SEQUENCE LISTING

<110> Madison, Edwin L.
Soros, Vanessa
Popkov, Mikhail

<120> MODIFIED MEMBRANE TYPE SERINE PROTEASE 1
(MTSP-1) POLYPEPTIDES AND METHODS OF USE

<130> 33328-4939PC

<140> PCT/US2018/038844
<141> 2018-06-21

<150> 62/523,735
<151> 2017-06-22

<150> 62/664,051
<151> 2018-04-27

<160> 692

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 855
<212> PRT
<213> Homo sapiens

<400> 1

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 1               5                  10                  15
Gly Ala Gly Leu Lys Tyr Asn Ser Arg His Glu Lys Val Asn Gly Leu
            20                  25                  30
Glu Glu Gly Val Glu Phe Leu Pro Val Asn Asn Val Lys Lys Val Glu
        35                  40                  45
Lys His Gly Pro Gly Arg Trp Val Val Leu Ala Ala Val Leu Ile Gly
    50                  55                  60
Leu Leu Leu Val Leu Leu Gly Ile Gly Phe Leu Val Trp His Leu Gln
65                  70                  75                  80
Tyr Arg Asp Val Arg Val Gln Lys Val Phe Asn Gly Tyr Met Arg Ile
                85                  90                  95
Thr Asn Glu Asn Phe Val Asp Ala Tyr Glu Asn Ser Asn Ser Thr Glu
            100                 105                 110
Phe Val Ser Leu Ala Ser Lys Val Lys Asp Ala Leu Lys Leu Leu Tyr
        115                 120                 125
Ser Gly Val Pro Phe Leu Gly Pro Tyr His Lys Glu Ser Ala Val Thr
    130                 135                 140
Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp Ser Glu Phe Ser
145                 150                 155                 160
```

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Ile Pro Gln His Leu Val Glu Glu Ala Glu Arg Val Met Ala Glu Glu
                165                 170                 175
Arg Val Val Met Leu Pro Pro Arg Ala Arg Ser Leu Lys Ser Phe Val
            180                 185                 190
Val Thr Ser Val Val Ala Phe Pro Thr Asp Ser Lys Thr Val Gln Arg
        195                 200                 205
Thr Gln Asp Asn Ser Cys Ser Phe Gly Leu His Ala Arg Gly Val Glu
    210                 215                 220
Leu Met Arg Phe Thr Thr Pro Gly Phe Pro Asp Ser Pro Tyr Pro Ala
225                 230                 235                 240
His Ala Arg Cys Gln Trp Ala Leu Arg Gly Asp Ala Asp Ser Val Leu
                245                 250                 255
Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys Asp Glu Arg Gly
            260                 265                 270
Ser Asp Leu Val Thr Val Tyr Asn Thr Leu Ser Pro Met Glu Pro His
        275                 280                 285
Ala Leu Val Gln Leu Cys Gly Thr Tyr Pro Pro Ser Tyr Asn Leu Thr
    290                 295                 300
Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu Ile Thr Asn Thr
305                 310                 315                 320
Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Arg
                325                 330                 335
Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln Gly Thr Phe Asn
            340                 345                 350
Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asp Cys Thr Trp
        355                 360                 365
Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val Arg Phe Lys Phe
    370                 375                 380
Phe Tyr Leu Leu Glu Pro Gly Val Pro Ala Gly Thr Cys Pro Lys Asp
385                 390                 395                 400
Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu Arg Ser Gln Phe
                405                 410                 415
Val Val Thr Ser Asn Ser Asn Lys Ile Thr Val Arg Phe His Ser Asp
            420                 425                 430
Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
        435                 440                 445
Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg Thr Gly Arg Cys
    450                 455                 460
Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Thr Asp His
465                 470                 475                 480
Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His Gln Phe Thr Cys
                485                 490                 495
Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
            500                 505                 510
Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser Cys Pro Ala Gln
        515                 520                 525
Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys Ser Gln Gln Cys
    530                 535                 540
Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Pro
545                 550                 555                 560
Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr Arg Cys Leu Asn
                565                 570                 575
Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp Gly Lys Glu Asp
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            580                 585                 590
Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys Gly Leu Arg Ser
        595                 600                 605
Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp Ala Asp Glu Gly
    610                 615                 620
Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Ile
625                 630                 635                 640
Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val Ser Ala Ala His
                645                 650                 655
Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp
            660                 665                 670
Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg Ser Ala Pro Gly
        675                 680                 685
Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His Pro Phe Phe Asn
    690                 695                 700
Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro
705                 710                 715                 720
Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Cys Leu Pro Asp Ala Ser
                725                 730                 735
His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
            740                 745                 750
Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
        755                 760                 765
Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile
    770                 775                 780
Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785                 790                 795                 800
Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly
                805                 810                 815
Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln
            820                 825                 830
Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp
        835                 840                 845
Ile Lys Glu Asn Thr Gly Val
    850                 855


<210> 2
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain

<400> 2
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
```

```
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Cys Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
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<210> 3
<211> 855
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1)
pro-peptide C122S

<400> 3

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

```
        115                 120                 125
Ser Gly Val Pro Phe Leu Gly Pro Tyr His Lys Glu Ser Ala Val Thr
    130                 135                 140
Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp Ser Glu Phe Ser
145                 150                 155                 160
Ile Pro Gln His Leu Val Glu Glu Ala Glu Arg Val Met Ala Glu Glu
                165                 170                 175
Arg Val Val Met Leu Pro Pro Arg Ala Arg Ser Leu Lys Ser Phe Val
            180                 185                 190
Val Thr Ser Val Val Ala Phe Pro Thr Asp Ser Lys Thr Val Gln Arg
        195                 200                 205
Thr Gln Asp Asn Ser Cys Ser Phe Gly Leu His Ala Arg Gly Val Glu
    210                 215                 220
Leu Met Arg Phe Thr Thr Pro Gly Phe Pro Asp Ser Pro Tyr Pro Ala
225                 230                 235                 240
His Ala Arg Cys Gln Trp Ala Leu Arg Gly Asp Ala Asp Ser Val Leu
                245                 250                 255
Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys Asp Glu Arg Gly
            260                 265                 270
Ser Asp Leu Val Thr Val Tyr Asn Thr Leu Ser Pro Met Glu Pro His
        275                 280                 285
Ala Leu Val Gln Leu Cys Gly Thr Tyr Pro Pro Ser Tyr Asn Leu Thr
    290                 295                 300
Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu Ile Thr Asn Thr
305                 310                 315                 320
Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Arg
                325                 330                 335
Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln Gly Thr Phe Asn
            340                 345                 350
Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asp Cys Thr Trp
        355                 360                 365
Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val Arg Phe Lys Phe
    370                 375                 380
Phe Tyr Leu Leu Glu Pro Gly Val Pro Ala Gly Thr Cys Pro Lys Asp
385                 390                 395                 400
Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu Arg Ser Gln Phe
                405                 410                 415
Val Val Thr Ser Asn Ser Asn Lys Ile Thr Val Arg Phe His Ser Asp
            420                 425                 430
Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
        435                 440                 445
Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg Thr Gly Arg Cys
    450                 455                 460
Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Thr Asp His
465                 470                 475                 480
Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His Gln Phe Thr Cys
                485                 490                 495
Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
            500                 505                 510
Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser Cys Pro Ala Gln
        515                 520                 525
Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys Ser Gln Gln Cys
    530                 535                 540
```

```
Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Pro
545                 550                 555                 560
Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr Arg Cys Leu Asn
                565                 570                 575
Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp Gly Lys Glu Asp
            580                 585                 590
Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys Gly Leu Arg Ser
        595                 600                 605
Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp Ala Asp Glu Gly
    610                 615                 620
Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Ile
625                 630                 635                 640
Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val Ser Ala Ala His
                645                 650                 655
Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp
            660                 665                 670
Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg Ser Ala Pro Gly
        675                 680                 685
Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His Pro Phe Phe Asn
    690                 695                 700
Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro
705                 710                 715                 720
Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser
                725                 730                 735
His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
            740                 745                 750
Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
        755                 760                 765
Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile
    770                 775                 780
Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785                 790                 795                 800
Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly
                805                 810                 815
Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln
            820                 825                 830
Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp
        835                 840                 845
Ile Lys Glu Asn Thr Gly Val
    850                 855


<210> 4
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain      C122S

<400> 4
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
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```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
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<210> 5
<211> 3149
<212> DNA
<213> Homo sapiens

<400> 5
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tgaatggctt ggaggaaggc gtggagttcc tgccagtcaa caacgtcaag aaggtggaaa 180
agcatggccc ggggcgctgg gtggtgctgg cagccgtgct gatcggcctc ctcttggtct 240
tgctggggat cggcttcctg gtgtggcatt tgcagtaccg ggacgtgcgt gtccagaagg 300
tcttcaatgg ctacatgagg atcacaaatg agaattttgt ggatgcctac gagaactcca 360
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gcggagtccc attcctgggc ccctaccaca aggagtcggc tgtgacggcc ttcagcgagg 480
gcagcgtcat cgcctactac tggtctgagt tcagcatccc gcagcacctg gtggaggagg 540
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ccacgcccgg cttccctgac agcccctacc ccgctcatgc ccgctgccag tgggccctgc 780
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<210> 6
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41T/F97L/F99L/C122S/G151N/Q175S/Q192S/D217W

<400> 6
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15

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Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Trp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
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<210> 7
<211> 723
<212> DNA
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

<400> 7
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gcacactgct acatcgatga cagaggattc aggtactcag accccacgca gtggacggcc 180
ttcctgggct tgcacgacca gagccagcgc agcgcccctg gggtgcagga gcgcaggctc 240
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agcggcggcg tggactcctg ccagggtgat tccgggggac ccctgtccag cgtggaggcg 600
gatgggcgga tcttccaggc cggtgtggtg agctggggag acggctgcgc tcagaggaac 660
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gta 723

<210> 8
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<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97T/F99M/C122S/Q192V/D217M

<400> 8
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Met Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Met Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 9
<211> 1663
<212> PRT
<213> Artificial Sequence

<220>
<223> Complement Protein C3

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Ile Leu Arg Leu Glu Ser Glu Glu Thr Met Val Leu Glu Ala His Asp
        35   40   45
Ala Gln Gly Asp Val Pro Val Thr Val Thr Val His Asp Phe Pro Gly
    50   55   60
Lys Lys Leu Val Leu Ser Ser Glu Lys Thr Val Leu Thr Pro Ala Thr
65   70   75   80
Asn His Met Gly Asn Val Thr Phe Thr Ile Pro Ala Asn Arg Glu Phe
                85   90   95
Lys Ser Glu Lys Gly Arg Asn Lys Phe Val Thr Val Gln Ala Thr Phe
            100   105   110
Gly Thr Gln Val Val Glu Lys Val Val Leu Val Ser Leu Gln Ser Gly
        115   120   125
Tyr Leu Phe Ile Gln Thr Asp Lys Thr Ile Tyr Thr Pro Gly Ser Thr
    130   135   140
Val Leu Tyr Arg Ile Phe Thr Val Asn His Lys Leu Leu Pro Val Gly
145   150   155   160
Arg Thr Val Met Val Asn Ile Glu Asn Pro Glu Gly Ile Pro Val Lys
                165   170   175
Gln Asp Ser Leu Ser Ser Gln Asn Gln Leu Gly Val Leu Pro Leu Ser
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Trp Asp Ile Pro Glu Leu Val Asn Met Gly Gln Trp Lys Ile Arg Ala
        195   200   205
Tyr Tyr Glu Asn Ser Pro Gln Gln Val Phe Ser Thr Glu Phe Glu Val
    210   215   220
Lys Glu Tyr Val Leu Pro Ser Phe Glu Val Ile Val Glu Pro Thr Glu
225   230   235   240
Lys Phe Tyr Tyr Ile Tyr Asn Glu Lys Gly Leu Glu Val Thr Ile Thr
                245   250   255
Ala Arg Phe Leu Tyr Gly Lys Lys Val Glu Gly Thr Ala Phe Val Ile
            260   265   270
Phe Gly Ile Gln Asp Gly Glu Gln Arg Ile Ser Leu Pro Glu Ser Leu
        275   280   285
Lys Arg Ile Pro Ile Glu Asp Gly Ser Gly Glu Val Val Leu Ser Arg
    290   295   300
Lys Val Leu Leu Asp Gly Val Gln Asn Pro Arg Ala Glu Asp Leu Val
305   310   315   320
Gly Lys Ser Leu Tyr Val Ser Ala Thr Val Ile Leu His Ser Gly Ser
                325   330   335
Asp Met Val Gln Ala Glu Arg Ser Gly Ile Pro Ile Val Thr Ser Pro
            340   345   350
Tyr Gln Ile His Phe Thr Lys Thr Pro Lys Tyr Phe Lys Pro Gly Met
        355   360   365
Pro Phe Asp Leu Met Val Phe Val Thr Asn Pro Asp Gly Ser Pro Ala
    370   375   380
Tyr Arg Val Pro Val Ala Val Gln Gly Glu Asp Thr Val Gln Ser Leu

385 390 395 400
Thr Gln Gly Asp Gly Val Ala Lys Leu Ser Ile Asn Thr His Pro Ser
405 410 415
Gln Lys Pro Leu Ser Ile Thr Val Arg Thr Lys Lys Gln Glu Leu Ser
420 425 430
Glu Ala Glu Gln Ala Thr Arg Thr Met Gln Ala Leu Pro Tyr Ser Thr
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Val Gly Asn Ser Asn Asn Tyr Leu His Leu Ser Val Leu Arg Thr Glu
450 455 460
Leu Arg Pro Gly Glu Thr Leu Asn Val Asn Phe Leu Leu Arg Met Asp
465 470 475 480
Arg Ala His Glu Ala Lys Ile Arg Tyr Tyr Thr Tyr Leu Ile Met Asn
485 490 495
Lys Gly Arg Leu Leu Lys Ala Gly Arg Gln Val Arg Glu Pro Gly Gln
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Asp Leu Val Val Leu Pro Leu Ser Ile Thr Thr Asp Phe Ile Pro Ser
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Phe Arg Leu Val Ala Tyr Tyr Thr Leu Ile Gly Ala Ser Gly Gln Arg
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Glu Val Val Ala Asp Ser Val Trp Val Asp Val Lys Asp Ser Cys Val
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Gly Ser Leu Val Val Lys Ser Gly Gln Ser Glu Asp Arg Gln Pro Val
565 570 575
Pro Gly Gln Gln Met Thr Leu Lys Ile Glu Gly Asp His Gly Ala Arg
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Val Val Leu Val Ala Val Asp Lys Gly Val Phe Val Leu Asn Lys Lys
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Asn Lys Leu Thr Gln Ser Lys Ile Trp Asp Val Val Glu Lys Ala Asp
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Ile Gly Cys Thr Pro Gly Ser Gly Lys Asp Tyr Ala Gly Val Phe Ser
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Asp Ala Gly Leu Thr Phe Thr Ser Ser Ser Gly Gln Gln Thr Ala Gln
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Arg Ala Glu Leu Gln Cys Pro Gln Pro Ala Ala Arg Arg Arg Arg Ser
660 665 670
Val Gln Leu Thr Glu Lys Arg Met Asp Lys Val Gly Lys Tyr Pro Lys
675 680 685
Glu Leu Arg Lys Cys Cys Glu Asp Gly Met Arg Glu Asn Pro Met Arg
690 695 700
Phe Ser Cys Gln Arg Arg Thr Arg Phe Ile Ser Leu Gly Glu Ala Cys
705 710 715 720
Lys Lys Val Phe Leu Asp Cys Cys Asn Tyr Ile Thr Glu Leu Arg Arg
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Gln His Ala Arg Ala Ser His Leu Gly Leu Ala Arg Ser Asn Leu Asp
740 745 750
Glu Asp Ile Ile Ala Glu Glu Asn Ile Val Ser Arg Ser Glu Phe Pro
755 760 765
Glu Ser Trp Leu Trp Asn Val Glu Asp Leu Lys Glu Pro Pro Lys Asn
770 775 780
Gly Ile Ser Thr Lys Leu Met Asn Ile Phe Leu Lys Asp Ser Ile Thr
785 790 795 800
Thr Trp Glu Ile Leu Ala Val Ser Met Ser Asp Lys Lys Gly Ile Cys
805 810 815

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Val Ala Asp Pro Phe Glu Val Thr Val Met Gln Asp Phe Phe Ile Asp
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Leu Arg Leu Pro Tyr Ser Val Val Arg Asn Glu Gln Val Glu Ile Arg
        835                 840                 845
Ala Val Leu Tyr Asn Tyr Arg Gln Asn Gln Glu Leu Lys Val Arg Val
    850                 855                 860
Glu Leu Leu His Asn Pro Ala Phe Cys Ser Leu Ala Thr Thr Lys Arg
865                 870                 875                 880
Arg His Gln Gln Thr Val Thr Ile Pro Pro Lys Ser Ser Leu Ser Val
                885                 890                 895
Pro Tyr Val Ile Val Pro Leu Lys Thr Gly Leu Gln Glu Val Glu Val
            900                 905                 910
Lys Ala Ala Val Tyr His His Phe Ile Ser Asp Gly Val Arg Lys Ser
        915                 920                 925
Leu Lys Val Val Pro Glu Gly Ile Arg Met Asn Lys Thr Val Ala Val
    930                 935                 940
Arg Thr Leu Asp Pro Glu Arg Leu Gly Arg Glu Gly Val Gln Lys Glu
945                 950                 955                 960
Asp Ile Pro Pro Ala Asp Leu Ser Asp Gln Val Pro Asp Thr Glu Ser
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Glu Thr Arg Ile Leu Leu Gln Gly Thr Pro Val Ala Gln Met Thr Glu
            980                 985                 990
Asp Ala Val Asp Ala Glu Arg Leu Lys His Leu Ile Val Thr Pro Ser
        995                 1000                1005
Gly Cys Gly Glu Gln Asn Met Ile Gly Met Thr Pro Thr Val Ile Ala
    1010                1015                1020
Val His Tyr Leu Asp Glu Thr Glu Gln Trp Glu Lys Phe Gly Leu Glu
1025                1030                1035                1040
Lys Arg Gln Gly Ala Leu Glu Leu Ile Lys Lys Gly Tyr Thr Gln Gln
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Leu Ala Phe Arg Gln Pro Ser Ser Ala Phe Ala Ala Phe Val Lys Arg
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Ala Pro Ser Thr Trp Leu Thr Ala Tyr Val Val Lys Val Phe Ser Leu
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Ala Val Asn Leu Ile Ala Ile Asp Ser Gln Val Leu Cys Gly Ala Val
    1090                1095                1100
Lys Trp Leu Ile Leu Glu Lys Gln Lys Pro Asp Gly Val Phe Gln Glu
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Glu Ala Lys Asp Ile Cys Glu Glu Gln Val Asn Ser Leu Pro Gly Ser
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Ile Thr Lys Ala Gly Asp Phe Leu Glu Ala Asn Tyr Met Asn Leu Gln
    1170                1175                1180
Arg Ser Tyr Thr Val Ala Ile Ala Gly Tyr Ala Leu Ala Gln Met Gly
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Arg Leu Lys Gly Pro Leu Leu Asn Lys Phe Leu Thr Thr Ala Lys Asp
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Lys Asn Arg Trp Glu Asp Pro Gly Lys Gln Leu Tyr Asn Val Glu Ala
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Thr Ser Tyr Ala Leu Leu Ala Leu Leu Gln Leu Lys Asp Phe Asp Phe
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Gln Tyr Gln Lys Asp Ala Pro Asp His Gln Glu Leu Asn Leu Asp Val
                1285                1290                1295
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Phe Asp Leu Lys Val Thr Ile Lys Pro Ala Pro Glu Thr Glu Lys Arg
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Pro Gln Asp Ala Lys Asn Thr Met Ile Leu Glu Ile Cys Thr Arg Tyr
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Thr Gly Phe Ala Pro Asp Thr Asp Asp Leu Lys Gln Leu Ala Asn Gly
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Val Asp Arg Tyr Ile Ser Lys Tyr Glu Leu Asp Lys Ala Phe Ser Asp
1425                1430                1435                1440
Arg Asn Thr Leu Ile Ile Tyr Leu Asp Lys Val Ser His Ser Glu Asp
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Asp Cys Leu Ala Phe Lys Val His Gln Tyr Phe Asn Val Glu Leu Ile
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Gln Pro Gly Ala Val Lys Val Tyr Ala Tyr Tyr Asn Leu Glu Glu Ser
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Leu Cys Arg Asp Glu Leu Cys Arg Cys Ala Glu Glu Asn Cys Phe Ile
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Gln Lys Ser Asp Asp Lys Val Thr Leu Glu Glu Arg Leu Asp Lys Ala
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Cys Glu Pro Gly Val Asp Tyr Val Tyr Lys Thr Arg Leu Val Lys Val
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Gln Leu Ser Asn Asp Phe Asp Glu Tyr Ile Met Ala Ile Glu Gln Thr
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Ile Lys Ser Gly Ser Asp Glu Val Gln Val Gly Gln Gln Arg Thr Phe
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Ile Ser Pro Ile Lys Cys Arg Glu Ala Leu Lys Leu Glu Glu Lys Lys
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His Tyr Leu Met Trp Gly Leu Ser Ser Asp Phe Trp Gly Glu Lys Pro
                1605                1610                1615
Asn Leu Ser Tyr Ile Ile Gly Lys Asp Thr Trp Val Glu His Trp Pro
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Glu Glu Asp Glu Cys Gln Asp Glu Glu Asn Gln Lys Gln Cys Gln Asp
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<210> 11
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<212> PRT
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<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) 381V/
674V Accession NO. AAD42765

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        35                  40                  45
Lys His Gly Pro Gly Arg Trp Val Val Leu Ala Ala Val Leu Ile Gly
    50                  55                  60
Leu Leu Leu Val Leu Leu Gly Ile Gly Phe Leu Val Trp His Leu Gln
65                  70                  75                  80
Tyr Arg Asp Val Arg Val Gln Lys Val Phe Asn Gly Tyr Met Arg Ile
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Thr Asn Glu Asn Phe Val Asp Ala Tyr Glu Asn Ser Asn Ser Thr Glu
            100                 105                 110
Phe Val Ser Leu Ala Ser Lys Val Lys Asp Ala Leu Lys Leu Leu Tyr
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Ser Gly Val Pro Phe Leu Gly Pro Tyr His Lys Glu Ser Ala Val Thr
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Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp Ser Glu Phe Ser
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Ile Pro Gln His Leu Val Glu Glu Ala Glu Arg Val Met Ala Glu Glu
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Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys Asp Glu Arg Gly
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Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu Ile Thr Asn Thr
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Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Arg
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Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln Gly Thr Phe Asn
            340                 345                 350
Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asp Cys Thr Trp
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Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val Arg Phe Lys Phe
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Phe Tyr Leu Leu Glu Pro Gly Val Pro Ala Gly Thr Cys Pro Lys Asp
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Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
435 440 445
Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg Thr Gly Arg Cys
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Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Thr Asp His
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Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His Gln Phe Thr Cys
485 490 495
Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
500 505 510
Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser Cys Pro Ala Gln
515 520 525
Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys Ser Gln Gln Cys
530 535 540
Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Pro
545 550 555 560
Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr Arg Cys Leu Asn
565 570 575
Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp Gly Lys Glu Asp
580 585 590
Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys Gly Leu Arg Ser
595 600 605
Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp Ala Asp Glu Gly
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Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Ile
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Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val Ser Ala Ala His
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Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp
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Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg Ser Ala Pro Gly
675 680 685
Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His Pro Phe Phe Asn
690 695 700
Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro
705 710 715 720
Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Cys Leu Pro Asp Ala Ser
725 730 735
His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
740 745 750
Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
755 760 765
Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile
770 775 780
Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785 790 795 800
Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly
805 810 815

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Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln
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Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp
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Ile Lys Glu Asn Thr Gly Val
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<212> PRT
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Met Gly Ser Asn Arg Gly Arg Lys Ala Gly Gly Gly Ser Gln Asp Phe
 1               5                  10                  15
Gly Ala Gly Leu Lys Tyr Asn Ser Arg Leu Glu Asn Met Asn Gly Phe
            20                  25                  30
Glu Glu Gly Val Glu Phe Leu Pro Ala Asn Asn Ala Lys Lys Val Glu
        35                  40                  45
Lys Arg Gly Pro Arg Arg Trp Val Val Leu Val Ala Val Leu Phe Ser
    50                  55                  60
Phe Leu Leu Leu Ser Leu Met Ala Gly Leu Leu Val Trp His Phe His
65                  70                  75                  80
Tyr Arg Asn Val Arg Val Gln Lys Val Phe Asn Gly His Leu Arg Ile
                85                  90                  95
Thr Asn Glu Ile Phe Leu Asp Ala Tyr Glu Asn Ser Thr Ser Thr Glu
            100                 105                 110
Phe Ile Ser Leu Ala Ser Gln Val Lys Glu Ala Leu Lys Leu Leu Tyr
        115                 120                 125
Asn Glu Val Pro Val Leu Gly Pro Tyr His Lys Lys Ser Ala Val Thr
    130                 135                 140
Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp Ser Glu Phe Ser
145                 150                 155                 160
Ile Pro Pro His Leu Ala Glu Glu Val Asp Arg Ala Met Ala Val Glu
                165                 170                 175
Arg Val Val Thr Leu Pro Pro Arg Ala Arg Ala Leu Lys Ser Phe Val
            180                 185                 190
Leu Thr Ser Val Val Ala Phe Pro Ile Asp Pro Arg Met Leu Gln Arg
        195                 200                 205
Thr Gln Asp Asn Ser Cys Ser Phe Ala Leu His Ala His Gly Ala Ala
    210                 215                 220
Val Thr Arg Phe Thr Thr Pro Gly Phe Pro Asn Ser Pro Tyr Pro Ala
225                 230                 235                 240
His Ala Arg Cys Gln Trp Val Leu Arg Gly Asp Ala Asp Ser Val Leu
                245                 250                 255
Ser Leu Thr Phe Arg Ser Phe Asp Val Ala Pro Cys Asp Glu His Gly
            260                 265                 270
Ser Asp Leu Val Thr Val Tyr Asp Ser Leu Ser Pro Met Glu Pro His
        275                 280                 285
Ala Val Val Arg Leu Cys Gly Thr Phe Ser Pro Ser Tyr Asn Leu Thr
    290                 295                 300
Phe Leu Ser Ser Gln Asn Val Phe Leu Val Thr Leu Ile Thr Asn Thr
```

```
305                 310                 315                 320
Asp Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Lys
                325                 330                 335
Met Ser Ser Cys Gly Gly Phe Leu Ser Asp Thr Gln Gly Thr Phe Ser
            340                 345                 350
Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asn Cys Thr Trp
        355                 360                 365
Asn Ile Lys Val Pro Asn Asn Arg Asn Val Lys Val Arg Phe Lys Leu
    370                 375                 380
Phe Tyr Leu Val Asp Pro Asn Val Pro Val Gly Ser Cys Thr Lys Asp
385                 390                 395                 400
Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu Arg Ser Gln Phe
                405                 410                 415
Val Val Ser Ser Asn Ser Ser Lys Ile Thr Val His Phe His Ser Asp
            420                 425                 430
His Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
        435                 440                 445
Ser Asn Asp Pro Cys Pro Gly Met Phe Met Cys Lys Thr Gly Arg Cys
    450                 455                 460
Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Pro Asp Tyr
465                 470                 475                 480
Ser Asp Glu Arg Tyr Cys Arg Cys Asn Ala Thr His Gln Phe Thr Cys
                485                 490                 495
Lys Asn Gln Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
            500                 505                 510
Asp Cys Gly Asp Gly Ser Asp Glu Glu Gly Cys Ser Cys Pro Ala Gly
        515                 520                 525
Ser Phe Lys Cys Ser Asn Gly Lys Cys Leu Pro Gln Ser Gln Lys Cys
    530                 535                 540
Asn Gly Lys Asp Asn Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Asp
545                 550                 555                 560
Ser Val Asn Val Val Ser Cys Thr Lys Tyr Thr Tyr Arg Cys Gln Asn
                565                 570                 575
Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp Gly Lys Thr Asp
            580                 585                 590
Cys Ser Asp Gly Ser Asp Glu Lys Asn Cys Asp Cys Gly Leu Arg Ser
        595                 600                 605
Phe Thr Lys Gln Ala Arg Val Val Gly Gly Thr Asn Ala Asp Glu Gly
    610                 615                 620
Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Leu
625                 630                 635                 640
Cys Gly Ala Ser Leu Ile Ser Pro Asp Trp Leu Val Ser Ala Ala His
                645                 650                 655
Cys Phe Gln Asp Asp Lys Asn Phe Lys Tyr Ser Asp Tyr Thr Met Trp
            660                 665                 670
Thr Ala Phe Leu Gly Leu Leu Asp Gln Ser Lys Arg Ser Ala Ser Gly
        675                 680                 685
Val Gln Glu Leu Lys Leu Lys Arg Ile Ile Thr His Pro Ser Phe Asn
    690                 695                 700
Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Ser
705                 710                 715                 720
Val Glu Tyr Ser Thr Val Val Arg Pro Ile Cys Leu Pro Asp Ala Thr
                725                 730                 735
```

```
His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
            740                 745                 750
Thr Lys Glu Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
        755                 760                 765
Arg Val Ile Asn Gln Thr Thr Cys Glu Asp Leu Met Pro Gln Gln Ile
    770                 775                 780
Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785                 790                 795                 800
Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Ala Glu Lys Asp Gly
                805                 810                 815
Arg Met Phe Gln Ala Gly Val Val Ser Trp Gly Glu Gly Cys Ala Gln
            820                 825                 830
Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Val Val Arg Asp Trp
        835                 840                 845
Ile Lys Glu His Thr Gly Val
    850                 855
```

<210> 13
<211> 855
<212> PRT
<213> Rattus norvegicus

<400> 13

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Met Gly Asn Asn Arg Gly Arg Lys Ala Gly Gly Gly Ser Gln Asp Phe
 1               5                  10                  15
Gly Ala Gly Leu Lys Tyr Asn Ser Arg Leu Glu Asn Met Asn Gly Phe
            20                  25                  30
Glu Glu Gly Val Glu Phe Leu Pro Val Asn Asn Ala Lys Gln Val Glu
        35                  40                  45
Lys Arg Gly Pro Arg Arg Trp Val Val Met Val Ala Val Val Phe Ser
    50                  55                  60
Phe Leu Leu Leu Ser Leu Met Ala Gly Leu Leu Val Trp His Phe His
65                  70                  75                  80
Tyr Arg Asn Val Arg Ile Gln Lys Val Phe Asn Gly His Leu Arg Ile
                85                  90                  95
Thr Asn Glu Asn Phe Leu Asp Ala Tyr Glu Asn Ser Thr Ser Thr Glu
            100                 105                 110
Phe Ile Ser Leu Ala Ser Gln Val Lys Glu Ala Leu Lys Leu Met Tyr
        115                 120                 125
Ser Glu Val Pro Val Leu Gly Pro Tyr His Lys Lys Ser Thr Val Thr
    130                 135                 140
Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp Ser Glu Phe Ser
145                 150                 155                 160
Ile Pro Pro His Leu Glu Glu Glu Val Asp Arg Ala Met Ala Val Glu
                165                 170                 175
Arg Val Val Thr Leu Pro Pro Arg Ala Arg Ala Leu Lys Ser Phe Val
            180                 185                 190
Leu Thr Ser Val Val Ala Phe Pro Ile Asp Pro Arg Met Leu Gln Arg
        195                 200                 205
Thr Gln Asp Asn Ser Cys Ser Phe Ala Leu His Ala Arg Gly Arg Thr
    210                 215                 220
Val Thr Arg Phe Thr Thr Pro Gly Phe Pro Asn Ser Pro Tyr Pro Ala
```

225 230 235 240
His Ala Arg Cys Gln Trp Val Leu Arg Gly Asp Ala Asp Ser Val Leu
245 250 255
Ser Leu Thr Phe Arg Ser Phe Asp Val Ala Pro Cys Asp Gly His Asp
260 265 270
Ser Asp Leu Val Thr Val Tyr Asp Ser Leu Ser Pro Met Glu Pro His
275 280 285
Ala Val Val Arg Leu Cys Gly Thr Phe Ser Pro Ser Tyr Asn Leu Thr
290 295 300
Phe Leu Ser Ser Gln Asn Val Phe Leu Val Thr Leu Ile Thr Asn Thr
305 310 315 320
Asp Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Lys
325 330 335
Met Ser Ser Cys Gly Gly Leu Leu Ser Glu Ala Gln Gly Thr Phe Ser
340 345 350
Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asn Cys Thr Trp
355 360 365
Asn Ile Lys Val Pro Asn Asn Arg Asn Val Lys Val Arg Phe Lys Leu
370 375 380
Phe Tyr Leu Val Asp Pro Asn Ile Pro Val Gly Ser Cys Thr Lys Asp
385 390 395 400
Tyr Val Glu Ile Asn Gly Glu Lys Phe Cys Gly Glu Arg Ser Gln Phe
405 410 415
Val Val Ser Ser Asn Ser Ser Lys Ile Thr Val His Phe His Ser Asp
420 425 430
His Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
435 440 445
Ser Asn Asp Pro Cys Pro Gly Met Phe Met Cys Lys Thr Gly Arg Cys
450 455 460
Ile Arg Lys Asp Leu Arg Cys Asp Gly Trp Ala Asp Cys Pro Asp Tyr
465 470 475 480
Ser Asp Glu Arg His Cys Arg Cys Asn Ala Thr His Gln Phe Met Cys
485 490 495
Lys Asn Gln Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
500 505 510
Asp Cys Gly Asp Gly Ser Asp Glu Glu Gly Cys Ser Cys Pro Ala Gly
515 520 525
Ser Phe Lys Cys Ser Asn Gly Lys Cys Leu Pro Gln Ser Gln Gln Cys
530 535 540
Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Asp
545 550 555 560
Asn Val Asn Ala Val Ser Cys Thr Lys Tyr Thr Tyr Arg Cys Gln Asn
565 570 575
Gly Leu Cys Leu Asn Lys Gly Asn Pro Glu Cys Asp Gly Lys Lys Asp
580 585 590
Cys Ser Asp Gly Ser Asp Glu Lys Asn Cys Asp Cys Gly Leu Arg Ser
595 600 605
Phe Thr Lys Gln Ala Arg Val Val Gly Gly Thr Asn Ala Asp Glu Gly
610 615 620
Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Leu
625 630 635 640
Cys Gly Ala Ser Leu Ile Ser Pro Asp Trp Leu Val Ser Ala Ala His
645 650 655

```
Cys Phe Gln Asp Glu Thr Ile Phe Lys Tyr Ser Asp His Thr Met Trp
            660                 665                 670
Thr Ala Phe Leu Gly Leu Leu Asp Gln Ser Lys Arg Ser Ala Ser Gly
        675                 680                 685
Val Gln Glu His Lys Leu Lys Arg Ile Ile Thr His Pro Ser Phe Asn
    690                 695                 700
Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro
705                 710                 715                 720
Ala Glu Tyr Ser Thr Val Val Arg Pro Ile Cys Leu Pro Asp Asn Thr
                725                 730                 735
His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
            740                 745                 750
Thr Lys Glu Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
        755                 760                 765
Arg Val Ile Asn Gln Thr Thr Cys Glu Glu Leu Leu Pro Gln Gln Ile
    770                 775                 780
Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785                 790                 795                 800
Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val Glu Lys Asp Gly
                805                 810                 815
Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Glu Gly Cys Ala Gln
            820                 825                 830
Arg Asn Lys Pro Gly Val Tyr Thr Arg Ile Pro Glu Val Arg Asp Trp
        835                 840                 845
Ile Lys Glu Gln Thr Gly Val
    850                 855


<210> 14
<211> 263
<212> PRT
<213> Artificial Sequence

<220>
<223> chymotrypsin B

<400> 14
Met Ala Phe Leu Trp Leu Leu Ser Cys Trp Ala Leu Leu Gly Thr Thr
 1               5                  10                  15
Phe Gly Cys Gly Val Pro Ala Ile His Pro Val Leu Ser Gly Leu Ser
            20                  25                  30
Arg Ile Val Asn Gly Glu Asp Ala Val Pro Gly Ser Trp Pro Trp Gln
        35                  40                  45
Val Ser Leu Gln Asp Lys Thr Gly Phe His Phe Cys Gly Gly Ser Leu
    50                  55                  60
Ile Ser Glu Asp Trp Val Val Thr Ala Ala His Cys Gly Val Arg Thr
65                  70                  75                  80
Ser Asp Val Val Val Ala Gly Glu Phe Asp Gln Gly Ser Asp Glu Glu
                85                  90                  95
Asn Ile Gln Val Leu Lys Ile Ala Lys Val Phe Lys Asn Pro Lys Phe
            100                 105                 110
Ser Ile Leu Thr Val Asn Asn Asp Ile Thr Leu Leu Lys Leu Ala Thr
        115                 120                 125
```

```
Pro Ala Arg Phe Ser Gln Thr Val Ser Ala Val Cys Leu Pro Ser Ala
    130                 135                 140
Asp Asp Asp Phe Pro Ala Gly Thr Leu Cys Ala Thr Thr Gly Trp Gly
145                 150                 155                 160
Lys Thr Lys Tyr Asn Ala Asn Lys Thr Pro Asp Lys Leu Gln Gln Ala
                165                 170                 175
Ala Leu Pro Leu Leu Ser Asn Ala Glu Cys Lys Lys Ser Trp Gly Arg
            180                 185                 190
Arg Ile Thr Asp Val Met Ile Cys Ala Gly Ala Ser Gly Val Ser Ser
        195                 200                 205
Cys Met Gly Asp Ser Gly Gly Pro Leu Val Cys Gln Lys Asp Gly Ala
    210                 215                 220
Trp Thr Leu Val Gly Ile Val Ser Trp Gly Ser Asp Thr Cys Ser Thr
225                 230                 235                 240
Ser Ser Pro Gly Val Tyr Ala Arg Val Thr Lys Leu Ile Pro Trp Val
                245                 250                 255
Gln Lys Ile Leu Ala Ala Asn
            260
```

<210> 15
<211> 865
<212> DNA
<213> Artificial Sequence

<220>
<223> chymotrypsin B

<400> 15
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ccctgccagc ggcaccatgg ctttcctctg gctcctctcc tgctgggccc tcctgggtac 60
caccttcggc tgcggggtcc ccgccatcca ccctgtgctc agcggcctgt ccaggatcgt 120
gaatggggag gacgccgtcc ccggctcctg gccctggcag gtgtccctgc aggacaaaac 180
cggcttccac ttctgcgggg gctccctcat cagcgaggac tgggtggtca ccgctgccca 240
ctgcggggtc aggacctccg acgtggtcgt ggctggggag tttgaccagg gctctgacga 300
ggagaacatc caggtcctga agatcgccaa ggtcttcaag aaccccaagt tcagcattct 360
gaccgtgaac aatgacatca ccctgctgaa gctggccaca cctgcccgct tctcccagac 420
agtgtccgcc gtgtgcctgc ccagcgccga cgacgacttc cccgcgggga cactgtgtgc 480
caccacaggc tggggcaaga ccaagtacaa cgccaacaag acccctgaca agctgcagca 540
ggcagccctg cccctcctgt ccaatgccga atgcaagaag tcctggggca ggaggatcac 600
cgacgtgatg atctgtgccg gggccagtgg cgtctcctcc tgcatgggcg actctggcgg 660
tcccctggtc tgccaaaagg atggagcctg gaccctggtg ggcattgtgt cctggggcag 720
cgacacctgc tccacctcca gccctggcgt gtacgcccgt gtcaccaagc tcataccttg 780
ggtgcagaag atcctggctg ccaactgagc ccgcggctcc ctccgaccct gctccccaca 840
gagcctcagt aaacccatgg aacac                                       865
```

<210> 16
<211> 1637
<212> PRT
<213> Artificial Sequence

<220>
<223> Complement Protein C3: mature 2 chain

<400> 16
Ser Pro Met Tyr Ser Ile Ile Thr Pro Asn Ile Leu Arg Leu Glu Ser
 1   5   10   15
Glu Glu Thr Met Val Leu Glu Ala His Asp Ala Gln Gly Asp Val Pro
            20   25   30
Val Thr Val Thr Val His Asp Phe Pro Gly Lys Lys Leu Val Leu Ser
        35   40   45
Ser Glu Lys Thr Val Leu Thr Pro Ala Thr Asn His Met Gly Asn Val
    50   55   60
Thr Phe Thr Ile Pro Ala Asn Arg Glu Phe Lys Ser Glu Lys Gly Arg
65   70   75   80
Asn Lys Phe Val Thr Val Gln Ala Thr Phe Gly Thr Gln Val Val Glu
                85   90   95
Lys Val Val Leu Val Ser Leu Gln Ser Gly Tyr Leu Phe Ile Gln Thr
            100   105   110
Asp Lys Thr Ile Tyr Thr Pro Gly Ser Thr Val Leu Tyr Arg Ile Phe
        115   120   125
Thr Val Asn His Lys Leu Leu Pro Val Gly Arg Thr Val Met Val Asn
    130   135   140
Ile Glu Asn Pro Glu Gly Ile Pro Val Lys Gln Asp Ser Leu Ser Ser
145   150   155   160
Gln Asn Gln Leu Gly Val Leu Pro Leu Ser Trp Asp Ile Pro Glu Leu
                165   170   175
Val Asn Met Gly Gln Trp Lys Ile Arg Ala Tyr Tyr Glu Asn Ser Pro
            180   185   190
Gln Gln Val Phe Ser Thr Glu Phe Glu Val Lys Glu Tyr Val Leu Pro
        195   200   205
Ser Phe Glu Val Ile Val Glu Pro Thr Glu Lys Phe Tyr Tyr Ile Tyr
    210   215   220
Asn Glu Lys Gly Leu Glu Val Thr Ile Thr Ala Arg Phe Leu Tyr Gly
225   230   235   240
Lys Lys Val Glu Gly Thr Ala Phe Val Ile Phe Gly Ile Gln Asp Gly
                245   250   255
Glu Gln Arg Ile Ser Leu Pro Glu Ser Leu Lys Arg Ile Pro Ile Glu
            260   265   270
Asp Gly Ser Gly Glu Val Val Leu Ser Arg Lys Val Leu Leu Asp Gly
        275   280   285
Val Gln Asn Pro Arg Ala Glu Asp Leu Val Gly Lys Ser Leu Tyr Val
    290   295   300
Ser Ala Thr Val Ile Leu His Ser Gly Ser Asp Met Val Gln Ala Glu
305   310   315   320
Arg Ser Gly Ile Pro Ile Val Thr Ser Pro Tyr Gln Ile His Phe Thr
                325   330   335
Lys Thr Pro Lys Tyr Phe Lys Pro Gly Met Pro Phe Asp Leu Met Val
            340   345   350
Phe Val Thr Asn Pro Asp Gly Ser Pro Ala Tyr Arg Val Pro Val Ala
        355   360   365
Val Gln Gly Glu Asp Thr Val Gln Ser Leu Thr Gln Gly Asp Gly Val
    370   375   380
Ala Lys Leu Ser Ile Asn Thr His Pro Ser Gln Lys Pro Leu Ser Ile
385   390   395   400
Thr Val Arg Thr Lys Lys Gln Glu Leu Ser Glu Ala Glu Gln Ala Thr
                405   410   415

```
Arg Thr Met Gln Ala Leu Pro Tyr Ser Thr Val Gly Asn Ser Asn Asn
            420                 425                 430
Tyr Leu His Leu Ser Val Leu Arg Thr Glu Leu Arg Pro Gly Glu Thr
        435                 440                 445
Leu Asn Val Asn Phe Leu Leu Arg Met Asp Arg Ala His Glu Ala Lys
    450                 455                 460
Ile Arg Tyr Tyr Thr Tyr Leu Ile Met Asn Lys Gly Arg Leu Leu Lys
465                 470                 475                 480
Ala Gly Arg Gln Val Arg Glu Pro Gly Gln Asp Leu Val Val Leu Pro
                485                 490                 495
Leu Ser Ile Thr Thr Asp Phe Ile Pro Ser Phe Arg Leu Val Ala Tyr
            500                 505                 510
Tyr Thr Leu Ile Gly Ala Ser Gly Gln Arg Glu Val Val Ala Asp Ser
        515                 520                 525
Val Trp Val Asp Val Lys Asp Ser Cys Val Gly Ser Leu Val Val Lys
    530                 535                 540
Ser Gly Gln Ser Glu Asp Arg Gln Pro Val Pro Gly Gln Gln Met Thr
545                 550                 555                 560
Leu Lys Ile Glu Gly Asp His Gly Ala Arg Val Val Leu Val Ala Val
                565                 570                 575
Asp Lys Gly Val Phe Val Leu Asn Lys Lys Asn Lys Leu Thr Gln Ser
            580                 585                 590
Lys Ile Trp Asp Val Val Glu Lys Ala Asp Ile Gly Cys Thr Pro Gly
        595                 600                 605
Ser Gly Lys Asp Tyr Ala Gly Val Phe Ser Asp Ala Gly Leu Thr Phe
    610                 615                 620
Thr Ser Ser Ser Gly Gln Gln Thr Ala Gln Arg Ala Glu Leu Gln Cys
625                 630                 635                 640
Pro Gln Pro Ala Ala Ser Val Gln Leu Thr Glu Lys Arg Met Asp Lys
                645                 650                 655
Val Gly Lys Tyr Pro Lys Glu Leu Arg Lys Cys Cys Glu Asp Gly Met
            660                 665                 670
Arg Glu Asn Pro Met Arg Phe Ser Cys Gln Arg Arg Thr Arg Phe Ile
        675                 680                 685
Ser Leu Gly Glu Ala Cys Lys Lys Val Phe Leu Asp Cys Cys Asn Tyr
    690                 695                 700
Ile Thr Glu Leu Arg Arg Gln His Ala Arg Ala Ser His Leu Gly Leu
705                 710                 715                 720
Ala Arg Ser Asn Leu Asp Glu Asp Ile Ile Ala Glu Glu Asn Ile Val
                725                 730                 735
Ser Arg Ser Glu Phe Pro Glu Ser Trp Leu Trp Asn Val Glu Asp Leu
            740                 745                 750
Lys Glu Pro Pro Lys Asn Gly Ile Ser Thr Lys Leu Met Asn Ile Phe
        755                 760                 765
Leu Lys Asp Ser Ile Thr Thr Trp Glu Ile Leu Ala Val Ser Met Ser
    770                 775                 780
Asp Lys Lys Gly Ile Cys Val Ala Asp Pro Phe Glu Val Thr Val Met
785                 790                 795                 800
Gln Asp Phe Phe Ile Asp Leu Arg Leu Pro Tyr Ser Val Val Arg Asn
                805                 810                 815
Glu Gln Val Glu Ile Arg Ala Val Leu Tyr Asn Tyr Arg Gln Asn Gln
            820                 825                 830
Glu Leu Lys Val Arg Val Glu Leu Leu His Asn Pro Ala Phe Cys Ser
```

```
        835                 840                 845
Leu Ala Thr Thr Lys Arg Arg His Gln Gln Thr Val Thr Ile Pro Pro
    850                 855                 860
Lys Ser Ser Leu Ser Val Pro Tyr Val Ile Val Pro Leu Lys Thr Gly
865                 870                 875                 880
Leu Gln Glu Val Glu Val Lys Ala Ala Val Tyr His His Phe Ile Ser
                885                 890                 895
Asp Gly Val Arg Lys Ser Leu Lys Val Val Pro Glu Gly Ile Arg Met
            900                 905                 910
Asn Lys Thr Val Ala Val Arg Thr Leu Asp Pro Glu Arg Leu Gly Arg
        915                 920                 925
Glu Gly Val Gln Lys Glu Asp Ile Pro Pro Ala Asp Leu Ser Asp Gln
    930                 935                 940
Val Pro Asp Thr Glu Ser Glu Thr Arg Ile Leu Leu Gln Gly Thr Pro
945                 950                 955                 960
Val Ala Gln Met Thr Glu Asp Ala Val Asp Ala Glu Arg Leu Lys His
                965                 970                 975
Leu Ile Val Thr Pro Ser Gly Cys Gly Glu Gln Asn Met Ile Gly Met
            980                 985                 990
Thr Pro Thr Val Ile Ala Val His Tyr Leu Asp Glu Thr Glu Gln Trp
        995                 1000                1005
Glu Lys Phe Gly Leu Glu Lys Arg Gln Gly Ala Leu Glu Leu Ile Lys
    1010                1015                1020
Lys Gly Tyr Thr Gln Gln Leu Ala Phe Arg Gln Pro Ser Ser Ala Phe
1025                1030                1035                1040
Ala Ala Phe Val Lys Arg Ala Pro Ser Thr Trp Leu Thr Ala Tyr Val
                1045                1050                1055
Val Lys Val Phe Ser Leu Ala Val Asn Leu Ile Ala Ile Asp Ser Gln
            1060                1065                1070
Val Leu Cys Gly Ala Val Lys Trp Leu Ile Leu Glu Lys Gln Lys Pro
        1075                1080                1085
Asp Gly Val Phe Gln Glu Asp Ala Pro Val Ile His Gln Glu Met Ile
    1090                1095                1100
Gly Gly Leu Arg Asn Asn Asn Glu Lys Asp Met Ala Leu Thr Ala Phe
1105                1110                1115                1120
Val Leu Ile Ser Leu Gln Glu Ala Lys Asp Ile Cys Glu Glu Gln Val
                1125                1130                1135
Asn Ser Leu Pro Gly Ser Ile Thr Lys Ala Gly Asp Phe Leu Glu Ala
            1140                1145                1150
Asn Tyr Met Asn Leu Gln Arg Ser Tyr Thr Val Ala Ile Ala Gly Tyr
        1155                1160                1165
Ala Leu Ala Gln Met Gly Arg Leu Lys Gly Pro Leu Leu Asn Lys Phe
    1170                1175                1180
Leu Thr Thr Ala Lys Asp Lys Asn Arg Trp Glu Asp Pro Gly Lys Gln
1185                1190                1195                1200
Leu Tyr Asn Val Glu Ala Thr Ser Tyr Ala Leu Leu Ala Leu Leu Gln
                1205                1210                1215
Leu Lys Asp Phe Asp Phe Val Pro Pro Val Val Arg Trp Leu Asn Glu
            1220                1225                1230
Gln Arg Tyr Tyr Gly Gly Gly Tyr Gly Ser Thr Gln Ala Thr Phe Met
        1235                1240                1245
Val Phe Gln Ala Leu Ala Gln Tyr Gln Lys Asp Ala Pro Asp His Gln
    1250                1255                1260
```

Glu Leu Asn Leu Asp Val Ser Leu Gln Leu Pro Ser Arg Ser Ser Lys
1265 1270 1275 1280
Ile Thr His Arg Ile His Trp Glu Ser Ala Ser Leu Leu Arg Ser Glu
1285 1290 1295
Glu Thr Lys Glu Asn Glu Gly Phe Thr Val Thr Ala Glu Gly Lys Gly
1300 1305 1310
Gln Gly Thr Leu Ser Val Val Thr Met Tyr His Ala Lys Ala Lys Asp
1315 1320 1325
Gln Leu Thr Cys Asn Lys Phe Asp Leu Lys Val Thr Ile Lys Pro Ala
1330 1335 1340
Pro Glu Thr Glu Lys Arg Pro Gln Asp Ala Lys Asn Thr Met Ile Leu
1345 1350 1355 1360
Glu Ile Cys Thr Arg Tyr Arg Gly Asp Gln Asp Ala Thr Met Ser Ile
1365 1370 1375
Leu Asp Ile Ser Met Met Thr Gly Phe Ala Pro Asp Thr Asp Asp Leu
1380 1385 1390
Lys Gln Leu Ala Asn Gly Val Asp Arg Tyr Ile Ser Lys Tyr Glu Leu
1395 1400 1405
Asp Lys Ala Phe Ser Asp Arg Asn Thr Leu Ile Ile Tyr Leu Asp Lys
1410 1415 1420
Val Ser His Ser Glu Asp Asp Cys Leu Ala Phe Lys Val His Gln Tyr
1425 1430 1435 1440
Phe Asn Val Glu Leu Ile Gln Pro Gly Ala Val Lys Val Tyr Ala Tyr
1445 1450 1455
Tyr Asn Leu Glu Glu Ser Cys Thr Arg Phe Tyr His Pro Glu Lys Glu
1460 1465 1470
Asp Gly Lys Leu Asn Lys Leu Cys Arg Asp Glu Leu Cys Arg Cys Ala
1475 1480 1485
Glu Glu Asn Cys Phe Ile Gln Lys Ser Asp Asp Lys Val Thr Leu Glu
1490 1495 1500
Glu Arg Leu Asp Lys Ala Cys Glu Pro Gly Val Asp Tyr Val Tyr Lys
1505 1510 1515 1520
Thr Arg Leu Val Lys Val Gln Leu Ser Asn Asp Phe Asp Glu Tyr Ile
1525 1530 1535
Met Ala Ile Glu Gln Thr Ile Lys Ser Gly Ser Asp Glu Val Gln Val
1540 1545 1550
Gly Gln Gln Arg Thr Phe Ile Ser Pro Ile Lys Cys Arg Glu Ala Leu
1555 1560 1565
Lys Leu Glu Glu Lys Lys His Tyr Leu Met Trp Gly Leu Ser Ser Asp
1570 1575 1580
Phe Trp Gly Glu Lys Pro Asn Leu Ser Tyr Ile Ile Gly Lys Asp Thr
1585 1590 1595 1600
Trp Val Glu His Trp Pro Glu Glu Asp Glu Cys Gln Asp Glu Glu Asn
1605 1610 1615
Gln Lys Gln Cys Gln Asp Leu Gly Ala Phe Thr Glu Ser Met Val Val
1620 1625 1630
Phe Gly Cys Pro Asn
1635

<210> 17
<211> 4
<212> PRT

<213> Artificial Sequence

<220>
<223> C3 convertase cleavage site 748-749

<400> 17
Gly Leu Ala Arg
 1

<210> 18
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Factor I cleavage site 954-955

<400> 18
Arg Leu Gly Arg
 1

<210> 19
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Factor I cleavage site 1303-1304

<400> 19
Leu Pro Ser Arg
 1

<210> 20
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Factor I cleavage site 1320-1321

<400> 20
Ser Leu Leu Arg
 1

<210> 21
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41R/F97T/Ins97aE/T98G/F99L/C122S/G151N/Q175L/Q192
E

<400> 21
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 22
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/F97T/ins97aE/T98G/F99L
/C122S/G151N/Q175L/Q192D

<400> 22
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 23
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41A/D60bT/F60eK/Y60gW/F97T/ins97aE/T98G/F99L
      /C122S/G151N/Q175L/Q192D

<400> 23
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45

```
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 24
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/ins97aV/T98P/F99L
/C122S/G151H/Q175L/Q192E

<400> 24

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 25
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/ins97aV/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 25

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 26
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bT/F60eK/Y60gW/F97T/ins97aE/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 26

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
```

Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 27
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/ins97aV/T98P/F99L/C122S/G151N/Q175L/Q192D

<400> 27
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 28

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/F97T/ins97aE/T98G/F99L
/C122S/G151H/Q175L/Q192D

<400> 28
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 29
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

Q38H/I41A/D60bV/F60eR/Y60gW/D96I/F97Y/ins97aN/T98G
/F99L/C122S/G151N/Q175L/Q192D

<400> 29
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Tyr Asn Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 30
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97D/ins97aA/T98P
/F99L/C122S/G151H/Q175L/Q192D

<400> 30
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Asp Ala Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 31
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96P/F97W/ins97aN/T98G/F99L/C122S/G151N/Q175L/Q192E

<400> 31

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Trp Asn Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 32
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96I/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 32

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

```
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 33
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96Y/F97E/ins97aV/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 33

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Glu Val Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 34
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96L/F97D/ins97aG/T98N/F99L/C122S/G151H/Q175L/Q192E

<400> 34

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Leu Asp Gly Asn Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 35
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P
/F99L/C122S/G151H/Q175L/Q192D

<400> 35
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 36
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96V/F97G/ins97aV/T98P
/F99L/C122S/G151H/Q175L/Q192D

<400> 36
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 37
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97D/ins97aA/T98P
/F99L/C122S/G151N/Q175L/Q192D

<400> 37
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Asp Ala Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 38
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41S/D60bT/F60eS/Y60gW/F97G/ins97aV/T98P/F99L
      /C122S/G151H/Q175L/Q192D

<400> 38
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45

```
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 39
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/ins97aV/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 39

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

```
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 40
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/F99L/C122S/G151H/Q175L

<400> 40

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
```

```
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 41
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41E/F99L/C122S/G151N/Q192T

<400> 41

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
```

225 230 235 240
Val

<210> 42
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/C122S/G151N/Q192T

<400> 42
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 43
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99L/C122S/G151N/Q192V

<400> 43
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 44
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/G151N/Q192T

<400> 44
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 45
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/Y59F/D96E/F99L/C122S/G151N/Q192T

<400> 45

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

```
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 46
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/Y59F/C122S/G151N/Q192T

<400> 46

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
```

```
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 47
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 47

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Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
```

Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 48
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 48
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ile Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 49

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/F99L/
C122S/G151H/Q175L/Q192D

<400> 49
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 50
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

Q38H/I41S/D60bT/Y60gW/D96K/F97G/ins97aV/T98P/F99L/
C122S/G151H/Q175L/Q192D

<400> 50
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 51
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/D96K/F97G/ins97aV/T98P/F99L/
C122S/G151H/Q175L/Q192D

<400> 51
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 52
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 52

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Pro Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 53
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/F99L/C122S/G151H/Q175L/Q192D

<400> 53

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

```
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 54
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/C122S/G151H/Q175L/Q192D

<400> 54

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 55
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/Q192D

<400> 55

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 56
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P
/F99L/C122S/G151H/Q192D

<400> 56
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 57
<211> 242
<212> PRT

<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192D

<400> 57
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 58
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/Q192D

<400> 58
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 59
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/
      Q192D

<400> 59
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 60
<211> 855
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1)
pro-peptide 381S 674V

<400> 60

```
Met Gly Ser Asp Arg Ala Arg Lys Gly Gly Gly Gly Pro Lys Asp Phe
 1               5                  10                  15
Gly Ala Gly Leu Lys Tyr Asn Ser Arg His Glu Lys Val Asn Gly Leu
            20                  25                  30
Glu Glu Gly Val Glu Phe Leu Pro Val Asn Asn Val Lys Lys Val Glu
        35                  40                  45
Lys His Gly Pro Gly Arg Trp Val Val Leu Ala Ala Val Leu Ile Gly
    50                  55                  60
Leu Leu Leu Val Leu Leu Gly Ile Gly Phe Leu Val Trp His Leu Gln
65                  70                  75                  80
Tyr Arg Asp Val Arg Val Gln Lys Val Phe Asn Gly Tyr Met Arg Ile
                85                  90                  95
```

```
Thr Asn Glu Asn Phe Val Asp Ala Tyr Glu Asn Ser Asn Ser Thr Glu
            100                 105                 110
Phe Val Ser Leu Ala Ser Lys Val Lys Asp Ala Leu Lys Leu Leu Tyr
        115                 120                 125
Ser Gly Val Pro Phe Leu Gly Pro Tyr His Lys Glu Ser Ala Val Thr
    130                 135                 140
Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp Ser Glu Phe Ser
145                 150                 155                 160
Ile Pro Gln His Leu Val Glu Glu Ala Glu Arg Val Met Ala Glu Glu
                165                 170                 175
Arg Val Val Met Leu Pro Pro Arg Ala Arg Ser Leu Lys Ser Phe Val
            180                 185                 190
Val Thr Ser Val Val Ala Phe Pro Thr Asp Ser Lys Thr Val Gln Arg
        195                 200                 205
Thr Gln Asp Asn Ser Cys Ser Phe Gly Leu His Ala Arg Gly Val Glu
    210                 215                 220
Leu Met Arg Phe Thr Thr Pro Gly Phe Pro Asp Ser Pro Tyr Pro Ala
225                 230                 235                 240
His Ala Arg Cys Gln Trp Ala Leu Arg Gly Asp Ala Asp Ser Val Leu
                245                 250                 255
Ser Leu Thr Phe Arg Ser Phe Asp Leu Ala Ser Cys Asp Glu Arg Gly
            260                 265                 270
Ser Asp Leu Val Thr Val Tyr Asn Thr Leu Ser Pro Met Glu Pro His
        275                 280                 285
Ala Leu Val Gln Leu Cys Gly Thr Tyr Pro Pro Ser Tyr Asn Leu Thr
    290                 295                 300
Phe His Ser Ser Gln Asn Val Leu Leu Ile Thr Leu Ile Thr Asn Thr
305                 310                 315                 320
Glu Arg Arg His Pro Gly Phe Glu Ala Thr Phe Phe Gln Leu Pro Arg
                325                 330                 335
Met Ser Ser Cys Gly Gly Arg Leu Arg Lys Ala Gln Gly Thr Phe Asn
            340                 345                 350
Ser Pro Tyr Tyr Pro Gly His Tyr Pro Pro Asn Ile Asp Cys Thr Trp
        355                 360                 365
Asn Ile Glu Val Pro Asn Asn Gln His Val Lys Val Arg Phe Lys Phe
    370                 375                 380
Phe Tyr Leu Leu Glu Pro Gly Val Pro Ala Gly Thr Cys Pro Lys Asp
385                 390                 395                 400
Tyr Val Glu Ile Asn Gly Glu Lys Tyr Cys Gly Glu Arg Ser Gln Phe
                405                 410                 415
Val Val Thr Ser Asn Ser Asn Lys Ile Thr Val Arg Phe His Ser Asp
            420                 425                 430
Gln Ser Tyr Thr Asp Thr Gly Phe Leu Ala Glu Tyr Leu Ser Tyr Asp
        435                 440                 445
Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg Thr Gly Arg Cys
    450                 455                 460
Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp Cys Thr Asp His
465                 470                 475                 480
Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His Gln Phe Thr Cys
                485                 490                 495
Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys Asp Ser Val Asn
            500                 505                 510
Asp Cys Gly Asp Asn Ser Asp Glu Gln Gly Cys Ser Cys Pro Ala Gln
```

```
        515                 520                 525
Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys Ser Gln Gln Cys
    530                 535                 540
Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu Ala Ser Cys Pro
545                 550                 555                 560
Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr Arg Cys Leu Asn
                565                 570                 575
Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp Gly Lys Glu Asp
            580                 585                 590
Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys Gly Leu Arg Ser
        595                 600                 605
Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp Ala Asp Glu Gly
    610                 615                 620
Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly Gln Gly His Ile
625                 630                 635                 640
Cys Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val Ser Ala Ala His
                645                 650                 655
Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp
            660                 665                 670
Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg Ser Ala Pro Gly
        675                 680                 685
Val Gln Glu Arg Arg Leu Lys Arg Ile Ile Ser His Pro Phe Phe Asn
    690                 695                 700
Asp Phe Thr Phe Asp Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro
705                 710                 715                 720
Ala Glu Tyr Ser Ser Met Val Arg Pro Ile Cys Leu Pro Asp Ala Ser
                725                 730                 735
His Val Phe Pro Ala Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His
            740                 745                 750
Thr Gln Tyr Gly Gly Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile
        755                 760                 765
Arg Val Ile Asn Gln Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile
    770                 775                 780
Thr Pro Arg Met Met Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser
785                 790                 795                 800
Cys Gln Gly Asp Ser Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly
                805                 810                 815
Arg Ile Phe Gln Ala Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln
            820                 825                 830
Arg Asn Lys Pro Gly Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp
        835                 840                 845
Ile Lys Glu Asn Thr Gly Val
    850                 855
```

<210> 61
<211> 330
<212> PRT
<213> Artificial Sequence

<220>
<223> IgG1; FC 99-330

<400> 61
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys
 1   5   10   15
Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
            20   25   30
Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
        35   40   45
Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
    50   55   60
Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65   70   75   80
Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
                85   90   95
Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
            100   105   110
Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
        115   120   125
Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
    130   135   140
Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
145   150   155   160
Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
                165   170   175
Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
            180   185   190
His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
        195   200   205
Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
    210   215   220
Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu
225   230   235   240
Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
                245   250   255
Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
            260   265   270
Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
        275   280   285
Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
    290   295   300
Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
305   310   315   320
Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
                325   330

<210> 62
<211> 231
<212> PRT
<213> Artificial Sequence

<220>
<223> hIgG1 Fc

<400> 62
Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro
 1   5   10   15
Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys
            20   25   30
Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
        35   40   45
Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp
    50   55   60
Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
65   70   75   80
Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
                85   90   95
Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
            100   105   110
Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
        115   120   125
Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys
    130   135   140
Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
145   150   155   160
Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
                165   170   175
Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
            180   185   190
Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
        195   200   205
Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
    210   215   220
Leu Ser Leu Ser Pro Gly Lys
225   230

<210> 63
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192D

<400> 63
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 64
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/Q192D

<400> 64

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 65
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bY/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192D/D217V

<400> 65

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 66
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192G/D217V

<400> 66

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 67
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/D60bY/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192D/D217V

<400> 67
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 68
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D96M/F97G/ins97aV/T98P/F99L/C122S/Q192G/D217V

<400> 68
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 69
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192V/D217I

<400> 69
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 70
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192H

<400> 70
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 71
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192N/D217V

<400> 71

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

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asn Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 72
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D60bY/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/Q192D

<400> 72

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 73
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192G/D217V

<400> 73

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 74
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain

I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/Q192V

<400> 74
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 75
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/P49S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192G/
D217V

<400> 75
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Ser Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 76
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175L/Q192N

/D217V

<400> 76
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asn Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 77
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41T/F97W/F99L/C122S/G151N/Q175M/Q192G/D217L

<400> 77
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Trp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 78
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97L/F99L/C122S/Q175A/Q192T/D217V

<400> 78

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 79
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97V/F99L/C122S/G151Q/Q175M/Q192A/D217L

<400> 79

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
```

```
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 80
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97I/F99L/C122S/G151L/Q175M/Q192S/D217V

<400> 80

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ile Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Leu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
```

225 230 235 240
Val

<210> 81
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97S/F99L/C122S/G151N/Q175L/Q192G/D217I

<400> 81
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 82
<211> 21
<212> PRT

<213> Artificial Sequence

<220>
<223> Buforin II

<400> 82
Thr Arg Ser Ser Arg Ala Gly Leu Gln Phe Pro Val Gly Arg Val His
 1   5   10   15
Arg Leu Leu Arg Lys
            20

<210> 83
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV3

<400> 83
Arg Lys Lys Arg Arg Arg Glu Ser Arg Lys Lys Arg Arg Arg Glu Ser
 1   5   10   15

<210> 84
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV6

<400> 84
Gly Arg Pro Arg Glu Ser Gly Lys Lys Arg Lys Arg Lys Arg Leu Lys
 1   5   10   15
Pro

<210> 85
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV7

<400> 85
Gly Lys Arg Lys Lys Lys Gly Lys Leu Gly Lys Lys Arg Asp Pro
 1   5   10   15

<210> 86
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV7b

<400> 86
Gly Lys Arg Lys Lys Lys Gly Lys Leu Gly Lys Lys Arg Pro Arg Ser
 1   5   10   15
Arg

<210> 87
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV3/10

<400> 87
Arg Lys Lys Arg Arg Arg Glu Ser Arg Arg Ala Arg Arg Ser Pro Arg
 1   5   10   15
His Leu

<210> 88
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV10/6

<400> 88
Ser Arg Arg Ala Arg Arg Ser Pro Arg Glu Ser Gly Lys Lys Arg Lys
 1   5   10   15
Arg Lys Arg

<210> 89
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV1047

<400> 89
Val Lys Arg Gly Leu Lys Leu Arg His Val Arg Pro Arg Val Thr Arg
 1   5   10   15
Met Asp Val

<210> 90
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV1048

<400> 90
Val Lys Arg Gly Leu Lys Leu Arg His Val Arg Pro Arg Val Thr Arg
 1   5   10   15
Asp Val

<210> 91
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV10

<400> 91
Ser Arg Arg Ala Arg Arg Ser Pro Arg His Leu Gly Ser Gly
 1   5   10

<210> 92
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV15

<400> 92
Leu Arg Arg Glu Arg Gln Ser Arg Leu Arg Arg Glu Arg Gln Ser Arg
 1   5   10   15

<210> 93
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> DPV15b

<400> 93
Gly Ala Tyr Asp Leu Arg Arg Arg Glu Arg Gln Ser Arg Leu Arg Arg
 1   5   10   15
Arg Glu Arg Gln Ser Arg
            20

<210> 94
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> GALA

<400> 94
Trp Glu Ala Ala Leu Ala Glu Ala Leu Ala Glu Ala Leu Ala Glu His
 1   5   10   15
Leu Ala Glu Ala Leu Ala Glu Ala Leu Glu Ala Leu Ala Ala
            20   25   30

<210> 95
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Fibrinogen beta chain

<400> 95
Lys Gly Ser Trp Tyr Ser Met Arg Lys Met Ser Met Lys Ile Arg Pro
 1   5   10   15
Phe Phe Pro Gln Gln
            20

<210> 96
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Fibrinogen gamma chain precursor

<400> 96

Lys Thr Arg Tyr Tyr Ser Met Lys Lys Thr Thr Met Lys Ile Ile Pro
 1   5   10   15
Phe Asn Arg Leu
            20

<210> 97
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Fibrinogen alpha chain

<400> 97
Arg Gly Ala Asp Tyr Ser Leu Arg Ala Val Arg Met Lys Ile Arg Pro
 1   5   10   15
Leu Val Thr Gln
            20

<210> 98
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> hCT(9-32)

<400> 98
Leu Gly Thr Tyr Thr Gln Asp Phe Asn Lys Phe His Thr Phe Pro Gln
 1   5   10   15
Thr Ala Ile Gly Val Gly Ala Pro
            20

<210> 99
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> HN-1

<400> 99
Thr Ser Pro Leu Asn Ile His Asn Gly Gln Lys Leu
 1   5   10

<210> 100
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Influenza virus nucleoprotein (NLS)

<400> 100
Asn Ser Ala Ala Phe Glu Asp Leu Arg Val Leu Ser
 1   5   10

<210> 101
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> KALA

<400> 101
Trp Glu Ala Lys Leu Ala Lys Ala Leu Ala Lys Ala Leu Ala Lys His
 1   5   10   15
Leu Ala Lys Ala Leu Ala Lys Ala Leu Lys Ala Cys Glu Ala
            20   25   30

<210> 102
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Ku70

<400> 102
Val Pro Met Leu Lys Pro Met Leu Lys Glu
 1   5   10

<210> 103
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> MAP

<400> 103
Lys Leu Ala Leu Lys Leu Ala Leu Lys Ala Leu Lys Ala Ala Leu Lys
 1   5   10   15
Leu Ala

<210> 104

<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> MPG

<400> 104
Gly Ala Leu Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly
 1   5   10   15
Ala Trp Ser Gln Pro Lys Lys Lys Arg Lys Val
            20   25

<210> 105
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Human Fibroblast growth factor 4 (Kaposi
      Fibroblast growth
      factor)

<400> 105
Ala Ala Val Ala Leu Leu Pro Ala Val Leu Leu Ala Leu Leu Ala Pro
 1   5   10   15

<210> 106
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> N50 (NLS of NF-kB P50)

<400> 106
Val Gln Arg Lys Arg Gln Lys Leu Met
 1   5

<210> 107
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Pep-1

<400> 107
Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys

```
 1               5                  10                  15
Lys Lys Arg Lys Val
            20


<210> 108
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Pep-7

<400> 108
Ser Asp Leu Trp Glu Met Met Met Val Ser Leu Ala Cys Gln Tyr
 1               5                  10                  15


<210> 109
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Penetratin

<400> 109
Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys
 1               5                  10                  15


<210> 110
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Penetratin variant

<400> 110
Gly Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys
 1               5                  10                  15
Lys



<210> 111
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Short Penetratin
```

<400> 111
Arg Arg Met Lys Trp Lys Lys
 1   5

<210> 112
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Penetratin 42-58

<400> 112
Glu Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys
 1   5   10   15
Lys

<210> 113
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Poly Arginine - R7

<400> 113
Arg Arg Arg Arg Arg Arg Arg
 1   5

<210> 114
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Poly Arginine - R9

<400> 114
Arg Arg Arg Arg Arg Arg Arg Arg Arg
 1   5

<210> 115
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> pISL

<400> 115
Arg Val Ile Arg Val Trp Phe Gln Asn Lys Arg Cys Lys Asp Lys Lys
 1   5   10   15

<210> 116
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Prion mouse PrPc1-28

<400> 116
Met Ala Asn Leu Gly Tyr Trp Leu Leu Ala Leu Phe Val Thr Met Trp
 1   5   10   15
Thr Asp Val Gly Leu Cys Lys Lys Arg Pro Lys Pro
            20   25

<210> 117
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> pVEC

<400> 117
Leu Leu Ile Ile Leu Arg Arg Arg Ile Arg Lys Gln Ala His Ala His
 1   5   10   15
Ser Lys

<210> 118
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> pVEC variant

<400> 118
Leu Leu Ile Ile Leu Arg Arg Arg Ile Arg Lys Gln Ala His Ala His
 1   5   10   15

<210> 119
<211> 18
<212> PRT

<213> Artificial Sequence

<220>
<223> SAP

<400> 119
Val Arg Leu Pro Pro Pro Val Arg Leu Pro Pro Pro Val Arg Leu Pro
 1   5   10   15
Pro Pro

<210> 120
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> SV-40 (NLS)

<400> 120
Pro Lys Lys Lys Arg Lys Val
 1   5

<210> 121
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> SynB1

<400> 121
Arg Gly Gly Arg Leu Ser Tyr Ser Arg Arg Arg Phe Ser Thr Ser Thr
 1   5   10   15
Gly Arg

<210> 122
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> SynB3

<400> 122
Arg Arg Leu Ser Tyr Ser Arg Arg Arg Phe
 1   5   10

<210> 123
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> SynB4

<400> 123
Ala Trp Ser Phe Arg Val Ser Tyr Arg Gly Ile Ser Tyr Arg Arg Ser
 1   5   10   15
Arg

<210> 124
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 47-60

<400> 124
Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln
 1   5   10

<210> 125
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 47-57

<400> 125
Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
 1   5   10

<210> 126
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 47-56

<400> 126
Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg
 1   5   10

<210> 127
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 48-56

<400> 127
Gly Arg Lys Lys Arg Arg Gln Arg Arg
 1   5

<210> 128
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 48-57

<400> 128
Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
 1   5   10

<210> 129
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 49-57

<400> 129
Arg Lys Lys Arg Arg Gln Arg Arg Arg
 1   5

<210> 130
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 49-56

<400> 130
Arg Lys Lys Arg Arg Gln Arg Arg
 1   5

<210> 131
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 48-60

<400> 131
Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln
 1   5   10

<210> 132
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 48-52

<400> 132
Gly Arg Lys Lys Arg
 1   5

<210> 133
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 37-72

<400> 133
Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys Lys Arg
 1   5   10   15
Arg Gln Arg Arg Arg Pro Pro Gln Phe Ser Gln Thr His Gln Val Ser
            20   25   30
Leu Ser Lys Gln
        35

<210> 134
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 38-72

<400> 134
Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys Lys Arg Arg
 1   5   10   15
Gln Arg Arg Arg Pro Gln Phe Ser Gln Thr His Gln Val Ser Leu Ser
            20   25   30
Lys Gln

<210> 135
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Tat 47-59

<400> 135
Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro
 1   5   10

<210> 136
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Transportan

<400> 136
Gly Trp Thr Leu Asn Ser Ala Gly Tyr Leu Leu Gly Lys Ile Asn Leu
 1   5   10   15
Lys Ala Leu Ala Ala Leu Ala Lys Lys Ile Leu
            20   25

<210> 137
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Transportan 10

<400> 137
Ala Gly Tyr Leu Leu Gly Lys Ile Asn Leu Lys Ala Leu Ala Ala Leu
 1   5   10   15
Ala Lys Lys Ile Leu
            20

<210> 138
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Transportan derivative

<400> 138
Gly Trp Thr Leu Asn Ser Ala Gly Tyr Leu Leu Gly
 1   5   10

<210> 139
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Transportan derivative 2

<400> 139
Ile Asn Leu Lys Ala Leu Ala Ala Leu Ala Lys Lys Ile Leu
 1   5   10

<210> 140
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> VP22

<400> 140
Asp Ala Ala Thr Ala Thr Arg Gly Arg Ser Ala Ala Ser Arg Pro Thr
 1   5   10   15
Glu Arg Pro Arg Ala Pro Ala Arg Ser Ala Ser Arg Pro Arg Arg Pro
            20   25   30
Val Asp

<210> 141
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> VT5

<400> 141
Asp Pro Lys Gly Asp Pro Lys Gly Val Thr Val Thr Val Thr Val Thr
 1   5   10   15
Val Thr Gly Lys Gly Asp Pro Lys Pro Asp
            20   25

<210> 142
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Signal Sequence-based peptide

<400> 142
Gly Ala Leu Phe Leu Gly Trp Leu Gly Ala Ala Gly Ser Thr Met Gly
 1   5   10   15
Ala Trp Ser Gln Pro Lys Lys Lys Arg Lys Val
            20   25

<210> 143
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Amphiphilic model peptide

<400> 143
Lys Leu Ala Leu Lys Leu Ala Leu Lys Ala Leu Lys Ala Ala Leu Lys
 1   5   10   15
Leu Ala

<210> 144
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Bacterial cell wall permeating

<400> 144
Lys Phe Phe Lys Phe Phe Lys Phe Phe Lys
 1   5   10

<210> 145
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> LL- 37

<400> 145
Leu Leu Gly Asp Phe Phe Arg Lys Ser Lys Glu Lys Ile Gly Lys Glu
 1   5   10   15
Phe Lys Arg Ile Val Gln Arg Ile Lys Asp Phe Leu Arg Asn Leu Val
            20   25   30
Pro Arg Thr Glu Ser
        35

<210> 146
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Cecropin P1

<400> 146
Ser Trp Leu Ser Lys Thr Ala Lys Lys Leu Glu Asn Ser Ala Lys Lys
 1   5   10   15
Arg Ile Ser Glu Gly Ile Ala Ile Ala Ile Gln Gly Gly Pro Arg
            20   25   30

<210> 147
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> alpha defensin

<400> 147
Ala Cys Tyr Cys Arg Ile Pro Ala Cys Ile Ala Gly Glu Arg Arg Tyr
 1   5   10   15
Gly Thr Cys Ile Tyr Gln Gly Arg Leu Trp Ala Phe Cys Cys
            20   25   30

<210> 148
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> beta defensin

<400> 148
Asp His Tyr Asn Cys Val Ser Ser Gly Gly Gln Cys Leu Tyr Ser Ala
 1   5   10   15
Cys Pro Ile Phe Thr Lys Ile Gln Gly Thr Cys Tyr Arg Gly Lys Ala
            20   25   30
Lys Cys Cys Lys
        35

<210> 149
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Bactenecin

<400> 149
Arg Lys Cys Arg Ile Trp Ile Arg Val Cys Arg
 1   5   10

<210> 150
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> PR- 39

<400> 150
Arg Arg Arg Pro Arg Pro Pro Tyr Leu Pro Arg Pro Arg Pro Pro Pro
 1   5   10   15
Phe Phe Pro Pro Arg Leu Pro Pro Arg Ile Pro Pro Gly Phe Pro Pro
            20   25   30
Arg Phe Pro Pro Arg Phe Pro Gly Lys Arg
        35   40

<210> 151
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Indolicidin

<400> 151
Ile Leu Pro Trp Lys Trp Pro Trp Trp Pro Trp Arg Arg

```
 1               5                   10


<210> 152
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> MPS

<400> 152
Gly Ala Leu Phe Leu Gly Trp Leu Gly Ala Ala Gly Ser Thr Met Gly
 1               5                   10                  15
Ala Trp Ser Gln Pro Lys Lys Lys Arg Lys Val
            20                  25


<210> 153
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> pIs1

<400> 153
Pro Val Ile Arg Arg Val Trp Phe Gln Asn Lys Arg Cys Lys Asp Lys
 1               5                   10                  15
Lys



<210> 154
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain F97E/F99L/C122S/D217I/K224N


<400> 154
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                   10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Asn Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 155
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain C122S/G193A

<400> 155
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr

```
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Ala Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 156
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain C122S/G193E

<400> 156

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Glu Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
```

```
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 157
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain D96_F97delinsWYY/T98P/F99L/C122S

<400> 157

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Trp Tyr Tyr Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 158

<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97D/F99L/C122S/Q192G

<400> 158
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 159
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/Q192G

<400> 159

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 160
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain C122S/G151N/G193A

<400> 160

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Ala Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 161
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/C122S/G151N

<400> 161
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140

```
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 162
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/C122S/G151N

<400> 162

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 163
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97E/C122S

<400> 163

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 164
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192E

<400> 164
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 165
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/Y60gL/F97D/F99L/C122S/G151N/Q175M/D217I/
K224S

<400> 165
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Leu Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Ser Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 166
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain H40R/I41H/F97D/F99L/C122S/G151D/Q192G

<400> 166
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 167
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/F97D/F99L/Q192G

<400> 167

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

```
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 168
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/Y60gH/F97D/F99L/C122S/G151N/Q175A/Q192H/D217I/K224R

<400> 168

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg His Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser Gly
            180                 185                 190
```

```
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 169
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/Y60gF/F97D/F99L/C122S/Q192G/D217M/K224R

<400> 169

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Met Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 170
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/Y60gF/F97D/F99L/C122S/Q192G/D217R/K224A

<400> 170
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Arg Gly Cys Ala Gln Arg Asn Ala Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 171
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/F97D/F99L/C122S/Q175L/Q192G/D217K/K224A

<400> 171
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Lys Gly Cys Ala Gln Arg Asn Ala Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 172
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/F97D/F99L/C122S/Q175M/Q192G/D217V/K224Y

<400> 172
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Tyr Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 173
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/F99L/C122S/Q175K/Q192G/D217I/K224H

<400> 173

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
```

```
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Lys Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn His Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 174
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/Q175M/Q192G/D217S

<400> 174

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
```

```
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 175
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/Y60gF/F97D/F99L/C122S/Q175M/Q192G/D217W/K224R

<400> 175

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Trp Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 176
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/Y60gN/F97D/F99L/C122S/G151N/Q175K/Q192S/D217S/K224L

<400> 176

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Asn Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Lys Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Leu Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 177
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/Y60gH/F97D/F99L/C122S/Q175M/Q192G/D217I/
K224L

<400> 177
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg His Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Leu Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 178
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain H40K/I41L/Y60gF/F97D/F99L/C122S/G151N/Q175R

<400> 178
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Lys Leu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 179
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/Y60gL/F97D/F99L/C122S/G151N

<400> 179
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45

```
Gly Phe Arg Leu Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 180
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40K/I41M/Y60gG/F97D/F99L/C122S/G151N/Q175R/Q192R/D217V/K224S

<400> 180

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Ser Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 181
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40K/I41M/Y60gF/F97D/F99L/C122S/G151N/Q175L/Q192D

<400> 181

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Lys Met Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
```

```
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 182
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/C122S/G151N/Q175M/Q192A/D217S/K224R

<400> 182

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
```

225 230 235 240
Val

<210> 183
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/Y60gH/F97D/F99L/C122S/Q175M/Q192G/D217I/K224R

<400> 183
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg His Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 184
<211> 241

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/F97D/F99L/C122S/G151D/Q175M/Q192G/D217V

<400> 184
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 185
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/F97D/F99L/C122S/G151N/Q175M/Q192A/D217N/
K224R

<400> 185
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 186
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      H40R/I41H/F97D/F99L/C122S/G151N/Q175L/Q192A/D217N/
      K224R

<400> 186
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 187
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40K/I41M/F97D/F99L/C122S/G151N/Q175M/Q192D/D217N/K224R

<400> 187

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

```
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 188
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40K/I41M/F97D/F99L/C122S/G151N/Q175L/Q192A/D217N/K224R

<400> 188

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Lys Met Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
```

```
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 189
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/F99L/C122S/Q175M/Q192D/D217N/K224R

<400> 189

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 190
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/Q175M/D217N/K224R

<400> 190

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 191
<211> 241

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40K/I41M/F97D/F99L/C122S/Q175M/Q192D/D217N/K224R

<400> 191
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Lys Met Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 192
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40K/I41M/F97D/F99L/C122S/G151N/Q175M/Q192A/D217N/
K224R

<400> 192
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Lys Met Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 193
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain H40K/I41M/F97D/F99L/C122S/Q175M/D217N/K224R

<400> 193
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Lys Met Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 194
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192E

<400> 194

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

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val



<210> 195
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      H40R/I41H/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 195
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
```

```
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 196
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97E/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 196

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 197
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/G151N/Q192H

<400> 197
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 198
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/G151N/L153R

<400> 198
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Arg Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 199
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/C122S/G151N/L153R/V202M

<400> 199
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Arg Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Met Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 200
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/G151N/Q192H/P232S

<400> 200

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

```
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Ser Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 201
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 201

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 202
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/F97D/C122S/G151N/L153R

<400> 202

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Arg Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 203
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40K/I41M/F99L/C122S/T150A/G151R/Q192G

<400> 203
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Lys Met Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Ala
    130   135   140
Arg Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 204
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/C122S/G133D/G151N

<400> 204
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Asp
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 205
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41R/F99L/C122S/Q192G

<400> 205
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 206
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F99L/C122S/G151K/Q192G

<400> 206

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

```
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Lys Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 207
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151E/Q175L/Q192E

<400> 207

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Glu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 208
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain K86R/K110R/C122S/K134R/K157R/K224R/K239R

<400> 208

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Arg Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Arg Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Arg Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Arg Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Arg Glu Asn Thr Gly
225                 230                 235                 240
```

Val

<210> 209
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/K86R/F97D/K110R/C122S/K134R/G151N/K157R/K224R/K239R

<400> 209
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Arg Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Arg Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Arg Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Arg Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Arg Glu Asn Thr Gly
225 230 235 240
Val

<210> 210
<211> 242
<212> PRT

<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
K86R/F97T/ins97aE/T98G/F99L/K110R/C122S/K134R/K157
R/Q175L/Q192E/K224R/K239R

<400> 210
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Arg Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Arg Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Arg Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Arg Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Arg Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Arg Glu Asn Thr
225   230   235   240
Gly Val

<210> 211
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/F97D/F99L/C122S/Q175R/Q192G/D217H/K224S

<400> 211
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Ser Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 212
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain H40R/I41H/F97D/F99L/C122S/Q192G/D217I/K224S

<400> 212
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Ser Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 213
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/C122S/Q192G/D217K/K224A

<400> 213

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

```
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Lys Gly Cys Ala Gln Arg Asn Ala Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 214
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/F99L/C122S/Q175R/Q192G/D217E/K224R

<400> 214

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
```

```
        195                 200                 205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 215
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/C122S/Q175R/Q192G/D217I/K224Q

<400> 215

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Gln Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 216
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40P/I41R/F99L/C122S/Q192G

<400> 216
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Pro Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 217
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40P/I41R/F99L/C122S/G151K/Q192G

<400> 217
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Pro Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Lys Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 218
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain H40R/I41H/F99L/C122S/G151E/Q192G

<400> 218
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Glu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 219
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151D/Q175L/Q192E

<400> 219

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 220
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151D/Q175T/Q192E

<400> 220

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 221
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151D/Q175T/Q192D

<400> 221

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
```

Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 222
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151E/Q175T/Q192D

<400> 222
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Glu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 223

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40P/I41R/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 223
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Pro Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 224
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40P/I41R/ins97aE/F97T/T98G/F99L/C122S/G151D/Q175L

/Q192E

<400> 224
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Pro Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 225
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41R/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192
      E

<400> 225
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 226
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 226

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 227
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41R/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175T/Q192E

<400> 227

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 228
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175T/Q192D

<400> 228

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 229
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 229

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 230
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40P/I41R/F99L/C122S/G151E/Q192G

<400> 230
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Pro Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Glu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 231
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

I41R/F97T/ins97aE/T98G/F99L/C122S/G151E/Q175T/Q192
E

<400> 231
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Glu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 232
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41R/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175S/Q192
      E

<400> 232
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 233
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175I/Q192E

<400> 233

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 234
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain H40R/I41H/Y60gF/F97D/F99L/C122S/Q175K/Q192G/D217R/K224Q

<400> 234

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

```
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Lys Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Arg Gly Cys Ala Gln Arg Asn Gln Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 235
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/F99L/C122S/Q175L/Q192G/D217Q/K224R

<400> 235

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
```

```
        195                 200                 205
Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 236
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/F99L/C122S/G151N/Q192N/D217L/K224R

<400> 236

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asn Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 237
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
H40R/I41H/F97D/F99L/C122S/G151N/Q192H/D217K/K224A

<400> 237
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Lys Gly Cys Ala Gln Arg Asn Ala Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 238
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain ins97aV/F97D/T98P/F99L/C122S/Q192G

<400> 238
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 239
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97N/ins97aT/T98Y/F99N/C122S

<400> 239
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45

```
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asn Thr Tyr Asn Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 240
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97M/ins97aD/T98D/F99L/C122S/Q192T

<400> 240

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

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 241
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain ins97aV/F97Q/T98P/F99L/C122S/Q175F/Q192D

<400> 241

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Phe Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 242
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain ins97aD/F97T/T98S/F99L/C122S/Q192E/D217Y/K224R

<400> 242

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Asp Ser Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Tyr Gly Cys Ala Gln Arg Asn Arg Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 243
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
ins97aN/F97H/T98D/F99L/C122S/Q192E/D217Q/K224S

<400> 243
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp His Asn Asp Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Ser Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 244
<211> 242
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97Q/ins97aT/T98M/C122S/Q192E/D217R/K224L

<400> 244
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Thr Met Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Arg Gly Cys Ala Gln Arg Asn Leu Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 245
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
ins97aD/F97Q/T98G/F99L/C122S/Q175L/Q192E/D217F/K22
4S

<400> 245
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Asp Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Phe Gly Cys Ala Gln Arg Asn Ser Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 246
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aD/F97G/T98N/F99L/C122S/Q192E/D217Y/K224R

<400> 246

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Asp Asn Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Tyr Gly Cys Ala Gln Arg Asn Arg Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 247
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aE/F97Y/T98S/F99L/C122S/Q192T/D217Q/K224R

<400> 247

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Tyr Glu Ser Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
```

```
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Arg Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 248
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aG/F97N/T98D/F99L/C122S/Q192E/D217H/K224A

<400> 248

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asn Gly Asp Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Ala Pro Gly
```

```
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 249
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aA/F97G/T98N/F99L/C122S/Q175M/Q192T/K224A

<400> 249

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Ala Asn Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Ala Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 250

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175S/Q192
D

<400> 250
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 251
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

I41R/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175I/Q192
D

<400> 251
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 252
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41R/F97T/ins97aE/T98G/F99L/C122S/G151D/Q175I/Q192
E

<400> 252
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 253
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/ins97aE/F97T/T98G/F99L/C122S/G151D/Q175I/Q192D

<400> 253

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 254
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
S90T/D96A/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192D

<400> 254

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Thr His Pro Phe Phe Asn Ala Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 255
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Y59F/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 255

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
```

```
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 256
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E/Q209L

<400> 256

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 257
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Y59F/D96V/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 257
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 258
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

D96V/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192D

<400> 258
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 259
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41R/ins97aE/F97T/T98G/F99L/C122S/G151S/Q175L/Q192
      E

<400> 259
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Ser Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 260
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
E24K/ins97aE/F97T/T98G/F99L/C122S/A152S/Q175L/Q192D

<400> 260

```
Val Val Gly Gly Thr Asp Ala Asp Lys Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ser Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 261
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aE/F97T/T98G/F99L/C122S/L153Q/Q175L/Q192D

<400> 261

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Gln Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
```

```
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 262
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain ins97aE/F97T/T98G/F99L/C122S/I136M/L155M/N170D/Q175L/Q192E

<400> 262

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Met Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Met Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asp Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
```

Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 263
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41R/ins97aE/F97T/T98G/F99L/A112V/C122S/Q175L/Q192
      E

<400> 263
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Val Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 264
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Y59F/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192D

<400> 264
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 265
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain
Y59F/G60dS/R84H/ins97aE/F97T/T98G/F99L/C122S/Q175L
/Q192E/V212I

<400> 265
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35   40   45
Ser Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg His Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Ile Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 266
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Y59F/ins97aE/F97T/T98G/F99L/C122S/L153Q/Q175L/Q192
E

<400> 266
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Gln Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 267
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/Y59F/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192D

<400> 267

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 268
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/Y59F/G60dS/R84H/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E/V212I

<400> 268

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

```
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Ile Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 269
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/Y59F/ins97aE/F97T/T98G/F99L/C122S/L153Q/Q175L/Q192E

<400> 269

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Gln Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 270
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41R/F97W/F99L/C122S/G151N/Q192G

<400> 270

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Trp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 271
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97D/ins97aV/T98P/F99L/C122S/G151N/Q192G

<400> 271
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 272
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

I41D/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 272
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 273
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41D/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192
      E

<400> 273
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 274
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38E/H40R/I41H/F97D/F99L/C122S/Q192G

<400> 274

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 275
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain H40R/I41H/F97D/F99L/Q175R/Q192G/D217E/K224R

<400> 275

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Cys Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
```

Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 276
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41R/ins97aV/F97D/T98P/F99L/C122S/G151N/Q192G

<400> 276
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240

Gly Val

<210> 277
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain ins97aV/F97D/T98P/F99L/C122S/Q175L/Q192E

<400> 277
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 278
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41R/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175L/Q192
E

<400> 278
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 279
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38E/H40R/I41H/D60bE/F97D/F99L/C122S/Q192G

<400> 279
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly Glu Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Glu Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 280
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38E/H40R/I41H/D60bN/F97D/F99L/C122S/Q192G

<400> 280

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asn Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
```

```
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 281
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/H40R/I41H/D60bK/F97D/F99L/C122S/Q175L/Q192G

<400> 281

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly Arg His Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Lys Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
```

145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 282
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/H40R/I41H/D60bN/F60eT/F97D/F99L/C122S/Q175L/Q192G

<400> 282
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Glu Gly Arg His Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asn Arg
35 40 45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205

```
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 283
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41S/D60bH/F60eV/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192E

<400> 283

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Val Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 284
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38G/H40R/I41H/D60bK/F97D/F99L/C122S/Q175L/Q192G

<400> 284
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gly Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Lys Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 285
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain
I41D/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192
E/Q209L

<400> 285
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 286
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38G/H40R/I41H/D60bN/F97D/F99L/C122S/Q175L/Q192G

<400> 286
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gly Gly Arg His Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asn Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 287
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41S/D60bH/F60eV/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192E

<400> 287

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Val Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 288
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
H40R/I41H/F97D/ins97aV/T98P/F99L/C122S/Q175R/Q192G/D217E/K224R

<400> 288

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

```
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Arg Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 289
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bA/F60eV/Y60gF/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192T

<400> 289

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35                  40                  45
Gly Val Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 290
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38E/I41S/D60bH/F60eI/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192V

<400> 290

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Ile Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 291
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38R/I41S/D60bH/F60eI/ins97aE/F97T/T98G/F99L/C122S
/Q175L/Q192E

<400> 291
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Arg Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35   40   45
Gly Ile Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 292
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38E/I41S/D60bV/F60eK/F97T/ins97aE/T98G/F99L/C122S
/Q175L/Q192I

<400> 292
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Lys Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ile Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 293
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38R/I41E/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192T

<400> 293

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 294
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192D

<400> 294

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
```

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 295
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bA/F60eR/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192E

<400> 295

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 296
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
F97D/ins97aV/T98P/F99L/C122S/G151N/Q175L/Q192E

<400> 296

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 297
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aV/F97D/T98P/F99L/C122S/G151N/Q175L/Q192G

<400> 297

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
```

Gly Val

<210> 298
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38G/H40R/I41H/D60bN/F60eT/F97D/F99L/C122S/Q175L/Q192G

<400> 298
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gly Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asn Arg
        35   40   45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 299
<211> 241
<212> PRT

<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38G/H40R/I41H/D60bK/F60eT/F97D/F99L/C122S/Q175L/Q
192G

<400> 299
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gly Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Lys Arg
        35   40   45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 300
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38E/H40R/I41H/D60bK/F60eT/F97D/F99L/C122S/Q175L/Q
192G

<400> 300
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Glu Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Lys Arg
        35   40   45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 301
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41S/D60bA/F60eV/Y60gF/ins97aE/F97T/T98G/F99L
      /C122S/G151N/Q175L/Q192T

<400> 301
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg

```
        35                  40                  45
Gly Val Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 302
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/I41S/D60bH/F60eI/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192V

<400> 302

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

```
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 303
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41S/D60bH/F60eI/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192E

<400> 303

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Ile Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
```

```
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 304
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/I41S/D60bV/F60eK/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192I

<400> 304

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Lys Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ile Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
```

Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 305
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38R/I41E/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L
      /Q192T

<400> 305
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Arg Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 306
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/ins97aE/F97T/T98G/F99L
/C122S/G151N/Q175L/Q192D

<400> 306
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 307
<211> 242
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bA/F60eR/ins97aE/F97T/T98G/F99L/C122S
/G151N/Q175L/Q192E

<400> 307
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35   40   45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 308
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/ins97aV/F97D/T98P/F99L/C122S
/G151H/Q175L/Q192E

<400> 308
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 309
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bV/F60eQ/Y60gF/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192I

<400> 309

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Gln Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
```

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ile Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 310
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eI/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 310

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

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 311
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eT/Y60gW/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 311

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Thr Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 312
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/F60eA/Y60gW/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 312

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Ala Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 313
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bE/F60eH/Y60gW/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192D

<400> 313
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Glu Arg
35 40 45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 314
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bT/F60eK/Y60gW/ins97aE/F97T/T98G/F99L
/C122S/Q175L/Q192D

<400> 314
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 315
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bT/F60eH/Y60gW/ins97aE/F97T/T98G/F99L

/C122S/Q175L/Q192D

<400> 315
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 316
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41S/D60bS/F60eR/Y60gW/F97T/ins97aE/T98G/F99L
      /C122S/Q175L/Q192E

<400> 316
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 317
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/F97D/ins97aV/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 317

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 318
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41T/ins97aE/F97T/T98G/F99L/C122S/G151N/Q175L/Q192G

<400> 318

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 319
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38S/I41S/F60eR/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175L/Q192S

<400> 319

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Ser Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 320
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41T/D60bV/F60eQ/F97T/ins97aE/T98G/F99L/C122S /Q175L/Q192G

<400> 320

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Gln Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 321
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38G/H40R/I41H/D60bH/F60eK/F97T/ins97aE/T98G/F99L/
C122S/Q175L/V183A/Q192G

<400> 321
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gly Gly Arg His Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35   40   45
Gly Lys Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Ala Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 322
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 322
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 323
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38L/I41T/D60bR/F60eL/Y60gM/F97T/ins97aE/T98G/F99L
/C122S/G151N/Q175L/Q192G

<400> 323
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Leu Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Arg Arg
        35                  40                  45
Gly Leu Arg Met Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 324
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38F/I41S/D60bF/F60eR/Y60gF/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175L/Q192V

<400> 324

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Phe Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Phe Arg
        35                  40                  45
Gly Arg Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
```

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 325
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38V/I41S/D60bT/F60eT/F97D/ins97aV/T98P/F99L/C122S/G151N/Q175H/Q192S

<400> 325

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

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln His Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 326
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38W/I41A/ins97aV/F97D/T98P/F99L/C122S/G151T/Q175S/Q192D

<400> 326

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Trp Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Thr Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 327
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38T/I41S/D60bV/F60eR/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175R/Q192V

<400> 327

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Thr Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 328
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bT/F60eS/ins97aV/F97D/T98P/F99L/C122S /G151H/Q175A/Q192D

<400> 328
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 329
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eT/F97D/ins97aV/T98P/F99L/C122S
/G151N/Q175L/Q192V

<400> 329
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 330
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38Y/I41A/D60bL/F60eQ/ins97aV/F97D/T98P/F99L/C122S

/G151N/Q175M/Q192A

<400> 330
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Leu Arg
        35   40   45
Gly Gln Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 331
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38L/I41T/D60bA/F60eL/ins97aV/F97D/T98P/F99L/C122S
      /G151H/Q175M/Q192T

<400> 331
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Leu Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35                  40                  45
Gly Leu Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 332
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41S/D60bY/F60eD/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175M/Q192A

<400> 332

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Asp Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 333
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38W/I41S/D60bG/F60eI/F97D/ins97aV/T98P/F99L/C122S/G151N/Q175A/Q192D

<400> 333

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Trp Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Gly Arg
        35                  40                  45
Gly Ile Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 334
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38T/I41S/D60bG/F60eM/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175S/Q192S

<400> 334

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Thr Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Gly Arg
        35                  40                  45
Gly Met Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 335
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41T/D60bW/F60eH/F97D/ins97aV/T98P/F99L/C122S/G151N/Q175L/Q192G

<400> 335

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Trp Arg
        35                  40                  45
Gly His Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 336
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38D/I41S/D60bT/F60eR/ins97aV/F97D/T98P/F99L/C122S
/G151K/Q175S/Q192V

<400> 336
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Asp Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Lys Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 337
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bF/F60eV/F97D/ins97aV/T98P/F99L/C122S
/G151N/Q175L/Q192A

<400> 337
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Phe Arg
        35   40   45
Gly Val Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 338
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38L/I41A/D60bH/F60eT/ins97aV/F97D/T98P/F99L/C122S
/G151Q/Q175A/Q192G

<400> 338

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Leu Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 339
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bE/F60eH/Y60gW/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 339

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Glu Arg
        35                  40                  45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
```

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 340
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eI/Y60gW/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 340

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 341
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/I41S/D60bV/F60eK/Y60gW/F97T/ins97aE/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 341

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 342
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 342

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
```

Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 343
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/ins97aV/T98P/F99L/C122S/G151H/Q175A/Q192D

<400> 343
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 344

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/ins97aE/F97T/T98G/F99L/C122S
/G151N/Q175L/Q192D

<400> 344
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 345
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

Q38H/I41A/D60bT/F60eH/Y60gW/F97T/ins97aE/T98G/F99L
/C122S/G151N/Q175L/Q192D

<400> 345
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 346
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
D60bY/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 346
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 347
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41T/D60bY/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 347

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 348
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38E/I41S/D60bT/F60eR/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192V

<400> 348

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 349
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bK/F60eK/Y60gW/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192D

<400> 349

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Lys Arg
        35                  40                  45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 350
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bA/F60eV/ins97aE/F97T/T98G/F99L/C122S /Q175L/Q192E/Q209L

<400> 350

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35                  40                  45
Gly Val Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 351
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bT/F60eR/F97T/ins97aE/T98G/F99L/C122S
/Q175L/Q192V

<400> 351
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 352
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38K/I41S/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192V

<400> 352
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 353
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38F/I41A/D60bT/F60eG/Y60gW/ins97aE/F97T/T98G/F99L
/C122S/Q175L/Q192E

<400> 353
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Phe Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 354
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/F60eH/Y60gW/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192A

<400> 354

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
```

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 355
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bT/F60eK/Y60gW/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192A

<400> 355

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

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 356
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eA/Y60gW/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192V

<400> 356

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Ala Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 357
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38E/I41V/D60bF/F60eK/Y60gF/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192G

<400> 357

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Val Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Phe Arg
        35                  40                  45
Gly Lys Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 358
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/H40P/I41A/F60eQ/Y60gW/F97T/ins97aE/T98G/F99L/C122S/Q175L/Q192D

<400> 358
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly Pro Ala Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Gln Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 359
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38R/I41V/D60bV/F60eV/Y60gF/ins97aE/F97T/T98G/F99L
/C122S/Q175L/Q192G

<400> 359
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Arg Gly His Val Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Val Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 360
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38L/H40P/I41T/D60bV/F60eH/Y60gL/ins97aE/F97T/T98G

/F99L/C122S/Q175L/Q192A

<400> 360
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Leu Gly Pro Thr Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly His Arg Leu Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 361
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41A/D60bV/F60eH/ins97aE/F97T/T98G/F99L/C122S
      /Q175L/Q192D

<400> 361
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly His Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 362
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bA/F60eV/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192V

<400> 362

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35                  40                  45
Gly Val Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 363
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41T/D60bH/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192G

<400> 363

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 364
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bT/F60eR/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192E

<400> 364

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 365
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38K/I41T/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192A

<400> 365

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Lys Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 366
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bT/F60eK/ins97aE/F97T/T98G/F99L/C122S
/Q175L/Q192E

<400> 366
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Lys Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 367
<211> 242
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38L/I41T/D60bV/F60eH/Y60gL/ins97aE/F97T/T98G/F99L
/C122S/Q175L/Q192S

<400> 367
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Leu Gly His Thr Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
35 40 45
Gly His Arg Leu Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 368
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
ins97aA/F97G/T98L/C122S/Q175M/Q192A/D217I/K224R

<400> 368
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15

```
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Ala Leu Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Arg Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 369
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bY/F60eT/ins97aE/F97T/T98G/F99L/C122S/Q175L/Q192D

<400> 369

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

```
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 370
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain ins97aY/F97H/F99L/C122S/Q175M/Q192A/D217V

<400> 370

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp His Tyr Thr Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 371
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
ins97aL/F97Q/T98G/F99L/C122S/Q175M/Q192S/D217I

<400> 371

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Leu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
```

```
Gly Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 372
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain ins97aY/F97G/T98V/C122S/Q175M/Q192S/D217V

<400> 372

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Tyr Val Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 373

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38Y/I41S/D60bR/F60eE/Y60gF/ins97aE/F97T/T98G/F99L
/C122S/Q175L/Q192V

<400> 373
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Arg Arg
        35   40   45
Gly Glu Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 374
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

Q38H/I41S/D60bT/F60eS/ins97aV/F97D/T98P/F99L/C122S
/G151H/Q175L/Q192V

<400> 374
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 375
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L
/C122S/G151H/Q175L/Q192V

<400> 375
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 376
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175A/Q192D

<400> 376

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 377
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175L/Q192E

<400> 377

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

```
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 378
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bE/F60eH/Y60gW/ins97aE/F97T/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 378

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Glu Arg
        35                  40                  45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 379
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bT/F60eK/Y60gW/ins97aE/F97T/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 379

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 380
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eI/Y60gW/ins97aE/F97T/T98G/F99L
/C122S/G151H/Q175L/Q192D

<400> 380
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Ile Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 381
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38E/I41S/D60bV/F60eK/Y60gW/ins97aE/F97T/T98G/F99L
/C122S/G151H/Q175L/Q192D

<400> 381
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 382
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/L52M/D60bG/ins97aV/F97D/T98P/F99L/M117K/
C122S/I136L/Q192G/D217A

<400> 382
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Met Val Ser Ala Ala His Cys Tyr Ile Asp Gly Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Lys Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Leu Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 383
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38E/I41A/D60bH/ins97aV/F97D/T98P/F99L/C122S/Q192G
      /Q209L/D217H

<400> 383
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Glu Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35   40   45

```
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195                 200                 205
Gly Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 384
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D60bT/F93L/ins97aV/F97D/T98P/F99L/C122S/Q192G/D217H

<400> 384

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

```
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 385
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41T/D60bH/ins97aV/F97D/T98P/F99L/C122S/Q192G/D217I

<400> 385

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
```

```
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 386
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bS/ins97aV/F97D/T98P/F99L/M117L/C122S/I136T/Q192G/D217I

<400> 386

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Leu Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Thr Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly
```

```
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 387
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38R/I41T/D60bT/ins97aV/F97D/T98P/F99L/C122S/I136V/Q192G/D217N/L233Q

<400> 387

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Val Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Gln Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 388
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bW/ins97aV/F97D/T98P/F99L/C122S/I136M/Q192G/D217N

<400> 388
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Trp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Met Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 389
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain
Q38H/I41S/P49Q/D60bS/F93L/ins97aV/F97D/T98P/F99L/C
122S/Q192G/D217Q

<400> 389
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Gln Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Leu Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 390
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/ins97aV/F97D/T98P/F99L/C122S/I136V
/Q192G/D217S

<400> 390
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Val Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 391
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bS/F93L/D96Y/ins97aV/F97D/T98P/F99L/C122S/I136F/Q192G/D217V

<400> 391

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

```
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Leu Phe Asn Tyr Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Phe Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 392
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41T/D60bH/ins97aV/F97D/T98P/F99L/C122S/I136F/L153P/Q192G/D217Y

<400> 392

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

```
Gly Lys Ala Phe Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Pro Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Tyr Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 393
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F93L/ins97aV/F97D/T98P/F99L/S115N/
C122S/Q192V/F208L/D217Q

<400> 393

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Leu Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Asn Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
```

```
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Leu Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 394
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38K/I41T/D60bY/ins97aV/F97D/T98P/F99L/C122S/I136T/Q192G/F208V/D217R

<400> 394

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Lys Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Thr Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Val Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Arg Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
```

Gly Val

<210> 395
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bS/ins97aV/F97D/T98P/F99L/C122S/I136V/Q192G/D217V

<400> 395
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Val Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 396
<211> 242
<212> PRT

<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bG/ins97aV/F97D/T98P/F99L/M117T/C122S
/N164D/Q192G/D217E

<400> 396
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Gly Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Thr Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asp Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 397
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38K/I41S/D60bV/ins97aV/F97D/T98P/F99L/M117T/C122S
/Q145E/Q175L/Q192G

<400> 397
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Thr Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Glu Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 398
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41S/D60bT/F60eT/Y60gW/ins97aV/F97D/T98P/F99L
      /C122S/G151H/Q175L/Q192V

<400> 398
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg

```
        35                  40                  45
Gly Thr Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 399
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151N/Q175L/Q192D

<400> 399

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

```
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 400
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/ins97aE/F97T/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 400

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Glu Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
```

145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 401
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/L52M/D60bH/D96V/ins97aV/F97D/T98P/F99L/C122S/T150A/Q192G/Q209L/D217T

<400> 401
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Met Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Asp Val Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Ala Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
195 200 205

```
Gly Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 402
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D60bS/D96V/ins97aV/F97D/T98P/F99L/C122S/Q192G/F208L/D217N

<400> 402

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Leu Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 403
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/S90T/F97D/ins97aV/T98P/F99L/C122S/
S127N/I136F/Q192G/D217Q

<400> 403
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Thr His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Asn His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Phe Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 404
<211> 242
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F93S/ins97aV/F97D/T98P/F99L/C122S/
I136L/Q192G/D217A

<400> 404
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Ser Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Leu Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 405
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D60bH/ins97aV/F97D/T98P/F99L/C122S/I136V/Q192
G/D217N

<400> 405
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp His Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Val Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 406
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
L33M/Q38H/I41A/D60bA/ins97aV/F97D/T98P/F99L/C122S/Q192G/D217N

<400> 406

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Met His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
```

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asn Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 407
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bY/D96Y/ins97aV/F97D/T98P/F99L/L106M/C122S/I136M/Q192G/Q209L/D217T

<400> 407

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

```
        115                 120                 125
Gly Lys Ala Met Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 408
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96I/ins97aN/F97Y/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 408

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Tyr Asn Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 409
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bT/F60eS/Y60gW/D96K/ins97aA/F97D/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 409

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Asp Ala Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 410
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41T/D60bV/F60eR/Y60gW/D96I/ins97aN/F97Y/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 410
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Thr Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
35 40 45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Tyr Asn Gly Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 411
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96Y/ins97aI/F97E/T98N
/F99M/C122S/G151N/Q175L/Q192V

<400> 411
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Glu Ile Asn Met Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 412
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96S/ins97aR/F97A/T98S

/F99L/C122S/G151N/Q175L/Q192T

<400> 412
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ser Ala Arg Ser Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 413
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41A/D60bV/F60eR/Y60gW/D96P/ins97aN/F97W/T98G
      /F99L/C122S/G151N/Q175L/Q192E

<400> 413
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Trp Asn Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 414
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/F99L/C122S/G151H/Q175L/Q192D

<400> 414

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
```

```
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 415
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96Y/ins97aV/F97E/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 415

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Glu Val Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
```

```
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 416
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bA/Y60gG/ins97aV/F97D/T98P/F99L/C122S/H143T/G151N/Q175L/Q192A

<400> 416

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ala Arg
        35                  40                  45
Gly Phe Arg Gly Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Thr Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 417
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eH/Y60gF/ins97aV/F97D/T98P/F99L/C122S/H143R/G151N/Q175L/Q192S

<400> 417

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly His Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Arg Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 418
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bS/F60eQ/Y60gF/ins97aV/F97D/T98P/F99L
/C122S/H143R/G151N/Q175L/Q192T

<400> 418
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35   40   45
Gly Gln Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Arg Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 419
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bF/F60eT/ins97aV/F97D/T98P/F99L/C122S
/H143Q/G151N/Q175L/Q192G

<400> 419
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Phe Arg
        35   40   45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Gln Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 420
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bF/F60eQ/Y60gF/ins97aV/F97D/T98P/F99L
/C122S/H143A/G151N/Q175L/Q192A

<400> 420

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Phe Arg
        35                  40                  45
Gly Gln Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Ala Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 421
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eT/ins97aV/F97D/T98P/F99L/C122S/H143Q/G151Q/Q175L/Q192G

<400> 421

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Thr Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
```

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Gln Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 422
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bQ/F60eQ/F97D/ins97aV/T98P/F99L/C122S/H143Q/G151Q/Q175L/Q192G

<400> 422

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Gln Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 423
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bS/F60eQ/ins97aV/F97D/T98P/F99L/C122S/H143A/G151N/Q175L/Q192G

<400> 423

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Ser Arg
        35                  40                  45
Gly Gln Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Ala Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 424
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96Q/F97E/ins97aD/T98S/F99L/C122S/G151N/Q175L/Q192R

<400> 424

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Gln Glu Asp Ser Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
```

Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 425
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96F/F97D/ins97aE/T98S/F99L/C122S/G151H/Q175L/Q192A

<400> 425
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Asp Glu Ser Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 426

<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96L/ins97aG/F97D/T98N
/F99L/C122S/G151H/Q175L/Q192E

<400> 426
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Leu Asp Gly Asn Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 427
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

Q38H/I41S/D60bT/F60eS/Y60gW/D96K/ins97aV/F97G/T98P
/F99L/C122S/G151H/Q175L/Q192D

<400> 427
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 428
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96I/ins97aN/F97Y/T98G
/F99L/C122S/G151H/Q175L/Q192D

<400> 428
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Tyr Asn Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 429
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96I/F97N/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 429

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 430
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/F99L/C122S/G151N/Q175L/Q192D

<400> 430

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

```
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 431
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96Y/ins97aV/F97E/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 431

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Glu Val Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 432
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96P/ins97aN/F97W/T98G/F99L/C122S/G151H/Q175L/Q192E

<400> 432

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Trp Asn Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 433
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96P/ins97aN/F97W/T98G
/F99L/C122S/G151N/Q175L/Q192D

<400> 433
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Trp Asn Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 434
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96P/ins97aN/F97W/T98G
/F99L/C122S/G151H/Q175L/Q192D

<400> 434
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Trp Asn Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 435
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/F97D/F99L/C122S/G151H/
Q175L/Q192D

<400> 435
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 436
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41S/D60bT/F60eS/Y60gW/D96I/F97N/T98G/F99L/C1
      22S/G151N/Q175L/Q192D

<400> 436
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45

```
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 437
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/F97D/F99L/C122S/G151N/Q175L/Q192D

<400> 437

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 438
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151H/Q175L/Q192E

<400> 438

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
```

Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 439
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122
      S/G151H/Q175L/Q192E

<400> 439
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly

```
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 440
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151H/Q175L/Q192E

<400> 440

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 441
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/T98P/F99L/C122S/G151H/Q175L/Q192E

<400> 441
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 442
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/T98P/F99L/C122S/G
151H/Q175L/Q192E

<400> 442
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Pro Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 443
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/F99L/C122
S/G151H/Q175L/Q192E

<400> 443
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Thr Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 444
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/C122S/G151H/Q175L/Q192E

<400> 444

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

```
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 445
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/Q175L/Q192E

<400> 445

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

```
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 446
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/ins97aV/T98P/F99L/C122S/G151H/Q192E

<400> 446

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
```

```
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 447
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/ins97aV/F97D/T98P/F99L/C122S/G151H/Q175L

<400> 447

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
```

Gly Val

<210> 448
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/F97D/ins97aA/T98P/F99L/C122S/G151H/Q175L/Q192E

<400> 448
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Ala Pro Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 449
<211> 242
<212> PRT

<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/Y60gW/ins97aV/F97D/T98P/F99L/C122S
/G151H/Q175L/Q192E

<400> 449
```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asp Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 450
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eG/Y60gW/D96V/F97N/T98G/F99L/C1
22S/G151N/Q175L/Q192D

<400> 450
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Asn Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 451
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38K/I41G/F60eG/Y60gW/D96P/F97N/T98G/F99L/C122S/G1
      51N/Q175L/Q192D

<400> 451
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 452
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41E/D60bS/F60eV/Y60gF/D96W/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 452

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

```
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 453
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eG/D96Y/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 453

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Gly Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
```

145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 454
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38V/I41G/F60eG/Y60gW/D96P/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 454
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Val Gly His Gly Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Asn Gly Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205

```
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 455
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41A/D60bT/F60eG/Y60gW/D96V/F97N/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 455

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 456
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eG/D96P/F97N/T98G/F99L/C122S/G1
51Q/Q175L/Q192D

<400> 456
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Gly Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Asn Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 457
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38K/I41G/D60bT/F60eG/Y60gW/D96P/F97N/T98G/F99L/C1
22S/G151N/Q175L/Q192D

<400> 457
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Asn Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 458
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38K/I41G/D60bT/F60eG/Y60gW/D96L/F97N/T98G/F99L/C1
22S/G151N/Q175L/Q192D

<400> 458
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Lys Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Gly Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Leu Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 459
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/I41S/D60bV/F60eK/Y60gW/D96P/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 459

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
```

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Pro Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 460
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38E/I41S/D60bW/F60eG/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 460

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

```
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 461
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38M/I41S/F60eH/Y60gW/D96Y/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 461

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Met Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly His Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
```

```
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 462
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bV/F60eR/Y60gW/D96F/F97D/ins97aE/T98G/F99M/C122S/G151N/Q175L/Q192R

<400> 462

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Asp Glu Gly Met Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 463
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bV/F60eR/Y60gW/D96F/F97E/ins97aT/T98G/F99M/C122S/G151N/Q175L/Q192G

<400> 463
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
35 40 45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Glu Thr Gly Met Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 464
<211> 242

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96F/F97E/ins97aS/T98G
/F99M/C122S/G151N/Q175L/Q192G

<400> 464
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Glu Ser Gly Met Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 465
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96W/F97D/ins97aD/T98G

/F99L/C122S/G151N/Q175L/Q192G

<400> 465
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Trp Asp Asp Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 466
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38H/I41A/D60bV/F60eR/Y60gW/D96F/F97Y/ins97aE/T98G
      /F99M/C122S/G151N/Q175L/Q192R

<400> 466
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Tyr Glu Gly Met Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 467
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96W/F97D/ins97aT/T98G/F99L/C122S/G151N/Q175L/Q192G

<400> 467

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Trp Asp Thr Gly Leu Asp
```

```
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 468
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eK/Y60gF/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 468

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Lys Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
```

```
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 469
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bV/F60eR/Y60gW/D96F/F97S/ins97aH/T98G/F99L/C122S/G151N/Q175L/Q192G

<400> 469

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Ser His Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 470
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D60bV/F60eR/Y60gW/D96F/F97Y/ins97aN/T98G/F99M/C122S/G151N/Q175L/Q192G

<400> 470

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Tyr Asn Gly Met Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 471
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96F/F97S/ins97aD/T98G
/F99L/C122S/G151H/Q175L/Q192D

<400> 471
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Ser Asp Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 472
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96F/F97Y/ins97aD/T98G
/F99L/C122S/G151H/Q175L/Q192D

<400> 472
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Tyr Asp Gly Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 473
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96Y/F97N/ins97aE/T98S
/F99L/C122S/G151H/Q175L/Q192D

<400> 473

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Asn Glu Ser Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 474
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96Y/F97R/ins97aD/T98G/F99L/C122S/G151H/Q175L/Q192D

<400> 474

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
```

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Tyr Arg Asp Gly Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 475
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38H/I41A/D60bT/F60eK/Y60gF/F97T/ins97aE/T98G/F99L/C122S/H143R/G151N/Q175L/Q192V

<400> 475

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly Arg Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 476
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41S/D60bV/F60eR/Y60gF/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 476

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Arg Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
```

```
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 477
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38E/I41S/D60bV/F60eK/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 477

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Glu Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Val Arg
        35                  40                  45
Gly Lys Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
```

Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 478
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 478
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 479

<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/F60eT/Y60gW/D96M/F97N/T98G/F99L/C122S/G1
51N/Q175L/Q192D

<400> 479
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Thr Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 480
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

Q38H/I41S/D60bT/F60eK/D96V/F97N/T98G/F99L/C122S/G1
51N/Q175L/Q192D

<400> 480
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Lys Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Asn Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 481
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D60bT/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/G
151N/Q175L/Q192D

<400> 481
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 482
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/D60bT/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 482

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 483
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38Y/I41S/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 483

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

```
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 484
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41S/D60bT/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 484

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
```

```
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 485
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38Y/I41S/D60bT/F60eR/D96M/F97N/T98G/F99L/C122S/G151N/Q175L/Q192D

<400> 485

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Arg Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 486
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38Y/I41S/D60bT/F60eR/Y60gW/F97N/T98G/F99L/C122S/G
151N/Q175L/Q192D

<400> 486
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Asn Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 487
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/T98G/F99L/C122S/G
151N/Q175L/Q192D

<400> 487
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Phe Gly Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 488
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/F97N/F99L/C122S/G
151N/Q175L/Q192D

<400> 488
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 489
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/F97N/T98G/C122S/G
      151N/Q175L/Q192D

<400> 489
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45

```
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 490
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q192D

<400> 490

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 491
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/G151N/Q175L

<400> 491

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Arg Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Asn Gly Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
```

```
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 492
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38Y/I41S/D60bT/F60eR/Y60gW/D96M/F97N/T98G/F99L/C122S/Q175L/Q192D

<400> 492

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 493
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P/F99L/M117K/C122S/G151H/Q175L/Q192D

<400> 493

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Lys Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 494
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
L36Q/Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV
/T98P/F99L/C122S/G151H/Q175L/Q192D

<400> 494
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Gln Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 495
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aV/T98P
/F99L/C122S/T150S/G151H/Q175L/Q192D/Q209L

<400> 495
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35   40   45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Ser His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 496
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/ins97aA/T98P
/F99L/C122S/G151H/Q175L/Q192D

<400> 496
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
        35                  40                  45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Ala Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 497
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97A/F99L/C122S/G151H/Q175L/Q192G/D217L

<400> 497

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ala Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 498
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97S/F99L/C122S/G151N/Q175I/Q192T/D217T

<400> 498

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
```

```
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 499
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/F97A/F99L/C122S/G151N/Q175R/Q192G/D217Q

<400> 499

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ala Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
```

Val Val Ser Trp Gly Gln Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 500
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41S/F97E/F99L/C122S/G151N/Q175G/Q192R/D217A

<400> 500
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 501
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41G/F97S/F99L/C122S/G151T/Q175R/Q192A/D217Y

<400> 501
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Thr Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Tyr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 502
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain

I41G/F97L/F99L/C122S/G151N/Q175A/Q192V/D217R

<400> 502
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Ala Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Arg Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 503
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41G/F97T/F99M/C122S/G151D/Q175T/Q192T/D217V

<400> 503
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 504
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97L/F99L/C122S/G151T/Q175M/Q192D/D217M

<400> 504

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Thr Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Met Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 505
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97S/F99L/C122S/G151N/Q175I/Q192T/D217T

<400> 505

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165                 170                 175
```

```
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 506
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F99L/C122S/G151N/Q175I/Q192T/D217T

<400> 506

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 507
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F97S/C122S/G151N/Q175I/Q192T/D217T

<400> 507
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Phe Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 508
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F97S/F99L/C122S/Q175I/Q192T/D217T

<400> 508
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 509
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F97S/F99L/C122S/G151N/Q192T/D217T

<400> 509
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 510
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F97S/F99L/C122S/G151N/Q175I/D217T

<400> 510

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

```
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 511
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F97S/F99L/C122S/G151N/Q175I/Q192T

<400> 511

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
```

```
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 512
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain F97R/ins97aT/T98V/C122S/Q175M/Q192T/D217S

<400> 512

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Val Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 513
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
F97V/ins97aH/T98R/F99L/C122S/Q175R/Q192G/D217S

<400> 513
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val His Arg Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 514
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97Q/F99L/C122S/Q175N/Q192V/D217G

<400> 514
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Asn Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Gly Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 515
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
F97L/ins97aM/T98N/F99L/C122S/Q175T/Q192T/D217S

<400> 515
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Met Asn Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
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<210> 516
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
F97S/ins97aN/T98G/F99M/C122S/Q175T/Q192T/D217S

<400> 516

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

```
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Ser Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 517
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41T/F97H/F99L/C122S/G151N/Q175H/Q192V/D217L

<400> 517

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp His Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
```

```
Thr Cys Glu Asn Leu Leu Pro Gln His Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 518
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41R/F97T/F99L/C122S/G151N/Q175T/Q192T/D217I

<400> 518

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
```

```
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 519
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41E/F97V/F99L/C122S/G151N/Q175L/Q192S/D217H

<400> 519

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 520
<211> 241

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41D/F97R/F99L/C122S/G151Q/Q175R/Q192V/D217L

<400> 520
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 521
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41E/F97R/F99L/C122S/G151Q/Q175G/Q192T/D217V

<400> 521
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 522
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41D/F97T/F99L/C122S/G151N/Q175S/Q192T/D217A

<400> 522
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 523
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41E/F97A/F99M/C122S/G151N/Q175R/Q192S/D217E

<400> 523

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

```
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 524
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F99L/C122S/Q175I/Q192T/D217T

<400> 524

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
```

```
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 525
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F99L/C122S/G151N/Q192T/D217T

<400> 525

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Thr Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 526
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F99L/C122S/G151N/Q175I/Q192T

<400> 526
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Ile Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 527
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97V/F99L/C122S/G151N/Q175L/Q192S/D217H

<400> 527
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 528
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41E/F99L/C122S/G151N/Q175L/Q192S/D217H

<400> 528
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 529
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F97V/F99L/C122S/Q175L/Q192S/D217H

<400> 529

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

```
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 530
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41E/F97V/F99L/C122S/G151N/Q192S/D217H

<400> 530

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
```

```
        195                 200                 205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 531
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F97V/F99L/C122S/G151N/Q175L/D217H

<400> 531

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly His Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 532
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F97V/F99L/C122S/G151N/Q175L/Q192S

<400> 532
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 533
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97R/F99L/C122S/G151Q/Q175R/Q192V/D217L

<400> 533
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 534
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41D/F99L/C122S/G151Q/Q175R/Q192V/D217L

<400> 534
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 535
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97R/F99L/C122S/Q175R/Q192V/D217L

<400> 535

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

```
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 536
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97R/F99L/C122S/G151Q/Q192V/D217L

<400> 536

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
```

```
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 537
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97R/F99L/C122S/G151Q/Q175R/D217L

<400> 537

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 538

<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97R/F99L/C122S/G151Q/Q175R/Q192V

<400> 538
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 539
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F97R/F99L/C122S/G151Q/Q175G/Q192T

<400> 539

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 540
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/F99L/C122S/G151N/Q175S/Q192T/D217A

<400> 540

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 541
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97T/F99L/C122S/Q175S/Q192T/D217A

<400> 541
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140

```
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 542
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97T/F99L/C122S/G151N/Q192T/D217A

<400> 542

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 543
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97T/F99L/C122S/G151N/Q175S/D217A

<400> 543

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 544
<211> 241

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97T/F99L/C122S/G151N/Q175S/Q192T

<400> 544
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 545
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain F97T/F99L/C122S/G151N/Q175S/Q192T/D217A

<400> 545
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 546
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/F97Q/F99L/C122S/Q175W/Q192V/D217R

<400> 546

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Trp Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Arg Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 547
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F97L/F99L/C122S/G151N/Q192V/D217L

<400> 547

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
```

```
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 548
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F97A/F99L/C122S/G151N/Q175M/Q192S

<400> 548

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ala Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
```

Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 549
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F97V/F99L/C122S/G151N/Q192T/D217V

<400> 549
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 550
<211> 241
<212> PRT

<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F97R/F99L/C122S/Q175L/Q192T/D217I

<400> 550
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 551
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F97S/F99L/C122S/Q175L/Q192V/D217A

<400> 551
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 552
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain F97L/F99L/C122S/Q175K/Q192V/D217M

<400> 552

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
```

```
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Lys Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Met Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 553
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain F97E/F99L/C122S/G151A/Q192V

<400> 553

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Ala Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
```

```
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 554
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain F97E/F99L/C122S/Q175H/Q192V/D217P

<400> 554

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln His Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Pro Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
```

225 230 235 240
Val

<210> 555
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain F97R/ins97aI/T98P/C122S/Q175M/Q192V/D217I

<400> 555
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Ile Pro Phe Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Ile Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 556
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F99L/C122S/G151N/Q192T/D217A

<400> 556
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Ala Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 557
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F99L/C122S/G151N/Q175S/Q192T

<400> 557
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 558
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/F97T/F99L/C122S/G151N/Q192T

<400> 558

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

```
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 559
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F99L/C122S/G151N/Q192T

<400> 559

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
```

```
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 560
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F99L/C122S/Q175S/Q192T

<400> 560

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
```

Val

<210> 561
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F99L/C122S/Q192T

<400> 561
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 562
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38R/I41G/Y60gG/F99M/C122S/G151N/Q192R

<400> 562
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Arg Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Gly Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Met Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 563
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38K/I41G/Y60gG/F99L/C122S/G151N/Q192H

<400> 563
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Gly Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 564
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38L/I41R/Y60gF/F99L/C122S/G151N/Q192A

<400> 564

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

```
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 565
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38K/I41D/Y60gG/F99L/C122S/G151N

<400> 565

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Lys Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Gly Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
```

```
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 566
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38R/I41R/Y60gF/F99L/C122S/G151N/Q192G

<400> 566

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Arg Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Phe Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 567
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38S/I41S/Y60gW/F99L/C122S/G151D/Q192T

<400> 567
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Ser Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 568
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38K/I41G/Y60gW/F99L/C122S/G151N/Q192A

<400> 568
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 569
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/Y60gW/C122S/G151H/Q192A

<400> 569
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 570
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38K/I41S/Y60gW/F99L/C122S/G151N/Q192G

<400> 570

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

```
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 571
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38F/I41S/Y60gA/C122S/G151N/Q192R

<400> 571

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Phe Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Ala Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
```

```
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 572
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38R/I41S/Y60gW/F99L/C122S/G151N/Q192E

<400> 572

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Arg Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Glu Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 573
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38K/I41R/Y60gG/F99L/C122S/G151N/Q192G

<400> 573
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Lys Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Gly Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 574
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain Q38R/I41R/F99L/C122S/G151N/Q192G

<400> 574
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Arg Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 575
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38R/I41R/Y60gL/F99L/C122S/G151N/Q192G

<400> 575
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Arg Gly His Arg Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45

```
Gly Phe Arg Leu Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 576
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41E/C122S/G151N/Q175L/Q192A

<400> 576

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

```
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 577
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/F99M/C122S/G151N/Q175L/Q192G

<400> 577

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180                 185                 190
```

```
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 578
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41E/F99L/C122S/G151N/Q175L/Q192A

<400> 578

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 579
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99L/C122S/G151H/Q175L/Q192V

<400> 579
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 580
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F99L/C122S/G151N/Q192A

<400> 580
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 581
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41S/F99M/C122S/G151N/Q175G/Q192R

<400> 581
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 582
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/G151N/Q175R/Q192H

<400> 582

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

```
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 583
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/F99M/C122S/G151N/Q175E/Q192R

<400> 583

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Glu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
```

```
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 584
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/G151N/Q192V

<400> 584

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 585
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/G151N/Q192S

<400> 585
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 586
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99L/C122S/G151N/Q175P/Q192V

<400> 586
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Pro Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 587
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41E/F99L/C122S/G151N/Q175G/Q192T

<400> 587
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 588
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/C122S/G151N/Q175R/Q192R

<400> 588

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

```
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 589
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99M/C122S/G151N/Q175P/Q192S

<400> 589

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Pro Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
```

```
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 590
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/C122S/G151N/Q175D/Q192R

<400> 590

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Asp Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Arg Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 591

<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/G151N/Q175R/Q192T

<400> 591
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 592
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F99L/C122S/G151N/Q175R/Q192A

<400> 592

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 593
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain F99L/C122S/G151N/Q192T

<400> 593

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 594
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F99L/C122S/G151N

<400> 594
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140

```
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 595
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99L/C122S/Q175P/Q192V

<400> 595

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Pro Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 596
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99L/C122S/G151N/Q175P

<400> 596

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Pro Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 597
<211> 241

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/Q175G/Q192T

<400> 597
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 598
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41E/F99L/C122S/G151N/Q175G

<400> 598
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gly Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 599
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/Y59F/F99L/C122S/G151N/Q192T/V213A

<400> 599

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
```

```
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Ala Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 600
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41D/G43A/F99L/C122S/G151N/Q192T/P232S/K239R

<400> 600

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Ala Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
```

```
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Ser Leu Phe Arg Asp Trp Ile Arg Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 601
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/G43A/D96E/F99L/C122S/G151N/Q192T

<400> 601

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Ala Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Glu Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
```

```
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 602
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/D96E/F99L/C122S/G151N/Q192T

<400> 602

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Glu Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 603
<211> 241

<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/D96E/C122S/G151N/Q192T

<400> 603
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Glu Phe Thr Phe Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 604
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/D96E/F99L/C122S/G151N/Q192T/D217E

<400> 604
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val

```
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Glu Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 605
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41D/F99L/M117T/C122S/G151N/Q192T/A204D/D217E

<400> 605

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

```
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Thr
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Asp Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 606
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/F99L/C122S/G151N/Q192T/D217E

<400> 606

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
```

```
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 607
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41D/F99L/C122S/I136M/G151N/Q192T/D217L/K224R

<400> 607

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Met Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
```

```
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Arg Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 608
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/F60eI/D96E/F99L/C122S/G151N/Q192T

<400> 608

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Ile Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Glu Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 609

<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41D/C122S/G151N/Q192T/D217E

<400> 609
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Glu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 610
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain D96E/C122S/G151N/Q192T

<400> 610

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Glu Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 611
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Y59F/C122S/G151N/Q192T

<400> 611

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ile Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
```

65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
130 135 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145 150 155 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
165 170 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser Gly
180 185 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
195 200 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
210 215 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225 230 235 240
Val

<210> 612
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
Q38H/I41S/D60bT/F60eS/Y60gW/D96K/F97G/F99L/C122S/G
151H/Q175L/Q192D

<400> 612
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Thr Arg
35 40 45
Gly Ser Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Thr Leu Asp Tyr
85 90 95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
100 105 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
115 120 125

```
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
His Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 613
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/ins97aV/C122S/Q192D

<400> 613

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 614
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97L/F99L/C122S/Q192S

<400> 614

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 615
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41T/F97R/ins97aV/T98L/C122S/Q192S

<400> 615
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Arg Val Leu Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 616
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97V/T98N/F99L/C122S/Q192S

<400> 616
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Asn Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 617
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41S/F97G/ins97aA/T98L/C122S/Q192A

<400> 617
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Ala Leu Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 618
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97D/F99L/C122S/Q192V

<400> 618

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

```
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 619
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41E/F97L/F99L/C122S/Q192A

<400> 619

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Glu Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
```

```
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 620
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97A/ins97aV/T98L/C122S/Q192A

<400> 620

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ala Val Leu Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 621

<211> 240
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97del/T98S/F99L/C122S/Q192S

<400> 621
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Leu Asp Tyr Asp
                85   90   95
Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met Val
            100   105   110
Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly Lys
        115   120   125
Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr Gly
    130   135   140
Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr Thr
145   150   155   160
Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys Val
                165   170   175
Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly Gly
            180   185   190
Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly Val
        195   200   205
Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val Tyr
    210   215   220
Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly Val
225   230   235   240

<210> 622
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41A/Y60gW/D96F/F97G/F99M/C122S/Q175W/Q192A

<400> 622
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15

```
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Phe Gly Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Trp Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 623
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/Y60gW/F99L/C122S/Q175R/Q192S

<400> 623

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
```

```
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 624
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41A/Y60gW/ins97aE/F99L/C122S/Q175M/Q192T

<400> 624

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Glu Thr Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
```

```
Thr Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 625
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41T/ins97aA/F99Y/C122S/Q175L/Q192A

<400> 625

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Ala Thr Tyr Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
```

225 230 235 240
Gly Val

<210> 626
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41A/ins97aY/F99L/C122S/Q175R/Q192H

<400> 626
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
1 5 10 15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
20 25 30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
35 40 45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
50 55 60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65 70 75 80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Tyr Thr Leu Asp
85 90 95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
100 105 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
115 120 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
130 135 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145 150 155 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met
165 170 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser
180 185 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
195 200 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
210 215 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225 230 235 240
Gly Val

<210> 627
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/ins97aT/F99L/C122S/Q175R/Q192H

<400> 627
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Thr Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 628
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/Y60gW/ins97aN/F99L/C122S/Q175R/Q192T

<400> 628
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile

```
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Asn Thr Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Arg Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 629
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/D96S/ins97aK/C122S/G151N/Q192A

<400> 629

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

```
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 630
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41A/D96A/ins97aA/C122S/G151D/Q192T

<400> 630

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ala Phe Ala Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
```

```
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 631
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D96Q/ins97aT/C122S/G151N/Q192A

<400> 631

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Gln Phe Thr Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
```

Gly Val

<210> 632
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41T/D96M/ins97aA/C122S/G151D

<400> 632
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Phe Ala Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 633
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38Y/I41A/D96I/ins97aQ/C122S

<400> 633
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Tyr Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ile Phe Gln Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 634
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/D96K/ins97aT/C122S/G151K/Q192A

<400> 634
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Phe Thr Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Lys Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 635
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38W/I41S/D96R/ins97aA/C122S/G151N/Q192A

<400> 635

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

```
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 636
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41A/D96R/ins97aQ/C122S

<400> 636

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly His Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Arg Phe Gln Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 637
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38F/I41V/D96Q/ins97aT/C122S/G151D

<400> 637

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Phe Gly His Val Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Gln Phe Thr Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asp Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 638
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
L33M/Q38F/I41S/D96A/ins97aW/C122S/G151N/Q192S

<400> 638
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Met His Ala Leu Gly Phe Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Ala Phe Trp Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 639
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/D96V/ins97aA/C122S/G151N/Q192A

<400> 639
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Val Phe Ala Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 640
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41T/D96K/ins97aL/C122S/G151N/Q192A

<400> 640
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Phe Leu Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 641
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38H/I41S/D96Q/ins97aA/C122S/Q192T

<400> 641

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

```
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Thr Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 642
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38W/I41V/D96R/ins97aA/C122S/G151N

<400> 642

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Trp Gly His Val Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Arg Phe Ala Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
```

```
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 643
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain Q38Y/I41T/D96M/ins97aS/C122S/G151N

<400> 643

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Tyr Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Phe Ser Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 644
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/D96K/ins97aS/C122S/G151P/Q192S

<400> 644
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Phe Ser Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Pro Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 645
<211> 242
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/D96G/ins97aG/C122S/G151N/Q192A

<400> 645
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Gly Phe Gly Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 646
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41S/D96K/ins97aD/C122S/G151N/Q192S

<400> 646
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Phe Asp Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 647
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/D96E/ins97aG/C122S/G151Q/Q192A

<400> 647

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gln Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 648
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/Y59F/ins97aV/C122S/G187D/Q192V/D217V

<400> 648

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Asp Val Asp Ser Cys Val Gly Asp Ser
```

```
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 649
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain A35V/I41S/Y59F/C122S/Q192D/D217V

<400> 649

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Val Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Phe Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 650
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F93L/ins97aV/C122S/Q192V/D217V

<400> 650
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Leu Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 651
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain I41S/S90P/ins97aV/C122S/Y146E/Q192N/D217V

<400> 651
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Pro His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Glu Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asn Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 652
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/S90T/ins97aV/C122S/Q192N/D217V

<400> 652
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45

Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Thr His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asn Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 653
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41S/S90T/ins97aV/C122S/Q192V/D217V

<400> 653
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Thr His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 654
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/Y59F/ins97aV/C122S/Q192G

<400> 654

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
```

Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 655
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain
      I41S/Y59F/F97S/ins97aV/S116Y/C122S/Q192G/D217V

<400> 655
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Tyr
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 656
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/ins97aV/C122S/Q192G/Q209L

<400> 656
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 657
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease

domain Q38H/I41S/ins97aV/A112V/C122S/Q192A/Q209L

<400> 657
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Val Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 658
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/ins97aV/C122S/Q192V/D217V

<400> 658
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45

Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 659
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41S/Y59F/ins97aV/C122S/Q192A

<400> 659
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala

```
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 660
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41A/F97G/ins97aM/T98L/C122S

<400> 660

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Met Leu Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
```

```
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 661
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41G/F97E/F99L/C122S/Q192A

<400> 661

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Gly Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Glu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 662
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97V/ins97aV/T98P/C122S

<400> 662
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Val Val Pro Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 663
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/T98S/F99L/C122S/Q192A

<400> 663
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Ser Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 664
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41S/F97Q/F99L/C122S/Q192S

<400> 664
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gln Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 665
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41G/F97L/F99L/C122S/Q192S

<400> 665

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

```
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 666
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/F97G/ins97aA/T98P/C122S/Q192A

<400> 666

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Ala Pro Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 667
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41A/F97G/ins97aV/T98E/C122S

<400> 667

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Gly Val Glu Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 668
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41A/F97S/ins97aA/C122S

<400> 668
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Ala Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 669
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41A/F97W/T98S/F99L/C122S/Q192A

<400> 669
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Trp Ser Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 670
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41L/N95D/D96T/F97W/F99L/C122S/Q192A

<400> 670
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Leu Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60

```
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asp Thr Trp Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 671
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41T/Y60gL/N95D/D96F/F97S/F99L/C122S/Q175S/Q192A

<400> 671

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

```
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 672
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41A/Y60gW/N95D/D96F/F97G/F99L/C122S/Q175H/Q192A

<400> 672

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asp Phe Gly Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln His Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
```

```
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 673
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41A/Y60gW/F99L/C122S/Q175T/Q192A

<400> 673

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ala Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Trp Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Thr Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 674
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38M/I41T/D96M/ins97aH/C122S/G151E

<400> 674
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Met Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Met Phe His Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Glu Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 675
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain Q38H/I41T/D96R/ins97aG/C122S/G151S

<400> 675
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly His Gly His Thr Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Arg Phe Gly Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Ser Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 676
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
      domain I41S/D60bY/ins97aV/T98N/C122S/Q192H

<400> 676
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu

```
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Asn Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys His Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 677
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/Y59F/D60bY/ins97aV/C122S/Q192G

<400> 677

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

```
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 678
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/D60bY/ins97aV/A112V/C122S/Q192G/Q209L

<400> 678

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Tyr Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Val Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Leu Ala
```

```
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 679
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
A35T/I41S/Y59F/ins97aV/C122S/Y146F/V183A/Q192G/R235H

<400> 679

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Thr Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Phe Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Ala Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe His Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 680
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q175H/Q192D

<400> 680
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln His Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Asp Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 681
<211> 242
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/ins97aV/C122S/N164D/Q192G/R235H

<400> 681
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85   90   95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100   105   110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115   120   125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130   135   140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asp Gln
145   150   155   160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165   170   175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180   185   190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195   200   205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210   215   220
Val Tyr Thr Arg Leu Pro Leu Phe His Asp Trp Ile Lys Glu Asn Thr
225   230   235   240
Gly Val

<210> 682
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/Y59F/ins97aV/C122S/Q192G/N223D

<400> 682
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg

```
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asp Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 683
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/ins97aV/C122S/N164D/Q192G/R235L

<400> 683

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

```
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asp Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Leu Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 684
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41S/Y59F/F97Y/ins97aV/C122S/Q192G

<400> 684

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Phe Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Tyr Val Thr Phe Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser
```

```
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 685
<211> 242
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41S/D96K/F97G/ins97aV/T98P/F99L/C122S/Q192V

<400> 685

```
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Lys Gly Val Pro Leu Asp
                85                  90                  95
Tyr Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser
            100                 105                 110
Met Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala
        115                 120                 125
Gly Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly
    130                 135                 140
Thr Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln
145                 150                 155                 160
Thr Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met
                165                 170                 175
Cys Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser
            180                 185                 190
Gly Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala
        195                 200                 205
Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Arg Asn Lys Pro Gly
    210                 215                 220
Val Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr
225                 230                 235                 240
Gly Val
```

<210> 686
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F99L/C122S/G151N/Q175M/Q192G/D217V

<400> 686
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Phe Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Met Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 687
<211> 241
<212> PRT
<213> Artificial Sequence

<220>

<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain I41S/F97L/F99L/C122S/G151N/Q192G/D217V

<400> 687
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35   40   45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50   55   60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65   70   75   80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85   90   95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100   105   110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115   120   125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130   135   140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145   150   155   160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165   170   175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Gly Gly Asp Ser Gly
            180   185   190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195   200   205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210   215   220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225   230   235   240
Val

<210> 688
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease
domain
I41S/F97S/F99L/C122S/G151N/Q175L/Q192A/D217L

<400> 688
Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1   5   10   15
Ser Leu His Ala Leu Gly Gln Gly His Ser Cys Gly Ala Ser Leu Ile
            20   25   30

```
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Ser Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ala Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Leu Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 689
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41G/F97R/F99L/C122S/G151N/Q175L/Q192S/D217V

<400> 689

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

```
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Leu Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Val Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
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<210> 690
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain
I41T/F97L/F99L/C122S/G151N/Q175S/Q192S/D217W

<400> 690

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Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Thr Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Leu Thr Leu Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Asn Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
```

```
Thr Cys Glu Asn Leu Leu Pro Gln Ser Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Ser Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Trp Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
225                 230                 235                 240
Val
```

<210> 691
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> MEMBRANE TYPE SERINE PROTEASE 1 (MT-SP1) protease domain I41D/F97T/F99M/C122S/Q192V/D217M

<400> 691

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Val Val Gly Gly Thr Asp Ala Asp Glu Gly Glu Trp Pro Trp Gln Val
 1               5                  10                  15
Ser Leu His Ala Leu Gly Gln Gly His Asp Cys Gly Ala Ser Leu Ile
            20                  25                  30
Ser Pro Asn Trp Leu Val Ser Ala Ala His Cys Tyr Ile Asp Asp Arg
        35                  40                  45
Gly Phe Arg Tyr Ser Asp Pro Thr Gln Trp Thr Ala Phe Leu Gly Leu
    50                  55                  60
His Asp Gln Ser Gln Arg Ser Ala Pro Gly Val Gln Glu Arg Arg Leu
65                  70                  75                  80
Lys Arg Ile Ile Ser His Pro Phe Phe Asn Asp Thr Thr Met Asp Tyr
                85                  90                  95
Asp Ile Ala Leu Leu Glu Leu Glu Lys Pro Ala Glu Tyr Ser Ser Met
            100                 105                 110
Val Arg Pro Ile Ser Leu Pro Asp Ala Ser His Val Phe Pro Ala Gly
        115                 120                 125
Lys Ala Ile Trp Val Thr Gly Trp Gly His Thr Gln Tyr Gly Gly Thr
    130                 135                 140
Gly Ala Leu Ile Leu Gln Lys Gly Glu Ile Arg Val Ile Asn Gln Thr
145                 150                 155                 160
Thr Cys Glu Asn Leu Leu Pro Gln Gln Ile Thr Pro Arg Met Met Cys
                165                 170                 175
Val Gly Phe Leu Ser Gly Gly Val Asp Ser Cys Val Gly Asp Ser Gly
            180                 185                 190
Gly Pro Leu Ser Ser Val Glu Ala Asp Gly Arg Ile Phe Gln Ala Gly
        195                 200                 205
Val Val Ser Trp Gly Met Gly Cys Ala Gln Arg Asn Lys Pro Gly Val
    210                 215                 220
Tyr Thr Arg Leu Pro Leu Phe Arg Asp Trp Ile Lys Glu Asn Thr Gly
```

225 230 235 240
Val

<210> 692
<211> 444
<212> PRT
<213> Artificial Sequence

<220>
<223> ATIII Bait (ATIII modified by insertion of
QHARASHLG in the RSL loop)

<400> 692
His Gly Ser Pro Val Asp Ile Cys Thr Ala Lys Pro Arg Asp Ile Pro
1 5 10 15
Met Asn Pro Met Cys Ile Tyr Arg Ser Pro Glu Lys Lys Ala Thr Glu
20 25 30
Asp Glu Gly Ser Glu Gln Lys Ile Pro Glu Ala Thr Asn Arg Arg Val
35 40 45
Trp Glu Leu Ser Lys Ala Asn Ser Arg Phe Ala Thr Thr Phe Tyr Gln
50 55 60
His Leu Ala Asp Ser Lys Asn Asp Asn Asp Asn Ile Phe Leu Ser Pro
65 70 75 80
Leu Ser Ile Ser Thr Ala Phe Ala Met Thr Lys Leu Gly Ala Cys Asn
85 90 95
Asp Thr Leu Gln Gln Leu Met Glu Val Phe Lys Phe Asp Thr Ile Ser
100 105 110
Glu Lys Thr Ser Asp Gln Ile His Phe Phe Phe Ala Lys Leu Asn Cys
115 120 125
Arg Leu Tyr Arg Lys Ala Asn Lys Ser Ser Lys Leu Val Ser Ala Asn
130 135 140
Arg Leu Phe Gly Asp Lys Ser Leu Thr Phe Asn Glu Thr Tyr Gln Asp
145 150 155 160
Ile Ser Glu Leu Val Tyr Gly Ala Lys Leu Gln Pro Leu Asp Phe Lys
165 170 175
Glu Asn Ala Glu Gln Ser Arg Ala Ala Ile Asn Lys Trp Val Ser Asn
180 185 190
Lys Thr Glu Gly Arg Ile Thr Asp Val Ile Pro Ser Glu Ala Ile Asn
195 200 205
Glu Leu Thr Val Leu Val Leu Val Asn Thr Ile Tyr Phe Lys Gly Leu
210 215 220
Trp Lys Ser Lys Phe Ser Pro Glu Asn Thr Arg Lys Glu Leu Phe Tyr
225 230 235 240
Lys Ala Asp Gly Glu Ser Cys Ser Ala Ser Met Met Tyr Gln Glu Gly
245 250 255
Lys Phe Arg Tyr Arg Arg Val Ala Glu Gly Thr Gln Val Leu Glu Leu
260 265 270
Pro Phe Lys Gly Asp Asp Ile Thr Met Val Leu Ile Leu Pro Lys Pro
275 280 285
Glu Lys Ser Leu Ala Lys Val Glu Lys Glu Leu Thr Pro Glu Val Leu
290 295 300
Gln Glu Trp Leu Asp Glu Leu Glu Glu Met Met Leu Val Val His Met

```
305                 310                 315                 320
Pro Arg Phe Arg Ile Glu Asp Gly Phe Ser Leu Lys Glu Gln Leu Gln
                325                 330                 335
Asp Met Gly Leu Val Asp Leu Phe Ser Pro Glu Lys Ser Lys Leu Pro
            340                 345                 350
Gly Ile Val Ala Glu Gly Arg Asp Asp Leu Tyr Val Ser Asp Ala Phe
        355                 360                 365
His Lys Ala Phe Leu Glu Val Asn Glu Glu Gly Ser Glu Ala Ala Ala
    370                 375                 380
Ser Thr Ala Val Val Gln His Ala Arg Ala Ser His Leu Gly Arg Val
385                 390                 395                 400
Thr Phe Lys Ala Asn Arg Pro Phe Leu Val Phe Ile Arg Glu Val Pro
                405                 410                 415
Leu Asn Thr Ile Ile Phe Met Gly Arg Val Ala Asn Pro Cys Val Lys
            420                 425                 430
Gly Gly Gly Ser Asp Tyr Lys Asp Asp Asp Asp Lys
        435                 440
```