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<110> Scil Proteins GmbH

<120> Novel Immunoglobulin-Binding Proteins

<130> SP29 WO

<150> EP15177056.7
<151> 2015-07-16

<160> 49

<170> PatentIn version 3.5

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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Asn Gly Phe Ile Gln
            20   25   30

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

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

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

Leu Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp
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Ala
65

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<213> Staphylococcus aureus D (CID 148474)

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

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

Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys
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Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile
1   5   10   15

Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala
        35   40   45

Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys
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Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln
            20                  25                  30


Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala
        35                  40                  45


Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys
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1               5                   10                  15


Leu His Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln
            20                  25                  30


Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala
        35                  40                  45


Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys
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Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Ala Phe Ile Gln
20 25 30

Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala
35 40 45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys
50 55

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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
20 25 30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
35 40 45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
50 55

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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
            20   25   30

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

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Pro Ala Ala Gln His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile
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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
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Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile
1   5   10   15

Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Ala Asp Asn Lys Phe Asp Glu Ala Gln Gln Ser Ala Phe Tyr Glu Ile
1   5   10   15

Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Ala Asp Ser Lys Phe Asp Glu Ala Gln Gln Ser Ala Phe Tyr Glu Ile
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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Ser Leu Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro

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Leu His Leu Pro Asp Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
20 25 30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Ser Leu Leu Gly Glu Ala
35 40 45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Leu His Leu Pro Ser Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
20 25 30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Ser Leu Leu Gly Glu Ala
35 40 45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Leu His Leu Pro Ser Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Thr Ser Lys Ser Leu Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Leu His Leu Pro Ser Leu Thr Glu Asp Gln Arg Ala Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Thr Ser Lys Ser Leu Leu Gly Glu Ala

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


Ser Leu Lys Asp Asp Pro Ser Thr Ser Lys Ser Leu Leu Gly Glu Ala
        35                  40                  45


Lys Lys Leu Ser Asp Ala Gln Ala Pro Pro
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Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile
1               5                   10                  15


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

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys
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Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Asn Ala Phe Ile Gln

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

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35                  40                  45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
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Leu His Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys
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Leu His Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Val Leu Gly Glu Ala
        35   40   45

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

Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Glu Val Leu Gly Glu Ala
35 40 45

Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys
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Leu His Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Ala Phe Ile Gln
20 25 30

Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Glu Ile Leu Ala Glu Ala
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Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys
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<223> may be replaced by T or Q

<220>
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<223> may be replaced by A

<220>
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<223> may be replaced by S

<220>
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<222> (44)..(44)
<223> may be replaced by I or V

<220>
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<223> may be replaced by A

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<222> (49)..(49)
<223> may be replaced by Q

<220>
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<222> (52)..(52)
<223> may be replaced by S or D

<220>
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<222> (53)..(53)
<223> may be replaced by E

<220>

<221> VARIANT
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<223> may be replaced by S

<220>
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<222> (58)..(58)
<223> may be replaced by P

<400> 38

Ala Asp Ala Lys His Asp Glu Asp Gln Gln Ser Ala Phe Tyr Glu Ile
1   5   10   15

Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Asn Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Leu Leu Gly Glu Ala
        35   40   45

Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys
    50   55

<210> 39
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal coupling sequence (APS10/C)

<400> 39

Ala Ser Pro Ala Pro Ser Ala Pro Ser Ala Cys
1   5   10

<210> 40
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> coupling sequence c-terminal (APS30/C)

<400> 40

Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser Ala Ala Ser
1   5   10   15

Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala Ala Ala Ala
            20   25   30

Cys

<210> 41
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> APS30 linker

<400> 41

Ser Ala Ala Pro Ala Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro
1   5   10   15

Ala Pro Ala Pro Ala Pro Ser Pro Ala Ala Pro Ala Ala Ser
            20   25   30

<210> 42
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> APS30 linker

<400> 42

Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser Ala Ala Ser
1   5   10   15

Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala Ala
            20   25   30

<210> 43

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

<220>
<223> APS10 linker

<400> 43

Ala Ser Pro Ala Pro Ser Ala Pro Ser Ala
1   5   10

<210> 44
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Streptag

<400> 44

Trp Ser His Pro Gln Phe Glu Lys
1   5

<210> 45
<211> 189
<212> PRT
<213> Artificial Sequence

<220>
<223> IB14 dimer (CID150570)

<400> 45

Met Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu
1   5   10   15

Ile Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile
            20   25   30

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

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro Ser Ala Ala Pro Ala

```
    50                  55                  60

Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ala
65                  70                  75                  80

Pro Ser Pro Ala Ala Pro Ala Ala Ser Pro Ala Ala Lys His Asp Lys
                85                  90                  95

Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
            100                 105                 110

Glu Asp Gln Arg Ser Ala Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
        115                 120                 125

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

Ala Pro Pro Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser
145                 150                 155                 160

Ala Ala Ser Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala
                165                 170                 175

Ala Ala Ala Cys Ala Trp Ser His Pro Gln Phe Glu Lys
            180                 185


<210>  46
<211>  365
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  IB14 tetramer (CID150663)

<400>  46

Met Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu
1               5                   10                  15

Ile Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile
```

```
            20                  25                  30

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

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro Ser Ala Ala Pro Ala
    50                  55                  60

Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ala
65                  70                  75                  80

Pro Ser Pro Ala Ala Pro Ala Ala Ser Pro Ala Ala Lys His Asp Lys
                85                  90                  95

Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
            100                 105                 110

Glu Asp Gln Arg Ser Ala Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
        115                 120                 125

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

Ala Pro Pro Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser
145                 150                 155                 160

Ala Ala Ser Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala
                165                 170                 175

Ala Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu
            180                 185                 190

Ile Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile
        195                 200                 205

Gln Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu
    210                 215                 220
```

```
Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro Ser Ala Ala Pro Ala
225                 230                 235                 240


Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ala
                245                 250                 255


Pro Ser Pro Ala Ala Pro Ala Ala Ser Pro Ala Ala Lys His Asp Lys
            260                 265                 270


Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
        275                 280                 285


Glu Asp Gln Arg Ser Ala Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
    290                 295                 300


Val Ser Lys Glu Ile Leu Gly Glu Ala Lys Lys Leu Asn Asp Ala Gln
305                 310                 315                 320


Ala Pro Pro Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser
                325                 330                 335


Ala Ala Ser Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala
            340                 345                 350


Ala Ala Ala Cys Ala Trp Ser His Pro Gln Phe Glu Lys
        355                 360                 365


<210>  47
<211>  541
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  IB14 hexamer (CID 150772)

<400>  47

Met Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu
1               5                   10                  15
```

```
Ile Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile
            20                  25                  30

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

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro Ser Ala Ala Pro Ala
    50                  55                  60

Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ala
65                  70                  75                  80

Pro Ser Pro Ala Ala Pro Ala Ala Ser Pro Ala Ala Lys His Asp Lys
                85                  90                  95

Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
            100                 105                 110

Glu Asp Gln Arg Ser Ala Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
        115                 120                 125

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

Ala Pro Pro Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser
145                 150                 155                 160

Ala Ala Ser Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala
                165                 170                 175

Ala Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu
            180                 185                 190

Ile Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile
        195                 200                 205

Gln Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu
```

```
    210                 215                 220

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro Ser Ala Ala Pro Ala
225                 230                 235                 240

Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ala
                245                 250                 255

Pro Ser Pro Ala Ala Pro Ala Ala Ser Pro Ala Ala Lys His Asp Lys
            260                 265                 270

Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
        275                 280                 285

Glu Asp Gln Arg Ser Ala Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
    290                 295                 300

Val Ser Lys Glu Ile Leu Gly Glu Ala Lys Lys Leu Asn Asp Ala Gln
305                 310                 315                 320

Ala Pro Pro Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser
                325                 330                 335

Ala Ala Ser Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala
            340                 345                 350

Ala Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu
        355                 360                 365

Ile Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile
    370                 375                 380

Gln Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu
385                 390                 395                 400

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro Ser Ala Ala Pro Ala
                405                 410                 415
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```
Pro Ser Ala Pro Ala Ser Ala Ala Pro Ala Pro Ala Pro Ala Pro Ala
            420                 425                 430

Pro Ser Pro Ala Ala Pro Ala Ala Ser Pro Ala Ala Lys His Asp Lys
        435                 440                 445

Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr
    450                 455                 460

Glu Asp Gln Arg Ser Ala Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
465                 470                 475                 480

Val Ser Lys Glu Ile Leu Gly Glu Ala Lys Lys Leu Asn Asp Ala Gln
                485                 490                 495

Ala Pro Pro Ala Ser Pro Ser Pro Ala Ala Pro Ala Pro Ala Pro Ser
            500                 505                 510

Ala Ala Ser Pro Ala Pro Ala Ala Pro Ala Pro Ala Ala Ser Pro Ala
        515                 520                 525

Ala Ala Ala Cys Ala Trp Ser His Pro Gln Phe Glu Lys
    530                 535                 540


<210>  48
<211>  58
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Generic sequence for e.g. IB24-IB28


<220>
<221>  variant
<222>  (1)..(1)
<223>  may be replaced by V

<220>
<221>  variant
<222>  (2)..(2)
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<223> may be replaced by D

<220>
<221> variant
<222> (4)..(4)
<223> may be replaced by Q

<220>
<221> variant
<222> (5)..(5)
<223> may be replaced by F

<220>
<221> variant
<222> (7)..(7)
<223> may be replaced by K

<220>
<221> variant
<222> (8)..(8)
<223> may be replaced by D or E

<220>
<221> variant
<222> (11)..(11)
<223> may be replaced by N

<220>
<221> variant
<222> (25)..(25)
<223> may be replaced by D

<220>
<221> variant
<222> (40)..(40)
<223> may be replaced by Q

<220>
<221> variant
<222> (42)..(42)
<223> may be replaced by A

<220>
<221> variant
<222> (43)..(43)
<223> may be replaced by S

<220>
<221> variant
<222> (44)..(44)

<223> may be replaced by I

<220>
<221> variant
<222> (46)..(46)
<223> may be replaced by A

<220>
<221> variant
<222> (49)..(49)
<223> may be replaced by K

<220>
<221> variant
<222> (53)..(53)
<223> may be replaced by E

<220>
<221> variant
<222> (54)..(54)
<223> may be replaced by A

<400> 48

Asn Ala Ala Lys Phe Asp Glu Ala Gln Gln Ser Ala Phe Tyr Glu Ile
1   5   10   15

Leu His Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Ala Phe Ile Gln
            20   25   30

Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Val Leu Gly Glu Ala
        35   40   45

Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys
    50   55

<210> 49
<211> 58
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic sequence for e.g. IB9-IB23

<220>

<221> variant
<222> (1)..(1)
<223> may be replaced by N or A

<220>
<221> variant
<222> (2)..(2)
<223> may be replaced by D

<220>
<221> variant
<222> (3)..(3)
<223> may be replaced by N or S

<220>
<221> variant
<222> (4)..(4)
<223> may be replaced by Q

<220>
<221> variant
<222> (5)..(5)
<223> may be replaced by H

<220>
<221> variant
<222> (6)..(6)
<223> may be replaced by S or A

<220>
<221> variant
<222> (7)..(7)
<223> may be replaced by E

<220>
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<222> (8)..(8)
<223> may be replaced by A or E

<220>
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<222> (11)..(11)
<223> may be replaced by N

<220>
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<222> (21)..(21)
<223> may be replaced by S or D

<220>

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<222> (28)..(28)
<223> may be replaced by A

<220>
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<222> (40)..(40)
<223> may be replaced by T

<220>
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<222> (43)..(43)
<223> may be replaced by S

<220>
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<222> (44)..(44)
<223> may be replaced by L

<220>
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<222> (52)..(52)
<223> may be replaced by D or S

<400> 49

```
Pro Ala Ala Lys His Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile
1               5                   10                  15


Leu His Leu Pro Asn Leu Thr Glu Asp Gln Arg Ser Ala Phe Ile Gln
            20                  25                  30


Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Gly Glu Ala
        35                  40                  45


Lys Lys Leu Asn Asp Ala Gln Ala Pro Pro
    50                  55
```