arg Thr Ala Ala Pro Ser Val Arg
1               5                  10                  15

Pro Glu Lys Arg Arg Ser Glu Pro Glu Leu Glu Pro Glu Pro Glu Pro
            20                  25                  30

Glu Ala Ser Thr Pro Cys Pro Arg Thr Glu Met Ala Ser Ala Arg Ile
        35                  40                  45

Gly Asp Glu Tyr Ala Glu Asp Ser Ser Asp Glu Glu Asp Ile Arg Asn
    50                  55                  60

Thr Val Gly Asn Val Pro Leu Glu Trp Tyr Asp Asp Phe Pro His Val
65                  70                  75                  80

Gly Tyr Asp Leu Asp Gly Arg Arg Ile Tyr Lys Pro Leu Arg Thr Arg
                85                  90                  95

Asp Glu Leu Asp Gln Phe Leu Asp Lys Met Asp Asp Pro Asp Tyr Trp
            100                 105                 110

Arg Thr Val Gln Asp Pro Met Thr Gly Arg Asp Leu Arg Leu Thr Asp
        115                 120                 125

Glu Gln Val Ala Leu Val Arg Arg Leu Gln Ser Gly Gln Phe Gly Asp
    130                 135                 140

Val Gly Phe Asn Pro Tyr Glu Pro Ala Val Asp Phe Phe Ser Gly Asp
145                 150                 155                 160

Val Met Ile His Pro Val Thr Asn Arg Pro Ala Asp Lys Arg Ser Phe
                165                 170                 175

Ile Pro Ser Leu Val Glu Lys Glu Lys Val Ser Arg Met Val His Ala
```

```
            180                 185                 190

Ile Lys Met Gly Trp Ile Gln Pro Arg Arg Pro Arg Asp Pro Thr Pro
        195                 200                 205

Ser Phe Tyr Asp Leu Trp Ala Gln Glu
    210                 215


<210> 9222
<211> 360
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1871; "

<220>
<221> source
<223> /note="Gene Symbol: BVES; "

<220>
<221> source
<223> /note="Gene Name:
      blood vessel epicardial substance; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NE79; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000313172"

<400> 9222
Met Asn Tyr Thr Glu Ser Ser Pro Leu Arg Glu Ser Thr Ala Ile Gly
1               5                   10                  15

Phe Thr Pro Glu Leu Glu Ser Ile Ile Pro Val Pro Ser Asn Lys Thr
            20                  25                  30

Thr Cys Glu Asn Trp Arg Glu Ile His His Leu Val Phe His Val Ala
        35                  40                  45

Asn Ile Cys Phe Ala Val Gly Leu Val Ile Pro Thr Thr Leu His Leu
    50                  55                  60

His Met Ile Phe Leu Arg Gly Met Leu Thr Leu Gly Cys Thr Leu Tyr
65                  70                  75                  80
```

```
Ile Val Trp Ala Thr Leu Tyr Arg Cys Ala Leu Asp Ile Met Ile Trp
                85                  90                  95

Asn Ser Val Phe Leu Gly Val Asn Ile Leu His Leu Ser Tyr Leu Leu
            100                 105                 110

Tyr Lys Lys Arg Pro Val Lys Ile Glu Lys Glu Leu Ser Gly Met Tyr
        115                 120                 125

Arg Arg Leu Phe Glu Pro Leu Arg Val Pro Pro Asp Leu Phe Arg Arg
    130                 135                 140

Leu Thr Gly Gln Phe Cys Met Ile Gln Thr Leu Lys Lys Gly Gln Thr
145                 150                 155                 160

Tyr Ala Ala Glu Asp Lys Thr Ser Val Asp Asp Arg Leu Ser Ile Leu
                165                 170                 175

Leu Lys Gly Lys Met Lys Val Ser Tyr Arg Gly His Phe Leu His Asn
            180                 185                 190

Ile Tyr Pro Cys Ala Phe Ile Asp Ser Pro Glu Phe Arg Ser Thr Gln
        195                 200                 205

Met His Lys Gly Glu Lys Phe Gln Val Thr Ile Ile Ala Asp Asp Asn
    210                 215                 220

Cys Arg Phe Leu Cys Trp Ser Arg Glu Arg Leu Thr Tyr Phe Leu Glu
225                 230                 235                 240

Ser Glu Pro Phe Leu Tyr Glu Ile Phe Arg Tyr Leu Ile Gly Lys Asp
                245                 250                 255

Ile Thr Asn Lys Leu Tyr Ser Leu Asn Asp Pro Thr Leu Asn Asp Lys
            260                 265                 270

Lys Ala Lys Lys Leu Glu His Gln Leu Ser Leu Cys Thr Gln Ile Ser
        275                 280                 285

Met Leu Glu Met Arg Asn Ser Ile Ala Ser Ser Ser Asp Ser Asp Asp
    290                 295                 300
```

```
Gly Leu His Gln Phe Leu Arg Gly Thr Ser Ser Met Ser Ser Leu His
305                 310                 315                 320


Val Ser Ser Pro His Gln Arg Ala Ser Ala Lys Met Lys Pro Ile Glu
                325                 330                 335


Glu Gly Ala Glu Asp Asp Asp Asp Val Phe Glu Pro Ala Ser Pro Asn
            340                 345                 350


Thr Leu Lys Val His Gln Leu Pro
        355                 360


<210> 9223
<211> 360
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1871; "

<220>
<221> source
<223> /note="Gene Symbol: BVES; "

<220>
<221> source
<223> /note="Gene Name:
      blood vessel epicardial substance; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NE79; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000337259"

<400> 9223
Met Asn Tyr Thr Glu Ser Ser Pro Leu Arg Glu Ser Thr Ala Ile Gly
1               5                   10                  15


Phe Thr Pro Glu Leu Glu Ser Ile Ile Pro Val Pro Ser Asn Lys Thr
            20                  25                  30


Thr Cys Glu Asn Trp Arg Glu Ile His His Leu Val Phe His Val Ala
        35                  40                  45


Asn Ile Cys Phe Ala Val Gly Leu Val Ile Pro Thr Thr Leu His Leu
    50                  55                  60
```

```
His Met Ile Phe Leu Arg Gly Met Leu Thr Leu Gly Cys Thr Leu Tyr
65                  70                  75                  80

Ile Val Trp Ala Thr Leu Tyr Arg Cys Ala Leu Asp Ile Met Ile Trp
                85                  90                  95

Asn Ser Val Phe Leu Gly Val Asn Ile Leu His Leu Ser Tyr Leu Leu
            100                 105                 110

Tyr Lys Lys Arg Pro Val Lys Ile Glu Lys Glu Leu Ser Gly Met Tyr
        115                 120                 125

Arg Arg Leu Phe Glu Pro Leu Arg Val Pro Pro Asp Leu Phe Arg Arg
    130                 135                 140

Leu Thr Gly Gln Phe Cys Met Ile Gln Thr Leu Lys Lys Gly Gln Thr
145                 150                 155                 160

Tyr Ala Ala Glu Asp Lys Thr Ser Val Asp Asp Arg Leu Ser Ile Leu
                165                 170                 175

Leu Lys Gly Lys Met Lys Val Ser Tyr Arg Gly His Phe Leu His Asn
            180                 185                 190

Ile Tyr Pro Cys Ala Phe Ile Asp Ser Pro Glu Phe Arg Ser Thr Gln
        195                 200                 205

Met His Lys Gly Glu Lys Phe Gln Val Thr Ile Ile Ala Asp Asp Asn
    210                 215                 220

Cys Arg Phe Leu Cys Trp Ser Arg Glu Arg Leu Thr Tyr Phe Leu Glu
225                 230                 235                 240

Ser Glu Pro Phe Leu Tyr Glu Ile Phe Arg Tyr Leu Ile Gly Lys Asp
                245                 250                 255

Ile Thr Asn Lys Leu Tyr Ser Leu Asn Asp Pro Thr Leu Asn Asp Lys
            260                 265                 270

Lys Ala Lys Lys Leu Glu His Gln Leu Ser Leu Cys Thr Gln Ile Ser
        275                 280                 285
```

```
Met Leu Glu Met Arg Asn Ser Ile Ala Ser Ser Ser Asp Ser Asp Asp
    290                 295                 300

Gly Leu His Gln Phe Leu Arg Gly Thr Ser Ser Met Ser Ser Leu His
305                 310                 315                 320

Val Ser Ser Pro His Gln Arg Ala Ser Ala Lys Met Lys Pro Ile Glu
                325                 330                 335

Glu Gly Ala Glu Asp Asp Asp Asp Val Phe Glu Pro Ala Ser Pro Asn
            340                 345                 350

Thr Leu Lys Val His Gln Leu Pro
        355                 360
```

<210> 9224
<211> 360
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1871; "

<220>
<221> source
<223> /note="Gene Symbol: BVES; "

<220>
<221> source
<223> /note="Gene Name:
blood vessel epicardial substance; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NE79; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397310"

<400> 9224

```
Met Asn Tyr Thr Glu Ser Ser Pro Leu Arg Glu Ser Thr Ala Ile Gly
1               5                   10                  15

Phe Thr Pro Glu Leu Glu Ser Ile Ile Pro Val Pro Ser Asn Lys Thr
            20                  25                  30

Thr Cys Glu Asn Trp Arg Glu Ile His His Leu Val Phe His Val Ala
```

```
        35                  40                  45

Asn Ile Cys Phe Ala Val Gly Leu Val Ile Pro Thr Thr Leu His Leu
    50                  55                  60

His Met Ile Phe Leu Arg Gly Met Leu Thr Leu Gly Cys Thr Leu Tyr
65                  70                  75                  80

Ile Val Trp Ala Thr Leu Tyr Arg Cys Ala Leu Asp Ile Met Ile Trp
                85                  90                  95

Asn Ser Val Phe Leu Gly Val Asn Ile Leu His Leu Ser Tyr Leu Leu
            100                 105                 110

Tyr Lys Lys Arg Pro Val Lys Ile Glu Lys Glu Leu Ser Gly Met Tyr
        115                 120                 125

Arg Arg Leu Phe Glu Pro Leu Arg Val Pro Pro Asp Leu Phe Arg Arg
    130                 135                 140

Leu Thr Gly Gln Phe Cys Met Ile Gln Thr Leu Lys Lys Gly Gln Thr
145                 150                 155                 160

Tyr Ala Ala Glu Asp Lys Thr Ser Val Asp Asp Arg Leu Ser Ile Leu
                165                 170                 175

Leu Lys Gly Lys Met Lys Val Ser Tyr Arg Gly His Phe Leu His Asn
            180                 185                 190

Ile Tyr Pro Cys Ala Phe Ile Asp Ser Pro Glu Phe Arg Ser Thr Gln
        195                 200                 205

Met His Lys Gly Glu Lys Phe Gln Val Thr Ile Ile Ala Asp Asp Asn
    210                 215                 220

Cys Arg Phe Leu Cys Trp Ser Arg Glu Arg Leu Thr Tyr Phe Leu Glu
225                 230                 235                 240

Ser Glu Pro Phe Leu Tyr Glu Ile Phe Arg Tyr Leu Ile Gly Lys Asp
                245                 250                 255

Ile Thr Asn Lys Leu Tyr Ser Leu Asn Asp Pro Thr Leu Asn Asp Lys
            260                 265                 270
```

```
Lys Ala Lys Lys Leu Glu His Gln Leu Ser Leu Cys Thr Gln Ile Ser
        275                 280                 285

Met Leu Glu Met Arg Asn Ser Ile Ala Ser Ser Ser Asp Ser Asp Asp
    290                 295                 300

Gly Leu His Gln Phe Leu Arg Gly Thr Ser Ser Met Ser Ser Leu His
305                 310                 315                 320

Val Ser Ser Pro His Gln Arg Ala Ser Ala Lys Met Lys Pro Ile Glu
                325                 330                 335

Glu Gly Ala Glu Asp Asp Asp Asp Val Phe Glu Pro Ala Ser Pro Asn
            340                 345                 350

Thr Leu Lys Val His Gln Leu Pro
        355                 360


<210> 9225
<211> 1417
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1872; "

<220>
<221> source
<223> /note="Gene Symbol: BLM; "

<220>
<221> source
<223> /note="Gene Name:
      Bloom syndrome, RecQ helicase-like; "

<220>
<221> source
<223> /note="Uniprot ID:  P54132; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347232"

<400> 9225
Met Ala Ala Val Pro Gln Asn Asn Leu Gln Glu Gln Leu Glu Arg His
1               5                   10                  15
```

```
Ser Ala Arg Thr Leu Asn Asn Lys Leu Ser Leu Ser Lys Pro Lys Phe
            20                  25                  30

Ser Gly Phe Thr Phe Lys Lys Lys Thr Ser Ser Asp Asn Asn Val Ser
        35                  40                  45

Val Thr Asn Val Ser Val Ala Lys Thr Pro Val Leu Arg Asn Lys Asp
    50                  55                  60

Val Asn Val Thr Glu Asp Phe Ser Phe Ser Glu Pro Leu Pro Asn Thr
65                  70                  75                  80

Thr Asn Gln Gln Arg Val Lys Asp Phe Phe Lys Asn Ala Pro Ala Gly
                85                  90                  95

Gln Glu Thr Gln Arg Gly Gly Ser Lys Ser Leu Leu Pro Asp Phe Leu
            100                 105                 110

Gln Thr Pro Lys Glu Val Val Cys Thr Thr Gln Asn Thr Pro Thr Val
        115                 120                 125

Lys Lys Ser Arg Asp Thr Ala Leu Lys Lys Leu Glu Phe Ser Ser Ser
    130                 135                 140

Pro Asp Ser Leu Ser Thr Ile Asn Asp Trp Asp Asp Met Asp Asp Phe
145                 150                 155                 160

Asp Thr Ser Glu Thr Ser Lys Ser Phe Val Thr Pro Pro Gln Ser His
                165                 170                 175

Phe Val Arg Val Ser Thr Ala Gln Lys Ser Lys Lys Gly Lys Arg Asn
            180                 185                 190

Phe Phe Lys Ala Gln Leu Tyr Thr Thr Asn Thr Val Lys Thr Asp Leu
        195                 200                 205

Pro Pro Pro Ser Ser Glu Ser Glu Gln Ile Asp Leu Thr Glu Glu Gln
    210                 215                 220

Lys Asp Asp Ser Glu Trp Leu Ser Ser Asp Val Ile Cys Ile Asp Asp
225                 230                 235                 240

Gly Pro Ile Ala Glu Val His Ile Asn Glu Asp Ala Gln Glu Ser Asp
```

```
                245                 250                 255

Ser Leu Lys Thr His Leu Glu Asp Glu Arg Asp Asn Ser Glu Lys Lys
            260                 265                 270

Lys Asn Leu Glu Glu Ala Glu Leu His Ser Thr Glu Lys Val Pro Cys
        275                 280                 285

Ile Glu Phe Asp Asp Asp Asp Tyr Asp Thr Asp Phe Val Pro Pro Ser
    290                 295                 300

Pro Glu Glu Ile Ile Ser Ala Ser Ser Ser Ser Ser Lys Cys Leu Ser
305                 310                 315                 320

Thr Leu Lys Asp Leu Asp Thr Ser Asp Arg Lys Glu Asp Val Leu Ser
                325                 330                 335

Thr Ser Lys Asp Leu Leu Ser Lys Pro Glu Lys Met Ser Met Gln Glu
            340                 345                 350

Leu Asn Pro Glu Thr Ser Thr Asp Cys Asp Ala Arg Gln Ile Ser Leu
        355                 360                 365

Gln Gln Gln Leu Ile His Val Met Glu His Ile Cys Lys Leu Ile Asp
    370                 375                 380

Thr Ile Pro Asp Asp Lys Leu Lys Leu Leu Asp Cys Gly Asn Glu Leu
385                 390                 395                 400

Leu Gln Gln Arg Asn Ile Arg Arg Lys Leu Leu Thr Glu Val Asp Phe
                405                 410                 415

Asn Lys Ser Asp Ala Ser Leu Leu Gly Ser Leu Trp Arg Tyr Arg Pro
            420                 425                 430

Asp Ser Leu Asp Gly Pro Met Glu Gly Asp Ser Cys Pro Thr Gly Asn
        435                 440                 445

Ser Met Lys Glu Leu Asn Phe Ser His Leu Pro Ser Asn Ser Val Ser
    450                 455                 460

Pro Gly Asp Cys Leu Leu Thr Thr Thr Leu Gly Lys Thr Gly Phe Ser
465                 470                 475                 480
```

```
Ala Thr Arg Lys Asn Leu Phe Glu Arg Pro Leu Phe Asn Thr His Leu
                485                 490                 495

Gln Lys Ser Phe Val Ser Ser Asn Trp Ala Glu Thr Pro Arg Leu Gly
            500                 505                 510

Lys Lys Asn Glu Ser Ser Tyr Phe Pro Gly Asn Val Leu Thr Ser Thr
        515                 520                 525

Ala Val Lys Asp Gln Asn Lys His Thr Ala Ser Ile Asn Asp Leu Glu
    530                 535                 540

Arg Glu Thr Gln Pro Ser Tyr Asp Ile Asp Asn Phe Asp Ile Asp Asp
545                 550                 555                 560

Phe Asp Asp Asp Asp Asp Trp Glu Asp Ile Met His Asn Leu Ala Ala
                565                 570                 575

Ser Lys Ser Ser Thr Ala Ala Tyr Gln Pro Ile Lys Glu Gly Arg Pro
            580                 585                 590

Ile Lys Ser Val Ser Glu Arg Leu Ser Ser Ala Lys Thr Asp Cys Leu
        595                 600                 605

Pro Val Ser Ser Thr Ala Gln Asn Ile Asn Phe Ser Glu Ser Ile Gln
    610                 615                 620

Asn Tyr Thr Asp Lys Ser Ala Gln Asn Leu Ala Ser Arg Asn Leu Lys
625                 630                 635                 640

His Glu Arg Phe Gln Ser Leu Ser Phe Pro His Thr Lys Glu Met Met
                645                 650                 655

Lys Ile Phe His Lys Lys Phe Gly Leu His Asn Phe Arg Thr Asn Gln
            660                 665                 670

Leu Glu Ala Ile Asn Ala Ala Leu Leu Gly Glu Asp Cys Phe Ile Leu
        675                 680                 685

Met Pro Thr Gly Gly Gly Lys Ser Leu Cys Tyr Gln Leu Pro Ala Cys
    690                 695                 700
```

```
Val Ser Pro Gly Val Thr Val Val Ile Ser Pro Leu Arg Ser Leu Ile
705                 710                 715                 720

Val Asp Gln Val Gln Lys Leu Thr Ser Leu Asp Ile Pro Ala Thr Tyr
                725                 730                 735

Leu Thr Gly Asp Lys Thr Asp Ser Glu Ala Thr Asn Ile Tyr Leu Gln
            740                 745                 750

Leu Ser Lys Lys Asp Pro Ile Ile Lys Leu Leu Tyr Val Thr Pro Glu
        755                 760                 765

Lys Ile Cys Ala Ser Asn Arg Leu Ile Ser Thr Leu Glu Asn Leu Tyr
    770                 775                 780

Glu Arg Lys Leu Leu Ala Arg Phe Val Ile Asp Glu Ala His Cys Val
785                 790                 795                 800

Ser Gln Trp Gly His Asp Phe Arg Gln Asp Tyr Lys Arg Met Asn Met
                805                 810                 815

Leu Arg Gln Lys Phe Pro Ser Val Pro Val Met Ala Leu Thr Ala Thr
            820                 825                 830

Ala Asn Pro Arg Val Gln Lys Asp Ile Leu Thr Gln Leu Lys Ile Leu
        835                 840                 845

Arg Pro Gln Val Phe Ser Met Ser Phe Asn Arg His Asn Leu Lys Tyr
    850                 855                 860

Tyr Val Leu Pro Lys Lys Pro Lys Lys Val Ala Phe Asp Cys Leu Glu
865                 870                 875                 880

Trp Ile Arg Lys His His Pro Tyr Asp Ser Gly Ile Ile Tyr Cys Leu
                885                 890                 895

Ser Arg Arg Glu Cys Asp Thr Met Ala Asp Thr Leu Gln Arg Asp Gly
            900                 905                 910

Leu Ala Ala Leu Ala Tyr His Ala Gly Leu Ser Asp Ser Ala Arg Asp
        915                 920                 925
```

```
Glu Val Gln Gln Lys Trp Ile Asn Gln Asp Gly Cys Gln Val Ile Cys
    930                 935                 940

Ala Thr Ile Ala Phe Gly Met Gly Ile Asp Lys Pro Asp Val Arg Phe
945                 950                 955                 960

Val Ile His Ala Ser Leu Pro Lys Ser Val Glu Gly Tyr Tyr Gln Glu
                965                 970                 975

Ser Gly Arg Ala Gly Arg Asp Gly Glu Ile Ser His Cys Leu Leu Phe
            980                 985                 990

Tyr Thr Tyr His Asp Val Thr Arg  Leu Lys Arg Leu Ile  Met Met
Glu
        995                 1000                1005

Lys Asp  Gly Asn His His Thr  Arg Glu Thr His Phe  Asn Asn Leu
    1010                1015                1020

Tyr Ser  Met Val His Tyr Cys  Glu Asn Ile Thr Glu  Cys Arg Arg
    1025                1030                1035

Ile Gln  Leu Leu Ala Tyr Phe  Gly Glu Asn Gly Phe  Asn Pro Asp
    1040                1045                1050

Phe Cys  Lys Lys His Pro Asp  Val Ser Cys Asp Asn  Cys Cys Lys
    1055                1060                1065

Thr Lys  Asp Tyr Lys Thr Arg  Asp Val Thr Asp Asp  Val Lys Ser
    1070                1075                1080

Ile Val  Arg Phe Val Gln Glu  His Ser Ser Ser Gln  Gly Met Arg
    1085                1090                1095

Asn Ile  Lys His Val Gly Pro  Ser Gly Arg Phe Thr  Met Asn Met
    1100                1105                1110

Leu Val  Asp Ile Phe Leu Gly  Ser Lys Ser Ala Lys  Ile Gln Ser
    1115                1120                1125

Gly Ile  Phe Gly Lys Gly Ser  Ala Tyr Ser Arg His  Asn Ala Glu
    1130                1135                1140
```

```
Arg Leu  Phe Lys Lys Leu Ile  Leu Asp Lys Ile Leu  Asp Glu Asp
    1145                1150                1155

Leu Tyr  Ile Asn Ala Asn Asp  Gln Ala Ile Ala Tyr  Val Met Leu
    1160                1165                1170

Gly Asn  Lys Ala Gln Thr Val  Leu Asn Gly Asn Leu  Lys Val Asp
    1175                1180                1185

Phe Met  Glu Thr Glu Asn Ser  Ser Ser Val Lys Lys  Gln Lys Ala
    1190                1195                1200

Leu Val  Ala Lys Val Ser Gln  Arg Glu Glu Met Val  Lys Lys Cys
    1205                1210                1215

Leu Gly  Glu Leu Thr Glu Val  Cys Lys Ser Leu Gly  Lys Val Phe
    1220                1225                1230

Gly Val  His Tyr Phe Asn Ile  Phe Asn Thr Val Thr  Leu Lys Lys
    1235                1240                1245

Leu Ala  Glu Ser Leu Ser Ser  Asp Pro Glu Val Leu  Leu Gln Ile
    1250                1255                1260

Asp Gly  Val Thr Glu Asp Lys  Leu Glu Lys Tyr Gly  Ala Glu Val
    1265                1270                1275

Ile Ser  Val Leu Gln Lys Tyr  Ser Glu Trp Thr Ser  Pro Ala Glu
    1280                1285                1290

Asp Ser  Ser Pro Gly Ile Ser  Leu Ser Ser Ser Arg  Gly Pro Gly
    1295                1300                1305

Arg Ser  Ala Ala Glu Glu Leu  Asp Glu Glu Ile Pro  Val Ser Ser
    1310                1315                1320

His Tyr  Phe Ala Ser Lys Thr  Arg Asn Glu Arg Lys  Arg Lys Lys
    1325                1330                1335

Met Pro  Ala Ser Gln Arg Ser  Lys Arg Arg Lys Thr  Ala Ser Ser
    1340                1345                1350

Gly Ser  Lys Ala Lys Gly Gly  Ser Ala Thr Cys Arg  Lys Ile Ser
```

```
    1355                1360                1365

Ser Lys  Thr Lys Ser Ser Ser  Ile Ile Gly Ser Ser  Ser Ala Ser
    1370                1375                1380

His Thr  Ser Gln Ala Thr Ser  Gly Ala Asn Ser Lys  Leu Gly Ile
    1385                1390                1395

Met Ala  Pro Pro Lys Pro Ile  Asn Arg Pro Phe Leu  Lys Pro Ser
    1400                1405                1410

Tyr Ala  Phe Ser
    1415


<210> 9226
<211> 413
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1872; "

<220>
<221> source
<223> /note="Gene Symbol: BLM; "

<220>
<221> source
<223> /note="Gene Name:
      Bloom syndrome, RecQ helicase-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453359"

<400> 9226
Met Ala Ala Val Pro Gln Asn Asn Leu Gln Glu Gln Leu Glu Arg His
1               5                   10                  15

Ser Ala Arg Thr Leu Asn Asn Lys Leu Ser Leu Ser Lys Pro Lys Phe
            20                  25                  30

Ser Gly Phe Thr Phe Lys Lys Lys Thr Ser Ser Asp Asn Asn Val Ser
        35                  40                  45

Val Thr Asn Val Ser Val Ala Lys Thr Pro Val Leu Arg Asn Lys Asp
    50                  55                  60
```

```
Val Asn Val Thr Glu Asp Phe Ser Phe Ser Glu Pro Leu Pro Asn Thr
65                  70                  75                  80

Thr Asn Gln Gln Arg Val Lys Asp Phe Phe Lys Asn Ala Pro Ala Gly
                85                  90                  95

Gln Glu Thr Gln Arg Gly Gly Ser Lys Ser Leu Leu Pro Asp Phe Leu
            100                 105                 110

Gln Thr Pro Lys Glu Val Val Cys Thr Thr Gln Asn Thr Pro Thr Val
        115                 120                 125

Lys Lys Ser Arg Asp Thr Ala Leu Lys Lys Leu Glu Phe Ser Ser Ser
    130                 135                 140

Pro Asp Ser Leu Ser Thr Ile Asn Asp Trp Asp Asp Met Asp Asp Phe
145                 150                 155                 160

Asp Thr Ser Glu Thr Ser Lys Ser Phe Val Thr Pro Pro Gln Ser His
                165                 170                 175

Phe Val Arg Val Ser Thr Ala Gln Lys Ser Lys Lys Gly Lys Arg Asn
            180                 185                 190

Phe Phe Lys Ala Gln Leu Tyr Thr Thr Asn Thr Val Lys Thr Asp Leu
        195                 200                 205

Pro Pro Pro Ser Ser Glu Ser Glu Gln Ile Asp Leu Thr Glu Glu Gln
    210                 215                 220

Lys Asp Asp Ser Glu Trp Leu Ser Ser Asp Val Ile Cys Ile Asp Asp
225                 230                 235                 240

Gly Pro Ile Ala Glu Val His Ile Asn Glu Asp Ala Gln Glu Ser Asp
                245                 250                 255

Ser Leu Lys Thr His Leu Glu Asp Glu Arg Asp Asn Ser Glu Lys Lys
            260                 265                 270

Lys Asn Leu Glu Glu Ala Glu Leu His Ser Thr Glu Lys Val Pro Cys
        275                 280                 285
```

```
Ile Glu Phe Asp Asp Asp Asp Tyr Asp Thr Asp Phe Val Pro Pro Ser
    290                 295                 300

Pro Glu Glu Ile Ile Ser Ala Ser Ser Ser Ser Ser Lys Cys Leu Ser
305                 310                 315                 320

Thr Leu Lys Asp Leu Asp Thr Ser Asp Arg Lys Glu Asp Val Leu Ser
                325                 330                 335

Thr Ser Lys Asp Leu Leu Ser Lys Pro Glu Lys Met Ser Met Gln Glu
            340                 345                 350

Leu Asn Pro Glu Thr Ser Thr Asp Cys Asp Gly Ser His Cys Val Ala
        355                 360                 365

Gln Ala Gly Leu Glu Leu Leu Asp Leu Ser Asn Pro Pro Ala Leu Ala
    370                 375                 380

Ser Pro Lys Gly Trp Asp Tyr Ser His Glu Pro Pro Cys Leu Ala Lys
385                 390                 395                 400

Thr Phe Phe Phe Phe Pro Gln Arg Lys Ile Leu Thr Thr
                405                 410


<210> 9227
<211> 1286
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1872; "

<220>
<221> source
<223> /note="Gene Symbol: BLM; "

<220>
<221> source
<223> /note="Gene Name:
      Bloom syndrome, RecQ helicase-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454158"

<400> 9227
Met Ala Ala Val Pro Gln Asn Asn Leu Gln Glu Gln Leu Glu Arg His
1               5                   10                  15
```

```
Ser Ala Arg Thr Leu Asn Asn Lys Leu Ser Leu Ser Lys Pro Lys Phe
            20                  25                  30

Ser Gly Phe Thr Phe Lys Lys Lys Thr Ser Ser Asp Asn Asn Val Ser
        35                  40                  45

Val Thr Asn Val Ser Val Ala Lys Thr Pro Val Leu Arg Asn Lys Asp
    50                  55                  60

Val Asn Val Thr Glu Asp Phe Ser Phe Ser Glu Pro Leu Pro Asn Thr
65                  70                  75                  80

Thr Asn Gln Gln Arg Val Lys Asp Phe Phe Lys Asn Ala Pro Ala Gly
                85                  90                  95

Gln Glu Thr Gln Arg Gly Gly Ser Lys Ser Leu Leu Pro Asp Phe Leu
            100                 105                 110

Gln Thr Pro Lys Glu Val Val Cys Thr Thr Gln Asn Thr Pro Thr Val
        115                 120                 125

Lys Lys Ser Arg Asp Thr Ala Leu Lys Lys Leu Glu Phe Ser Ser Ser
    130                 135                 140

Pro Asp Ser Leu Ser Thr Ile Asn Asp Trp Asp Asp Met Asp Asp Phe
145                 150                 155                 160

Asp Thr Ser Glu Thr Ser Lys Ser Phe Val Thr Pro Pro Gln Ser His
                165                 170                 175

Phe Val Arg Val Ser Thr Ala Gln Lys Ser Lys Lys Gly Lys Arg Asn
            180                 185                 190

Phe Phe Lys Ala Gln Leu Tyr Thr Thr Asn Thr Val Lys Thr Asp Leu
        195                 200                 205

Pro Pro Pro Ser Ser Glu Ser Glu Gln Ile Asp Leu Thr Glu Glu Gln
    210                 215                 220

Lys Asp Asp Ser Glu Trp Leu Ser Ser Asp Val Ile Cys Ile Asp Asp
225                 230                 235                 240
```

```
Gly Pro Ile Ala Glu Val His Ile Asn Glu Asp Ala Gln Glu Ser Asp
                245                 250                 255

Ser Leu Lys Thr His Leu Glu Asp Glu Arg Asp Asn Ser Glu Lys Lys
            260                 265                 270

Lys Asn Leu Glu Glu Ala Glu Leu His Ser Thr Glu Lys Val Pro Cys
        275                 280                 285

Ile Glu Phe Asp Asp Asp Asp Tyr Asp Thr Asp Phe Val Pro Pro Ser
    290                 295                 300

Pro Glu Glu Ile Ile Ser Ala Ser Ser Ser Ser Ser Lys Cys Leu Ser
305                 310                 315                 320

Thr Leu Lys Asp Leu Asp Thr Ser Asp Arg Lys Glu Asp Val Leu Ser
                325                 330                 335

Thr Ser Lys Asp Leu Leu Ser Lys Pro Glu Lys Met Ser Met Gln Glu
            340                 345                 350

Leu Asn Pro Glu Thr Ser Thr Asp Cys Asp Ala Arg Gln Ile Ser Leu
        355                 360                 365

Gln Gln Gln Leu Ile His Val Met Glu His Ile Cys Lys Leu Ile Asp
    370                 375                 380

Thr Ile Pro Asp Asp Lys Leu Lys Leu Leu Asp Cys Gly Asn Glu Leu
385                 390                 395                 400

Leu Gln Gln Arg Asn Ile Arg Arg Lys Leu Leu Thr Glu Val Asp Phe
                405                 410                 415

Asn Lys Ser Asp Ala Ser Leu Leu Gly Ser Leu Trp Arg Tyr Arg Pro
            420                 425                 430

Asp Ser Leu Asp Gly Pro Met Glu Gly Asp Ser Cys Pro Thr Gly Asn
        435                 440                 445

Ser Met Lys Glu Leu Asn Phe Ser His Leu Pro Ser Asn Ser Val Ser
    450                 455                 460
```

```
Pro Gly Asp Cys Leu Leu Thr Thr Thr Leu Gly Lys Thr Gly Phe Ser
465                 470                 475                 480

Ala Thr Arg Lys Asn Leu Phe Glu Arg Pro Leu Phe Asn Thr His Leu
                485                 490                 495

Gln Lys Ser Phe Val Ser Ser Asn Trp Ala Glu Thr Pro Arg Leu Gly
            500                 505                 510

Lys Lys Asn Glu Ser Ser Tyr Phe Pro Gly Asn Val Leu Thr Ser Thr
        515                 520                 525

Ala Val Lys Asp Gln Asn Lys His Thr Ala Ser Ile Asn Asp Leu Glu
    530                 535                 540

Arg Glu Thr Gln Pro Ser Tyr Asp Ile Asp Asn Phe Asp Ile Asp Asp
545                 550                 555                 560

Phe Asp Asp Asp Asp Asp Trp Glu Asp Ile Met His Asn Leu Ala Ala
                565                 570                 575

Ser Lys Ser Ser Thr Ala Ala Tyr Gln Pro Ile Lys Glu Gly Arg Pro
            580                 585                 590

Ile Lys Ser Val Ser Glu Arg Leu Ser Ser Ala Lys Thr Asp Cys Leu
        595                 600                 605

Pro Val Ser Ser Thr Ala Gln Asn Ile Asn Phe Ser Glu Ser Ile Gln
    610                 615                 620

Asn Tyr Thr Asp Lys Ser Ala Gln Asn Leu Ala Ser Arg Asn Leu Lys
625                 630                 635                 640

His Glu Arg Phe Gln Ser Leu Ser Phe Pro His Thr Lys Glu Met Met
                645                 650                 655

Lys Ile Phe His Lys Lys Phe Gly Leu His Asn Phe Arg Thr Asn Gln
            660                 665                 670

Leu Glu Ala Ile Asn Ala Ala Leu Leu Gly Glu Asp Cys Phe Ile Leu
        675                 680                 685

Met Pro Thr Gly Gly Gly Lys Ser Leu Cys Tyr Gln Leu Pro Ala Cys
```

690 695 700

Val Ser Pro Gly Val Thr Val Val Ile Ser Pro Leu Arg Ser Leu Ile
705 710 715 720

Val Asp Gln Val Gln Lys Leu Thr Ser Leu Asp Ile Pro Ala Thr Tyr
725 730 735

Leu Thr Gly Asp Lys Thr Asp Ser Glu Ala Thr Asn Ile Tyr Leu Gln
740 745 750

Leu Ser Lys Lys Asp Pro Ile Ile Lys Leu Leu Tyr Val Thr Pro Glu
755 760 765

Lys Ile Cys Ala Ser Asn Arg Leu Ile Ser Thr Leu Glu Asn Leu Tyr
770 775 780

Glu Arg Lys Leu Leu Ala Arg Phe Val Ile Asp Glu Ala His Cys Val
785 790 795 800

Ser Gln Trp Gly His Asp Phe Arg Gln Asp Tyr Lys Arg Met Asn Met
805 810 815

Leu Arg Gln Lys Phe Pro Ser Val Pro Val Met Ala Leu Thr Ala Thr
820 825 830

Ala Asn Pro Arg Val Gln Lys Asp Ile Leu Thr Gln Leu Lys Ile Leu
835 840 845

Arg Pro Gln Val Phe Ser Met Ser Phe Asn Arg His Asn Leu Lys Tyr
850 855 860

Tyr Val Leu Pro Lys Lys Pro Lys Lys Val Ala Phe Asp Cys Leu Glu
865 870 875 880

Trp Ile Arg Lys His His Pro Tyr Asp Ser Gly Ile Ile Tyr Cys Leu
885 890 895

Ser Arg Arg Glu Cys Asp Thr Met Ala Asp Thr Leu Gln Arg Asp Gly
900 905 910

Leu Ala Ala Leu Ala Tyr His Ala Gly Leu Ser Asp Ser Ala Arg Asp
915 920 925

```
Glu Val Gln Gln Lys Trp Ile Asn Gln Asp Gly Cys Gln Val Ile Cys
    930                 935                 940

Ala Thr Ile Ala Phe Gly Met Gly Ile Asp Lys Pro Asp Val Arg Phe
945                 950                 955                 960

Val Ile His Ala Ser Leu Pro Lys Ser Val Glu Gly Tyr Tyr Gln Glu
                965                 970                 975

Ser Gly Arg Ala Gly Arg Asp Gly Glu Ile Ser His Cys Leu Leu Phe
            980                 985                 990

Tyr Thr Tyr His Asp Val Thr Arg  Leu Lys Arg Leu Ile  Met Met
Glu
        995                 1000                1005

Lys Asp  Gly Asn His His Thr  Arg Glu Thr His Phe  Asn Asn Leu
    1010                1015                1020

Tyr Ser  Met Val His Tyr Cys  Glu Asn Ile Thr Glu  Cys Arg Arg
    1025                1030                1035

Ile Gln  Leu Leu Ala Tyr Phe  Gly Glu Asn Gly Phe  Asn Pro Asp
    1040                1045                1050

Phe Cys  Lys Lys His Pro Asp  Val Ser Cys Asp Asn  Cys Cys Lys
    1055                1060                1065

Thr Lys  Asp Tyr Lys Thr Arg  Asp Val Thr Asp Asp  Val Lys Ser
    1070                1075                1080

Ile Val  Arg Phe Val Gln Glu  His Ser Ser Ser Gln  Gly Met Arg
    1085                1090                1095

Asn Ile  Lys His Val Gly Pro  Ser Gly Arg Phe Thr  Met Asn Met
    1100                1105                1110

Leu Val  Asp Ile Phe Leu Glu  Ser Leu Ser Ser Asp  Pro Glu Val
    1115                1120                1125

Leu Leu  Gln Ile Asp Gly Val  Thr Glu Asp Lys Leu  Glu Lys Tyr
    1130                1135                1140
```

```
Gly Ala  Glu Val Ile Ser Val  Leu Gln Lys Tyr Ser  Glu Trp Thr
    1145                1150                1155

Ser Pro  Ala Glu Asp Ser Ser  Pro Gly Ile Ser Leu  Ser Ser Ser
    1160                1165                1170

Arg Gly  Pro Gly Arg Ser Ala  Ala Glu Glu Leu Asp  Glu Glu Ile
    1175                1180                1185

Pro Val  Ser Ser His Tyr Phe  Ala Ser Lys Thr Arg  Asn Glu Arg
    1190                1195                1200

Lys Arg  Lys Lys Met Pro Ala  Ser Gln Arg Ser Lys  Arg Arg Lys
    1205                1210                1215

Thr Ala  Ser Ser Gly Ser Lys  Ala Lys Gly Gly Ser  Ala Thr Cys
    1220                1225                1230

Arg Lys  Ile Ser Ser Lys Thr  Lys Ser Ser Ser Ile  Ile Gly Ser
    1235                1240                1245

Ser Ser  Ala Ser His Thr Ser  Gln Ala Thr Ser Gly  Ala Asn Ser
    1250                1255                1260

Lys Leu  Gly Ile Met Ala Pro  Pro Lys Pro Ile Asn  Arg Pro Phe
    1265                1270                1275

Leu Lys  Pro Ser Tyr Ala Phe  Ser
    1280                1285


<210> 9228
<211> 326
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1873; "

<220>
<221> source
<223> /note="Gene Symbol: BMI1; "

<220>
<221> source
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<223> /note="Gene Name:
BMI1 proto-oncogene, polycomb ring finger; "

<220>
<221> source
<223> /note="Uniprot ID: P35226; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365851"

<400> 9228

```
Met His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu
1               5                  10                  15

Met Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile
            20                  25                  30

Glu Cys Leu His Ser Phe Cys Lys Thr Cys Ile Val Arg Tyr Leu Glu
        35                  40                  45

Thr Ser Lys Tyr Cys Pro Ile Cys Asp Val Gln Val His Lys Thr Arg
    50                  55                  60

Pro Leu Leu Asn Ile Arg Ser Asp Lys Thr Leu Gln Asp Ile Val Tyr
65                  70                  75                  80

Lys Leu Val Pro Gly Leu Phe Lys Asn Glu Met Lys Arg Arg Arg Asp
                85                  90                  95

Phe Tyr Ala Ala His Pro Ser Ala Asp Ala Ala Asn Gly Ser Asn Glu
            100                 105                 110

Asp Arg Gly Glu Val Ala Asp Glu Asp Lys Arg Ile Ile Thr Asp Asp
        115                 120                 125

Glu Ile Ile Ser Leu Ser Ile Glu Phe Phe Asp Gln Asn Arg Leu Asp
    130                 135                 140

Arg Lys Val Asn Lys Asp Lys Glu Lys Ser Lys Glu Glu Val Asn Asp
145                 150                 155                 160

Lys Arg Tyr Leu Arg Cys Pro Ala Ala Met Thr Val Met His Leu Arg
                165                 170                 175

Lys Phe Leu Arg Ser Lys Met Asp Ile Pro Asn Thr Phe Gln Ile Asp
```

```
            180                 185                 190

Val Met Tyr Glu Glu Glu Pro Leu Lys Asp Tyr Tyr Thr Leu Met Asp
        195                 200                 205

Ile Ala Tyr Ile Tyr Thr Trp Arg Arg Asn Gly Pro Leu Pro Leu Lys
    210                 215                 220

Tyr Arg Val Arg Pro Thr Cys Lys Arg Met Lys Ile Ser His Gln Arg
225                 230                 235                 240

Asp Gly Leu Thr Asn Ala Gly Glu Leu Glu Ser Asp Ser Gly Ser Asp
                245                 250                 255

Lys Ala Asn Ser Pro Ala Gly Gly Ile Pro Ser Thr Ser Ser Cys Leu
            260                 265                 270

Pro Ser Pro Ser Thr Pro Val Gln Ser Pro His Pro Gln Phe Pro His
        275                 280                 285

Ile Ser Ser Thr Met Asn Gly Thr Ser Asn Ser Pro Ser Gly Asn His
    290                 295                 300

Gln Ser Ser Phe Ala Asn Arg Pro Arg Lys Ser Ser Val Asn Gly Ser
305                 310                 315                 320

Ser Ala Thr Ser Ser Gly
                325


<210> 9229
<211> 184
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1873; "

<220>
<221> source
<223> /note="Gene Symbol: BMI1; "

<220>
<221> source
<223> /note="Gene Name:
      BMI1 proto-oncogene, polycomb ring finger; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000390768"

<400> 9229
Tyr Phe Ile Asp Ala Thr Thr Ile Ile Glu Cys Leu His Ser Phe Cys
1   5   10   15

Lys Thr Cys Ile Val Arg Tyr Leu Glu Thr Ser Lys Tyr Cys Pro Ile
            20   25   30

Cys Asp Val Gln Val His Lys Thr Arg Pro Leu Leu Asn Ile Arg Leu
        35   40   45

Asp Arg Lys Val Asn Lys Asp Lys Glu Lys Ser Lys Glu Glu Val Asn
    50   55   60

Asp Lys Arg Tyr Leu Arg Cys Pro Ala Ala Met Thr Val Met His Leu
65   70   75   80

Arg Lys Phe Leu Arg Ser Lys Met Asp Ile Pro Asn Thr Phe Gln Ile
                85   90   95

Asp Val Met Tyr Glu Glu Glu Pro Leu Lys Asp Tyr Tyr Thr Leu Met
            100   105   110

Asp Ile Ala Tyr Ile Tyr Thr Trp Arg Arg Asn Gly Pro Leu Pro Leu
        115   120   125

Lys Tyr Arg Val Arg Pro Thr Cys Lys Arg Met Lys Ile Ser His Gln
    130   135   140

Arg Asp Gly Leu Thr Asn Ala Gly Glu Leu Glu Ser Asp Ser Gly Ser
145   150   155   160

Asp Lys Ala Asn Ser Pro Ala Gly Gly Ile Pro Ser Thr Ser Ser Cys
                165   170   175

Leu Pro Ser Pro Ser Thr Pro Val
            180

<210> 9230
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1873; "

<220>
<221> source
<223> /note="Gene Symbol: BMI1; "

<220>
<221> source
<223> /note="Gene Name:
BMI1 proto-oncogene, polycomb ring finger; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397912"

<400> 9230
Met His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu
1 5 10 15

Met Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile
20 25 30

Glu Cys Leu His Ser Phe Cys Lys Thr Cys Ile Val Arg Tyr Leu Glu
35 40 45

Thr Ser Lys Tyr Cys Pro Ile Cys Asp Val Gln Val His Lys Thr Arg
50 55 60

Pro Leu Leu Asn Ile Arg Ser Asp Lys Thr Leu Gln Asp Ile Val Tyr
65 70 75 80

Lys Leu Val Pro Gly Leu Phe Lys Asn Glu Met Lys Arg Arg Arg Asp
85 90 95

Phe Tyr Ala Ala His Pro Ser Ala Asp Ala Ala Asn Gly Ser Asn Glu
100 105 110

Asp Arg Gly Glu Val Ala Asp Glu Asp Lys Arg Ile Ile Thr Asp Asp
115 120 125

Glu Ile Ile Ser Leu Ser Ile Glu Phe Phe Asp Gln Asn Arg Leu Asp
130 135 140

Arg Lys Val Asn Lys Asp
145 150

<210> 9231
<211> 105
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1873; "

<220>
<221> source
<223> /note="Gene Symbol: BMI1; "

<220>
<221> source
<223> /note="Gene Name:
BMI1 proto-oncogene, polycomb ring finger; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399220"

<400> 9231
Met His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu
1 5 10 15

Met Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile
20 25 30

Glu Cys Leu His Ser Phe Cys Lys Thr Cys Ile Val Arg Tyr Leu Glu
35 40 45

Thr Ser Lys Tyr Cys Pro Ile Cys Asp Val Gln Val His Lys Thr Arg
50 55 60

Pro Leu Leu Asn Ile Arg Ser Asp Lys Thr Leu Gln Asp Ile Val Tyr
65 70 75 80

Lys Leu Val Pro Gly Leu Phe Lys Asn Glu Met Lys Arg Arg Arg Asp
85 90 95

Phe Tyr Ala Ala His Pro Ser Ala Asp
100 105

<210> 9232
<211> 260
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1874; "

<220>
<221> source
<223> /note="Gene Symbol: BAMBI; "

<220>
<221> source
<223> /note="Gene Name:
BMP and activin membrane-bound inhibitor; "

<220>
<221> source
<223> /note="Uniprot ID: Q13145; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364683"

<400> 9232
Met Asp Arg His Ser Ser Tyr Ile Phe Ile Trp Leu Gln Leu Glu Leu
1   5   10   15

Cys Ala Met Ala Val Leu Leu Thr Lys Gly Glu Ile Arg Cys Tyr Cys
            20   25   30

Asp Ala Ala His Cys Val Ala Thr Gly Tyr Met Cys Lys Ser Glu Leu
        35   40   45

Ser Ala Cys Phe Ser Arg Leu Leu Asp Pro Gln Asn Ser Asn Ser Pro
    50   55   60

Leu Thr His Gly Cys Leu Asp Ser Leu Ala Ser Thr Thr Asp Ile Cys
65   70   75   80

Gln Ala Lys Gln Ala Arg Asn His Ser Gly Thr Thr Ile Pro Thr Leu
                85   90   95

Glu Cys Cys His Glu Asp Met Cys Asn Tyr Arg Gly Leu His Asp Val
            100   105   110

Leu Ser Pro Pro Arg Gly Glu Ala Ser Gly Gln Gly Asn Arg Tyr Gln
        115   120   125

His Asp Gly Ser Arg Asn Leu Ile Thr Lys Val Gln Glu Leu Thr Ser
    130   135   140

```
Ser Lys Glu Leu Trp Phe Arg Ala Ala Val Ile Ala Val Pro Ile Ala
145                 150                 155                 160

Gly Gly Leu Ile Leu Val Leu Leu Ile Met Leu Ala Leu Arg Met Leu
                165                 170                 175

Arg Ser Glu Asn Lys Arg Leu Gln Asp Gln Arg Gln Gln Met Leu Ser
            180                 185                 190

Arg Leu His Tyr Ser Phe His Gly His His Ser Lys Lys Gly Gln Val
        195                 200                 205

Ala Lys Leu Asp Leu Glu Cys Met Val Pro Val Ser Gly His Glu Asn
    210                 215                 220

Cys Cys Leu Thr Cys Asp Lys Met Arg Gln Ala Asp Leu Ser Asn Asp
225                 230                 235                 240

Lys Ile Leu Ser Leu Val His Trp Gly Met Tyr Ser Gly His Gly Lys
                245                 250                 255

Leu Glu Phe Val
            260


<210> 9233
<211> 685
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1875; "

<220>
<221> source
<223> /note="Gene Symbol: BMPER; "

<220>
<221> source
<223> /note="Gene Name:
      BMP binding endothelial
      regulator; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N8U9; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000297161"

<400> 9233
Met Leu Trp Phe Ser Gly Val Gly Ala Leu Ala Glu Arg Tyr Cys Arg
1   5   10   15

Arg Ser Pro Gly Ile Thr Cys Cys Val Leu Leu Leu Leu Asn Cys Ser
            20   25   30

Gly Val Pro Met Ser Leu Ala Ser Ser Phe Leu Thr Gly Ser Val Ala
        35   40   45

Lys Cys Glu Asn Glu Gly Glu Val Leu Gln Ile Pro Phe Ile Thr Asp
    50   55   60

Asn Pro Cys Ile Met Cys Val Cys Leu Asn Lys Glu Val Thr Cys Lys
65   70   75   80

Arg Glu Lys Cys Pro Val Leu Ser Arg Asp Cys Ala Leu Ala Ile Lys
                85   90   95

Gln Arg Gly Ala Cys Cys Glu Gln Cys Lys Gly Cys Thr Tyr Glu Gly
            100   105   110

Asn Thr Tyr Asn Ser Ser Phe Lys Trp Gln Ser Pro Ala Glu Pro Cys
        115   120   125

Val Leu Arg Gln Cys Gln Glu Gly Val Val Thr Glu Ser Gly Val Arg
    130   135   140

Cys Val Val His Cys Lys Asn Pro Leu Glu His Leu Gly Met Cys Cys
145   150   155   160

Pro Thr Cys Pro Gly Cys Val Phe Glu Gly Val Gln Tyr Gln Glu Gly
                165   170   175

Glu Glu Phe Gln Pro Glu Gly Ser Lys Cys Thr Lys Cys Ser Cys Thr
            180   185   190

Gly Gly Arg Thr Gln Cys Val Arg Glu Val Cys Pro Ile Leu Ser Cys
        195   200   205

```
Pro Gln His Leu Ser His Ile Pro Pro Gly Gln Cys Cys Pro Lys Cys
    210                 215                 220

Leu Gly Gln Arg Lys Val Phe Asp Leu Pro Phe Gly Ser Cys Leu Phe
225                 230                 235                 240

Arg Ser Asp Val Tyr Asp Asn Gly Ser Ser Phe Leu Tyr Asp Asn Cys
                245                 250                 255

Thr Ala Cys Thr Cys Arg Asp Ser Thr Val Val Cys Lys Arg Lys Cys
            260                 265                 270

Ser His Pro Gly Gly Cys Asp Gln Gly Gln Glu Gly Cys Cys Glu Glu
        275                 280                 285

Cys Leu Leu Arg Val Pro Pro Glu Asp Ile Lys Val Cys Lys Phe Gly
    290                 295                 300

Asn Lys Ile Phe Gln Asp Gly Glu Met Trp Ser Ser Ile Asn Cys Thr
305                 310                 315                 320

Ile Cys Ala Cys Val Lys Gly Arg Thr Glu Cys Arg Asn Lys Gln Cys
                325                 330                 335

Ile Pro Ile Ser Ser Cys Pro Gln Gly Lys Ile Leu Asn Arg Lys Gly
            340                 345                 350

Cys Cys Pro Ile Cys Thr Glu Lys Pro Gly Val Cys Thr Val Phe Gly
        355                 360                 365

Asp Pro His Tyr Asn Thr Phe Asp Gly Arg Thr Phe Asn Phe Gln Gly
    370                 375                 380

Thr Cys Gln Tyr Val Leu Thr Lys Asp Cys Ser Ser Pro Ala Ser Pro
385                 390                 395                 400

Phe Gln Val Leu Val Lys Asn Asp Ala Arg Arg Thr Arg Ser Phe Ser
                405                 410                 415

Trp Thr Lys Ser Val Glu Leu Val Leu Gly Glu Ser Arg Val Ser Leu
            420                 425                 430

Gln Gln His Leu Thr Val Arg Trp Asn Gly Ser Arg Ile Ala Leu Pro
```

435 440 445

Cys Arg Ala Pro His Phe His Ile Asp Leu Asp Gly Tyr Leu Leu Lys
450 455 460

Val Thr Thr Lys Ala Gly Leu Glu Ile Ser Trp Asp Gly Asp Ser Phe
465 470 475 480

Val Glu Val Met Ala Ala Pro His Leu Lys Gly Lys Leu Cys Gly Leu
485 490 495

Cys Gly Asn Tyr Asn Gly His Lys Arg Asp Asp Leu Ile Gly Gly Asp
500 505 510

Gly Asn Phe Lys Phe Asp Val Asp Asp Phe Ala Glu Ser Trp Arg Val
515 520 525

Glu Ser Asn Glu Phe Cys Asn Arg Pro Gln Arg Lys Pro Val Pro Glu
530 535 540

Leu Cys Gln Gly Thr Val Lys Val Lys Leu Arg Ala His Arg Glu Cys
545 550 555 560

Gln Lys Leu Lys Ser Trp Glu Phe Gln Thr Cys His Ser Thr Val Asp
565 570 575

Tyr Ala Thr Phe Tyr Arg Ser Cys Val Thr Asp Met Cys Glu Cys Pro
580 585 590

Val His Lys Asn Cys Tyr Cys Glu Ser Phe Leu Ala Tyr Thr Arg Ala
595 600 605

Cys Gln Arg Glu Gly Ile Lys Val His Trp Glu Pro Gln Gln Asn Cys
610 615 620

Ala Ala Thr Gln Cys Lys His Gly Ala Val Tyr Asp Thr Cys Gly Pro
625 630 635 640

Gly Cys Ile Lys Thr Cys Asp Asn Trp Asn Glu Ile Gly Pro Cys Asn
645 650 655

Lys Pro Cys Val Ala Gly Cys His Cys Pro Ala Asn Leu Val Leu His
660 665 670

Lys Gly Arg Cys Ile Lys Pro Val Leu Cys Pro Gln Arg
675 680 685

<210> 9234
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1875; "

<220>
<221> source
<223> /note="Gene Symbol: BMPER; "

<220>
<221> source
<223> /note="Gene Name:
BMP binding endothelial
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398835"

<400> 9234
Met Leu Trp Phe Ser Gly Val Gly Ala Leu Ala Glu Arg Tyr Cys Arg
1 5 10 15

Arg Ser Pro Gly Ile Thr Cys Cys Val Leu Leu Leu Leu Asn Cys Ser
20 25 30

Gly Val Pro Met Ser Leu Ala Ser Ser Phe Leu Thr Gly Ser Val Ala
35 40 45

Lys Cys Glu Asn Glu Gly Glu Val Leu Gln Ile Pro Phe Ile Thr Asp
50 55 60

Asn Pro Cys Ile Met Cys Val Cys Leu His Glu Pro Thr Arg Trp Ser
65 70 75 80

Asn Leu Thr Gln Asn Pro Gly Phe Tyr Asp
85 90

<210> 9235
<211> 161
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1875; "

<220>
<221> source
<223> /note="Gene Symbol: BMPER; "

<220>
<221> source
<223> /note="Gene Name:
BMP binding endothelial
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399843"

<400> 9235

```
Met Leu Trp Phe Ser Gly Val Gly Ala Leu Ala Glu Arg Tyr Cys Arg
1               5                   10                  15

Arg Ser Pro Gly Ile Thr Cys Cys Val Leu Leu Leu Leu Asn Cys Ser
            20                  25                  30

Gly Val Pro Met Ser Leu Ala Ser Ser Phe Leu Thr Gly Ser Val Ala
        35                  40                  45

Lys Cys Glu Asn Glu Gly Glu Val Leu Gln Ile Pro Phe Ile Thr Asp
    50                  55                  60

Asn Pro Cys Ile Met Cys Val Cys Leu Val Ala Pro Met Lys Glu Ile
65                  70                  75                  80

Pro Ile Thr Ala Pro Ser Asn Gly Arg Ala Arg Leu Ser Leu Val Phe
                85                  90                  95

Tyr Ala Ser Ala Arg Arg Ala Leu Ser Gln Ser Leu Gly Cys Ala Val
            100                 105                 110

Leu Phe Ile Val Lys Thr Leu Trp Ser Ile Trp Glu Cys Ala Ala Pro
        115                 120                 125

His Val Gln Ala Val Cys Leu Arg Val Cys Ser Ile Lys Lys Gly Arg
    130                 135                 140
```

```
Asn Phe Ser Gln Lys Glu Ala Asn Val Pro Ser Val Pro Ala Leu Glu
145                 150                 155                 160


Ala



<210> 9236
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1875; "

<220>
<221> source
<223> /note="Gene Symbol: BMPER; "

<220>
<221> source
<223> /note="Gene Name:
      BMP binding endothelial
      regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409998"

<400> 9236
Met Leu Trp Phe Ser Gly Val Gly Ala Leu Ala Glu Arg Tyr Cys Arg
1               5                   10                  15


Arg Ser Pro Gly Ile Thr Cys Cys Val Leu Leu Leu Asn Cys Ser
            20                  25                  30


Gly Val Pro Met Ser Leu Ala Ser Ser Phe Leu Thr Gly Ser Val Ala
        35                  40                  45


Lys Cys Glu Asn Glu Gly Glu Val Leu Gln Ile Pro Phe Ile Thr Asp
    50                  55                  60


Asn Pro Cys Ile Met Cys Val Cys Leu Asn Lys Glu Val Thr Cys Lys
65                  70                  75                  80


Arg Glu Lys Cys Pro Val Leu Ser Arg Asp Cys Ala Leu Ala Ile Lys
                85                  90                  95


Gln Arg Gly Ala Cys Cys Glu Gln Cys Lys Val Leu Val Ser Arg Val
```

100 105 110

Leu Arg Asp Thr Val Leu Phe Thr Leu Lys Tyr Trp Arg Leu Pro Val
115 120 125

Phe Trp Leu His Leu
130

<210> 9237
<211> 1161
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1876; "

<220>
<221> source
<223> /note="Gene Symbol: BMP2K; "

<220>
<221> source
<223> /note="Gene Name:
BMP2 inducible kinase; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NSY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000334836"

<400> 9237
Met Lys Lys Phe Ser Arg Met Pro Lys Ser Glu Gly Gly Ser Gly Gly
1 5 10 15

Gly Ala Ala Gly Gly Gly Ala Gly Gly Ala Gly Ala Gly Ala Gly Cys
20 25 30

Gly Ser Gly Gly Ser Ser Val Gly Val Arg Val Phe Ala Val Gly Arg
35 40 45

His Gln Val Thr Leu Glu Glu Ser Leu Ala Glu Gly Gly Phe Ser Thr
50 55 60

Val Phe Leu Val Arg Thr His Gly Gly Ile Arg Cys Ala Leu Lys Arg
65 70 75 80

```
Met Tyr Val Asn Asn Met Pro Asp Leu Asn Val Cys Lys Arg Glu Ile
                85                  90                  95

Thr Ile Met Lys Glu Leu Ser Gly His Lys Asn Ile Val Gly Tyr Leu
            100                 105                 110

Asp Cys Ala Val Asn Ser Ile Ser Asp Asn Val Trp Glu Val Leu Ile
        115                 120                 125

Leu Met Glu Tyr Cys Arg Ala Gly Gln Val Val Asn Gln Met Asn Lys
    130                 135                 140

Lys Leu Gln Thr Gly Phe Thr Glu Pro Glu Val Leu Gln Ile Phe Cys
145                 150                 155                 160

Asp Thr Cys Glu Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile
                165                 170                 175

Ile His Arg Asp Leu Lys Val Glu Asn Ile Leu Leu Asn Asp Gly Gly
            180                 185                 190

Asn Tyr Val Leu Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Leu Asn
        195                 200                 205

Pro Gln Lys Asp Gly Val Asn Val Val Glu Glu Glu Ile Lys Lys Tyr
    210                 215                 220

Thr Thr Leu Ser Tyr Arg Ala Pro Glu Met Ile Asn Leu Tyr Gly Gly
225                 230                 235                 240

Lys Pro Ile Thr Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu
                245                 250                 255

Tyr Lys Leu Cys Phe Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala
            260                 265                 270

Ile Cys Asp Gly Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Arg
        275                 280                 285

Asn Ile His Cys Leu Ile Arg Phe Met Leu Glu Pro Asp Pro Glu His
    290                 295                 300
```

```
Arg Pro Asp Ile Phe Gln Val Ser Tyr Phe Ala Phe Lys Phe Ala Lys
305                 310                 315                 320

Lys Asp Cys Pro Val Ser Asn Ile Asn Asn Ser Ser Ile Pro Ser Ala
                325                 330                 335

Leu Pro Glu Pro Met Thr Ala Ser Glu Ala Ala Ala Arg Lys Ser Gln
            340                 345                 350

Ile Lys Ala Arg Ile Thr Asp Thr Ile Gly Pro Thr Glu Thr Ser Ile
        355                 360                 365

Ala Pro Arg Gln Arg Pro Lys Ala Asn Ser Ala Thr Thr Ala Thr Pro
    370                 375                 380

Ser Val Leu Thr Ile Gln Ser Ser Ala Thr Pro Val Lys Val Leu Ala
385                 390                 395                 400

Pro Gly Glu Phe Gly Asn His Arg Pro Lys Gly Ala Leu Arg Pro Gly
                405                 410                 415

Asn Gly Pro Glu Ile Leu Leu Gly Gln Gly Pro Pro Gln Gln Pro Pro
            420                 425                 430

Gln Gln His Arg Val Leu Gln Gln Leu Gln Gln Gly Asp Trp Arg Leu
        435                 440                 445

Gln Gln Leu His Leu Gln His Arg His Pro His Gln Gln Gln Gln Gln
    450                 455                 460

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
465                 470                 475                 480

Gln Gln Gln Gln Gln Gln His His His His His His His His Leu Leu
                485                 490                 495

Gln Asp Ala Tyr Met Gln Gln Tyr Gln His Ala Thr Gln Gln Gln Gln
            500                 505                 510

Met Leu Gln Gln Gln Phe Leu Met His Ser Val Tyr Gln Pro Gln Pro
        515                 520                 525

Ser Ala Ser Gln Tyr Pro Thr Met Met Pro Gln Tyr Gln Gln Ala Phe
```

530 535 540

Phe Gln Gln Gln Met Leu Ala Gln His Gln Pro Ser Gln Gln Gln Ala
545 550 555 560

Ser Pro Glu Tyr Leu Thr Ser Pro Gln Glu Phe Ser Pro Ala Leu Val
565 570 575

Ser Tyr Thr Ser Ser Leu Pro Ala Gln Val Gly Thr Ile Met Asp Ser
580 585 590

Ser Tyr Ser Ala Asn Arg Ser Val Ala Asp Lys Glu Ala Ile Ala Asn
595 600 605

Phe Thr Asn Gln Lys Asn Ile Ser Asn Pro Pro Asp Met Ser Gly Trp
610 615 620

Asn Pro Phe Gly Glu Asp Asn Phe Ser Lys Leu Thr Glu Glu Glu Leu
625 630 635 640

Leu Asp Arg Glu Phe Asp Leu Leu Arg Ser Asn Arg Leu Glu Glu Arg
645 650 655

Ala Ser Ser Asp Lys Asn Val Asp Ser Leu Ser Ala Pro His Asn His
660 665 670

Pro Pro Glu Asp Pro Phe Gly Ser Val Pro Phe Ile Ser His Ser Gly
675 680 685

Ser Pro Glu Lys Lys Ala Glu His Ser Ser Ile Asn Gln Glu Asn Gly
690 695 700

Thr Ala Asn Pro Ile Lys Asn Gly Lys Thr Ser Pro Ala Ser Lys Asp
705 710 715 720

Gln Arg Thr Gly Lys Lys Thr Ser Val Gln Gly Gln Val Gln Lys Gly
725 730 735

Asn Asp Glu Ser Glu Ser Asp Phe Glu Ser Asp Pro Pro Ser Pro Lys
740 745 750

Ser Ser Glu Glu Glu Glu Gln Asp Asp Glu Glu Val Leu Gln Gly Glu
755 760 765

```
Gln Gly Asp Phe Asn Asp Asp Asp Thr Glu Pro Glu Asn Leu Gly His
    770                 775                 780

Arg Pro Leu Leu Met Asp Ser Glu Asp Glu Glu Glu Glu Glu Lys His
785                 790                 795                 800

Ser Ser Asp Ser Asp Tyr Glu Gln Ala Lys Ala Lys Tyr Ser Asp Met
                805                 810                 815

Ser Ser Val Tyr Arg Asp Arg Ser Gly Ser Gly Pro Thr Gln Asp Leu
            820                 825                 830

Asn Thr Ile Leu Leu Thr Ser Ala Gln Leu Ser Ser Asp Val Ala Val
        835                 840                 845

Glu Thr Pro Lys Gln Glu Phe Asp Val Phe Gly Ala Val Pro Phe Phe
    850                 855                 860

Ala Val Arg Ala Gln Gln Pro Gln Gln Glu Lys Asn Glu Lys Asn Leu
865                 870                 875                 880

Pro Gln His Arg Phe Pro Ala Ala Gly Leu Glu Gln Glu Glu Phe Asp
                885                 890                 895

Val Phe Thr Lys Ala Pro Phe Ser Lys Lys Val Asn Val Gln Glu Cys
            900                 905                 910

His Ala Val Gly Pro Glu Ala His Thr Ile Pro Gly Tyr Pro Lys Ser
        915                 920                 925

Val Asp Val Phe Gly Ser Thr Pro Phe Gln Pro Phe Leu Thr Ser Thr
    930                 935                 940

Ser Lys Ser Glu Ser Asn Glu Asp Leu Phe Gly Leu Val Pro Phe Asp
945                 950                 955                 960

Glu Ile Thr Gly Ser Gln Gln Gln Lys Val Lys Gln Arg Ser Leu Gln
                965                 970                 975

Lys Leu Ser Ser Arg Gln Arg Arg Thr Lys Gln Asp Met Ser Lys Ser
            980                 985                 990
```

```
Asn Gly Lys Arg His His Gly Thr  Pro Thr Ser Thr Lys  Lys Thr
Leu
        995                 1000                1005

Lys Pro  Thr Tyr Arg Thr Pro  Glu Arg Ala Arg Arg  His Lys Lys
    1010                1015                1020

Val Gly  Arg Arg Asp Ser Gln  Ser Ser Asn Glu Phe  Leu Thr Ile
    1025                1030                1035

Ser Asp  Ser Lys Glu Asn Ile  Ser Val Ala Leu Thr  Asp Gly Lys
    1040                1045                1050

Asp Arg  Gly Asn Val Leu Gln  Pro Glu Glu Ser Leu  Leu Asp Pro
    1055                1060                1065

Phe Gly  Ala Lys Pro Phe His  Ser Pro Asp Leu Ser  Trp His Pro
    1070                1075                1080

Pro His  Gln Gly Leu Ser Asp  Ile Arg Ala Asp His  Asn Thr Val
    1085                1090                1095

Leu Pro  Gly Arg Pro Arg Gln  Asn Ser Leu His Gly  Ser Phe His
    1100                1105                1110

Ser Ala  Asp Val Leu Lys Met  Asp Asp Phe Gly Ala  Val Pro Phe
    1115                1120                1125

Thr Glu  Leu Val Val Gln Ser  Ile Thr Pro His Gln  Ser Gln Gln
    1130                1135                1140

Ser Gln  Pro Val Glu Leu Asp  Pro Phe Gly Ala Ala  Pro Phe Pro
    1145                1150                1155

Ser Lys  Gln
    1160
```

<210> 9238
<211> 355
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1876; "

<220>
<221> source
<223> /note="Gene Symbol: BMP2K; "

<220>
<221> source
<223> /note="Gene Name:
BMP2 inducible kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373662"

<400> 9238

```
Met Lys Lys Phe Ser Arg Met Pro Lys Ser Glu Gly Gly Ser Gly Gly
1               5                   10                  15

Gly Ala Ala Gly Gly Gly Ala Gly Gly Ala Gly Ala Gly Ala Gly Cys
            20                  25                  30

Gly Ser Gly Gly Ser Ser Val Gly Val Arg Val Phe Ala Val Gly Arg
        35                  40                  45

His Gln Val Thr Leu Glu Glu Ser Leu Ala Glu Gly Gly Phe Ser Thr
    50                  55                  60

Val Phe Leu Val Arg Thr His Gly Gly Ile Arg Cys Ala Leu Lys Arg
65                  70                  75                  80

Met Tyr Val Asn Asn Met Pro Asp Leu Asn Val Cys Lys Arg Glu Ile
                85                  90                  95

Thr Ile Met Lys Glu Leu Ser Gly His Lys Asn Ile Val Gly Tyr Leu
            100                 105                 110

Asp Cys Ala Val Asn Ser Ile Ser Asp Asn Val Trp Glu Val Leu Ile
        115                 120                 125

Leu Met Glu Tyr Cys Arg Ala Gly Gln Val Val Asn Gln Met Asn Lys
    130                 135                 140

Lys Leu Gln Thr Gly Phe Thr Glu Pro Glu Val Leu Gln Ile Phe Cys
145                 150                 155                 160

Asp Thr Cys Glu Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile
```

```
                165                 170                 175

Ile His Arg Asp Leu Lys Val Glu Asn Ile Leu Leu Asn Asp Gly Gly
            180                 185                 190

Asn Tyr Val Leu Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Leu Asn
        195                 200                 205

Pro Gln Lys Asp Gly Val Asn Val Val Glu Glu Glu Ile Lys Lys Tyr
    210                 215                 220

Thr Thr Leu Ser Tyr Arg Ala Pro Glu Met Ile Asn Leu Tyr Gly Gly
225                 230                 235                 240

Lys Pro Ile Thr Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu
                245                 250                 255

Tyr Lys Leu Cys Phe Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala
            260                 265                 270

Ile Cys Asp Gly Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Arg
        275                 280                 285

Asn Ile His Cys Leu Ile Arg Phe Met Leu Glu Pro Asp Pro Glu His
    290                 295                 300

Arg Pro Asp Ile Phe Gln Val Ser Tyr Phe Ala Phe Lys Phe Ala Lys
305                 310                 315                 320

Lys Asp Cys Pro Val Ser Asn Ile Asn Lys Cys Cys Lys Gln Leu Leu
                325                 330                 335

Arg His Gly Ala Leu Leu Thr Glu Ile Leu Leu Phe Leu Gln Leu Phe
            340                 345                 350

Leu Asn Arg
        355


<210> 9239
<211> 662
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1876; "

<220>
<221> source
<223> /note="Gene Symbol: BMP2K; "

<220>
<221> source
<223> /note="Gene Name:
BMP2 inducible kinase; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NSY1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421768"

<400> 9239

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Met Lys Lys Phe Ser Arg Met Pro Lys Ser Glu Gly Gly Ser Gly Gly
1               5                  10                  15

Gly Ala Ala Gly Gly Gly Ala Gly Gly Ala Gly Ala Gly Ala Gly Cys
            20                  25                  30

Gly Ser Gly Gly Ser Ser Val Gly Val Arg Val Phe Ala Val Gly Arg
        35                  40                  45

His Gln Val Thr Leu Glu Glu Ser Leu Ala Glu Gly Gly Phe Ser Thr
    50                  55                  60

Val Phe Leu Val Arg Thr His Gly Gly Ile Arg Cys Ala Leu Lys Arg
65                  70                  75                  80

Met Tyr Val Asn Asn Met Pro Asp Leu Asn Val Cys Lys Arg Glu Ile
                85                  90                  95

Thr Ile Met Lys Glu Leu Ser Gly His Lys Asn Ile Val Gly Tyr Leu
            100                 105                 110

Asp Cys Ala Val Asn Ser Ile Ser Asp Asn Val Trp Glu Val Leu Ile
        115                 120                 125

Leu Met Glu Tyr Cys Arg Ala Gly Gln Val Val Asn Gln Met Asn Lys
    130                 135                 140
```

```
Lys Leu Gln Thr Gly Phe Thr Glu Pro Glu Val Leu Gln Ile Phe Cys
145                 150                 155                 160

Asp Thr Cys Glu Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile
                165                 170                 175

Ile His Arg Asp Leu Lys Val Glu Asn Ile Leu Leu Asn Asp Gly Gly
            180                 185                 190

Asn Tyr Val Leu Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Leu Asn
        195                 200                 205

Pro Gln Lys Asp Gly Val Asn Val Val Glu Glu Glu Ile Lys Lys Tyr
    210                 215                 220

Thr Thr Leu Ser Tyr Arg Ala Pro Glu Met Ile Asn Leu Tyr Gly Gly
225                 230                 235                 240

Lys Pro Ile Thr Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu
                245                 250                 255

Tyr Lys Leu Cys Phe Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala
            260                 265                 270

Ile Cys Asp Gly Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Arg
        275                 280                 285

Asn Ile His Cys Leu Ile Arg Phe Met Leu Glu Pro Asp Pro Glu His
    290                 295                 300

Arg Pro Asp Ile Phe Gln Val Ser Tyr Phe Ala Phe Lys Phe Ala Lys
305                 310                 315                 320

Lys Asp Cys Pro Val Ser Asn Ile Asn Asn Ser Ser Ile Pro Ser Ala
                325                 330                 335

Leu Pro Glu Pro Met Thr Ala Ser Glu Ala Ala Ala Arg Lys Ser Gln
            340                 345                 350

Ile Lys Ala Arg Ile Thr Asp Thr Ile Gly Pro Thr Glu Thr Ser Ile
        355                 360                 365

Ala Pro Arg Gln Arg Pro Lys Ala Asn Ser Ala Thr Thr Ala Thr Pro
```

```
    370                 375                 380

Ser Val Leu Thr Ile Gln Ser Ser Ala Thr Pro Val Lys Val Leu Ala
385                 390                 395                 400

Pro Gly Glu Phe Gly Asn His Arg Pro Lys Gly Ala Leu Arg Pro Gly
                405                 410                 415

Asn Gly Pro Glu Ile Leu Leu Gly Gln Gly Pro Pro Gln Gln Pro Pro
            420                 425                 430

Gln Gln His Arg Val Leu Gln Gln Leu Gln Gln Gly Asp Trp Arg Leu
        435                 440                 445

Gln Gln Leu His Leu Gln His Arg His Pro His Gln Gln Gln Gln Gln
    450                 455                 460

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
465                 470                 475                 480

Gln Gln Gln Gln Gln Gln His His His His His His His His Leu Leu
                485                 490                 495

Gln Asp Ala Tyr Met Gln Gln Tyr Gln His Ala Thr Gln Gln Gln Gln
            500                 505                 510

Met Leu Gln Gln Gln Phe Leu Met His Ser Val Tyr Gln Pro Gln Pro
        515                 520                 525

Ser Ala Ser Gln Tyr Pro Thr Met Met Pro Gln Tyr Gln Gln Ala Phe
    530                 535                 540

Phe Gln Gln Gln Met Leu Ala Gln His Gln Pro Ser Gln Gln Gln Ala
545                 550                 555                 560

Ser Pro Glu Tyr Leu Thr Ser Pro Gln Glu Phe Ser Pro Ala Leu Val
                565                 570                 575

Ser Tyr Thr Ser Ser Leu Pro Ala Gln Val Gly Thr Ile Met Asp Ser
            580                 585                 590

Ser Tyr Ser Ala Asn Arg Ser Val Ala Asp Lys Glu Ala Ile Ala Asn
        595                 600                 605
```

```
Phe Thr Asn Gln Lys Asn Ile Ser Asn Pro Pro Asp Met Ser Gly Trp
    610                 615                 620

Asn Pro Phe Gly Glu Asp Asn Phe Ser Lys Leu Thr Glu Glu Glu Leu
625                 630                 635                 640

Leu Asp Arg Glu Phe Asp Leu Leu Arg Ser Ser Lys Gly His Leu Lys
                645                 650                 655

Ala Tyr Phe Ala Ser Gln
            660


<210> 9240
<211> 854
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1876; "

<220>
<221> source
<223> /note="Gene Symbol: BMP2K; "

<220>
<221> source
<223> /note="Gene Name:
      BMP2 inducible kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424668"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9240
Xaa Phe Gln Val Ser Tyr Phe Ala Phe Lys Phe Ala Lys Lys Asp Cys
1               5                   10                  15

Pro Val Ser Asn Ile Asn Asn Ser Ser Ile Pro Ser Ala Leu Pro Glu
            20                  25                  30

Pro Met Thr Ala Ser Glu Ala Ala Ala Arg Lys Ser Gln Ile Lys Ala
        35                  40                  45
```

```
Arg Ile Thr Asp Thr Ile Gly Pro Thr Glu Thr Ser Ile Ala Pro Arg
    50                  55                  60

Gln Arg Pro Lys Ala Asn Ser Ala Thr Thr Ala Thr Pro Ser Val Leu
65                  70                  75                  80

Thr Ile Gln Ser Ser Ala Thr Pro Val Lys Val Leu Ala Pro Gly Glu
                85                  90                  95

Phe Gly Asn His Arg Pro Lys Gly Ala Leu Arg Pro Gly Asn Gly Pro
            100                 105                 110

Glu Ile Leu Leu Gly Gln Gly Pro Pro Gln Gln Pro Pro Gln Gln His
        115                 120                 125

Arg Val Leu Gln Gln Leu Gln Gln Gly Asp Trp Arg Leu Gln Gln Leu
    130                 135                 140

His Leu Gln His Arg His Pro His Gln Gln Gln Gln Gln Gln Gln Gln
145                 150                 155                 160

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
                165                 170                 175

Gln Gln Gln His His His His His His His His Leu Leu Gln Asp Ala
            180                 185                 190

Tyr Met Gln Gln Tyr Gln His Ala Thr Gln Gln Gln Gln Met Leu Gln
        195                 200                 205

Gln Gln Phe Leu Met His Ser Val Tyr Gln Pro Gln Pro Ser Ala Ser
    210                 215                 220

Gln Tyr Pro Thr Met Met Pro Gln Tyr Gln Gln Ala Phe Phe Gln Gln
225                 230                 235                 240

Gln Met Leu Ala Gln His Gln Pro Ser Gln Gln Gln Ala Ser Pro Glu
                245                 250                 255

Tyr Leu Thr Ser Pro Gln Glu Phe Ser Pro Ala Leu Val Ser Tyr Thr
            260                 265                 270
```

```
Ser Ser Leu Pro Ala Gln Val Gly Thr Ile Met Asp Ser Ser Tyr Ser
        275                 280                 285

Ala Asn Arg Ser Val Ala Asp Lys Glu Ala Ile Ala Asn Phe Thr Asn
    290                 295                 300

Gln Lys Asn Ile Ser Asn Pro Pro Asp Met Ser Gly Trp Asn Pro Phe
305                 310                 315                 320

Gly Glu Asp Asn Phe Ser Lys Leu Thr Glu Glu Glu Leu Leu Asp Arg
                325                 330                 335

Glu Phe Asp Leu Leu Arg Ser Asn Arg Leu Glu Glu Arg Ala Ser Ser
            340                 345                 350

Asp Lys Asn Val Asp Ser Leu Ser Ala Pro His Asn His Pro Pro Glu
        355                 360                 365

Asp Pro Phe Gly Ser Val Pro Phe Ile Ser His Ser Gly Ser Pro Glu
    370                 375                 380

Lys Lys Ala Glu His Ser Ser Ile Asn Gln Glu Asn Gly Thr Ala Asn
385                 390                 395                 400

Pro Ile Lys Asn Gly Lys Thr Ser Pro Ala Ser Lys Asp Gln Arg Thr
                405                 410                 415

Gly Lys Lys Thr Ser Val Gln Gly Gln Val Gln Lys Gly Asn Asp Glu
            420                 425                 430

Ser Glu Ser Asp Phe Glu Ser Asp Pro Pro Ser Pro Lys Ser Ser Glu
        435                 440                 445

Glu Glu Glu Gln Asp Asp Glu Glu Val Leu Gln Gly Glu Gln Gly Asp
    450                 455                 460

Phe Asn Asp Asp Asp Thr Glu Pro Glu Asn Leu Gly His Arg Pro Leu
465                 470                 475                 480

Leu Met Asp Ser Glu Asp Glu Glu Glu Glu Glu Lys His Ser Ser Asp
                485                 490                 495
```

```
Ser Asp Tyr Glu Gln Ala Lys Ala Lys Tyr Ser Asp Met Ser Ser Val
            500                 505                 510

Tyr Arg Asp Arg Ser Gly Ser Gly Pro Thr Gln Asp Leu Asn Thr Ile
        515                 520                 525

Leu Leu Thr Ser Ala Gln Leu Ser Ser Asp Val Ala Val Glu Thr Pro
    530                 535                 540

Lys Gln Glu Phe Asp Val Phe Gly Ala Val Pro Phe Phe Ala Val Arg
545                 550                 555                 560

Ala Gln Gln Pro Gln Gln Glu Lys Asn Glu Lys Asn Leu Pro Gln His
                565                 570                 575

Arg Phe Pro Ala Ala Gly Leu Glu Gln Glu Glu Phe Asp Val Phe Thr
            580                 585                 590

Lys Ala Pro Phe Ser Lys Lys Val Asn Val Gln Glu Cys His Ala Val
        595                 600                 605

Gly Pro Glu Ala His Thr Ile Pro Gly Tyr Pro Lys Ser Val Asp Val
    610                 615                 620

Phe Gly Ser Thr Pro Phe Gln Pro Phe Leu Thr Ser Thr Ser Lys Ser
625                 630                 635                 640

Glu Ser Asn Glu Asp Leu Phe Gly Leu Val Pro Phe Asp Glu Ile Thr
                645                 650                 655

Gly Ser Gln Gln Gln Lys Val Lys Gln Arg Ser Leu Gln Lys Leu Ser
            660                 665                 670

Ser Arg Gln Arg Arg Thr Lys Gln Asp Met Ser Lys Ser Asn Gly Lys
        675                 680                 685

Arg His His Gly Thr Pro Thr Ser Thr Lys Lys Thr Leu Lys Pro Thr
    690                 695                 700

Tyr Arg Thr Pro Glu Arg Ala Arg Arg His Lys Lys Val Gly Arg Arg
705                 710                 715                 720

Asp Ser Gln Ser Ser Asn Glu Phe Leu Thr Ile Ser Asp Ser Lys Glu
```

```
                725                 730                 735

Asn Ile Ser Val Ala Leu Thr Asp Gly Lys Asp Arg Gly Asn Val Leu
            740                 745                 750

Gln Pro Glu Glu Ser Leu Leu Asp Pro Phe Gly Ala Lys Pro Phe His
        755                 760                 765

Ser Pro Asp Leu Ser Trp His Pro Pro His Gln Gly Leu Ser Asp Ile
    770                 775                 780

Arg Ala Asp His Asn Thr Val Leu Pro Gly Arg Pro Arg Gln Asn Ser
785                 790                 795                 800

Leu His Gly Ser Phe His Ser Ala Asp Val Leu Lys Met Asp Asp Phe
                805                 810                 815

Gly Ala Val Pro Phe Thr Glu Leu Val Val Gln Ser Ile Thr Pro His
            820                 825                 830

Gln Ser Gln Gln Ser Gln Pro Val Glu Leu Asp Pro Phe Gly Ala Ala
        835                 840                 845

Pro Phe Pro Ser Lys Gln
    850


<210> 9241
<211> 355
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1876; "

<220>
<221> source
<223> /note="Gene Symbol: BMP2K; "

<220>
<221> source
<223> /note="Gene Name:
      BMP2 inducible kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487317"
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<400> 9241
Met Lys Lys Phe Ser Arg Met Pro Lys Ser Glu Gly Gly Ser Gly Gly
1 5 10 15

Gly Ala Ala Gly Gly Gly Ala Gly Gly Ala Gly Ala Gly Ala Gly Cys
20 25 30

Gly Ser Gly Gly Ser Ser Val Gly Val Arg Val Phe Ala Val Gly Arg
35 40 45

His Gln Val Thr Leu Glu Glu Ser Leu Ala Glu Gly Gly Phe Ser Thr
50 55 60

Val Phe Leu Val Arg Thr His Gly Gly Ile Arg Cys Ala Leu Lys Arg
65 70 75 80

Met Tyr Val Asn Asn Met Pro Asp Leu Asn Val Cys Lys Arg Glu Ile
85 90 95

Thr Ile Met Lys Glu Leu Ser Gly His Lys Asn Ile Val Gly Tyr Leu
100 105 110

Asp Cys Ala Val Asn Ser Ile Ser Asp Asn Val Trp Glu Val Leu Ile
115 120 125

Leu Met Glu Tyr Cys Arg Ala Gly Gln Val Val Asn Gln Met Asn Lys
130 135 140

Lys Leu Gln Thr Gly Phe Thr Glu Pro Glu Val Leu Gln Ile Phe Cys
145 150 155 160

Asp Thr Cys Glu Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile
165 170 175

Ile His Arg Asp Leu Lys Val Glu Asn Ile Leu Leu Asn Asp Gly Gly
180 185 190

Asn Tyr Val Leu Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Leu Asn
195 200 205

Pro Gln Lys Asp Gly Val Asn Val Val Glu Glu Glu Ile Lys Lys Tyr
210 215 220

```
Thr Thr Leu Ser Tyr Arg Ala Pro Glu Met Ile Asn Leu Tyr Gly Gly
225                 230                 235                 240

Lys Pro Ile Thr Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu
                245                 250                 255

Tyr Lys Leu Cys Phe Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala
            260                 265                 270

Ile Cys Asp Gly Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Arg
        275                 280                 285

Asn Ile His Cys Leu Ile Arg Phe Met Leu Glu Pro Asp Pro Glu His
    290                 295                 300

Arg Pro Asp Ile Phe Gln Val Ser Tyr Phe Ala Phe Lys Phe Ala Lys
305                 310                 315                 320

Lys Asp Cys Pro Val Ser Asn Ile Asn Lys Cys Cys Lys Gln Leu Leu
                325                 330                 335

Arg His Gly Ala Leu Leu Thr Glu Ile Leu Leu Phe Leu Gln Leu Phe
            340                 345                 350

Leu Asn Arg
        355


<210> 9242
<211> 1282
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1877; "

<220>
<221> source
<223> /note="Gene Symbol: BMS1; "

<220>
<221> source
<223> /note="Gene Name:
      BMS1 ribosome biogenesis
      factor; "

<220>
<221> source
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<223> /note="Uniprot ID: Q14692; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363642"

<400> 9242
Met Glu Ala Lys Asp Gln Lys Lys His Arg Lys Lys Asn Ser Gly Pro
1   5   10   15

Lys Ala Ala Lys Lys Lys Lys Arg Leu Leu Gln Asp Leu Gln Leu Gly
            20   25   30

Asp Glu Glu Asp Ala Arg Lys Arg Asn Pro Lys Ala Phe Ala Val Gln
        35   40   45

Ser Ala Val Arg Met Ala Arg Ser Phe His Arg Thr Gln Asp Leu Lys
    50   55   60

Thr Lys Lys His His Ile Pro Val Val Asp Arg Thr Pro Leu Glu Pro
65   70   75   80

Pro Pro Ile Val Val Val Val Met Gly Pro Pro Lys Val Gly Lys Ser
                85   90   95

Thr Leu Ile Gln Cys Leu Ile Arg Asn Phe Thr Arg Gln Lys Leu Thr
            100   105   110

Glu Ile Arg Gly Pro Val Thr Ile Val Ser Gly Lys Lys Arg Arg Leu
        115   120   125

Thr Ile Ile Glu Cys Gly Cys Asp Ile Asn Met Met Ile Asp Leu Ala
    130   135   140

Lys Val Ala Asp Leu Val Leu Met Leu Ile Asp Ala Ser Phe Gly Phe
145   150   155   160

Glu Met Glu Thr Phe Glu Phe Leu Asn Ile Cys Gln Val His Gly Phe
                165   170   175

Pro Lys Ile Met Gly Val Leu Thr His Leu Asp Ser Phe Lys His Asn
            180   185   190

Lys Gln Leu Lys Lys Thr Lys Lys Arg Leu Lys His Arg Phe Trp Thr
        195   200   205

Glu Val Tyr Pro Gly Ala Lys Leu Phe Tyr Leu Ser Gly Met Val His
210 215 220

Gly Glu Tyr Gln Asn Gln Glu Ile His Asn Leu Gly Arg Phe Ile Thr
225 230 235 240

Val Met Lys Phe Arg Pro Leu Thr Trp Gln Thr Ser His Pro Tyr Ile
245 250 255

Leu Ala Asp Arg Met Glu Asp Leu Thr Asn Pro Glu Asp Ile Arg Thr
260 265 270

Asn Ile Lys Cys Asp Arg Lys Val Ser Leu Tyr Gly Tyr Leu Arg Gly
275 280 285

Ala His Leu Lys Asn Lys Ser Gln Ile His Met Pro Gly Val Gly Asp
290 295 300

Phe Ala Val Ser Asp Ile Ser Phe Leu Pro Asp Pro Cys Ala Leu Pro
305 310 315 320

Glu Gln Gln Lys Lys Arg Cys Leu Asn Glu Lys Glu Lys Leu Val Tyr
325 330 335

Ala Pro Leu Ser Gly Val Gly Gly Val Leu Tyr Asp Lys Asp Ala Val
340 345 350

Tyr Val Asp Leu Gly Gly Ser His Val Phe Gln Asp Glu Val Gly Pro
355 360 365

Thr His Glu Leu Val Gln Ser Leu Ile Ser Thr His Ser Thr Ile Asp
370 375 380

Ala Lys Met Ala Ser Ser Arg Val Thr Leu Phe Ser Asp Ser Lys Pro
385 390 395 400

Leu Gly Ser Glu Asp Ile Asp Asn Gln Gly Leu Met Met Pro Lys Glu
405 410 415

Glu Lys Gln Met Asp Leu Asn Thr Gly Arg Met Arg Arg Lys Ala Ile
420 425 430

```
Phe Gly Asp Glu Asp Glu Ser Gly Asp Ser Asp Asp Glu Glu Asp Asp
        435                 440                 445

Glu Met Ser Glu Asp Asp Gly Leu Glu Asn Gly Ser Ser Asp Glu Glu
    450                 455                 460

Ala Glu Glu Glu Glu Asn Ala Glu Met Thr Asp Gln Tyr Met Ala Val
465                 470                 475                 480

Lys Gly Ile Lys Arg Arg Lys Leu Glu Leu Glu Glu Asp Ser Glu Met
                485                 490                 495

Asp Leu Pro Ala Phe Ala Asp Ser Asp Asp Asp Leu Glu Arg Ser Ser
            500                 505                 510

Ala Glu Glu Gly Glu Ala Glu Glu Ala Asp Glu Ser Ser Glu Glu Glu
        515                 520                 525

Asp Cys Thr Ala Gly Glu Lys Gly Ile Ser Gly Ser Lys Ala Ala Gly
    530                 535                 540

Glu Gly Ser Lys Ala Gly Leu Ser Pro Ala Asn Cys Gln Ser Asp Arg
545                 550                 555                 560

Val Asn Leu Glu Lys Ser Leu Leu Met Lys Lys Ala Ala Leu Pro Thr
                565                 570                 575

Phe Asp Ser Gly His Cys Thr Ala Glu Glu Val Phe Ala Ser Glu Asp
            580                 585                 590

Glu Ser Glu Glu Ser Ser Ser Leu Ser Ala Glu Glu Glu Asp Ser Glu
        595                 600                 605

Asn Glu Glu Ala Ile Arg Lys Lys Leu Ser Lys Pro Ser Gln Val Ser
    610                 615                 620

Ser Gly Gln Lys Leu Gly Pro Gln Asn Phe Ile Asp Glu Thr Ser Asp
625                 630                 635                 640

Ile Glu Asn Leu Leu Lys Glu Glu Glu Asp Tyr Lys Glu Glu Asn Asn
                645                 650                 655
```

```
Asp Ser Lys Glu Thr Ser Gly Ala Leu Lys Trp Lys Glu Asp Leu Ser
            660                 665                 670

Arg Lys Ala Ala Glu Ala Phe Leu Arg Gln Gln Gln Ala Ala Pro Asn
        675                 680                 685

Leu Arg Lys Leu Ile Tyr Gly Thr Val Thr Glu Asp Asn Glu Glu Glu
    690                 695                 700

Asp Asp Asp Thr Leu Glu Glu Leu Gly Gly Leu Phe Arg Val Asn Gln
705                 710                 715                 720

Pro Asp Arg Glu Cys Lys His Lys Ala Asp Ser Leu Asp Cys Ser Arg
                725                 730                 735

Phe Leu Val Glu Ala Pro His Asp Trp Asp Leu Glu Glu Val Met Asn
            740                 745                 750

Ser Ile Arg Asp Cys Phe Val Thr Gly Lys Trp Glu Asp Asp Lys Asp
        755                 760                 765

Ala Ala Lys Val Leu Ala Glu Asp Glu Glu Leu Tyr Gly Asp Phe Glu
    770                 775                 780

Asp Leu Glu Thr Gly Asp Val His Lys Gly Lys Ser Gly Pro Asn Thr
785                 790                 795                 800

Gln Asn Glu Asp Ile Glu Lys Glu Val Lys Glu Glu Ile Asp Pro Asp
                805                 810                 815

Glu Glu Glu Ser Ala Lys Lys Lys His Leu Asp Lys Lys Arg Lys Leu
            820                 825                 830

Lys Glu Met Phe Asp Ala Glu Tyr Asp Glu Gly Glu Ser Thr Tyr Phe
        835                 840                 845

Asp Asp Leu Lys Gly Glu Met Gln Lys Gln Ala Gln Leu Asn Arg Ala
    850                 855                 860

Glu Phe Glu Asp Gln Asp Asp Glu Ala Arg Val Gln Tyr Glu Gly Phe
865                 870                 875                 880

Arg Pro Gly Met Tyr Val Arg Ile Glu Ile Glu Asn Val Pro Cys Glu
```

```
                885                 890                 895

Phe Val Gln Asn Phe Asp Pro His Tyr Pro Ile Ile Leu Gly Gly Leu
            900                 905                 910

Gly Asn Ser Glu Gly Asn Val Gly Tyr Val Gln Met Arg Leu Lys Lys
        915                 920                 925

His Arg Trp Tyr Lys Lys Ile Leu Lys Ser Arg Asp Pro Ile Ile Phe
    930                 935                 940

Ser Val Gly Trp Arg Arg Phe Gln Thr Ile Pro Leu Tyr Tyr Ile Glu
945                 950                 955                 960

Asp His Asn Gly Arg Gln Arg Leu Leu Lys Tyr Thr Pro Gln His Met
                965                 970                 975

His Cys Gly Ala Ala Phe Trp Gly Pro Ile Thr Pro Gln Gly Thr Gly
            980                 985                 990

Phe Leu Ala Ile Gln Ser Val Ser  Gly Ile Met Pro Asp  Phe Arg
Ile
        995                 1000                1005

Ala Ala  Thr Gly Val Val Leu  Asp Leu Asp Lys Ser  Ile Lys Ile
    1010                1015                1020

Val Lys  Lys Leu Lys Leu Thr  Gly Phe Pro Tyr Lys  Ile Phe Lys
    1025                1030                1035

Asn Thr  Ser Phe Ile Lys Gly  Met Phe Asn Ser Ala  Leu Glu Val
    1040                1045                1050

Ala Lys  Phe Glu Gly Ala Val  Ile Arg Thr Val Ser  Gly Ile Arg
    1055                1060                1065

Gly Gln  Ile Lys Lys Ala Leu  Arg Ala Pro Glu Gly  Ala Phe Arg
    1070                1075                1080

Ala Ser  Phe Glu Asp Lys Leu  Leu Met Ser Asp Ile  Val Phe Met
    1085                1090                1095

Arg Thr  Trp Tyr Pro Val Ser  Ile Pro Ala Phe Tyr  Asn Pro Val
```

1100 1105 1110

Thr Ser Leu Leu Lys Pro Val Gly Glu Lys Asp Thr Trp Ser Gly
1115 1120 1125

Met Arg Thr Thr Gly Gln Leu Arg Leu Ala His Gly Val Arg Leu
1130 1135 1140

Lys Ala Asn Lys Asp Ser Leu Tyr Lys Pro Ile Leu Arg Gln Lys
1145 1150 1155

Lys His Phe Asn Ser Leu His Ile Pro Lys Ala Leu Gln Lys Ala
1160 1165 1170

Leu Pro Phe Lys Asn Lys Pro Lys Thr Gln Ala Lys Ala Gly Lys
1175 1180 1185

Val Pro Lys Asp Arg Arg Arg Pro Ala Val Ile Arg Glu Pro His
1190 1195 1200

Glu Arg Lys Ile Leu Ala Leu Leu Asp Ala Leu Ser Thr Val His
1205 1210 1215

Ser Gln Lys Met Lys Lys Ala Lys Glu Gln Arg His Leu His Asn
1220 1225 1230

Lys Glu His Phe Arg Ala Lys Gln Lys Glu Glu Glu Glu Lys Leu
1235 1240 1245

Lys Arg Gln Lys Asp Leu Arg Lys Lys Leu Phe Arg Ile Gln Gly
1250 1255 1260

Gln Lys Glu Arg Arg Asn Gln Lys Ser Ser Leu Lys Gly Ala Glu
1265 1270 1275

Gly Gln Leu Gln
1280

<210> 9243
<211> 675
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1878; "

<220>
<221> source
<223> /note="Gene Symbol: BMX; "

<220>
<221> source
<223> /note="Gene Name:
BMX non-receptor tyr kinase; "

<220>
<221> source
<223> /note="Uniprot ID: P51813; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000308774"

<400> 9243

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Met Asp Thr Lys Ser Ile Leu Glu Glu Leu Leu Leu Lys Arg Ser Gln
1               5                  10                  15

Gln Lys Lys Lys Met Ser Pro Asn Asn Tyr Lys Glu Arg Leu Phe Val
            20                  25                  30

Leu Thr Lys Thr Asn Leu Ser Tyr Tyr Glu Tyr Asp Lys Met Lys Arg
        35                  40                  45

Gly Ser Arg Lys Gly Ser Ile Glu Ile Lys Lys Ile Arg Cys Val Glu
    50                  55                  60

Lys Val Asn Leu Glu Glu Gln Thr Pro Val Glu Arg Gln Tyr Pro Phe
65                  70                  75                  80

Gln Ile Val Tyr Lys Asp Gly Leu Leu Tyr Val Tyr Ala Ser Asn Glu
                85                  90                  95

Glu Ser Arg Ser Gln Trp Leu Lys Ala Leu Gln Lys Glu Ile Arg Gly
            100                 105                 110

Asn Pro His Leu Leu Val Lys Tyr His Ser Gly Phe Phe Val Asp Gly
        115                 120                 125

Lys Phe Leu Cys Cys Gln Gln Ser Cys Lys Ala Ala Pro Gly Cys Thr
    130                 135                 140
```

```
Leu Trp Glu Ala Tyr Ala Asn Leu His Thr Ala Val Asn Glu Glu Lys
145                 150                 155                 160

His Arg Val Pro Thr Phe Pro Asp Arg Val Leu Lys Ile Pro Arg Ala
                165                 170                 175

Val Pro Val Leu Lys Met Asp Ala Pro Ser Ser Ser Thr Thr Leu Ala
            180                 185                 190

Gln Tyr Asp Asn Glu Ser Lys Lys Asn Tyr Gly Ser Gln Pro Pro Ser
        195                 200                 205

Ser Ser Thr Ser Leu Ala Gln Tyr Asp Ser Asn Ser Lys Lys Ile Tyr
    210                 215                 220

Gly Ser Gln Pro Asn Phe Asn Met Gln Tyr Ile Pro Arg Glu Asp Phe
225                 230                 235                 240

Pro Asp Trp Trp Gln Val Arg Lys Leu Lys Ser Ser Ser Ser Ser Glu
                245                 250                 255

Asp Val Ala Ser Ser Asn Gln Lys Glu Arg Asn Val Asn His Thr Thr
            260                 265                 270

Ser Lys Ile Ser Trp Glu Phe Pro Glu Ser Ser Ser Ser Glu Glu Glu
        275                 280                 285

Glu Asn Leu Asp Asp Tyr Asp Trp Phe Ala Gly Asn Ile Ser Arg Ser
    290                 295                 300

Gln Ser Glu Gln Leu Leu Arg Gln Lys Gly Lys Glu Gly Ala Phe Met
305                 310                 315                 320

Val Arg Asn Ser Ser Gln Val Gly Met Tyr Thr Val Ser Leu Phe Ser
                325                 330                 335

Lys Ala Val Asn Asp Lys Lys Gly Thr Val Lys His Tyr His Val His
            340                 345                 350

Thr Asn Ala Glu Asn Lys Leu Tyr Leu Ala Glu Asn Tyr Cys Phe Asp
        355                 360                 365

Ser Ile Pro Lys Leu Ile His Tyr His Gln His Asn Ser Ala Gly Met
```

370 375 380

Ile Thr Arg Leu Arg His Pro Val Ser Thr Lys Ala Asn Lys Val Pro
385 390 395 400

Asp Ser Val Ser Leu Gly Asn Gly Ile Trp Glu Leu Lys Arg Glu Glu
405 410 415

Ile Thr Leu Leu Lys Glu Leu Gly Ser Gly Gln Phe Gly Val Val Gln
420 425 430

Leu Gly Lys Trp Lys Gly Gln Tyr Asp Val Ala Val Lys Met Ile Lys
435 440 445

Glu Gly Ser Met Ser Glu Asp Glu Phe Phe Gln Glu Ala Gln Thr Met
450 455 460

Met Lys Leu Ser His Pro Lys Leu Val Lys Phe Tyr Gly Val Cys Ser
465 470 475 480

Lys Glu Tyr Pro Ile Tyr Ile Val Thr Glu Tyr Ile Ser Asn Gly Cys
485 490 495

Leu Leu Asn Tyr Leu Arg Ser His Gly Lys Gly Leu Glu Pro Ser Gln
500 505 510

Leu Leu Glu Met Cys Tyr Asp Val Cys Glu Gly Met Ala Phe Leu Glu
515 520 525

Ser His Gln Phe Ile His Arg Asp Leu Ala Ala Arg Asn Cys Leu Val
530 535 540

Asp Arg Asp Leu Cys Val Lys Val Ser Asp Phe Gly Met Thr Arg Tyr
545 550 555 560

Val Leu Asp Asp Gln Tyr Val Ser Ser Val Gly Thr Lys Phe Pro Val
565 570 575

Lys Trp Ser Ala Pro Glu Val Phe His Tyr Phe Lys Tyr Ser Ser Lys
580 585 590

Ser Asp Val Trp Ala Phe Gly Ile Leu Met Trp Glu Val Phe Ser Leu
595 600 605

```
Gly Lys Gln Pro Tyr Asp Leu Tyr Asp Asn Ser Gln Val Val Leu Lys
    610                 615                 620

Val Ser Gln Gly His Arg Leu Tyr Arg Pro His Leu Ala Ser Asp Thr
625                 630                 635                 640

Ile Tyr Gln Ile Met Tyr Ser Cys Trp His Glu Leu Pro Glu Lys Arg
                645                 650                 655

Pro Thr Phe Gln Gln Leu Leu Ser Ser Ile Glu Pro Leu Arg Glu Lys
            660                 665                 670

Asp Lys His
        675
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<210> 9244
<211> 675
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1878; "

<220>
<221> source
<223> /note="Gene Symbol: BMX; "

<220>
<221> source
<223> /note="Gene Name:
BMX non-receptor tyr kinase; "

<220>
<221> source
<223> /note="Uniprot ID: P51813; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000340082"

<400> 9244

```
Met Asp Thr Lys Ser Ile Leu Glu Glu Leu Leu Leu Lys Arg Ser Gln
1               5                   10                  15

Gln Lys Lys Lys Met Ser Pro Asn Asn Tyr Lys Glu Arg Leu Phe Val
            20                  25                  30
```

```
Leu Thr Lys Thr Asn Leu Ser Tyr Tyr Glu Tyr Asp Lys Met Lys Arg
        35                  40                  45

Gly Ser Arg Lys Gly Ser Ile Glu Ile Lys Lys Ile Arg Cys Val Glu
    50                  55                  60

Lys Val Asn Leu Glu Glu Gln Thr Pro Val Glu Arg Gln Tyr Pro Phe
65                  70                  75                  80

Gln Ile Val Tyr Lys Asp Gly Leu Leu Tyr Val Tyr Ala Ser Asn Glu
                85                  90                  95

Glu Ser Arg Ser Gln Trp Leu Lys Ala Leu Gln Lys Glu Ile Arg Gly
            100                 105                 110

Asn Pro His Leu Leu Val Lys Tyr His Ser Gly Phe Phe Val Asp Gly
        115                 120                 125

Lys Phe Leu Cys Cys Gln Gln Ser Cys Lys Ala Ala Pro Gly Cys Thr
    130                 135                 140

Leu Trp Glu Ala Tyr Ala Asn Leu His Thr Ala Val Asn Glu Glu Lys
145                 150                 155                 160

His Arg Val Pro Thr Phe Pro Asp Arg Val Leu Lys Ile Pro Arg Ala
                165                 170                 175

Val Pro Val Leu Lys Met Asp Ala Pro Ser Ser Ser Thr Thr Leu Ala
            180                 185                 190

Gln Tyr Asp Asn Glu Ser Lys Lys Asn Tyr Gly Ser Gln Pro Pro Ser
        195                 200                 205

Ser Ser Thr Ser Leu Ala Gln Tyr Asp Ser Asn Ser Lys Lys Ile Tyr
    210                 215                 220

Gly Ser Gln Pro Asn Phe Asn Met Gln Tyr Ile Pro Arg Glu Asp Phe
225                 230                 235                 240

Pro Asp Trp Trp Gln Val Arg Lys Leu Lys Ser Ser Ser Ser Ser Glu
                245                 250                 255

Asp Val Ala Ser Ser Asn Gln Lys Glu Arg Asn Val Asn His Thr Thr
```

260 265 270

Ser Lys Ile Ser Trp Glu Phe Pro Glu Ser Ser Ser Ser Glu Glu Glu
275 280 285

Glu Asn Leu Asp Asp Tyr Asp Trp Phe Ala Gly Asn Ile Ser Arg Ser
290 295 300

Gln Ser Glu Gln Leu Leu Arg Gln Lys Gly Lys Glu Gly Ala Phe Met
305 310 315 320

Val Arg Asn Ser Ser Gln Val Gly Met Tyr Thr Val Ser Leu Phe Ser
325 330 335

Lys Ala Val Asn Asp Lys Lys Gly Thr Val Lys His Tyr His Val His
340 345 350

Thr Asn Ala Glu Asn Lys Leu Tyr Leu Ala Glu Asn Tyr Cys Phe Asp
355 360 365

Ser Ile Pro Lys Leu Ile His Tyr His Gln His Asn Ser Ala Gly Met
370 375 380

Ile Thr Arg Leu Arg His Pro Val Ser Thr Lys Ala Asn Lys Val Pro
385 390 395 400

Asp Ser Val Ser Leu Gly Asn Gly Ile Trp Glu Leu Lys Arg Glu Glu
405 410 415

Ile Thr Leu Leu Lys Glu Leu Gly Ser Gly Gln Phe Gly Val Val Gln
420 425 430

Leu Gly Lys Trp Lys Gly Gln Tyr Asp Val Ala Val Lys Met Ile Lys
435 440 445

Glu Gly Ser Met Ser Glu Asp Glu Phe Phe Gln Glu Ala Gln Thr Met
450 455 460

Met Lys Leu Ser His Pro Lys Leu Val Lys Phe Tyr Gly Val Cys Ser
465 470 475 480

Lys Glu Tyr Pro Ile Tyr Ile Val Thr Glu Tyr Ile Ser Asn Gly Cys
485 490 495

```
Leu Leu Asn Tyr Leu Arg Ser His Gly Lys Gly Leu Glu Pro Ser Gln
            500                 505                 510

Leu Leu Glu Met Cys Tyr Asp Val Cys Glu Gly Met Ala Phe Leu Glu
        515                 520                 525

Ser His Gln Phe Ile His Arg Asp Leu Ala Ala Arg Asn Cys Leu Val
    530                 535                 540

Asp Arg Asp Leu Cys Val Lys Val Ser Asp Phe Gly Met Thr Arg Tyr
545                 550                 555                 560

Val Leu Asp Asp Gln Tyr Val Ser Ser Val Gly Thr Lys Phe Pro Val
                565                 570                 575

Lys Trp Ser Ala Pro Glu Val Phe His Tyr Phe Lys Tyr Ser Ser Lys
            580                 585                 590

Ser Asp Val Trp Ala Phe Gly Ile Leu Met Trp Glu Val Phe Ser Leu
        595                 600                 605

Gly Lys Gln Pro Tyr Asp Leu Tyr Asp Asn Ser Gln Val Val Leu Lys
    610                 615                 620

Val Ser Gln Gly His Arg Leu Tyr Arg Pro His Leu Ala Ser Asp Thr
625                 630                 635                 640

Ile Tyr Gln Ile Met Tyr Ser Cys Trp His Glu Leu Pro Glu Lys Arg
                645                 650                 655

Pro Thr Phe Gln Gln Leu Leu Ser Ser Ile Glu Pro Leu Arg Glu Lys
            660                 665                 670

Asp Lys His
        675
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<210> 9245
<211> 675
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1878; "

<220>
<221> source
<223> /note="Gene Symbol: BMX; "

<220>
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<223> /note="Gene Name:
BMX non-receptor tyr kinase; "

<220>
<221> source
<223> /note="Uniprot ID: P51813; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350224"

<400> 9245

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Met Asp Thr Lys Ser Ile Leu Glu Glu Leu Leu Leu Lys Arg Ser Gln
1               5                  10                  15

Gln Lys Lys Lys Met Ser Pro Asn Asn Tyr Lys Glu Arg Leu Phe Val
            20                  25                  30

Leu Thr Lys Thr Asn Leu Ser Tyr Tyr Glu Tyr Asp Lys Met Lys Arg
        35                  40                  45

Gly Ser Arg Lys Gly Ser Ile Glu Ile Lys Lys Ile Arg Cys Val Glu
    50                  55                  60

Lys Val Asn Leu Glu Glu Gln Thr Pro Val Glu Arg Gln Tyr Pro Phe
65                  70                  75                  80

Gln Ile Val Tyr Lys Asp Gly Leu Leu Tyr Val Tyr Ala Ser Asn Glu
                85                  90                  95

Glu Ser Arg Ser Gln Trp Leu Lys Ala Leu Gln Lys Glu Ile Arg Gly
            100                 105                 110

Asn Pro His Leu Leu Val Lys Tyr His Ser Gly Phe Phe Val Asp Gly
        115                 120                 125

Lys Phe Leu Cys Cys Gln Gln Ser Cys Lys Ala Ala Pro Gly Cys Thr
    130                 135                 140

Leu Trp Glu Ala Tyr Ala Asn Leu His Thr Ala Val Asn Glu Glu Lys
```

145 150 155 160

His Arg Val Pro Thr Phe Pro Asp Arg Val Leu Lys Ile Pro Arg Ala
165 170 175

Val Pro Val Leu Lys Met Asp Ala Pro Ser Ser Ser Thr Thr Leu Ala
180 185 190

Gln Tyr Asp Asn Glu Ser Lys Lys Asn Tyr Gly Ser Gln Pro Pro Ser
195 200 205

Ser Ser Thr Ser Leu Ala Gln Tyr Asp Ser Asn Ser Lys Lys Ile Tyr
210 215 220

Gly Ser Gln Pro Asn Phe Asn Met Gln Tyr Ile Pro Arg Glu Asp Phe
225 230 235 240

Pro Asp Trp Trp Gln Val Arg Lys Leu Lys Ser Ser Ser Ser Ser Glu
245 250 255

Asp Val Ala Ser Ser Asn Gln Lys Glu Arg Asn Val Asn His Thr Thr
260 265 270

Ser Lys Ile Ser Trp Glu Phe Pro Glu Ser Ser Ser Ser Glu Glu Glu
275 280 285

Glu Asn Leu Asp Asp Tyr Asp Trp Phe Ala Gly Asn Ile Ser Arg Ser
290 295 300

Gln Ser Glu Gln Leu Leu Arg Gln Lys Gly Lys Glu Gly Ala Phe Met
305 310 315 320

Val Arg Asn Ser Ser Gln Val Gly Met Tyr Thr Val Ser Leu Phe Ser
325 330 335

Lys Ala Val Asn Asp Lys Lys Gly Thr Val Lys His Tyr His Val His
340 345 350

Thr Asn Ala Glu Asn Lys Leu Tyr Leu Ala Glu Asn Tyr Cys Phe Asp
355 360 365

Ser Ile Pro Lys Leu Ile His Tyr His Gln His Asn Ser Ala Gly Met
370 375 380

```
Ile Thr Arg Leu Arg His Pro Val Ser Thr Lys Ala Asn Lys Val Pro
385                 390                 395                 400

Asp Ser Val Ser Leu Gly Asn Gly Ile Trp Glu Leu Lys Arg Glu Glu
                405                 410                 415

Ile Thr Leu Leu Lys Glu Leu Gly Ser Gly Gln Phe Gly Val Val Gln
            420                 425                 430

Leu Gly Lys Trp Lys Gly Gln Tyr Asp Val Ala Val Lys Met Ile Lys
        435                 440                 445

Glu Gly Ser Met Ser Glu Asp Glu Phe Phe Gln Glu Ala Gln Thr Met
    450                 455                 460

Met Lys Leu Ser His Pro Lys Leu Val Lys Phe Tyr Gly Val Cys Ser
465                 470                 475                 480

Lys Glu Tyr Pro Ile Tyr Ile Val Thr Glu Tyr Ile Ser Asn Gly Cys
                485                 490                 495

Leu Leu Asn Tyr Leu Arg Ser His Gly Lys Gly Leu Glu Pro Ser Gln
            500                 505                 510

Leu Leu Glu Met Cys Tyr Asp Val Cys Glu Gly Met Ala Phe Leu Glu
        515                 520                 525

Ser His Gln Phe Ile His Arg Asp Leu Ala Ala Arg Asn Cys Leu Val
    530                 535                 540

Asp Arg Asp Leu Cys Val Lys Val Ser Asp Phe Gly Met Thr Arg Tyr
545                 550                 555                 560

Val Leu Asp Asp Gln Tyr Val Ser Ser Val Gly Thr Lys Phe Pro Val
                565                 570                 575

Lys Trp Ser Ala Pro Glu Val Phe His Tyr Phe Lys Tyr Ser Ser Lys
            580                 585                 590

Ser Asp Val Trp Ala Phe Gly Ile Leu Met Trp Glu Val Phe Ser Leu
        595                 600                 605
```

```
Gly Lys Gln Pro Tyr Asp Leu Tyr Asp Asn Ser Gln Val Val Leu Lys
    610                 615                 620

Val Ser Gln Gly His Arg Leu Tyr Arg Pro His Leu Ala Ser Asp Thr
625                 630                 635                 640

Ile Tyr Gln Ile Met Tyr Ser Cys Trp His Glu Leu Pro Glu Lys Arg
                645                 650                 655

Pro Thr Phe Gln Gln Leu Leu Ser Ser Ile Glu Pro Leu Arg Glu Lys
            660                 665                 670

Asp Lys His
        675
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<210> 9246
<211> 354
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1879; "

<220>
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<223> /note="Gene Symbol: ABO; "

<220>
<221> source
<223> /note="Gene Name:
BO blood group (transferase A,
alpha 1-3-N-acetylgalactosaminyltransferase; "

<220>
<221> source
<223> /note="transferase B, alpha 1-3-galactosyltransferase); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487108"

<400> 9246

```
Met Ala Glu Val Leu Arg Thr Leu Ala Gly Lys Pro Lys Cys His Ala
1               5                   10                  15

Leu Arg Pro Met Ile Leu Phe Leu Ile Met Leu Val Leu Val Leu Phe
            20                  25                  30
```

```
Gly Tyr Gly Val Leu Ser Pro Arg Ser Leu Met Pro Gly Ser Leu Glu
        35                  40                  45

Arg Gly Phe Cys Met Ala Val Arg Glu Pro Asp His Leu Gln Arg Val
    50                  55                  60

Ser Leu Pro Arg Met Val Tyr Pro Gln Pro Lys Val Leu Thr Pro Cys
65                  70                  75                  80

Arg Lys Asp Val Leu Val Val Thr Pro Trp Leu Ala Pro Ile Val Trp
                85                  90                  95

Glu Gly Thr Phe Asn Ile Asp Ile Leu Asn Glu Gln Phe Arg Leu Gln
            100                 105                 110

Asn Thr Thr Ile Gly Leu Thr Val Phe Ala Ile Lys Lys Tyr Val Ala
        115                 120                 125

Phe Leu Lys Leu Phe Leu Glu Thr Ala Glu Lys His Phe Met Val Gly
    130                 135                 140

His Arg Val His Tyr Tyr Val Phe Thr Asp Gln Leu Ala Ala Val Pro
145                 150                 155                 160

Arg Val Thr Leu Gly Thr Gly Arg Gln Leu Ser Val Leu Glu Val Arg
                165                 170                 175

Ala Tyr Lys Arg Trp Gln Asp Val Ser Met Arg Arg Met Glu Met Ile
            180                 185                 190

Ser Asp Phe Cys Glu Arg Arg Phe Leu Ser Glu Val Asp Tyr Leu Val
        195                 200                 205

Cys Val Asp Val Asp Met Glu Phe Arg Asp His Val Gly Val Glu Ile
    210                 215                 220

Leu Thr Pro Leu Phe Gly Thr Leu His Pro Gly Phe Tyr Gly Ser Ser
225                 230                 235                 240

Arg Glu Ala Phe Thr Tyr Glu Arg Arg Pro Gln Ser Gln Ala Tyr Ile
                245                 250                 255

Pro Lys Asp Glu Gly Asp Phe Tyr Tyr Leu Gly Gly Phe Phe Gly Gly
```

```
            260                 265                 270

Ser Val Gln Glu Val Gln Arg Leu Thr Arg Ala Cys His Gln Ala Met
        275                 280                 285

Met Val Asp Gln Ala Asn Gly Ile Glu Ala Val Trp His Asp Glu Ser
    290                 295                 300

His Leu Asn Lys Tyr Leu Leu Arg His Lys Pro Thr Lys Val Leu Ser
305                 310                 315                 320

Pro Glu Tyr Leu Trp Asp Gln Gln Leu Leu Gly Trp Pro Ala Val Leu
                325                 330                 335

Arg Lys Leu Arg Phe Thr Ala Val Pro Lys Asn His Gln Ala Val Arg
            340                 345                 350

Asn Pro
```

<210> 9247
<211> 941
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
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<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID: Q8WY36; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000319974"

<400> 9247

```
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15
```

```
Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met Gly Gly Leu
        195                 200                 205

Ser Met Leu Leu Leu Ala Gly Glu His Ala Leu Gly Thr Pro Glu Val
    210                 215                 220

Ser Ser Gly Thr Cys Arg Pro Asp Val Ser Glu Ser Pro Glu Leu Arg
225                 230                 235                 240
```

```
Gln Lys Ser Pro Leu Phe Gln Phe Ala Glu Ile Ser Ser Ser Thr Ser
                245                 250                 255

His Ser Asp Ala Ser Thr Lys Gln Cys Gln Thr Ser Ala Leu Phe Gln
            260                 265                 270

Phe Ala Glu Ile Ser Ser Asn Thr Ser Gln Leu Gly Gly Ala Glu Pro
        275                 280                 285

Val Lys Arg Cys Gly Lys Ser Ala Leu Phe Gln Leu Ala Glu Met Cys
    290                 295                 300

Leu Ala Ser Glu Gly Met Lys Met Glu Glu Ser Lys Leu Ile Lys Ala
305                 310                 315                 320

Lys Glu Ser Asp Gly Gly Arg Ile Lys Glu Leu Glu Lys Gly Lys Glu
                325                 330                 335

Glu Lys Glu Ile Lys Met Glu Lys Thr Asp Glu Thr Arg Leu Gln Lys
            340                 345                 350

Glu Ala Glu Phe Glu Lys Ser Ala Lys Glu Asn Leu Arg Asp Ser Lys
        355                 360                 365

Glu Leu Arg Asn Phe Glu Ala Leu Gln Ile Asp Asp Ile Met Ala Ile
    370                 375                 380

Lys Met Glu Asp Pro Lys Glu Ile Arg Lys Glu Glu Leu Glu Glu Asp
385                 390                 395                 400

His Lys Cys Ser His Phe Pro Asp Phe Ser Tyr Ser Ala Ser Ser Lys
                405                 410                 415

Ile Ile Ile Ser Asp Val Pro Ser Arg Lys Asp His Met Cys His Pro
            420                 425                 430

His Gly Ile Met Ile Ile Glu Asp Pro Ala Ala Leu Asn Lys Pro Glu
        435                 440                 445

Lys Leu Lys Lys Lys Lys Lys Lys Ser Lys Met Asp Arg His Gly Asn
    450                 455                 460

Asp Lys Ser Thr Pro Lys Lys Thr Cys Lys Lys Arg Gln Ser Ser Glu
```

```
465                 470                 475                 480

Ser Asp Ile Glu Ser Val Ile Tyr Thr Ile Glu Ala Val Ala Lys Gly
                485                 490                 495

Asp Trp Gly Ile Glu Lys Leu Gly Asp Thr Pro Arg Lys Lys Val Arg
            500                 505                 510

Thr Ser Ser Ser Gly Lys Gly Ser Ile Leu Asp Ala Lys Pro Pro Lys
        515                 520                 525

Lys Lys Val Lys Ser Arg Glu Lys Lys Met Ser Lys Glu Lys Ser Ser
    530                 535                 540

Asp Thr Thr Lys Glu Ser Arg Pro Pro Asp Phe Ile Ser Ile Ser Ala
545                 550                 555                 560

Ser Lys Asn Ile Ser Gly Glu Thr Pro Glu Gly Ile Lys Ala Glu Pro
                565                 570                 575

Leu Thr Pro Met Glu Asp Ala Leu Pro Pro Ser Leu Ser Gly Gln Ala
            580                 585                 590

Lys Pro Glu Asp Ser Asp Cys His Arg Lys Ile Glu Thr Cys Gly Ser
        595                 600                 605

Arg Lys Ser Glu Arg Ser Cys Lys Gly Ala Leu Tyr Lys Thr Leu Val
    610                 615                 620

Ser Glu Gly Met Leu Thr Ser Leu Arg Ala Asn Val Asp Arg Gly Lys
625                 630                 635                 640

Arg Ser Ser Gly Lys Gly Asn Ser Ser Asp His Glu Gly Cys Trp Asn
                645                 650                 655

Glu Glu Ser Trp Thr Phe Ser Gln Ser Gly Thr Ser Gly Ser Lys Lys
            660                 665                 670

Phe Lys Lys Thr Lys Pro Lys Glu Asp Cys Leu Leu Gly Ser Ala Lys
        675                 680                 685

Leu Asp Glu Glu Phe Glu Lys Lys Phe Asn Ser Leu Pro Gln Tyr Ser
    690                 695                 700
```

```
Pro Val Thr Phe Asp Arg Lys Cys Val Pro Val Pro Arg Lys Lys Lys
705                 710                 715                 720

Lys Thr Gly Asn Val Ser Ser Glu Pro Thr Lys Thr Ser Lys Gly Pro
                725                 730                 735

Phe Gln Ser Gln Lys Lys Asn Leu Phe His Lys Ile Val Ser Lys Tyr
            740                 745                 750

Lys His Lys Lys Glu Lys Pro Asn Val Pro Glu Lys Gly Ser Gly Asp
        755                 760                 765

Lys Trp Ser Asn Lys Gln Leu Phe Leu Asp Ala Ile His Pro Thr Glu
    770                 775                 780

Ala Ile Phe Ser Glu Asp Arg Asn Thr Met Glu Pro Val His Lys Val
785                 790                 795                 800

Lys Asn Ile Pro Ser Ile Phe Asn Thr Pro Glu Pro Thr Thr Thr Gln
                805                 810                 815

Glu Pro Leu Val Gly Ser Gln Lys Arg Lys Ala Arg Lys Thr Lys Ile
            820                 825                 830

Thr His Leu Val Arg Thr Ala Asp Gly Arg Val Ser Pro Ala Gly Gly
        835                 840                 845

Thr Leu Asp Asp Lys Pro Lys Glu Gln Leu Gln Arg Ser Leu Pro Lys
    850                 855                 860

Ala Thr Glu Thr Asp Cys Asn Asp Lys Cys Ser His Asn Thr Glu Val
865                 870                 875                 880

Gly Glu Thr Arg Ser Ser Thr Pro Glu Met Pro Ala Val Ser Ala Phe
                885                 890                 895

Phe Ser Leu Ala Ala Leu Ala Glu Val Ala Ala Met Glu Asn Val His
            900                 905                 910

Arg Gly Gln Arg Ser Thr Pro Leu Thr His Asp Gly Gln Pro Lys Glu
        915                 920                 925
```

```
Met Pro Gln Ala Pro Val Leu Ile Ser Cys Ala Asp Gln
    930                 935                 940


<210> 9248
<211> 891
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385317"

<400> 9248
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15


Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30


Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45


Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60


Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80


Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95


Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110


Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
```

```
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met Gly Gly Leu
        195                 200                 205

Ser Met Leu Leu Leu Ala Gly Glu His Ala Leu Gly Thr Pro Glu Val
    210                 215                 220

Ser Ser Gly Thr Cys Arg Pro Asp Val Ser Glu Ser Pro Glu Leu Arg
225                 230                 235                 240

Gln Lys Ser Pro Leu Phe Gln Phe Ala Glu Ile Ser Ser Ser Thr Ser
                245                 250                 255

His Ser Asp Ala Ser Thr Lys Gln Cys Gln Thr Ser Ala Leu Phe Gln
            260                 265                 270

Phe Ala Glu Ile Ser Ser Asn Thr Ser Gln Leu Gly Gly Ala Glu Pro
        275                 280                 285

Val Lys Arg Cys Gly Lys Ser Ala Leu Phe Gln Leu Ala Glu Met Cys
    290                 295                 300

Leu Ala Ser Glu Gly Met Lys Met Glu Glu Ser Lys Leu Ile Lys Ala
305                 310                 315                 320

Lys Glu Ser Asp Gly Gly Arg Ile Lys Glu Leu Glu Lys Gly Lys Glu
                325                 330                 335

Glu Lys Glu Ile Lys Met Glu Lys Thr Asp Glu Thr Arg Leu Gln Lys
            340                 345                 350
```

Glu Ala Glu Phe Glu Lys Ser Ala Lys Glu Asn Leu Arg Asp Ser Lys
355 360 365

Glu Leu Arg Asn Phe Glu Ala Leu Gln Ile Asp Asp Ile Met Ala Ile
370 375 380

Lys Met Glu Asp Pro Lys Glu Ile Arg Lys Glu Glu Leu Glu Glu Asp
385 390 395 400

His Lys Cys Ser His Phe Pro Asp Phe Ser Tyr Ser Ala Ser Ser Lys
405 410 415

Ile Ile Ile Ser Asp Val Pro Ser Arg Lys Asp His Met Cys His Pro
420 425 430

His Gly Ile Met Ile Ile Glu Asp Pro Ala Ala Leu Asn Lys Pro Glu
435 440 445

Lys Leu Lys Lys Lys Lys Lys Lys Ser Lys Met Asp Arg His Gly Asn
450 455 460

Asp Lys Ser Thr Pro Lys Lys Thr Cys Lys Lys Arg Gln Ser Ser Glu
465 470 475 480

Ser Asp Ile Glu Ser Val Ile Tyr Thr Ile Glu Ala Val Ala Lys Gly
485 490 495

Asp Trp Gly Ile Glu Lys Leu Gly Asp Thr Pro Arg Lys Lys Val Arg
500 505 510

Thr Ser Ser Ser Gly Lys Gly Ser Ile Leu Asp Ala Lys Pro Pro Lys
515 520 525

Lys Lys Val Lys Ser Arg Glu Lys Lys Met Ser Lys Glu Lys Ser Ser
530 535 540

Asp Thr Thr Lys Glu Ser Arg Pro Pro Asp Phe Ile Ser Ile Ser Ala
545 550 555 560

Ser Lys Asn Ile Ser Gly Glu Thr Pro Glu Gly Ile Lys Ala Glu Pro
565 570 575

```
Leu Thr Pro Met Glu Asp Ala Leu Pro Pro Ser Leu Ser Gly Gln Ala
            580                 585                 590

Lys Pro Glu Asp Ser Asp Cys His Arg Lys Ile Glu Thr Cys Gly Ser
        595                 600                 605

Arg Lys Ser Glu Arg Ser Cys Lys Gly Ala Leu Tyr Lys Thr Leu Val
    610                 615                 620

Ser Glu Gly Met Leu Thr Ser Leu Arg Ala Asn Val Asp Arg Gly Lys
625                 630                 635                 640

Arg Ser Ser Gly Lys Gly Asn Ser Ser Asp His Glu Gly Cys Trp Asn
                645                 650                 655

Glu Glu Ser Trp Thr Phe Ser Gln Ser Gly Thr Ser Gly Ser Lys Lys
            660                 665                 670

Phe Lys Lys Thr Lys Pro Lys Glu Asp Cys Leu Leu Gly Ser Ala Lys
        675                 680                 685

Leu Asp Glu Glu Phe Glu Lys Lys Phe Asn Ser Leu Pro Gln Tyr Ser
    690                 695                 700

Pro Val Thr Phe Asp Arg Lys Cys Val Pro Val Pro Arg Lys Lys Lys
705                 710                 715                 720

Lys Thr Gly Asn Val Ser Ser Glu Pro Thr Lys Thr Ser Lys Ala Ile
                725                 730                 735

Phe Ser Glu Asp Arg Asn Thr Met Glu Pro Val His Lys Val Lys Asn
            740                 745                 750

Ile Pro Ser Ile Phe Asn Thr Pro Glu Pro Thr Thr Thr Gln Glu Pro
        755                 760                 765

Leu Val Gly Ser Gln Lys Arg Lys Ala Arg Lys Thr Lys Ile Thr His
    770                 775                 780

Leu Val Arg Thr Ala Asp Gly Arg Val Ser Pro Ala Gly Gly Thr Leu
785                 790                 795                 800
```

```
Asp Asp Lys Pro Lys Glu Gln Leu Gln Arg Ser Leu Pro Lys Ala Thr
                805                 810                 815

Glu Thr Asp Cys Asn Asp Lys Cys Ser His Asn Thr Glu Val Gly Glu
            820                 825                 830

Thr Arg Ser Ser Thr Pro Glu Met Pro Ala Val Ser Ala Phe Phe Ser
        835                 840                 845

Leu Ala Ala Leu Ala Glu Val Ala Ala Met Glu Asn Val His Arg Gly
    850                 855                 860

Gln Arg Ser Thr Pro Leu Thr His Asp Gly Gln Pro Lys Glu Met Pro
865                 870                 875                 880

Gln Ala Pro Val Leu Ile Ser Cys Ala Asp Gln
                885                 890


<210> 9249
<211> 448
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
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<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385518"

<400> 9249
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45
```

```
Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met Gly Gly Leu
        195                 200                 205

Ser Met Leu Leu Leu Ala Gly Glu His Ala Leu Gly Thr Pro Glu Val
    210                 215                 220

Ser Ser Gly Thr Cys Arg Pro Asp Val Ser Glu Ser Pro Glu Leu Arg
225                 230                 235                 240

Gln Lys Ser Pro Leu Phe Gln Phe Ala Glu Ile Ser Ser Ser Thr Ser
                245                 250                 255

His Ser Asp Ala Ser Thr Lys Gln Cys Gln Thr Ser Ala Leu Phe Gln
            260                 265                 270
```

```
Phe Ala Glu Ile Ser Ser Asn Thr Ser Gln Leu Gly Gly Ala Glu Pro
        275                 280                 285

Val Lys Arg Cys Gly Lys Ser Ala Leu Phe Gln Leu Ala Glu Met Cys
    290                 295                 300

Leu Ala Ser Glu Gly Met Lys Met Glu Glu Ser Lys Leu Ile Lys Ala
305                 310                 315                 320

Lys Glu Ser Asp Gly Gly Arg Ile Lys Glu Leu Glu Lys Gly Lys Glu
                325                 330                 335

Glu Lys Glu Ile Lys Met Glu Lys Thr Asp Glu Thr Arg Leu Gln Lys
            340                 345                 350

Glu Ala Glu Phe Glu Lys Ser Ala Lys Glu Asn Leu Arg Asp Ser Lys
        355                 360                 365

Glu Leu Arg Asn Phe Glu Ala Leu Gln Ile Asp Asp Ile Met Ala Ile
    370                 375                 380

Lys Met Glu Asp Pro Lys Glu Ile Arg Lys Glu Glu Leu Glu Glu Asp
385                 390                 395                 400

His Lys Cys Ser His Phe Pro Asp Phe Ser Tyr Ser Ala Ser Ser Lys
                405                 410                 415

Ile Ile Ile Ser Asp Val Pro Ser Arg Lys Asp His Met Cys His Pro
            420                 425                 430

His Gly Ile Met Ile Ile Glu Asp Pro Ala Ala Leu Asn Lys Pro Glu
        435                 440                 445


<210> 9250
<211> 911
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "
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<220>
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<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID: Q8WY36; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385530"

<400> 9250

```
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                  10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175
```

```
Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met Gly Gly Leu
        195                 200                 205

Ser Met Leu Leu Leu Ala Gly Glu His Ala Leu Gly Thr Pro Glu Val
    210                 215                 220

Ser Ser Gly Thr Cys Arg Pro Asp Val Ser Glu Ser Pro Glu Leu Arg
225                 230                 235                 240

Gln Lys Ser Pro Leu Phe Gln Phe Ala Glu Ile Ser Ser Ser Thr Ser
                245                 250                 255

His Ser Asp Ala Ser Thr Lys Gln Cys Gln Thr Ser Ala Leu Phe Gln
            260                 265                 270

Phe Ala Glu Ile Ser Ser Asn Thr Ser Gln Leu Gly Gly Ala Glu Pro
        275                 280                 285

Val Lys Arg Cys Gly Lys Ser Ala Leu Phe Gln Leu Ala Glu Met Cys
    290                 295                 300

Leu Ala Ser Glu Gly Met Lys Met Glu Glu Ser Lys Leu Ile Lys Ala
305                 310                 315                 320

Lys Glu Ser Asp Gly Gly Arg Ile Lys Glu Leu Glu Lys Gly Lys Glu
                325                 330                 335

Glu Lys Glu Ile Lys Met Glu Lys Thr Asp Glu Thr Arg Leu Gln Lys
            340                 345                 350

Glu Ala Glu Phe Glu Lys Ser Ala Lys Glu Asn Leu Arg Asp Ser Lys
        355                 360                 365

Glu Leu Arg Asn Phe Glu Ala Leu Gln Ile Asp Asp Ile Met Ala Ile
    370                 375                 380

Lys Met Glu Asp Pro Lys Glu Ile Arg Lys Glu Glu Leu Glu Glu Asp
385                 390                 395                 400
```

```
His Lys Cys Ser His Phe Pro Asp Phe Ser Tyr Ser Ala Ser Ser Lys
                405                 410                 415

Ile Ile Ile Ser Asp Val Pro Ser Arg Lys Asp His Met Cys His Pro
            420                 425                 430

His Gly Ile Met Ile Ile Glu Asp Pro Ala Ala Leu Asn Lys Pro Glu
        435                 440                 445

Lys Leu Lys Lys Lys Lys Lys Lys Ser Lys Met Asp Arg His Gly Asn
    450                 455                 460

Asp Lys Ser Thr Pro Lys Lys Thr Cys Lys Lys Arg Gln Ser Ser Glu
465                 470                 475                 480

Ser Asp Ile Glu Ser Val Ile Tyr Thr Ile Glu Ala Val Ala Lys Gly
                485                 490                 495

Asp Trp Gly Ile Glu Lys Leu Gly Asp Thr Pro Arg Lys Lys Val Arg
            500                 505                 510

Thr Ser Ser Ser Gly Lys Gly Ser Ile Leu Asp Ala Lys Pro Pro Lys
        515                 520                 525

Lys Lys Val Lys Ser Arg Glu Lys Lys Met Ser Lys Glu Lys Ser Ser
    530                 535                 540

Asp Thr Thr Lys Glu Ser Arg Pro Pro Asp Phe Ile Ser Ile Ser Ala
545                 550                 555                 560

Ser Lys Asn Ile Ser Gly Glu Thr Pro Glu Gly Ile Lys Ala Glu Pro
                565                 570                 575

Leu Thr Pro Met Glu Asp Ala Leu Pro Pro Ser Leu Ser Gly Gln Ala
            580                 585                 590

Lys Pro Glu Asp Ser Asp Cys His Arg Lys Ile Glu Thr Cys Gly Ser
        595                 600                 605

Arg Lys Ser Glu Arg Ser Cys Lys Gly Ala Leu Tyr Lys Thr Leu Val
    610                 615                 620
```

Ser Glu Gly Met Leu Thr Ser Leu Arg Ala Asn Val Asp Arg Gly Lys
625 630 635 640

Arg Ser Ser Gly Lys Gly Asn Ser Ser Asp His Glu Gly Cys Trp Asn
645 650 655

Glu Glu Ser Trp Thr Phe Ser Gln Ser Gly Thr Ser Gly Ser Lys Lys
660 665 670

Phe Lys Lys Thr Lys Pro Lys Glu Asp Cys Leu Leu Gly Ser Ala Lys
675 680 685

Leu Asp Glu Glu Phe Glu Lys Lys Phe Asn Ser Leu Pro Gln Tyr Ser
690 695 700

Pro Val Thr Phe Asp Arg Lys Cys Val Pro Val Pro Arg Lys Lys Lys
705 710 715 720

Lys Thr Gly Asn Val Ser Ser Glu Pro Thr Lys Thr Ser Lys Gly Ser
725 730 735

Gly Asp Lys Trp Ser Asn Lys Gln Leu Phe Leu Asp Ala Ile His Pro
740 745 750

Thr Glu Ala Ile Phe Ser Glu Asp Arg Asn Thr Met Glu Pro Val His
755 760 765

Lys Val Lys Asn Ile Pro Ser Ile Phe Asn Thr Pro Glu Pro Thr Thr
770 775 780

Thr Gln Glu Pro Leu Val Gly Ser Gln Lys Arg Lys Ala Arg Lys Thr
785 790 795 800

Lys Ile Thr His Leu Val Arg Thr Ala Asp Gly Arg Val Ser Pro Ala
805 810 815

Gly Gly Thr Leu Asp Asp Lys Pro Lys Glu Gln Leu Gln Arg Ser Leu
820 825 830

Pro Lys Ala Thr Glu Thr Asp Cys Asn Asp Lys Cys Ser His Asn Thr
835 840 845

Glu Val Gly Glu Thr Arg Ser Ser Thr Pro Glu Met Pro Ala Val Ser

```
    850                 855                 860

Ala Phe Phe Ser Leu Ala Ala Leu Ala Glu Val Ala Ala Met Glu Asn
865                 870                 875                 880

Val His Arg Gly Gln Arg Ser Thr Pro Leu Thr His Asp Gly Gln Pro
                885                 890                 895

Lys Glu Met Pro Gln Ala Pro Val Leu Ile Ser Cys Ala Asp Gln
            900                 905                 910


<210> 9251
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392230"

<400> 9251
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Thr Arg Ile Glu Ala Gln Tyr Lys Asn Arg
    50                  55                  60

Gly Leu Ala Cys Leu Val Leu Ser Ser Cys Leu Arg Asn Glu Asn Gly
65                  70                  75                  80
```

```
Ala Trp His Ile Val Gln Leu Leu Gly Ala Asp Gly Leu Glu Gln Asp
                85                  90                  95

Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala Arg Arg
            100                 105                 110

Pro Met Asn Ala Phe Leu Leu
        115


<210> 9252
<211> 13
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: BBX; "

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<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
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<400> 9252
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu
1               5                   10


<210> 9253
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
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<220>
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<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "
```

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400543"

<400> 9253
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1   5   10   15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20   25   30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35   40   45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50   55   60

Gln Asp Val Gly Glu Thr Glu
65   70

<210> 9254
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: BBX; "

<220>
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<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
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<223> /note="ENSP ID: ENSP00000401524"

<400> 9254
Asn Thr Pro Glu Pro Thr Thr Thr Gln Glu Pro Leu Val Gly Ser Gln
1   5   10   15

Lys Arg Lys Ala Arg Lys Thr Lys Ile Thr His Leu Val Arg Thr Ala
            20   25   30

```
Asp Gly Arg Val Ser Pro Ala Gly Asp Asp Lys Pro Lys Glu Gln Leu
        35                  40                  45

Gln Arg Ser Leu Pro Lys Ala Thr Glu Thr Asp Cys Asn Asp Lys Cys
    50                  55                  60

Ser His Asn Thr Glu Val Gly Glu Thr Arg Ser Ser Thr Pro Glu Met
65                  70                  75                  80

Pro Ala Val Ser Ala Phe Phe Ser Leu Ala Ala Leu Ala Glu Val Ala
                85                  90                  95

Ala Met Glu Asn Val His Arg Gly Gln Arg Ser Thr Pro Leu Thr His
            100                 105                 110

Asp Gly Gln Pro Lys Glu Met Pro Gln Ala Pro Val Leu Ile Ser Cys
        115                 120                 125

Ala Asp Gln
    130
```

<210> 9255
<211> 80
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BBX; "

<220>
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<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402372"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9255

```
Xaa Thr Lys Thr Ser Lys Gly Pro Phe Gln Ser Gln Lys Lys Asn Leu
1               5                   10                  15

Phe His Lys Ile Val Ser Lys Tyr Lys His Lys Lys Glu Lys Pro Asn
            20                  25                  30

Val Pro Glu Lys Gly Ser Gly Asp Lys Trp Ser Asn Lys Gln Leu Phe
        35                  40                  45

Leu Asp Ala Ile His Pro Thr Glu Glu Pro Thr Thr Thr Gln Glu Pro
    50                  55                  60

Leu Val Gly Ser Gln Lys Arg Lys Ala Arg Lys Thr Lys Ile Thr His
65                  70                  75                  80
```

<210> 9256
<211> 149
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403806"

<400> 9256

```
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60
```

```
Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp
145


<210> 9257
<211> 628
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q8WY36; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403860"

<400> 9257
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15
```

```
Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met Gly Gly Leu
        195                 200                 205

Ser Met Leu Leu Leu Ala Gly Glu His Ala Leu Gly Thr Pro Glu Val
    210                 215                 220

Ser Ser Gly Thr Cys Arg Pro Asp Val Ser Glu Ser Pro Glu Leu Arg
225                 230                 235                 240

Gln Lys Ser Pro Leu Phe Gln Phe Ala Glu Ile Ser Ser Ser Thr Ser
```

```
                245                 250                 255

His Ser Asp Ala Ser Thr Lys Gln Cys Gln Thr Ser Ala Leu Phe Gln
            260                 265                 270

Phe Ala Glu Ile Ser Ser Asn Thr Ser Gln Leu Gly Gly Ala Glu Pro
        275                 280                 285

Val Lys Arg Cys Gly Lys Ser Ala Leu Phe Gln Leu Ala Glu Glu Asn
    290                 295                 300

Glu Ala Gln Glu Lys Glu Thr Pro Leu Ile Met Lys Gly Val Gly Met
305                 310                 315                 320

Lys Lys Ala Gly His Leu Val Arg Val Gly Pro Val Gly Ala Arg Ser
                325                 330                 335

Ser Arg Arg Gln Ser Gln Lys Lys Thr Val Ser Leu Ala Pro Gln Ser
            340                 345                 350

Trp Met Lys Asn Leu Lys Lys Asn Ser Thr Ala Ser Leu Asn Ile Val
        355                 360                 365

Leu Leu His Leu Thr Gly Asn Val Tyr Leu Ser Gln Glu Lys Arg Arg
    370                 375                 380

Arg Leu Glu Met Cys Pro Gln Asn Arg Leu Lys Pro Ala Lys Val Leu
385                 390                 395                 400

Ser Ser Leu Arg Lys Arg Thr Tyr Ser Thr Lys Leu Ser Ala Asn Ile
                405                 410                 415

Ser Thr Lys Arg Arg Ser Pro Met Phe Arg Lys Lys Glu Val Gly Ile
            420                 425                 430

Asn Gly Gln Thr Ser Asn Ser Ser Trp Met Pro Phe Thr Leu Gln Lys
        435                 440                 445

Pro Tyr Phe Gln Lys Thr Glu Thr Pro Trp Ser Leu Phe Ile Arg Leu
    450                 455                 460

Lys Ile Ser His Pro Phe Ser Thr Leu Gln Ser Gln Gln Gln Arg Lys
465                 470                 475                 480
```

```
Asn Leu Trp Trp Ala Ala Lys Arg Glu Lys Gln Gly Lys Pro Arg Leu
                485                 490                 495

His Thr Leu Ser Gly Gln Gln Met Ala Gly Tyr His Gln Gln Glu Val
            500                 505                 510

Leu Trp Met Thr Asn Gln Arg Asn Asn Cys Arg Gly Val Ser Leu Lys
        515                 520                 525

Gln Leu Arg Gln Thr Ala Met Thr Asn Ala His Thr Thr Pro Arg Ser
    530                 535                 540

Gly Arg Arg Gly Ala Val Leu Gln Lys Cys Leu Pro Cys Leu Arg Ser
545                 550                 555                 560

Leu Ala Ser Leu Arg Trp Leu Lys Trp Gln Pro Trp Lys Met Cys Thr
                565                 570                 575

Glu Val Arg Gly Gln Leu Arg Ser Pro Met Met Asp Ser Gln Lys Lys
            580                 585                 590

Cys Arg Arg Leu Leu Tyr Leu Phe Pro Ala Leu Thr Ser Glu Ala Pro
        595                 600                 605

Phe His Cys Lys Thr Leu Cys Phe Thr Tyr Tyr Pro Ser Leu Val Phe
    610                 615                 620

Thr Glu Gly Cys
625
```

<210> 9258
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source

<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404654"

<400> 9258
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1 5 10 15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
20 25 30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
35 40 45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
50 55 60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65 70 75 80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
85 90 95

Leu

<210> 9259
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404943"

<400> 9259
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1 5 10 15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
20 25 30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
35 40 45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
50 55 60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65 70 75 80

Arg Arg Pro Met Asn
85

<210> 9260
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406554"

<400> 9260
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1 5 10 15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
20 25 30

```
Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile
```

<210> 9261
<211> 159
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407662"

<400> 9261

```
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45
```

```
Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser
145                 150                 155


<210> 9262
<211> 144
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408297"

<400> 9262
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15
```

```
Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140


<210> 9263
<211> 911
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
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<223> /note="Gene Name:
      bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WY36; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408358"
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<400> 9263
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1 5 10 15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
20 25 30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
35 40 45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
50 55 60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65 70 75 80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
85 90 95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
100 105 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
115 120 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
130 135 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145 150 155 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
165 170 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
180 185 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met Gly Gly Leu
195 200 205

Ser Met Leu Leu Leu Ala Gly Glu His Ala Leu Gly Thr Pro Glu Val
210 215 220

```
Ser Ser Gly Thr Cys Arg Pro Asp Val Ser Glu Ser Pro Glu Leu Arg
225                 230                 235                 240

Gln Lys Ser Pro Leu Phe Gln Phe Ala Glu Ile Ser Ser Ser Thr Ser
                245                 250                 255

His Ser Asp Ala Ser Thr Lys Gln Cys Gln Thr Ser Ala Leu Phe Gln
            260                 265                 270

Phe Ala Glu Ile Ser Ser Asn Thr Ser Gln Leu Gly Gly Ala Glu Pro
        275                 280                 285

Val Lys Arg Cys Gly Lys Ser Ala Leu Phe Gln Leu Ala Glu Met Cys
    290                 295                 300

Leu Ala Ser Glu Gly Met Lys Met Glu Glu Ser Lys Leu Ile Lys Ala
305                 310                 315                 320

Lys Glu Ser Asp Gly Gly Arg Ile Lys Glu Leu Glu Lys Gly Lys Glu
                325                 330                 335

Glu Lys Glu Ile Lys Met Glu Lys Thr Asp Glu Thr Arg Leu Gln Lys
            340                 345                 350

Glu Ala Glu Phe Glu Lys Ser Ala Lys Glu Asn Leu Arg Asp Ser Lys
        355                 360                 365

Glu Leu Arg Asn Phe Glu Ala Leu Gln Ile Asp Asp Ile Met Ala Ile
    370                 375                 380

Lys Met Glu Asp Pro Lys Glu Ile Arg Lys Glu Glu Leu Glu Glu Asp
385                 390                 395                 400

His Lys Cys Ser His Phe Pro Asp Phe Ser Tyr Ser Ala Ser Ser Lys
                405                 410                 415

Ile Ile Ile Ser Asp Val Pro Ser Arg Lys Asp His Met Cys His Pro
            420                 425                 430

His Gly Ile Met Ile Ile Glu Asp Pro Ala Ala Leu Asn Lys Pro Glu
        435                 440                 445
```

```
Lys Leu Lys Lys Lys Lys Lys Lys Ser Lys Met Asp Arg His Gly Asn
    450                 455                 460

Asp Lys Ser Thr Pro Lys Lys Thr Cys Lys Lys Arg Gln Ser Ser Glu
465                 470                 475                 480

Ser Asp Ile Glu Ser Val Ile Tyr Thr Ile Glu Ala Val Ala Lys Gly
                485                 490                 495

Asp Trp Gly Ile Glu Lys Leu Gly Asp Thr Pro Arg Lys Lys Val Arg
            500                 505                 510

Thr Ser Ser Ser Gly Lys Gly Ser Ile Leu Asp Ala Lys Pro Pro Lys
        515                 520                 525

Lys Lys Val Lys Ser Arg Glu Lys Lys Met Ser Lys Glu Lys Ser Ser
    530                 535                 540

Asp Thr Thr Lys Glu Ser Arg Pro Pro Asp Phe Ile Ser Ile Ser Ala
545                 550                 555                 560

Ser Lys Asn Ile Ser Gly Glu Thr Pro Glu Gly Ile Lys Ala Glu Pro
                565                 570                 575

Leu Thr Pro Met Glu Asp Ala Leu Pro Pro Ser Leu Ser Gly Gln Ala
            580                 585                 590

Lys Pro Glu Asp Ser Asp Cys His Arg Lys Ile Glu Thr Cys Gly Ser
        595                 600                 605

Arg Lys Ser Glu Arg Ser Cys Lys Gly Ala Leu Tyr Lys Thr Leu Val
    610                 615                 620

Ser Glu Gly Met Leu Thr Ser Leu Arg Ala Asn Val Asp Arg Gly Lys
625                 630                 635                 640

Arg Ser Ser Gly Lys Gly Asn Ser Ser Asp His Glu Gly Cys Trp Asn
                645                 650                 655

Glu Glu Ser Trp Thr Phe Ser Gln Ser Gly Thr Ser Gly Ser Lys Lys
            660                 665                 670

Phe Lys Lys Thr Lys Pro Lys Glu Asp Cys Leu Leu Gly Ser Ala Lys
```

675 680 685

Leu Asp Glu Glu Phe Glu Lys Lys Phe Asn Ser Leu Pro Gln Tyr Ser
690 695 700

Pro Val Thr Phe Asp Arg Lys Cys Val Pro Val Pro Arg Lys Lys Lys
705 710 715 720

Lys Thr Gly Asn Val Ser Ser Glu Pro Thr Lys Thr Ser Lys Gly Ser
725 730 735

Gly Asp Lys Trp Ser Asn Lys Gln Leu Phe Leu Asp Ala Ile His Pro
740 745 750

Thr Glu Ala Ile Phe Ser Glu Asp Arg Asn Thr Met Glu Pro Val His
755 760 765

Lys Val Lys Asn Ile Pro Ser Ile Phe Asn Thr Pro Glu Pro Thr Thr
770 775 780

Thr Gln Glu Pro Leu Val Gly Ser Gln Lys Arg Lys Ala Arg Lys Thr
785 790 795 800

Lys Ile Thr His Leu Val Arg Thr Ala Asp Gly Arg Val Ser Pro Ala
805 810 815

Gly Gly Thr Leu Asp Asp Lys Pro Lys Glu Gln Leu Gln Arg Ser Leu
820 825 830

Pro Lys Ala Thr Glu Thr Asp Cys Asn Asp Lys Cys Ser His Asn Thr
835 840 845

Glu Val Gly Glu Thr Arg Ser Ser Thr Pro Glu Met Pro Ala Val Ser
850 855 860

Ala Phe Phe Ser Leu Ala Ala Leu Ala Glu Val Ala Ala Met Glu Asn
865 870 875 880

Val His Arg Gly Gln Arg Ser Thr Pro Leu Thr His Asp Gly Gln Pro
885 890 895

Lys Glu Met Pro Gln Ala Pro Val Leu Ile Ser Cys Ala Asp Gln
900 905 910

<210> 9264
<211> 24
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412390"

<400> 9264
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1 5 10 15

Val Gly Lys Arg Pro Lys Arg Lys
20

<210> 9265
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413274"

<400> 9265
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly

```
1               5                   10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95

Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro Gln Leu Asn Phe Gly Met Ala Asp Pro Thr Gln Met
        195                 200                 205
```

<210> 9266
<211> 193
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413320"

<400> 9266

```
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                  10                  15


Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30


Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45


Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60


Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80


Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95


Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110


Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125


Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140


Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160
```

```
Thr Pro Thr Val Asn Pro Arg Lys Lys Leu Trp Ala Phe Pro Ser Asp
                165                 170                 175

Ser Ser Arg Asp Leu Pro Ser Pro Lys Lys Ala Lys Thr Glu Glu Met
            180                 185                 190

Pro
```

<210> 9267
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1880; "

<220>
<221> source
<223> /note="Gene Symbol: BBX; "

<220>
<221> source
<223> /note="Gene Name:
bobby sox homolog (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414673"

<400> 9267

```
Met Lys Gly Ser Asn Arg Asn Lys Asp His Ser Ala Glu Gly Glu Gly
1               5                   10                  15

Val Gly Lys Arg Pro Lys Arg Lys Cys Leu Gln Trp His Pro Leu Leu
            20                  25                  30

Ala Lys Lys Leu Leu Asp Phe Ser Glu Glu Glu Glu Glu Glu Asp Glu
        35                  40                  45

Glu Glu Asp Ile Asp Lys Val Gln Leu Leu Gly Ala Asp Gly Leu Glu
    50                  55                  60

Gln Asp Val Gly Glu Thr Glu Asp Asp Glu Ser Pro Glu Gln Arg Ala
65                  70                  75                  80

Arg Arg Pro Met Asn Ala Phe Leu Leu Phe Cys Lys Arg His Arg Ser
                85                  90                  95
```

```
Leu Val Arg Gln Glu His Pro Arg Leu Asp Asn Arg Gly Ala Thr Lys
            100                 105                 110

Ile Leu Ala Asp Trp Trp Ala Val Leu Asp Pro Lys Glu Lys Gln Lys
        115                 120                 125

Tyr Thr Asp Met Ala Lys Glu Tyr Lys Asp Ala Phe Met Lys Ala Asn
    130                 135                 140

Pro Gly Tyr Lys Trp Cys Pro Thr Thr Asn Lys Pro Val Lys Ser Pro
145                 150                 155                 160

Thr Pro Thr Val Asn Pro
                165
```

<210> 9268
<211> 1115
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BWV1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000273395"

<400> 9268

```
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1               5                   10                  15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
            20                  25                  30
```

```
Asn Glu Val Pro Gln Val Thr Val Gln Pro Ala Ser Thr Val Gln Lys
        35                  40                  45

Pro Gly Gly Thr Val Ile Leu Gly Cys Val Val Glu Pro Pro Arg Met
    50                  55                  60

Asn Val Thr Trp Arg Leu Asn Gly Lys Glu Leu Asn Gly Ser Asp Asp
65                  70                  75                  80

Ala Leu Gly Val Leu Ile Thr His Gly Thr Leu Val Ile Thr Ala Leu
                85                  90                  95

Asn Asn His Thr Val Gly Arg Tyr Gln Cys Val Ala Arg Met Pro Ala
            100                 105                 110

Gly Ala Val Ala Ser Val Pro Ala Thr Val Thr Leu Ala Asn Leu Gln
        115                 120                 125

Asp Phe Lys Leu Asp Val Gln His Val Ile Glu Val Asp Glu Gly Asn
    130                 135                 140

Thr Ala Val Ile Ala Cys His Leu Pro Glu Ser His Pro Lys Ala Gln
145                 150                 155                 160

Val Arg Tyr Ser Val Lys Gln Glu Trp Leu Glu Ala Ser Arg Gly Asn
                165                 170                 175

Tyr Leu Ile Met Pro Ser Gly Asn Leu Gln Ile Val Asn Ala Ser Gln
            180                 185                 190

Glu Asp Glu Gly Met Tyr Lys Cys Ala Ala Tyr Asn Pro Val Thr Gln
        195                 200                 205

Glu Val Lys Thr Ser Gly Ser Ser Asp Arg Leu Arg Val Arg Arg Ser
    210                 215                 220

Thr Ala Glu Ala Ala Arg Ile Ile Tyr Pro Pro Glu Ala Gln Thr Ile
225                 230                 235                 240

Ile Val Thr Lys Gly Gln Ser Leu Ile Leu Glu Cys Val Ala Ser Gly
                245                 250                 255
```

```
Ile Pro Pro Pro Arg Val Thr Trp Ala Lys Asp Gly Ser Ser Val Thr
            260                 265                 270

Gly Tyr Asn Lys Thr Arg Phe Leu Leu Ser Asn Leu Leu Ile Asp Thr
        275                 280                 285

Thr Ser Glu Glu Asp Ser Gly Thr Tyr Arg Cys Met Ala Asp Asn Gly
    290                 295                 300

Val Gly Gln Pro Gly Ala Ala Val Ile Leu Tyr Asn Val Gln Val Phe
305                 310                 315                 320

Glu Pro Pro Glu Val Thr Met Glu Leu Ser Gln Leu Val Ile Pro Trp
                325                 330                 335

Gly Gln Ser Ala Lys Leu Thr Cys Glu Val Arg Gly Asn Pro Pro Pro
            340                 345                 350

Ser Val Leu Trp Leu Arg Asn Ala Val Pro Leu Ile Ser Ser Gln Arg
        355                 360                 365

Leu Arg Leu Ser Arg Arg Ala Leu Arg Val Leu Ser Met Gly Pro Glu
    370                 375                 380

Asp Glu Gly Val Tyr Gln Cys Met Ala Glu Asn Glu Val Gly Ser Ala
385                 390                 395                 400

His Ala Val Val Gln Leu Arg Thr Ser Arg Pro Ser Ile Thr Pro Arg
                405                 410                 415

Leu Trp Gln Asp Ala Glu Leu Ala Thr Gly Thr Pro Pro Val Ser Pro
            420                 425                 430

Ser Lys Leu Gly Asn Pro Glu Gln Met Leu Arg Gly Gln Pro Ala Leu
        435                 440                 445

Pro Arg Pro Pro Thr Ser Val Gly Pro Ala Ser Pro Gln Cys Pro Gly
    450                 455                 460

Glu Lys Gly Gln Gly Ala Pro Ala Glu Ala Pro Ile Ile Leu Ser Ser
465                 470                 475                 480

Pro Arg Thr Ser Lys Thr Asp Ser Tyr Glu Leu Val Trp Arg Pro Arg
```

485 490 495

His Glu Gly Ser Gly Arg Ala Pro Ile Leu Tyr Tyr Val Val Lys His
500 505 510

Arg Lys Gln Val Thr Asn Ser Ser Asp Asp Trp Thr Ile Ser Gly Ile
515 520 525

Pro Ala Asn Gln His Arg Leu Thr Leu Thr Arg Leu Asp Pro Gly Ser
530 535 540

Leu Tyr Glu Val Glu Met Ala Ala Tyr Asn Cys Ala Gly Glu Gly Gln
545 550 555 560

Thr Ala Met Val Thr Phe Arg Thr Gly Arg Arg Pro Lys Pro Glu Ile
565 570 575

Met Ala Ser Lys Glu Gln Gln Ile Gln Arg Asp Asp Pro Gly Ala Ser
580 585 590

Pro Gln Ser Ser Ser Gln Pro Asp His Gly Arg Leu Ser Pro Pro Glu
595 600 605

Ala Pro Asp Arg Pro Thr Ile Ser Thr Ala Ser Glu Thr Ser Val Tyr
610 615 620

Val Thr Trp Ile Pro Arg Gly Asn Gly Gly Phe Pro Ile Gln Ser Phe
625 630 635 640

Arg Val Glu Tyr Lys Lys Leu Lys Lys Val Gly Asp Trp Ile Leu Ala
645 650 655

Thr Ser Ala Ile Pro Pro Ser Arg Leu Ser Val Glu Ile Thr Gly Leu
660 665 670

Glu Lys Gly Thr Ser Tyr Lys Phe Arg Val Arg Ala Leu Asn Met Leu
675 680 685

Gly Glu Ser Glu Pro Ser Ala Pro Ser Arg Pro Tyr Val Val Ser Gly
690 695 700

Tyr Ser Gly Arg Val Tyr Glu Arg Pro Val Ala Gly Pro Tyr Ile Thr
705 710 715 720

```
Phe Thr Asp Ala Val Asn Glu Thr Thr Ile Met Leu Lys Trp Met Tyr
                725                 730                 735

Ile Pro Ala Ser Asn Asn Asn Thr Pro Ile His Gly Phe Tyr Ile Tyr
            740                 745                 750

Tyr Arg Pro Thr Asp Ser Asp Asn Asp Ser Asp Tyr Lys Lys Asp Met
        755                 760                 765

Val Glu Gly Asp Lys Tyr Trp His Ser Ile Ser His Leu Gln Pro Glu
    770                 775                 780

Thr Ser Tyr Asp Ile Lys Met Gln Cys Phe Asn Glu Gly Gly Glu Ser
785                 790                 795                 800

Glu Phe Ser Asn Val Met Ile Cys Glu Thr Lys Ala Arg Lys Ser Ser
                805                 810                 815

Gly Gln Pro Gly Arg Leu Pro Pro Pro Thr Leu Ala Pro Pro Gln Pro
            820                 825                 830

Pro Leu Pro Glu Thr Ile Glu Arg Pro Val Gly Thr Gly Ala Met Val
        835                 840                 845

Ala Arg Ser Ser Asp Leu Pro Tyr Leu Ile Val Gly Val Val Leu Gly
    850                 855                 860

Ser Ile Val Leu Ile Ile Val Thr Phe Ile Pro Phe Cys Leu Trp Arg
865                 870                 875                 880

Ala Trp Ser Lys Gln Lys His Thr Thr Asp Leu Gly Phe Pro Arg Ser
                885                 890                 895

Ala Leu Pro Pro Ser Cys Pro Tyr Thr Met Val Pro Leu Gly Gly Leu
            900                 905                 910

Pro Gly His Gln Ala Ser Gly Gln Pro Tyr Leu Ser Gly Ile Ser Gly
        915                 920                 925

Arg Ala Cys Ala Asn Gly Ile His Met Asn Arg Gly Cys Pro Ser Ala
    930                 935                 940
```

```
Ala Val Gly Tyr Pro Gly Met Lys Pro Gln Gln His Cys Pro Gly Glu
945                 950                 955                 960

Leu Gln Gln Gln Ser Asp Thr Ser Ser Leu Leu Arg Gln Thr His Leu
                965                 970                 975

Gly Asn Gly Tyr Asp Pro Gln Ser His Gln Ile Thr Arg Gly Pro Lys
            980                 985                 990

Ser Ser Pro Asp Glu Gly Ser Phe  Leu Tyr Thr Leu Pro  Asp Asp
Ser
        995                 1000                1005

Thr His  Gln Leu Leu Gln Pro  His His Asp Cys Cys  Gln Arg Gln
    1010                1015                1020

Glu Gln  Pro Ala Ala Val Gly  Gln Ser Gly Val Arg  Arg Ala Pro
    1025                1030                1035

Asp Ser  Pro Val Leu Glu Ala  Val Trp Asp Pro Pro  Phe His Ser
    1040                1045                1050

Gly Pro  Pro Cys Cys Leu Gly  Leu Val Pro Val Glu  Glu Val Asp
    1055                1060                1065

Ser Pro  Asp Ser Cys Gln Val  Ser Gly Gly Asp Trp  Cys Pro Gln
    1070                1075                1080

His Pro  Val Gly Ala Tyr Val  Gly Gln Glu Pro Gly  Met Gln Leu
    1085                1090                1095

Ser Pro  Gly Pro Leu Val Arg  Val Ser Phe Glu Thr  Pro Pro Leu
    1100                1105                1110

Thr Ile
    1115
```

<210> 9269
<211> 1114
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BWV1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347546"

<400> 9269

```
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1               5                  10                  15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
            20                  25                  30

Asn Glu Val Pro Gln Val Thr Val Gln Pro Ala Ser Thr Val Gln Lys
        35                  40                  45

Pro Gly Gly Thr Val Ile Leu Gly Cys Val Val Glu Pro Pro Arg Met
    50                  55                  60

Asn Val Thr Trp Arg Leu Asn Gly Lys Glu Leu Asn Gly Ser Asp Asp
65                  70                  75                  80

Ala Leu Gly Val Leu Ile Thr His Gly Thr Leu Val Ile Thr Ala Leu
                85                  90                  95

Asn Asn His Thr Val Gly Arg Tyr Gln Cys Val Ala Arg Met Pro Ala
            100                 105                 110

Gly Ala Val Ala Ser Val Pro Ala Thr Val Thr Leu Ala Asn Leu Gln
        115                 120                 125

Asp Phe Lys Leu Asp Val Gln His Val Ile Glu Val Asp Glu Gly Asn
    130                 135                 140
```

```
Thr Ala Val Ile Ala Cys His Leu Pro Glu Ser His Pro Lys Ala Gln
145                 150                 155                 160

Val Arg Tyr Ser Val Lys Gln Glu Trp Leu Glu Ala Ser Arg Gly Asn
                165                 170                 175

Tyr Leu Ile Met Pro Ser Gly Asn Leu Gln Ile Val Asn Ala Ser Gln
            180                 185                 190

Glu Asp Glu Gly Met Tyr Lys Cys Ala Ala Tyr Asn Pro Val Thr Gln
        195                 200                 205

Glu Val Lys Thr Ser Gly Ser Ser Asp Arg Leu Arg Val Arg Arg Ser
    210                 215                 220

Thr Ala Glu Ala Ala Arg Ile Ile Tyr Pro Pro Glu Ala Gln Thr Ile
225                 230                 235                 240

Ile Val Thr Lys Gly Gln Ser Leu Ile Leu Glu Cys Val Ala Ser Gly
                245                 250                 255

Ile Pro Pro Pro Arg Val Thr Trp Ala Lys Asp Gly Ser Ser Val Thr
            260                 265                 270

Gly Tyr Asn Lys Thr Arg Phe Leu Leu Ser Asn Leu Leu Ile Asp Thr
        275                 280                 285

Thr Ser Glu Glu Asp Ser Gly Thr Tyr Arg Cys Met Ala Asp Asn Gly
    290                 295                 300

Val Gly Gln Pro Gly Ala Ala Val Ile Leu Tyr Asn Val Gln Val Phe
305                 310                 315                 320

Glu Pro Pro Glu Val Thr Met Glu Leu Ser Gln Leu Val Ile Pro Trp
                325                 330                 335

Gly Gln Ser Ala Lys Leu Thr Cys Glu Val Arg Gly Asn Pro Pro Pro
            340                 345                 350

Ser Val Leu Trp Leu Arg Asn Ala Val Pro Leu Ile Ser Ser Gln Arg
        355                 360                 365

Leu Arg Leu Ser Arg Arg Ala Leu Arg Val Leu Ser Met Gly Pro Glu
```

```
    370                 375                 380

Asp Glu Gly Val Tyr Gln Cys Met Ala Glu Asn Glu Val Gly Ser Ala
385                 390                 395                 400

His Ala Val Val Gln Leu Arg Thr Ser Arg Pro Ser Ile Thr Pro Arg
                405                 410                 415

Leu Trp Gln Asp Ala Glu Leu Ala Thr Gly Thr Pro Pro Val Ser Pro
            420                 425                 430

Ser Lys Leu Gly Asn Pro Glu Gln Met Leu Arg Gly Gln Pro Ala Leu
        435                 440                 445

Pro Arg Pro Pro Thr Ser Val Gly Pro Ala Ser Pro Gln Cys Pro Gly
    450                 455                 460

Glu Lys Gly Gln Gly Ala Pro Ala Glu Ala Pro Ile Ile Leu Ser Ser
465                 470                 475                 480

Pro Arg Thr Ser Lys Thr Asp Ser Tyr Glu Leu Val Trp Arg Pro Arg
                485                 490                 495

His Glu Gly Ser Gly Arg Ala Pro Ile Leu Tyr Tyr Val Val Lys His
            500                 505                 510

Arg Lys Val Thr Asn Ser Ser Asp Asp Trp Thr Ile Ser Gly Ile Pro
        515                 520                 525

Ala Asn Gln His Arg Leu Thr Leu Thr Arg Leu Asp Pro Gly Ser Leu
    530                 535                 540

Tyr Glu Val Glu Met Ala Ala Tyr Asn Cys Ala Gly Glu Gly Gln Thr
545                 550                 555                 560

Ala Met Val Thr Phe Arg Thr Gly Arg Arg Pro Lys Pro Glu Ile Met
                565                 570                 575

Ala Ser Lys Glu Gln Gln Ile Gln Arg Asp Asp Pro Gly Ala Ser Pro
            580                 585                 590

Gln Ser Ser Ser Gln Pro Asp His Gly Arg Leu Ser Pro Pro Glu Ala
        595                 600                 605
```

```
Pro Asp Arg Pro Thr Ile Ser Thr Ala Ser Glu Thr Ser Val Tyr Val
    610                 615                 620

Thr Trp Ile Pro Arg Gly Asn Gly Gly Phe Pro Ile Gln Ser Phe Arg
625                 630                 635                 640

Val Glu Tyr Lys Lys Leu Lys Lys Val Gly Asp Trp Ile Leu Ala Thr
                645                 650                 655

Ser Ala Ile Pro Pro Ser Arg Leu Ser Val Glu Ile Thr Gly Leu Glu
            660                 665                 670

Lys Gly Thr Ser Tyr Lys Phe Arg Val Arg Ala Leu Asn Met Leu Gly
        675                 680                 685

Glu Ser Glu Pro Ser Ala Pro Ser Arg Pro Tyr Val Val Ser Gly Tyr
    690                 695                 700

Ser Gly Arg Val Tyr Glu Arg Pro Val Ala Gly Pro Tyr Ile Thr Phe
705                 710                 715                 720

Thr Asp Ala Val Asn Glu Thr Thr Ile Met Leu Lys Trp Met Tyr Ile
                725                 730                 735

Pro Ala Ser Asn Asn Asn Thr Pro Ile His Gly Phe Tyr Ile Tyr Tyr
            740                 745                 750

Arg Pro Thr Asp Ser Asp Asn Asp Ser Asp Tyr Lys Lys Asp Met Val
        755                 760                 765

Glu Gly Asp Lys Tyr Trp His Ser Ile Ser His Leu Gln Pro Glu Thr
    770                 775                 780

Ser Tyr Asp Ile Lys Met Gln Cys Phe Asn Glu Gly Gly Glu Ser Glu
785                 790                 795                 800

Phe Ser Asn Val Met Ile Cys Glu Thr Lys Ala Arg Lys Ser Ser Gly
                805                 810                 815

Gln Pro Gly Arg Leu Pro Pro Pro Thr Leu Ala Pro Pro Gln Pro Pro
            820                 825                 830
```

```
Leu Pro Glu Thr Ile Glu Arg Pro Val Gly Thr Gly Ala Met Val Ala
        835                 840                 845

Arg Ser Ser Asp Leu Pro Tyr Leu Ile Val Gly Val Val Leu Gly Ser
    850                 855                 860

Ile Val Leu Ile Ile Val Thr Phe Ile Pro Phe Cys Leu Trp Arg Ala
865                 870                 875                 880

Trp Ser Lys Gln Lys His Thr Thr Asp Leu Gly Phe Pro Arg Ser Ala
                885                 890                 895

Leu Pro Pro Ser Cys Pro Tyr Thr Met Val Pro Leu Gly Gly Leu Pro
            900                 905                 910

Gly His Gln Ala Ser Gly Gln Pro Tyr Leu Ser Gly Ile Ser Gly Arg
        915                 920                 925

Ala Cys Ala Asn Gly Ile His Met Asn Arg Gly Cys Pro Ser Ala Ala
    930                 935                 940

Val Gly Tyr Pro Gly Met Lys Pro Gln Gln His Cys Pro Gly Glu Leu
945                 950                 955                 960

Gln Gln Gln Ser Asp Thr Ser Ser Leu Leu Arg Gln Thr His Leu Gly
                965                 970                 975

Asn Gly Tyr Asp Pro Gln Ser His Gln Ile Thr Arg Gly Pro Lys Ser
            980                 985                 990

Ser Pro Asp Glu Gly Ser Phe Leu  Tyr Thr Leu Pro Asp  Asp Ser
Thr
        995                 1000                1005

His Gln  Leu Leu Gln Pro His  His Asp Cys Cys Gln  Arg Gln Glu
    1010                1015                1020

Gln Pro  Ala Ala Val Gly Gln  Ser Gly Val Arg Arg  Ala Pro Asp
    1025                1030                1035

Ser Pro  Val Leu Glu Ala Val  Trp Asp Pro Pro Phe  His Ser Gly
    1040                1045                1050
```

```
Pro Pro  Cys Cys Leu Gly Leu  Val Pro Val Glu Glu  Val Asp Ser
    1055                1060                1065

Pro Asp  Ser Cys Gln Val Ser  Gly Gly Asp Trp Cys  Pro Gln His
    1070                1075                1080

Pro Val  Gly Ala Tyr Val Gly  Gln Glu Pro Gly Met  Gln Leu Ser
    1085                1090                1095

Pro Gly  Pro Leu Val Arg Val  Ser Phe Glu Thr Pro  Pro Leu Thr
    1100                1105                1110

Ile
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<210> 9270
<211> 157
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417337"

<400> 9270

```
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1               5                  10                  15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
            20                  25                  30

Asn Glu Val Pro Gln Val Thr Val Gln Pro Ala Ser Thr Val Gln Lys
        35                  40                  45
```

```
Pro Gly Gly Thr Val Ile Leu Gly Cys Val Val Glu Pro Pro Arg Met
    50                  55                  60

Asn Val Thr Trp Arg Leu Asn Gly Lys Glu Leu Asn Gly Ser Asp Asp
65                  70                  75                  80

Ala Leu Gly Val Leu Ile Thr His Gly Thr Leu Val Ile Thr Ala Leu
                85                  90                  95

Asn Asn His Thr Val Gly Arg Tyr Gln Cys Val Ala Arg Met Pro Ala
            100                 105                 110

Gly Ala Val Ala Ser Val Pro Ala Thr Val Thr Leu Ala Ser Glu Ser
        115                 120                 125

Ala Pro Leu Pro Pro Cys His Gly Ala Val Pro Pro His Leu Ser His
    130                 135                 140

Pro Glu Ala Pro Thr Ile His Ala Ala Ser Cys Tyr Ser
145                 150                 155


<210> 9271
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
      BOC cell adhesion
      associated, oncogene regulated; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417362"

<400> 9271
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1               5                   10                  15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
```

20 25 30

Asn Glu Val Pro Gln Val Thr Val Gln Pro Ala Ser Thr Val Gln Lys
35 40 45

Pro Gly Gly Thr Val Ile Leu Gly Cys Val Val Glu Pro Pro Arg Met
50 55 60

Asn Val Thr Trp Arg Leu Asn Gly Lys Glu Leu Asn Gly Ser Asp Asp
65 70 75 80

Ala Leu Gly Val

<210> 9272
<211> 21
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418118"

<400> 9272
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1 5 10 15

Thr Leu Ala Cys Leu
20

<210> 9273
<211> 39
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418182"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9273
Xaa Gln Gln Gln Ser Asp Thr Ser Ser Leu Leu Arg Gln Thr His Leu
1 5 10 15

Gly Asn Gly Tyr Asp Pro Gln Ser His Gln Ile Thr Arg Ala Pro Met
20 25 30

Leu Leu Gly Pro Cys Ala Ser
35

<210> 9274
<211> 32
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000418260"

<400> 9274
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1   5   10   15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
            20   25   30

<210> 9275
<211> 1114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
<221> source
<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BWV1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418663"

<400> 9275
Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1   5   10   15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
            20   25   30

Asn Glu Val Pro Gln Val Thr Val Gln Pro Ala Ser Thr Val Gln Lys
        35   40   45

Pro Gly Gly Thr Val Ile Leu Gly Cys Val Val Glu Pro Pro Arg Met
    50   55   60

Asn Val Thr Trp Arg Leu Asn Gly Lys Glu Leu Asn Gly Ser Asp Asp
65   70   75   80

```
Ala Leu Gly Val Leu Ile Thr His Gly Thr Leu Val Ile Thr Ala Leu
                85                  90                  95

Asn Asn His Thr Val Gly Arg Tyr Gln Cys Val Ala Arg Met Pro Ala
            100                 105                 110

Gly Ala Val Ala Ser Val Pro Ala Thr Val Thr Leu Ala Asn Leu Gln
        115                 120                 125

Asp Phe Lys Leu Asp Val Gln His Val Ile Glu Val Asp Glu Gly Asn
    130                 135                 140

Thr Ala Val Ile Ala Cys His Leu Pro Glu Ser His Pro Lys Ala Gln
145                 150                 155                 160

Val Arg Tyr Ser Val Lys Gln Glu Trp Leu Glu Ala Ser Arg Gly Asn
                165                 170                 175

Tyr Leu Ile Met Pro Ser Gly Asn Leu Gln Ile Val Asn Ala Ser Gln
            180                 185                 190

Glu Asp Glu Gly Met Tyr Lys Cys Ala Ala Tyr Asn Pro Val Thr Gln
        195                 200                 205

Glu Val Lys Thr Ser Gly Ser Ser Asp Arg Leu Arg Val Arg Arg Ser
    210                 215                 220

Thr Ala Glu Ala Ala Arg Ile Ile Tyr Pro Pro Glu Ala Gln Thr Ile
225                 230                 235                 240

Ile Val Thr Lys Gly Gln Ser Leu Ile Leu Glu Cys Val Ala Ser Gly
                245                 250                 255

Ile Pro Pro Pro Arg Val Thr Trp Ala Lys Asp Gly Ser Ser Val Thr
            260                 265                 270

Gly Tyr Asn Lys Thr Arg Phe Leu Leu Ser Asn Leu Leu Ile Asp Thr
        275                 280                 285

Thr Ser Glu Glu Asp Ser Gly Thr Tyr Arg Cys Met Ala Asp Asn Gly
    290                 295                 300
```

```
Val Gly Gln Pro Gly Ala Ala Val Ile Leu Tyr Asn Val Gln Val Phe
305                 310                 315                 320

Glu Pro Pro Glu Val Thr Met Glu Leu Ser Gln Leu Val Ile Pro Trp
                325                 330                 335

Gly Gln Ser Ala Lys Leu Thr Cys Glu Val Arg Gly Asn Pro Pro Pro
            340                 345                 350

Ser Val Leu Trp Leu Arg Asn Ala Val Pro Leu Ile Ser Ser Gln Arg
        355                 360                 365

Leu Arg Leu Ser Arg Arg Ala Leu Arg Val Leu Ser Met Gly Pro Glu
    370                 375                 380

Asp Glu Gly Val Tyr Gln Cys Met Ala Glu Asn Glu Val Gly Ser Ala
385                 390                 395                 400

His Ala Val Val Gln Leu Arg Thr Ser Arg Pro Ser Ile Thr Pro Arg
                405                 410                 415

Leu Trp Gln Asp Ala Glu Leu Ala Thr Gly Thr Pro Pro Val Ser Pro
            420                 425                 430

Ser Lys Leu Gly Asn Pro Glu Gln Met Leu Arg Gly Gln Pro Ala Leu
        435                 440                 445

Pro Arg Pro Pro Thr Ser Val Gly Pro Ala Ser Pro Gln Cys Pro Gly
    450                 455                 460

Glu Lys Gly Gln Gly Ala Pro Ala Glu Ala Pro Ile Ile Leu Ser Ser
465                 470                 475                 480

Pro Arg Thr Ser Lys Thr Asp Ser Tyr Glu Leu Val Trp Arg Pro Arg
                485                 490                 495

His Glu Gly Ser Gly Arg Ala Pro Ile Leu Tyr Tyr Val Val Lys His
            500                 505                 510

Arg Lys Val Thr Asn Ser Ser Asp Asp Trp Thr Ile Ser Gly Ile Pro
        515                 520                 525
```

```
Ala Asn Gln His Arg Leu Thr Leu Thr Arg Leu Asp Pro Gly Ser Leu
    530                 535                 540

Tyr Glu Val Glu Met Ala Ala Tyr Asn Cys Ala Gly Glu Gly Gln Thr
545                 550                 555                 560

Ala Met Val Thr Phe Arg Thr Gly Arg Arg Pro Lys Pro Glu Ile Met
                565                 570                 575

Ala Ser Lys Glu Gln Gln Ile Gln Arg Asp Asp Pro Gly Ala Ser Pro
            580                 585                 590

Gln Ser Ser Ser Gln Pro Asp His Gly Arg Leu Ser Pro Pro Glu Ala
        595                 600                 605

Pro Asp Arg Pro Thr Ile Ser Thr Ala Ser Glu Thr Ser Val Tyr Val
    610                 615                 620

Thr Trp Ile Pro Arg Gly Asn Gly Gly Phe Pro Ile Gln Ser Phe Arg
625                 630                 635                 640

Val Glu Tyr Lys Lys Leu Lys Lys Val Gly Asp Trp Ile Leu Ala Thr
                645                 650                 655

Ser Ala Ile Pro Pro Ser Arg Leu Ser Val Glu Ile Thr Gly Leu Glu
            660                 665                 670

Lys Gly Thr Ser Tyr Lys Phe Arg Val Arg Ala Leu Asn Met Leu Gly
        675                 680                 685

Glu Ser Glu Pro Ser Ala Pro Ser Arg Pro Tyr Val Val Ser Gly Tyr
    690                 695                 700

Ser Gly Arg Val Tyr Glu Arg Pro Val Ala Gly Pro Tyr Ile Thr Phe
705                 710                 715                 720

Thr Asp Ala Val Asn Glu Thr Thr Ile Met Leu Lys Trp Met Tyr Ile
                725                 730                 735

Pro Ala Ser Asn Asn Asn Thr Pro Ile His Gly Phe Tyr Ile Tyr Tyr
            740                 745                 750

Arg Pro Thr Asp Ser Asp Asn Asp Ser Asp Tyr Lys Lys Asp Met Val
```

```
        755                 760                 765

Glu Gly Asp Lys Tyr Trp His Ser Ile Ser His Leu Gln Pro Glu Thr
    770                 775                 780

Ser Tyr Asp Ile Lys Met Gln Cys Phe Asn Glu Gly Gly Glu Ser Glu
785                 790                 795                 800

Phe Ser Asn Val Met Ile Cys Glu Thr Lys Ala Arg Lys Ser Ser Gly
                805                 810                 815

Gln Pro Gly Arg Leu Pro Pro Pro Thr Leu Ala Pro Pro Gln Pro Pro
            820                 825                 830

Leu Pro Glu Thr Ile Glu Arg Pro Val Gly Thr Gly Ala Met Val Ala
        835                 840                 845

Arg Ser Ser Asp Leu Pro Tyr Leu Ile Val Gly Val Val Leu Gly Ser
    850                 855                 860

Ile Val Leu Ile Ile Val Thr Phe Ile Pro Phe Cys Leu Trp Arg Ala
865                 870                 875                 880

Trp Ser Lys Gln Lys His Thr Thr Asp Leu Gly Phe Pro Arg Ser Ala
                885                 890                 895

Leu Pro Pro Ser Cys Pro Tyr Thr Met Val Pro Leu Gly Gly Leu Pro
            900                 905                 910

Gly His Gln Ala Ser Gly Gln Pro Tyr Leu Ser Gly Ile Ser Gly Arg
        915                 920                 925

Ala Cys Ala Asn Gly Ile His Met Asn Arg Gly Cys Pro Ser Ala Ala
    930                 935                 940

Val Gly Tyr Pro Gly Met Lys Pro Gln Gln His Cys Pro Gly Glu Leu
945                 950                 955                 960

Gln Gln Gln Ser Asp Thr Ser Ser Leu Leu Arg Gln Thr His Leu Gly
                965                 970                 975

Asn Gly Tyr Asp Pro Gln Ser His Gln Ile Thr Arg Gly Pro Lys Ser
            980                 985                 990
```

Ser Pro Asp Glu Gly Ser Phe Leu Tyr Thr Leu Pro Asp Asp Ser
Thr
995 1000 1005

His Gln Leu Leu Gln Pro His His Asp Cys Cys Gln Arg Gln Glu
1010 1015 1020

Gln Pro Ala Ala Val Gly Gln Ser Gly Val Arg Arg Ala Pro Asp
1025 1030 1035

Ser Pro Val Leu Glu Ala Val Trp Asp Pro Pro Phe His Ser Gly
1040 1045 1050

Pro Pro Cys Cys Leu Gly Leu Val Pro Val Glu Glu Val Asp Ser
1055 1060 1065

Pro Asp Ser Cys Gln Val Ser Gly Gly Asp Trp Cys Pro Gln His
1070 1075 1080

Pro Val Gly Ala Tyr Val Gly Gln Glu Pro Gly Met Gln Leu Ser
1085 1090 1095

Pro Gly Pro Leu Val Arg Val Ser Phe Glu Thr Pro Pro Leu Thr
1100 1105 1110

Ile

<210> 9276
<211> 65
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1881; "

<220>
<221> source
<223> /note="Gene Symbol: BOC; "

<220>
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<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419022"

<400> 9276
Met Thr His Glu Val Leu Ser Thr Phe Ile Pro Ser Glu Gly Ser Ser
1   5   10   15

Ser Lys Val Glu Glu Val Asp Leu Gln Asp Phe Lys Leu Asp Val Gln
            20   25   30

His Val Ile Glu Val Asp Glu Gly Asn Thr Ala Val Ile Ala Cys His
        35   40   45

Leu Pro Glu Ser His Pro Lys Ala Gln Val Arg Tyr Ser Val Lys Gln
    50   55   60

Glu
65

<210> 9277
<211> 84
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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      associated, oncogene regulated; "

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<223> /note="ENSP ID: ENSP00000420056"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 9277
Xaa Arg Ala Cys Ala Asn Gly Ile His Met Asn Arg Gly Cys Pro Ser

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1               5                   10                  15

Ala Ala Val Gly Tyr Pro Gly Met Lys Pro Gln Gln His Cys Pro Gly
            20                  25                  30

Glu Leu Gln Gln Gln Ser Asp Thr Ser Ser Leu Leu Arg Gln Thr His
        35                  40                  45

Leu Gly Asn Gly Tyr Asp Pro Gln Ser His Gln Ile Thr Ser Cys Cys
    50                  55                  60

Ser Pro Ile Thr Thr Ala Ala Asn Ala Arg Ser Ser Leu Leu Leu Trp
65                  70                  75                  80

Ala Ser Gln Gly
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<210> 9278
<211> 157
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
BOC cell adhesion
associated, oncogene regulated; "

<220>
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<223> /note="ENSP ID: ENSP00000420154"

<400> 9278

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Met Leu Arg Gly Thr Met Thr Ala Trp Arg Gly Met Arg Pro Glu Val
1               5                   10                  15

Thr Leu Ala Cys Leu Leu Leu Ala Thr Ala Gly Cys Phe Ala Asp Leu
            20                  25                  30

Asn Glu Val Pro Gln Val Thr Val Gln Pro Ala Ser Thr Val Gln Lys
        35                  40                  45
```

```
Pro Gly Gly Thr Val Ile Leu Gly Cys Val Val Glu Pro Pro Arg Met
    50                  55                  60

Asn Val Thr Trp Arg Leu Asn Gly Lys Glu Leu Asn Gly Ser Asp Asp
65                  70                  75                  80

Ala Leu Gly Val Leu Ile Thr His Gly Thr Leu Val Ile Thr Ala Leu
                85                  90                  95

Asn Asn His Thr Val Gly Arg Tyr Gln Cys Val Ala Arg Met Pro Ala
            100                 105                 110

Gly Ala Val Ala Ser Val Pro Ala Thr Val Thr Leu Ala Ser Glu Ser
        115                 120                 125

Ala Pro Leu Pro Pro Cys His Gly Ala Val Pro Pro His Leu Ser His
    130                 135                 140

Pro Glu Ala Pro Thr Ile His Ala Ala Ser Cys Tyr Ser
145                 150                 155


<210> 9279
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1882; "

<220>
<221> source
<223> /note="Gene Symbol: BOLA1; "

<220>
<221> source
<223> /note="Gene Name:
      bolA family
      member 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9Y3E2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358146"
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<400> 9279
Met Leu Ser Gly Arg Leu Val Leu Gly Leu Val Ser Met Ala Gly Arg
1 5 10 15

Val Cys Leu Cys Gln Gly Ser Ala Gly Ser Gly Ala Ile Gly Pro Val
20 25 30

Glu Ala Ala Ile Arg Thr Lys Leu Glu Glu Ala Leu Ser Pro Glu Val
35 40 45

Leu Glu Leu Arg Asn Glu Ser Gly Gly His Ala Val Pro Pro Gly Ser
50 55 60

Glu Thr His Phe Arg Val Ala Val Val Ser Ser Arg Phe Glu Gly Leu
65 70 75 80

Ser Pro Leu Gln Arg His Arg Leu Val His Ala Ala Leu Ala Glu Glu
85 90 95

Leu Gly Gly Pro Val His Ala Leu Ala Ile Gln Ala Arg Thr Pro Ala
100 105 110

Gln Trp Arg Glu Asn Ser Gln Leu Asp Thr Ser Pro Pro Cys Leu Gly
115 120 125

Gly Asn Lys Lys Thr Leu Gly Thr Pro
130 135

<210> 9280
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: BOLA1; "

<220>
<221> source
<223> /note="Gene Name:
bolA family
member 1; "

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<221> source
<223> /note="Uniprot ID: Q9Y3E2; "

<220>
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<223> /note="ENSP ID: ENSP00000358148"

<400> 9280
Met Leu Ser Gly Arg Leu Val Leu Gly Leu Val Ser Met Ala Gly Arg
1   5   10   15

Val Cys Leu Cys Gln Gly Ser Ala Gly Ser Gly Ala Ile Gly Pro Val
            20   25   30

Glu Ala Ala Ile Arg Thr Lys Leu Glu Glu Ala Leu Ser Pro Glu Val
        35   40   45

Leu Glu Leu Arg Asn Glu Ser Gly Gly His Ala Val Pro Pro Gly Ser
    50   55   60

Glu Thr His Phe Arg Val Ala Val Val Ser Ser Arg Phe Glu Gly Leu
65   70   75   80

Ser Pro Leu Gln Arg His Arg Leu Val His Ala Ala Leu Ala Glu Glu
                85   90   95

Leu Gly Gly Pro Val His Ala Leu Ala Ile Gln Ala Arg Thr Pro Ala
            100   105   110

Gln Trp Arg Glu Asn Ser Gln Leu Asp Thr Ser Pro Pro Cys Leu Gly
        115   120   125

Gly Asn Lys Lys Thr Leu Gly Thr Pro
    130   135

<210> 9281
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1882; "

<220>
<221> source
<223> /note="Gene Symbol: BOLA1; "

<220>
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<223> /note="Gene Name:
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member 1; "

<220>
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<223> /note="Uniprot ID: Q9Y3E2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358149"

<400> 9281
Met Leu Ser Gly Arg Leu Val Leu Gly Leu Val Ser Met Ala Gly Arg
1 5 10 15

Val Cys Leu Cys Gln Gly Ser Ala Gly Ser Gly Ala Ile Gly Pro Val
20 25 30

Glu Ala Ala Ile Arg Thr Lys Leu Glu Glu Ala Leu Ser Pro Glu Val
35 40 45

Leu Glu Leu Arg Asn Glu Ser Gly Gly His Ala Val Pro Pro Gly Ser
50 55 60

Glu Thr His Phe Arg Val Ala Val Val Ser Ser Arg Phe Glu Gly Leu
65 70 75 80

Ser Pro Leu Gln Arg His Arg Leu Val His Ala Ala Leu Ala Glu Glu
85 90 95

Leu Gly Gly Pro Val His Ala Leu Ala Ile Gln Ala Arg Thr Pro Ala
100 105 110

Gln Trp Arg Glu Asn Ser Gln Leu Asp Thr Ser Pro Pro Cys Leu Gly
115 120 125

Gly Asn Lys Lys Thr Leu Gly Thr Pro
130 135

<210> 9282
<211> 152
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1883; "

<220>
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<220>
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<223> /note="Gene Name:
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member 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H3K6; "

<220>
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<223> /note="ENSP ID: ENSP00000331127"

<400> 9282

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Met Ala Ser Ala Lys Ser Leu Asp Arg Trp Lys Ala Arg Leu Leu Glu
1               5                   10                  15

Gly Gly Ser Thr Ala Leu Thr Tyr Ala Leu Val Arg Ala Glu Val Ser
            20                  25                  30

Phe Pro Ala Glu Val Ala Pro Val Arg Gln Gln Gly Ser Val Ala Gly
        35                  40                  45

Ala Arg Ala Gly Val Val Ser Leu Leu Gly Cys Arg Ser Ser Trp Thr
    50                  55                  60

Ala Ala Met Glu Leu Ser Ala Glu Tyr Leu Arg Glu Lys Leu Gln Arg
65                  70                  75                  80

Asp Leu Glu Ala Glu His Val Glu Val Glu Asp Thr Thr Leu Asn Arg
                85                  90                  95

Cys Ser Cys Ser Phe Arg Val Leu Val Val Ser Ala Lys Phe Glu Gly
            100                 105                 110

Lys Pro Leu Leu Gln Arg His Arg Leu Val Asn Ala Cys Leu Ala Glu
        115                 120                 125

Glu Leu Pro His Ile His Ala Phe Glu Gln Lys Thr Leu Thr Pro Asp
    130                 135                 140
```

```
Gln Trp Ala Arg Glu Arg Gln Lys
145                 150


<210> 9283
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1883; "

<220>
<221> source
<223> /note="Gene Symbol: BOLA2; "

<220>
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<223> /note="Gene Name:
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      member 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482868"

<400> 9283
Met Ala Ser Ala Lys Ser Leu Asp Arg Trp Lys Ala Arg Leu Leu Glu
1               5                   10                  15


Gly Gly Ser Thr Ala Leu Thr Tyr Ala Leu Val Arg Ala Glu Val Ser
            20                  25                  30


Phe Pro Ala Glu Val Ala Pro Val Arg Gln Gln Gly Ser Val Ala Gly
        35                  40                  45


Ala Arg Ala Gly Val Val Ser Leu Leu Gly Cys Arg Ser Ser Trp Thr
    50                  55                  60


Ala Ala Met Glu Leu Ser Ala Glu Tyr Leu Arg Glu Lys Leu Gln Arg
65                  70                  75                  80


Asp Leu Glu Ala Glu His Val Glu Val Glu Asp Thr Thr Leu Asn Arg
                85                  90                  95


Cys Ser Cys Ser Phe Arg Val Leu Val Val Ser Ala Lys Phe Glu Gly
            100                 105                 110
```

```
Lys Pro Leu Leu Gln Arg His Arg Leu Val Asn Ala Cys Leu Ala Glu
        115                 120                 125


Glu Leu Pro His Ile His Ala Phe Glu Gln Lys Thr Leu Thr Pro Asp
    130                 135                 140


Gln Trp Ala Arg Glu Arg Gln Lys
145                 150


<210> 9284
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1884; "

<220>
<221> source
<223> /note="Gene Symbol: BOLA2B; "

<220>
<221> source
<223> /note="Gene Name:
      bolA family
      member 2B; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H3K6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000306752"

<400> 9284
Met Ala Ser Ala Lys Ser Leu Asp Arg Trp Lys Ala Arg Leu Leu Glu
1               5                   10                  15


Gly Gly Ser Thr Ala Leu Thr Tyr Ala Leu Val Arg Ala Glu Val Ser
            20                  25                  30


Phe Pro Ala Glu Val Ala Pro Val Arg Gln Gln Gly Ser Val Ala Gly
        35                  40                  45


Ala Arg Ala Gly Val Val Ser Leu Leu Gly Cys Arg Ser Ser Trp Thr
    50                  55                  60


Ala Ala Met Glu Leu Ser Ala Glu Tyr Leu Arg Glu Lys Leu Gln Arg
```

65 70 75 80

Asp Leu Glu Ala Glu His Val Glu Val Glu Asp Thr Thr Leu Asn Arg
85 90 95

Cys Ser Cys Ser Phe Arg Val Leu Val Val Ser Ala Lys Phe Glu Gly
100 105 110

Lys Pro Leu Leu Gln Arg His Arg Leu Val Asn Ala Cys Leu Ala Glu
115 120 125

Glu Leu Pro His Ile His Ala Phe Glu Gln Lys Thr Leu Thr Pro Asp
130 135 140

Gln Trp Ala Arg Glu Arg Gln Lys
145 150

<210> 9285
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1884; "

<220>
<221> source
<223> /note="Gene Symbol: BOLA2B; "

<220>
<221> source
<223> /note="Gene Name:
bolA family
member 2B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455468"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 9285
Xaa Gly Ser Val Ala Gly Ala Arg Ala Gly Val Val Ser Leu Leu Gly
1 5 10 15