

PCT - Sequence listing
SEQUENCE LISTING

<110> Nascient Limited

<120> BIOLOGICAL MATERIALS AND USES THEREOF

<140> PCT/GB2015/052298

<141> 2015-08-07

<150> GB - 1414021.4

<151> 2014-08-07

<160> 159

<170> BiSSAP 1.2

<210> 1

<211> 5

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VH CDR1

<400> 1

Glu Leu Ser Met His

1 5

<210> 2

<211> 17

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VH CDR2

<400> 2

Gly Phe Asp Pro Glu Asp Gly Glu Thr Ile Tyr Ala Gln Lys Phe Gln

1 5 10 15

Gly

<210> 3

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VH CDR3

<400> 3

Ala Gln Lys Glu Thr Tyr Ala Leu Thr Tyr

PCT - Sequence listing

1

5

10

<210> 4

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VH amino acid sequence

<400> 4

```

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

```

<210> 5

<211> 11

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VL CDR1

<400> 5

```

Arg Ala Ser Gln Tyr Ile Gln Gly Phe Leu Asn
1           5           10

```

<210> 6

<211> 7

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VL CDR2

<400> 6

```

Ala Ala Ser Thr Leu Gln Asp
1           5

```

PCT - Sequence listing

<210> 7

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VL CDR3

<400> 7

Gln Gln Ser Tyr Ser Thr Pro Trp Thr
1 5

<210> 8

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 VL amino acid sequence

<400> 8

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

<210> 9

<211> 5

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 VH CDR1

<400> 9

Asp Tyr Ala Met His
1 5

<210> 10

<211> 17

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody B12 VH CDR2

<400> 10

Gly	Ile	Ser	Gly	Ser	Gly	Gly	Ser	Thr	Tyr	Tyr	Ala	Asp	Ser	Val	Lys
1				5					10					15	
Gly															

<210> 11

<211> 11

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 VH CDR3

<400> 11

Asp	Ile	Ser	Ala	Val	Pro	Asp	Thr	Phe	Asp	Ile
1				5					10	

<210> 12

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 VH amino acid sequence

<400> 12

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

<210> 13

<211> 7

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody B12 VL CDR2

<400> 13

Asp Ala Ser Asn Leu Glu Thr

1 5

<210> 14

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 VL CDR3

<400> 14

Gln Gln Ser Tyr Ser Thr Pro Gln Thr

1 5

<210> 15

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 VL amino acid sequence

<400> 15

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Pro Thr Pro Val Gly

1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe

20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile

35 40 45

Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly

50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro

65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro Gln

85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Asp Ile Lys Arg

100 105

<210> 16

<211> 5

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody D8 VH CDR1

PCT - Sequence listing

<400> 16

Ser Tyr Gly Ile Ser
1 5

<210> 17

<211> 17

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody D8 VH CDR2

<400> 17

Trp Ile Ser Ala Tyr Asn Gly Asn Thr Asn Tyr Ala Gln Lys Leu Gln
1 5 10 15
Gly

<210> 18

<211> 8

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody D8 VH CDR3

<400> 18

Asn Gln Asp Ser Ser Ser Asp Tyr
1 5

<210> 19

<211> 117

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody D8 VH amino acid sequence

<400> 19

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

PCT - Sequence listing

Val Thr Val Ser Ser
100
105
110
115

<210> 20
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody D8 VL CDR3

<400> 20
Gln Gln Ser Tyr Ser Thr Leu Gln Thr
1 5

<210> 21
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody D8 VL amino acid sequence

<400> 21
Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Pro Thr Ser Val Gly
1 5 10 15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe
20 25 30
Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45
Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80
Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Leu Gln
85 90 95
Thr Phe Gly Gln Gly Thr Lys Val Asp Ile Lys Arg
100 105

<210> 22
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody F3 VH CDR1

<400> 22
Ser Tyr Gly Met His
1 5

PCT - Sequence listing

<210> 23

<211> 17

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody F3 VH CDR2

<400> 23

Val	Ile	Ser	Tyr	Asp	Gly	Ser	Asn	Lys	Tyr	Tyr	Ala	Asp	Ser	Val	Lys
1				5					10					15	
Gly															

<210> 24

<211> 16

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody F3 VH CDR3

<400> 24

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

<210> 25

<211> 125

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody F3 VH amino acid sequence

<400> 25

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

PCT - Sequence listing
120 125

115

<210> 26
<211> 13
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody F3 VL CDR1

<400> 26
Thr Arg Ser Ser Gly Ser Ile Ala Ser Tyr Phe Val Gln
1 5 10

<210> 27
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody F3 VL CDR2

<400> 27
Glu Asp Asn Gln Arg Pro Ser
1 5

<210> 28
<211> 9
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody F3 VL CDR3

<400> 28
Gln Ser Tyr Asp Ser Ser Asn Trp Val
1 5

<210> 29
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<223> Antibody F3 VL amino acid sequence

<400> 29
Asn Phe Met Leu Ala Gln Pro His Ser Val Ser Glu Ser Pro Gly Lys
1 5 10 15
Thr Val Thr Ile Ser Cys Thr Arg Ser Ser Gly Ser Ile Ala Ser Tyr
20 25 30
Phe Val Gln Trp Phe Gln Gln Arg Pro Gly Ser Ala Pro Thr Ala Val

PCT - Sequence listing

```

        35              40              45
Ile Tyr Glu Asp Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
    50              55              60
Gly Ser Ile Asp Ser Ser Ser Asn Ser Ala Ser Leu Thr Ile Ser Gly
65              70              75              80
Leu Lys Thr Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser
    85              90              95
Ser Asn Trp Val Phe Gly Gly Gly Thr Lys Val Thr Val Leu Gly Gln
    100              105              110
Pro

```

<210> 30
 <211> 11
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 165_13_B1 (derived from B12) VH CDR3

```

<400> 30
Val Met Ser Ser Met Glu Asp Ala Phe Asp Ile
1              5              10

```

<210> 31
 <211> 120
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 165_13_B1 (derived from B12) VH amino acid sequence

```

<400> 31
Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Arg
1              5              10              15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
    20              25              30
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
    35              40              45
Ser Gly Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val
    50              55              60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65              70              75              80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Leu Tyr Tyr Cys
    85              90              95
Ala Lys Val Met Ser Ser Met Glu Asp Ala Phe Asp Ile Trp Gly Gln
    100              105              110
Gly Thr Met Val Thr Val Ser Ser
    115              120

```

<210> 32
 <211> 11

PCT - Sequence listing

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_B6 (derived from B12) VH CDR3

<400> 32

Gly Gln Lys Gly Glu Gly Asp Thr Phe Asp Ile
1 5 10

<210> 33

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_B6 (derived from B12) VH amino acid sequence

<400> 33

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

<210> 34

<211> 11

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_D1 (derived from B12) VH CDR3

<400> 34

Gly Thr Arg Gly Glu Gly Asp Thr Phe Asp Ile
1 5 10

<210> 35

<211> 120

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody 165_13_D1 (derived from B12) VH amino acid sequence

<400> 35

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

<210> 36

<211> 11

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_C3 (derived from B12) VH CDR3

<400> 36

```
Ser Tyr Gln Ser Asp Glu Asp Ala Phe Asp Ile
1          5          10
```

<210> 37

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_C3 (derived from B12) VH amino acid sequence

<400> 37

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

PCT - Sequence listing

```

65          70          75          80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Leu Tyr Tyr Cys
          85          90          95
Ala Lys Ser Tyr Gln Ser Asp Glu Asp Ala Phe Asp Ile Trp Gly Gln
          100          105          110
Gly Thr Met Val Thr Val Ser Ser
          115          120

```

<210> 38
 <211> 11
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 165_13_D4 (derived from B12) VH CDR3

```

<400> 38
Gly Thr Val Gly Glu Gly Asp Thr Phe Asp Ile
1          5          10

```

<210> 39
 <211> 120
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 165_13_D4 (derived from B12) VH amino acid sequence

```

<400> 39
Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Arg
1          5          10          15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
          20          25          30
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
          35          40          45
Ser Gly Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val
          50          55          60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65          70          75          80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Leu Tyr Tyr Cys
          85          90          95
Ala Lys Gly Thr Val Gly Glu Gly Asp Thr Phe Asp Ile Trp Gly Gln
          100          105          110
Gly Thr Met Val Thr Val Ser Ser
          115          120

```

<210> 40
 <211> 11
 <212> PRT
 <213> Homo sapiens

<220>

PCT - Sequence listing

<223> Antibody 165_13_A4 (derived from B12) VH CDR3

<400> 40

Asp Lys Tyr Pro Val Leu Asp Thr Phe Asp Ile
1 5 10

<210> 41

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_A4 (derived from B12) VH amino acid sequence

<400> 41

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

<210> 42

<211> 11

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_B3 (derived from B12) VH CDR3

<400> 42

Ala Leu Ala Arg Gly His Asp Thr Phe Asp Ile
1 5 10

<210> 43

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_B3 (derived from B12) VH amino acid sequence

PCT - Sequence listing

<400> 43

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

<210> 44

<211> 11

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_E1 (derived from B12) VH CDR3

<400> 44

```
Asp Ile Ser Ala Val Met Asp Val Pro Gln Thr
1          5          10
```

<210> 45

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 165_13_E1 (derived from B12) VH amino acid sequence

<400> 45

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

PCT - Sequence listing

100 105 110
 Gly Thr Met Val Thr Val Ser Ser
 115 120

<210> 46
 <211> 11
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 180_11_F5 (derived from B12) VH CDR3

<400> 46
 Val Met Arg Thr Gly Leu Asp Thr Phe Asp Ile
 1 5 10

<210> 47
 <211> 120
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 180_11_F5 (derived from B12) VH amino acid sequence

<400> 47
 Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Arg
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr
 20 25 30
 Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Ser Gly Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val
 50 55 60
 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
 65 70 75 80
 Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95
 Ala Lys Val Met Arg Thr Gly Leu Asp Thr Phe Asp Ile Trp Gly Gln
 100 105 110
 Gly Thr Met Val Thr Val Ser Ser
 115 120

<210> 48
 <211> 10
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 160_01_E3 (derived from 2A5) VH CDR3

<400> 48
 Gln Arg Tyr Val Trp Glu Ala Leu Thr Tyr

PCT - Sequence listing

1

5

10

<210> 49

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_E3 (derived from 2A5) VH amino acid sequence

<400> 49

```

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

```

<210> 50

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_D6 (derived from 2A5) VH CDR3

<400> 50

```

Ala Gln Ala Asp Pro His Leu Phe Thr Tyr
1           5           10

```

<210> 51

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_D6 (derived from 2A5) VH amino acid sequence

<400> 51

```

Glu Val Arg Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1           5           10           15
Ser Val Lys Val Ser Cys Lys Val Ser Gly Tyr Thr Leu Thr Glu Leu

```

PCT - Sequence listing

```

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

```

<210> 52

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_H4 (derived from 2A5) VH CDR3

<400> 52

```

Gly Arg Phe Val Trp Glu Ala Leu Thr Tyr
1                5                10

```

<210> 53

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_H4 (derived from 2A5) VH amino acid sequence

<400> 53

```

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

```

PCT - Sequence listing

<210> 54

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_A4 (derived from 2A5) VH CDR3

<400> 54

Ala Gln Lys Glu Thr Leu Gly Asn Ala Ile
1 5 10

<210> 55

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_A4 (derived from 2A5) VH amino acid sequence

<400> 55

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

<210> 56

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_F1 (derived from 2A5) VH CDR3

<400> 56

Ala Gln Ser Pro Trp Ser Gly Met Thr Tyr
1 5 10

<210> 57

<211> 119

PCT - Sequence listing

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_F1 (derived from 2A5) VH amino acid sequence

<400> 57

```

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

```

<210> 58

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_G2 (derived from 2A5) VH CDR3

<400> 58

```

Tyr Thr Leu Asp Asn Met Ala Leu Thr Tyr
1          5          10

```

<210> 59

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 160_01_G2 (derived from 2A5) VH amino acid sequence

<400> 59

```

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

```

PCT - Sequence listing

```

      50              55              60
Gln Gly Arg Val Thr Met Thr Glu Asp Thr Ser Thr Asp Thr Ala Tyr
65              70              75              80
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
      85              90              95
Ala Thr Tyr Thr Leu Asp Asn Met Ala Leu Thr Tyr Trp Gly Gln Gly
      100              105              110
Thr Leu Val Thr Val Ser Ser
      115

```

<210> 60

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_F6, also known as 160_01_F6 (derived from 2A5) VH CDR3

<400> 60

```

Ala Gln Lys Glu Asn Ile Ala Asn Arg His
1              5              10

```

<210> 61

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_F6, also known as 160_01_F6 (derived from 2A5) VH amino acid sequence

<400> 61

```

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

```

<210> 62

<211> 10

PCT - Sequence listing

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_A12 (derived from 2A5) VH CDR3

<400> 62

Ala	Gln	Pro	Thr	Ala	Leu	Ala	Asn	Thr	Tyr
1				5					10

<210> 63

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_A12 (derived from 2A5) VH amino acid sequence

<400> 63

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

<210> 64

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_C09 (derived from 2A5) VH CDR3

<400> 64

Ala	Gln	Leu	Pro	Tyr	Leu	Ala	Gln	Thr	Tyr
1				5					10

<210> 65

<211> 119

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody 161_01_C09 (derived from 2A5) VH amino acid sequence

<400> 65

```

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

```

<210> 66

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_H10 (derived from 2A5) VH CDR3

<400> 66

```

Ala Gln Pro Val Trp Ala Pro Gly Thr Tyr
1           5           10

```

<210> 67

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 161_01_H10 (derived from 2A5) VH amino acid sequence

<400> 67

```

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

```

PCT - Sequence listing

```

65             70             75             80
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
             85             90             95
Ala Thr Ala Gln Pro Val Trp Ala Pro Gly Thr Tyr Trp Gly Gln Gly
             100            105            110
Thr Leu Val Thr Val Ser Ser
             115

```

<210> 68
 <211> 10
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 161_01_C11 (derived from 2A5) VH CDR3

```

<400> 68
Ala Gln Lys Glu Trp Leu Pro Asp Val Thr
1             5             10

```

<210> 69
 <211> 119
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 161_01_C11 (derived from 2A5) VH amino acid sequence

```

<400> 69
Glu Val Arg Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1             5             10            15
Ser Val Lys Val Ser Cys Lys Val Ser Gly Tyr Thr Leu Thr Glu Leu
             20            25            30
Ser Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Met
             35            40            45
Gly Gly Phe Asp Pro Glu Asp Gly Glu Thr Ile Tyr Ala Gln Lys Phe
             50            55            60
Gln Gly Arg Val Thr Met Thr Glu Asp Thr Ser Thr Asp Thr Ala Tyr
65             70             75             80
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
             85            90            95
Ala Thr Ala Gln Lys Glu Trp Leu Pro Asp Val Thr Trp Gly Gln Gly
             100            105            110
Thr Leu Val Thr Val Ser Ser
             115

```

<210> 70
 <211> 10
 <212> PRT
 <213> Homo sapiens

<220>

PCT - Sequence listing

<223> Antibody 162_02_D3 (derived from 2A5) VH CDR3

<400> 70

Ala Gln Ile His Pro Leu Gly Leu Thr Tyr
1 5 10

<210> 71

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_D3 (derived from 2A5) VH amino acid sequence

<400> 71

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

<210> 72

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C6 (derived from 2A5) VL CDR3

<400> 72

Gln Asn Gln Tyr Ala Gly Pro Trp Thr
1 5

<210> 73

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C6 (derived from 2A5) VL amino acid sequence

PCT - Sequence listing

<400> 73

```

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

```

<210> 74

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_H5 (derived from 2A5) VL CDR3

<400> 74

```

Gln Asn Gln Tyr Thr Gly Pro Trp Thr
1           5

```

<210> 75

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_H5 (derived from 2A5) VL amino acid sequence

<400> 75

```

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

```

PCT - Sequence listing

<210> 76

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_F3 (derived from 2A5) VL CDR3

<400> 76

Gln Asn Gln Tyr Arg Gly Pro Trp Thr
1 5

<210> 77

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_F3 (derived from 2A5) VL amino acid sequence

<400> 77

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

<210> 78

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C1 (derived from 2A5) VL CDR3

<400> 78

Leu His His Tyr Arg Ala Pro Trp Thr
1 5

<210> 79

<211> 108

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody 162_02_C1 (derived from 2A5) VL amino acid sequence

<400> 79

```

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

```

<210> 80

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C2 (derived from 2A5) VL CDR3

<400> 80

```

Met His His Tyr Arg Ala Pro Trp Thr
1           5

```

<210> 81

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C2 (derived from 2A5) VL amino acid sequence

<400> 81

```

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

```

PCT - Sequence listing

85 90 95
 Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 82
 <211> 9
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 162_02_F4 (derived from 2A5) VL CDR3

<400> 82
 Met His His Tyr Arg Ser Pro Trp Thr
 1 5

<210> 83
 <211> 108
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 162_02_F4 (derived from 2A5) VL amino acid sequence

<400> 83
 Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Pro Thr Ser Val Gly
 1 5 10 15
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe
 20 25 30
 Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Arg Leu Leu Ile
 35 40 45
 Tyr Ala Ala Ser Thr Leu Gln Asp Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80
 Glu Asp Phe Ala Thr Tyr Tyr Cys Met His His Tyr Arg Ser Pro Trp
 85 90 95
 Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 84
 <211> 9
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 162_02_C3 (derived from 2A5) VL CDR3

<400> 84
 Met Gln His Tyr Asp Gly Pro Trp Thr
 1 5

PCT - Sequence listing

<210> 85

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C3 (derived from 2A5) VL amino acid sequence

<400> 85

```

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

```

<210> 86

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_E11 (derived from 2A5) VL CDR3

<400> 86

```

Leu His His Tyr Arg Ser Pro Thr Trp Thr
1           5           10

```

<210> 87

<211> 109

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_E11 (derived from 2A5) VL amino acid sequence

<400> 87

```

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

```

PCT - Sequence listing

```

      50      55      60
Ser Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65      70      75      80
Glu Asp Phe Ala Thr Tyr Tyr Cys Leu His His Tyr Arg Ser Pro Thr
      85      90      95
Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
      100      105

```

<210> 88
 <211> 9
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 163_02_A12 (derived from 2A5) VL CDR3

<400> 88
 Leu His His Tyr Arg Glu Pro Trp Thr
 1 5

<210> 89
 <211> 108
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 163_02_A12 (derived from 2A5) VL amino acid sequence

```

<400> 89
Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Pro Thr Ser Val Gly
1      5      10      15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe
      20      25      30
Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Arg Leu Leu Ile
      35      40      45
Tyr Ala Ala Ser Thr Leu Gln Asp Gly Val Pro Ser Arg Phe Ser Gly
      50      55      60
Ser Gly Tyr Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65      70      75      80
Glu Asp Phe Ala Thr Tyr Tyr Cys Leu His His Tyr Arg Glu Pro Trp
      85      90      95
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
      100      105

```

<210> 90
 <211> 9
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody 163_02_D11 (derived from 2A5) VL CDR3

PCT - Sequence listing

<400> 90

Leu His His Tyr Lys Ser Pro Trp Thr
1 5

<210> 91

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 163_02_D11 (derived from 2A5) VL amino acid sequence

<400> 91

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

<210> 92

<211> 228

<212> PRT

<213> Homo sapiens

<220>

<223> Amino acid sequence of human tenascin-C FBG domain

<400> 92

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

PCT - Sequence listing

```

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

```

<210> 93

<211> 228

<212> PRT

<213> Mus musculus

<220>

<223> Amino acid sequence of mouse tenascin-C FBG domain

<400> 93

```

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

```

PCT - Sequence listing

210
Arg Lys Arg Ala
225

215

220

<210> 94
<211> 228
<212> PRT
<213> Rattus norvegicus

<220>
<223> Amino acid sequence of rat tenascin-C FBG domain

<400> 94
Ile Gly Leu Leu Tyr Pro Phe Pro Arg Asp Cys Ser Gln Ala Met Leu
1 5 10 15
Asn Gly Asp Thr Thr Ser Gly Leu Tyr Thr Ile Tyr Ile Asn Gly Asp
20 25 30
Lys Thr Gln Ala Leu Glu Val Tyr Cys Asp Met Thr Ser Asp Gly Gly
35 40 45
Gly Trp Ile Val Phe Leu Arg Arg Lys Asn Gly Arg Glu Asp Phe Tyr
50 55 60
Arg Asn Trp Lys Ala Tyr Ala Thr Gly Phe Gly Asp Arg Arg Glu Glu
65 70 75 80
Phe Trp Leu Gly Leu Asp Asn Leu Ser Lys Ile Thr Ala Gln Gly Gln
85 90 95
Tyr Glu Leu Arg Val Asp Leu Gln Asp His Gly Glu Ser Ala Tyr Ala
100 105 110
Val Tyr Asp Arg Phe Ser Val Gly Asp Ala Lys Ser Arg Tyr Lys Leu
115 120 125
Lys Val Glu Gly Tyr Ser Gly Thr Ala Gly Asp Ser Met Asn Tyr His
130 135 140
Asn Gly Arg Ser Phe Ser Thr Tyr Asp Lys Asp Thr Asp Ser Ala Ile
145 150 155 160
Thr Asn Cys Ala Leu Ser Tyr Lys Gly Ala Phe Trp Tyr Lys Asn Cys
165 170 175
His Arg Val Asn Leu Met Gly Arg Tyr Gly Asp Asn Asn His Ser Gln
180 185 190
Gly Val Asn Trp Phe His Trp Lys Gly His Glu Tyr Ser Ile Gln Phe
195 200 205
Ala Glu Met Lys Leu Arg Pro Ser Asn Phe Arg Asn Leu Glu Gly Arg
210 215 220
Arg Lys Arg Ala
225

<210> 95
<211> 228
<212> PRT
<213> Canis lupus familiaris

<220>
<223> Amino acid sequence of dog tenascin-C FBG domain

PCT - Sequence listing

<400> 95

```

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

```

<210> 96

<211> 227

<212> PRT

<213> Homo sapiens

<220>

<223> Amino acid sequence of human tenascin-R FBG domain

<400> 96

```

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

```

PCT - Sequence listing

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

<210> 97

<211> 66

<212> DNA

<213> Artificial Sequence

$\langle 220 \rangle$

<221> source

$\langle 222 \rangle$ 1..66

```
<223> /mol type="unassigned DNA"
```

```
/note="F3 VH 3.1 primer"
```

```
/organism="Artificial Sequence"
```

 $\langle 220 \rangle$

<221> misc feature

 $\langle 222 \rangle$ 23, $\bar{24}$

<223> /note="wherein 'n' is A, T, G, or C"

 $\langle 220 \rangle$

<221> misc feature

<222> 26..27

<223> /note="wherein 'n' is A, T, G, or C"

 $\langle 220 \rangle$

<221> misc feature

$\langle 222 \rangle$ 29.. $\bar{30}$

<223> /note="wherein 'n' is A, T, G, or C"

 $\langle 220 \rangle$

<221> misc feature

 $\langle 222 \rangle \quad 32..3\bar{3}$

<223> /note="wherein 'n' is A, T, G, or C"

PCT - Sequence listing

```

<220>
<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G, or C"

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G, or C"

<400> 97
agcattactc tcagcagaaa asnnsnnsnn snnsnnsnt ctcgcacagt aatacacagc      60

cgtgtc                                                                    66

<210> 98
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..67
<223> /mol_type="unassigned DNA"
      /note="F3 VH 3.2 primer"
      /organism="Artificial Sequence"

<220>
<221> misc_feature
<222> 26..27
<223> /note="wherein 'n' is A, T, G, or C"

<220>
<221> misc_feature
<222> 29..30
<223> /note="wherein 'n' is A, T, G, or C"

<220>
<221> misc_feature
<222> 32..33
<223> /note="wherein 'n' is A, T, G, or C"

<220>
<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G, or C"

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G, or C"

```

PCT - Sequence listing

```

<220>
<221> misc_feature
<222> 41..42
<223> /note="wherein 'n' is A, T, G, or C"

<400> 98
ctggccccag atatcaaaag cattsnnsnn snnsnnsnns nnttggtcat agccttctct      60

cgcacag                                                                    67

<210> 99
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..69
<223> /mol_type="unassigned DNA"
      /note="F3 VH 3.3 primer"
      /organism="Artificial Sequence"

<220>
<221> misc_feature
<222> 26..27
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 29..30
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 32..33
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 41..42

```

PCT - Sequence listing

<223> /note="wherein 'n' is A, T, G or C"

<400> 99

ggtgaccagg gttccctggc cccasnnnsn snnsnnsns nnctcagcag aaaatagttg 60

gtcatagcc 69

<210> 100

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<222> 1..66

<223> /mol_type="unassigned DNA"

/note="F3 VL 3.1 primer"

/organism="Artificial Sequence"

<220>

<221> misc_feature

<222> 26..27

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 29..30

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 32..33

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 35..36

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 38..39

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 41..42

<223> /note="wherein 'n' is A, T, G or C"

<400> 100

ggtccctccg ccgaacaccc aattsnnnsn snnsnnsns nnacagtagt agtcagcctc 60

gtcctc

66

<210> 101
 <211> 66
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> source
 <222> 1..66
 <223> /mol_type="unassigned DNA"
 /note="F3 VL 3.2 primer"
 /organism="Artificial Sequence"

<220>
 <221> misc_feature
 <222> 26..27
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 29..30
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 32..33
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 35..36
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 38..39
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 41..42
 <223> /note="wherein 'n' is A, T, G or C"

<400> 101
 ggtgaccttg gtccctccgc cgaasnnsnn snnsnnsnns nnataagact gacagtagta 60

gtcagc

66

PCT - Sequence listing

<210> 102
 <211> 70
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> source
 <222> 1..70
 <223> /mol_type="unassigned DNA"
 /note="B12 VH 3 primer"
 /organism="Artificial Sequence"

<220>
 <221> misc_feature
 <222> 27..28
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 30..31
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 33..34
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 36..37
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 39..40
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 42..43
 <223> /note="wherein 'n' is A, T, G or C"

<400> 102
 cttggcccca gatataaaaa gtatcsnnsn nsnnnsnnsn snnttttgca cagtaataca 60
 aggccgtgtc 70

<210> 103
 <211> 67
 <212> DNA
 <213> Artificial Sequence

PCT - Sequence listing

<220>
 <221> source
 <222> 1..67
 <223> /mol_type="unassigned DNA"
 /note="B12 VH 3.2 primer"
 /organism="Artificial Sequence"

<220>
 <221> misc_feature
 <222> 26..27
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 29..30
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 32..33
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 35..36
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 38..39
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 41..42
 <223> /note="wherein 'n' is A, T, G or C"

<400> 103
 cattgtccct tggccccaga tatcsnnsnn snnsnnsnns nncgagatat cttttgcaca 60
 gtaatac 67

<210> 104
 <211> 67
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> source
 <222> 1..67

PCT - Sequence listing

<223> /mol_type="unassigned DNA"
 /note="B12 VH 3.3 primer"
 /organism="Artificial Sequence"

<220>

<221> misc_feature

<222> 26..27

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 29..30

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 32..33

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 35..36

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 38..39

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 41..42

<223> /note="wherein 'n' is A, T, G or C"

<400> 104

ggtgaccatt gtcccttggc cccasnnnsn snnnsnnns nngactgccg agatatcttt 60

tgcacag 67

<210> 105

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<222> 1..66

<223> /mol_type="unassigned DNA"
 /note="B12 VL3.1 primer"
 /organism="Artificial Sequence"

PCT - Sequence listing

<220>
 <221> misc_feature
 <222> 26..27
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 29..30
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 32..33
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 35..36
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 38..39
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 41..42
 <223> /note="wherein 'n' is A, T, G or C"

<400> 105
 ggtcccttgg ccgaacgtct gaggsnnsnn snnsnnsnns nnacagtagt aagttgcaaa 60
 atcttc 66

<210> 106
 <211> 69
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> source
 <222> 1..69
 <223> /mol_type="unassigned DNA"
 /note="B12 VL 3.2 primer"
 /organism="Artificial Sequence"

<220>
 <221> misc_feature
 <222> 29..30
 <223> /note="wherein 'n' is A, T, G or C"

PCT - Sequence listing

<220>
 <221> misc_feature
 <222> 32..33
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 35..36
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 38..39
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 41..42
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 44..45
 <223> /note="wherein 'n' is A, T, G or C"

<400> 106
 gatatccact ttggtccctt ggccgaasnn snnsnnsnns nnsnnactct gttgacagta 60
 gtaagttgc 69

<210> 107
 <211> 69
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> source
 <222> 1..69
 <223> /mol_type="unassigned DNA"
 /note="2A5 VH 3.1 primer"
 /organism="Artificial Sequence"

<220>
 <221> misc_feature
 <222> 29..30
 <223> /note="wherein 'n' is A, T, G or C"

<220>
 <221> misc_feature
 <222> 32..33

PCT - Sequence listing

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 35..36

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 38..39

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 41..42

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 44..45

<223> /note="wherein 'n' is A, T, G or C"

<400> 107

ggttccctgg cccagtagg tcaaggcsnn snnsnnsnns nnsntgttg cacagtaata 60

cacggccgt 69

<210> 108

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<222> 1..66

<223> /mol_type="unassigned DNA"

/note="2A5 VH 3.2 primer"

/organism="Artificial Sequence"

<220>

<221> misc_feature

<222> 26..27

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

<222> 29..30

<223> /note="wherein 'n' is A, T, G or C"

<220>

<221> misc_feature

PCT - Sequence listing

```

<222> 32..33
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 41..42
<223> /note="wherein 'n' is A, T, G or C"

<400> 108
cagggttccc tggccccagt aggtsnnsnn snnsnnsnns nnctgggctg ttgcacagta      60
atacac                                          66

<210> 109
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..66
<223> /mol_type="unassigned DNA"
      /note="2A5 VH 3.3 primer"
      /organism="Artificial Sequence"

<220>
<221> misc_feature
<222> 26..27
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 29..30
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 32..33
<223> /note="wherein 'n' is A, T, G or C"

<220>

```

PCT - Sequence listing

```

<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 41..42
<223> /note="wherein 'n' is A, T, G or C"

<400> 109
ggtgaccagg gttccctggc cccasnnnnn snnnnnnnnn nnctctttct gggctgttgc      60
acagta                                                                    66

<210> 110
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..66
<223> /mol_type="unassigned DNA"
      /note="2A5 VL 3.1 primer"
      /organism="Artificial Sequence"

<220>
<221> misc_feature
<222> 26..27
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 29..30
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 32..33
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G or C"

```

PCT - Sequence listing

```

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 41..42
<223> /note="wherein 'n' is A, T, G or C"

<400> 110
gggtcccttgg ccgaacgtcc acggsnnsnn snnsnnsnns nnacagtagt aagttgcaaa      60
atcttc                                                                    66

<210> 111
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..66
<223> /mol_type="unassigned DNA"
      /note="2A5 VL 3.2 primer"
      /organism="Artificial Sequence"

<220>
<221> misc_feature
<222> 26..27
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 29..30
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 32..33
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 35..36
<223> /note="wherein 'n' is A, T, G or C"

<220>
<221> misc_feature
<222> 38..39
<223> /note="wherein 'n' is A, T, G or C"

```

PCT - Sequence listing

<220>

<221> misc_feature

<222> 41..42

<223> /note="wherein 'n' is A, T, G or C"

<400> 111

ctccaccttg gtcccttggc cgaasnnsnn snnsnnsnns nnactctgtt gacagtagta 60

agttgc 66

<210> 112

<211> 119

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 Framework Germlined: VH amino acid sequence

<400> 112

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

<210> 113

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 Framework Germlined: VL amino acid sequence

<400> 113

Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
1			5					10					15			
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Tyr	Ile	Gln	Gly	Phe	
		20					25					30				
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	

PCT - Sequence listing

```

        35              40              45
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
    50              55              60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65              70              75              80
Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro Trp
        85              90              95
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
        100              105

```

<210> 114

<211> 7

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 CDRs changed as a result of the germlined sequence
VL CDR2

<400> 114

```

Ala Ala Ser Ser Leu Gln Ser
1              5

```

<210> 115

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 Framework Germlined: VH amino acid sequence

<400> 115

```

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

```

<210> 116

<211> 17

<212> PRT

PCT - Sequence listing

<213> Homo sapiens

<220>

<223> Antibody B12 CDRs changed as a result of the germlined sequence
VH CDR2

<400> 116

Gly	Ile	Ser	Gly	Ser	Gly	Gly	Ser	Thr	Tyr	Tyr	Ala	Asp	Ser	Val	Lys
1			5					10					15		
Tyr															

<210> 117

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 Framework Germlined: VL amino acid sequence

<400> 117

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

<210> 118

<211> 7

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 CDRs changed as a result of the germlined sequence
VL CDR2

<400> 118

Asp	Ala	Ser	Ser	Leu	Gln	Ser
1			5			

<210> 119

<211> 117

<212> PRT

PCT - Sequence listing

<213> Homo sapiens

<220>

<223> Antibody D8 Framework Germlined: VH amino acid sequence

<400> 119

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

<210> 120

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody D8 Framework Germlined: VL amino acid sequence

<400> 120

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

<210> 121

<211> 7

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody D8 CDRs changed as a result of the germlined sequence VL CDR2

<400> 121

Asp Ala Ser Ser Leu Gln Ser
1 5

<210> 122

<211> 125

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody F3 Framework germlined: VH amino acid sequence

<400> 122

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

<210> 123

<211> 113

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody F3 Framework germlined: VL amino acid sequence

<400> 123

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

65 70 75 80
Leu Lys Thr Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser
 85 90 95
Ser Asn Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
 100 105 110
Pro

```
<210> 124
<211> 107
<212> PRT
<213> Homo sapiens
```

<220>
<223> Antibody 2A5 VL amino acid sequence

<400>	124														
Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ala	Ser	Leu	Pro	Thr	Ser	Val	Gly
1				5					10					15	
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Tyr	Ile	Gln	Gly	Phe
			20					25					30		
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Arg	Leu	Leu	Ile
		35					40					45			
Tyr	Ala	Ala	Ser	Thr	Leu	Gln	Asp	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly
	50					55				60					
Ser	Gly	Tyr	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro
65					70					75				80	
Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ser	Tyr	Ser	Thr	Pro	Trp
				85					90					95	
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys					
			100					105							

```
<210> 125
<211> 107
<212> PRT
<213> Homo sapiens
```

<220>
<223> Antibody B12 VL amino acid sequence

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

PCT - Sequence listing

85 90 95
 Thr Phe Gly Gln Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 126
 <211> 107
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody D8 VL amino acid sequence

<400> 126
 Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Pro Thr Ser Val Gly
 1 5 10 15
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe
 20 25 30
 Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45
 Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80
 Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Leu Gln
 85 90 95
 Thr Phe Gly Gln Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 127
 <211> 110
 <212> PRT
 <213> Homo sapiens

<220>
 <223> Antibody F3 VL amino acid sequence

<400> 127
 Asn Phe Met Leu Ala Gln Pro His Ser Val Ser Glu Ser Pro Gly Lys
 1 5 10 15
 Thr Val Thr Ile Ser Cys Thr Arg Ser Ser Gly Ser Ile Ala Ser Tyr
 20 25 30
 Phe Val Gln Trp Phe Gln Gln Arg Pro Gly Ser Ala Pro Thr Ala Val
 35 40 45
 Ile Tyr Glu Asp Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
 50 55 60
 Gly Ser Ile Asp Ser Ser Ser Asn Ser Ala Ser Leu Thr Ile Ser Gly
 65 70 75 80
 Leu Lys Thr Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser
 85 90 95
 Ser Asn Trp Val Phe Gly Gly Gly Thr Lys Val Thr Val Leu
 100 105 110

PCT - Sequence listing

<210> 128

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C6 (derived from 2A5) VL amino acid sequence

<400> 128

```

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

```

<210> 129

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_H5 (derived from 2A5) VL amino acid sequence

<400> 129

```

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

```

<210> 130

<211> 107

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody 162_02_F3 (derived from 2A5) VL amino acid sequence

<400> 130

```

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

```

<210> 131

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C1 (derived from 2A5) VL amino acid sequence

<400> 131

```

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

```

<210> 132

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C2 (derived from 2A5) VL amino acid sequence

PCT - Sequence listing

<400> 132

```

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

```

<210> 133

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_F4 (derived from 2A5) VL amino acid sequence

<400> 133

```

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

```

<210> 134

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_C3 (derived from 2A5) VL amino acid sequence

<400> 134

```

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Pro Thr Ser Val Gly
1           5           10           15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe

```

PCT - Sequence listing

```

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

```

<210> 135

<211> 9

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_E11 (derived from 2A5) VL CDR3

<400> 135

```

Leu His His Tyr Arg Ser Pro Trp Thr
1                5

```

<210> 136

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 162_02_E11 (derived from 2A5) VL amino acid sequence

<400> 136

```

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

```

<210> 137

<211> 107

<212> PRT

<213> Homo sapiens

PCT - Sequence listing

<220>

<223> Antibody 163_02_A12 (derived from 2A5) VL amino acid sequence

<400> 137

```

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

```

<210> 138

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 163_02_D11 (derived from 2A5) VL amino acid sequence

<400> 138

```

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

```

<210> 139

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody 2A5 Framework Germlined: VL amino acid sequence

PCT - Sequence listing

<400> 139

```

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

```

<210> 140

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody B12 Framework Germlined: VL amino acid sequence

<400> 140

```

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

```

<210> 141

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody D8 Framework Germlined: VL amino acid sequence

<400> 141

```

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1           5           10           15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Tyr Ile Gln Gly Phe

```

PCT - Sequence listing

```

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

```

<210> 142

<211> 110

<212> PRT

<213> Homo sapiens

<220>

<223> Antibody F3 Framework germlined: VL amino acid sequence

<400> 142

```

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

```

<210> 143

<211> 446

<212> PRT

<213> Artificial Sequence

<220>

<223> IgG4 165_13_C3 (constant region with hinge modification as described in Angal 1993)

<400> 143

```

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

```

PCT - Sequence listing

Ser	Gly	Ile	Ser	Gly	Ser	Gly	Gly	Ser	Thr	Tyr	Tyr	Ala	Asp	Ser	Val
50						55					60				
Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ala	Lys	Asn	Ser	Leu	Tyr
65					70					75					80
Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Leu	Tyr	Tyr	Cys
			85						90					95	
Ala	Lys	Ser	Tyr	Gln	Ser	Asp	Glu	Asp	Ala	Phe	Asp	Ile	Trp	Gly	Gln
			100					105					110		
Gly	Thr	Met	Val	Thr	Val	Ser	Ser	Ala	Ser	Thr	Lys	Gly	Pro	Ser	Val
		115					120					125			
Phe	Pro	Leu	Ala	Pro	Cys	Ser	Arg	Ser	Thr	Ser	Glu	Ser	Thr	Ala	Ala
	130					135					140				
Leu	Gly	Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	Pro	Val	Thr	Val	Ser
145					150					155					160
Trp	Asn	Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	Thr	Phe	Pro	Ala	Val
			165						170					175	
Leu	Gln	Ser	Ser	Gly	Leu	Tyr	Ser	Leu	Ser	Ser	Val	Val	Thr	Val	Pro
			180					185					190		
Ser	Ser	Ser	Leu	Gly	Thr	Lys	Thr	Tyr	Thr	Cys	Asn	Val	Asp	His	Lys
		195					200					205			
Pro	Ser	Asn	Thr	Lys	Val	Asp	Lys	Arg	Val	Glu	Ser	Lys	Tyr	Gly	Pro
	210					215					220				
Pro	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	Phe	Leu	Gly	Gly	Pro	Ser	Val
225					230					235					240
Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr
			245						250					255	
Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	Gln	Glu	Asp	Pro	Glu
			260					265					270		
Val	Gln	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala	Lys
		275					280					285			
Thr	Lys	Pro	Arg	Glu	Glu	Gln	Phe	Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser
	290					295					300				
Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp	Leu	Asn	Gly	Lys	Glu	Tyr	Lys
305					310					315					320
Cys	Lys	Val	Ser	Asn	Lys	Gly	Leu	Pro	Ser	Ser	Ile	Glu	Lys	Thr	Ile
				325					330					335	
Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu	Pro	Gln	Val	Tyr	Thr	Leu	Pro
		340						345					350		
Pro	Ser	Gln	Glu	Glu	Met	Thr	Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu
		355					360					365			
Val	Lys	Gly	Phe	Pro	Ser	Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly
	370					375					380				
Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp
385					390					395					400
Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Arg	Leu	Thr	Val	Asp	Lys	Ser	Arg	Trp
			405						410					415	
Gln	Glu	Gly	Asn	Val	Phe	Ser	Cys	Ser	Val	Met	His	Glu	Ala	Leu	His
			420					425					430		
Asn	His	Tyr	Thr	Gln	Lys	Ser	Leu	Ser	Leu	Ser	Leu	Gly	Lys		
		435					440					445			

<210> 144

PCT - Sequence listing

<211> 23

<212> PRT

<213> Homo sapiens

<220>

<223> Human Tenascin-C TA domain

<400> 144

Gly	Val	Leu	Lys	Lys	Val	Ile	Arg	His	Lys	Arg	Gln	Ser	Gly	Val	Asn
1			5						10					15	
Ala	Thr	Leu	Pro	Glu	Glu	Asn									
			20												

<210> 145

<211> 476

<212> PRT

<213> Homo sapiens

<220>

<223> Human Tenascin-C EGFL domain

<400> 145

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

PCT - Sequence listing

```

Arg Cys Val Asp Gly Arg Cys Glu Cys Asp Asp Gly Phe Thr Gly Ala
      245      250      255
Asp Cys Gly Glu Leu Lys Cys Pro Asn Gly Cys Ser Gly His Gly Arg
      260      265      270
Cys Val Asn Gly Gln Cys Val Cys Asp Glu Gly Tyr Thr Gly Glu Asp
      275      280      285
Cys Ser Gln Leu Arg Cys Pro Asn Asp Cys His Ser Arg Gly Arg Cys
      290      295      300
Val Glu Gly Lys Cys Val Cys Glu Gln Gly Phe Lys Gly Tyr Asp Cys
305      310      315      320
Ser Asp Met Ser Cys Pro Asn Asp Cys His Gln His Gly Arg Cys Val
      325      330      335
Asn Gly Met Cys Val Cys Asp Asp Gly Tyr Thr Gly Glu Asp Cys Arg
      340      345      350
Asp Arg Gln Cys Pro Arg Asp Cys Ser Asn Arg Gly Leu Cys Val Asp
      355      360      365
Gly Gln Cys Val Cys Glu Asp Gly Phe Thr Gly Pro Asp Cys Ala Glu
      370      375      380
Leu Ser Cys Pro Asn Asp Cys His Gly Gln Gly Arg Cys Val Asn Gly
385      390      395      400
Gln Cys Val Cys His Glu Gly Phe Met Gly Lys Asp Cys Lys Glu Gln
      405      410      415
Arg Cys Pro Ser Asp Cys His Gly Gln Gly Arg Cys Val Asp Gly Gln
      420      425      430
Cys Ile Cys His Glu Gly Phe Thr Gly Leu Asp Cys Gly Gln His Ser
      435      440      445
Cys Pro Ser Asp Cys Asn Asn Leu Gly Gln Cys Val Ser Gly Arg Cys
      450      455      460
Ile Cys Asn Glu Gly Tyr Ser Gly Glu Asp Cys Ser
465      470      475

```

<210> 146

<211> 1352

<212> PRT

<213> Homo sapiens

<220>

<223> Human Tenascin-C FNIII domain

<400> 146

```

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

```

PCT - Sequence listing

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

PCT - Sequence listing

Leu	Lys	Ala	Ala	Thr	Pro	Tyr	Thr	Val	Ser	Ile	Tyr	Gly	Val	Ile	Gln
		515					520					525			
Gly	Tyr	Arg	Thr	Pro	Val	Leu	Ser	Ala	Glu	Ala	Ser	Thr	Gly	Glu	Thr
		530				535					540				
Pro	Asn	Leu	Gly	Glu	Val	Val	Val	Ala	Glu	Val	Gly	Trp	Asp	Ala	Leu
545					550					555					560
Lys	Leu	Asn	Trp	Thr	Ala	Pro	Glu	Gly	Ala	Tyr	Glu	Tyr	Phe	Phe	Ile
				565					570					575	
Gln	Val	Gln	Glu	Ala	Asp	Thr	Val	Glu	Ala	Ala	Gln	Asn	Leu	Thr	Val
			580					585					590		
Pro	Gly	Gly	Leu	Arg	Ser	Thr	Asp	Leu	Pro	Gly	Leu	Lys	Ala	Ala	Thr
		595					600					605			
His	Tyr	Thr	Ile	Thr	Ile	Arg	Gly	Val	Thr	Gln	Asp	Phe	Ser	Thr	Thr
		610				615					620				
Pro	Leu	Ser	Val	Glu	Val	Leu	Thr	Glu	Glu	Val	Pro	Asp	Met	Gly	Asn
625					630					635					640
Leu	Thr	Val	Thr	Glu	Val	Ser	Trp	Asp	Ala	Leu	Arg	Leu	Asn	Trp	Thr
				645					650					655	
Thr	Pro	Asp	Gly	Thr	Tyr	Asp	Gln	Phe	Thr	Ile	Gln	Val	Gln	Glu	Ala
			660					665					670		
Asp	Gln	Val	Glu	Glu	Ala	His	Asn	Leu	Thr	Val	Pro	Gly	Ser	Leu	Arg
		675					680					685			
Ser	Met	Glu	Ile	Pro	Gly	Leu	Arg	Ala	Gly	Thr	Pro	Tyr	Thr	Val	Thr
	690				695						700				
Leu	His	Gly	Glu	Val	Arg	Gly	His	Ser	Thr	Arg	Pro	Leu	Ala	Val	Glu
705					710					715					720
Val	Val	Thr	Glu	Asp	Leu	Pro	Gln	Leu	Gly	Asp	Leu	Ala	Val	Ser	Glu
				725					730					735	
Val	Gly	Trp	Asp	Gly	Leu	Arg	Leu	Asn	Trp	Thr	Ala	Ala	Asp	Asn	Ala
			740					745					750		
Tyr	Glu	His	Phe	Val	Ile	Gln	Val	Gln	Glu	Val	Asn	Lys	Val	Glu	Ala
		755					760					765			
Ala	Gln	Asn	Leu	Thr	Leu	Pro	Gly	Ser	Leu	Arg	Ala	Val	Asp	Ile	Pro
		770				775					780				
Gly	Leu	Glu	Ala	Ala	Thr	Pro	Tyr	Arg	Val	Ser	Ile	Tyr	Gly	Val	Ile
785					790					795					800
Arg	Gly	Tyr	Arg	Thr	Pro	Val	Leu	Ser	Ala	Glu	Ala	Ser	Thr	Ala	Lys
				805					810					815	
Glu	Pro	Glu	Ile	Gly	Asn	Leu	Asn	Val	Ser	Asp	Ile	Thr	Pro	Glu	Ser
				820				825					830		
Phe	Asn	Leu	Ser	Trp	Met	Ala	Thr	Asp	Gly	Ile	Phe	Glu	Thr	Phe	Thr
		835					840					845			
Ile	Glu	Ile	Ile	Asp	Ser	Asn	Arg	Leu	Leu	Glu	Thr	Val	Glu	Tyr	Asn
		850				855					860				
Ile	Ser	Gly	Ala	Glu	Arg	Thr	Ala	His	Ile	Ser	Gly	Leu	Pro	Pro	Ser
865					870					875					880
Thr	Asp	Phe	Ile	Val	Tyr	Leu	Ser	Gly	Leu	Ala	Pro	Ser	Ile	Arg	Thr
				885					890					895	
Lys	Thr	Ile	Ser	Ala	Thr	Ala	Thr	Thr	Glu	Ala	Leu	Pro	Leu	Leu	Glu
			900					905					910		
Asn	Leu	Thr	Ile	Ser	Asp	Ile	Asn	Pro	Tyr	Gly	Phe	Thr	Val	Ser	Trp
		915					920					925			

PCT - Sequence listing

Met	Ala	Ser	Glu	Asn	Ala	Phe	Asp	Ser	Phe	Leu	Val	Thr	Val	Val	Asp	930	935	940
Ser	Gly	Lys	Leu	Leu	Asp	Pro	Gln	Glu	Phe	Thr	Leu	Ser	Gly	Thr	Gln	945	950	955
Arg	Lys	Leu	Glu	Leu	Arg	Gly	Leu	Ile	Thr	Gly	Ile	Gly	Tyr	Glu	Val	965	970	975
Met	Val	Ser	Gly	Phe	Thr	Gln	Gly	His	Gln	Thr	Lys	Pro	Leu	Arg	Ala	980	985	990
Glu	Ile	Val	Thr	Glu	Ala	Glu	Pro	Glu	Val	Asp	Asn	Leu	Leu	Val	Ser	995	1000	1005
Asp	Ala	Thr	Pro	Asp	Gly	Phe	Arg	Leu	Ser	Trp	Thr	Ala	Asp	Glu	Gly	1010	1015	1020
Val	Phe	Asp	Asn	Phe	Val	Leu	Lys	Ile	Arg	Asp	Thr	Lys	Lys	Gln	Ser	1025	1030	1035
Glu	Pro	Leu	Glu	Ile	Thr	Leu	Leu	Ala	Pro	Glu	Arg	Thr	Arg	Asp	Leu	1045	1050	1055
Thr	Gly	Leu	Arg	Glu	Ala	Thr	Glu	Tyr	Glu	Ile	Glu	Leu	Tyr	Gly	Ile	1060	1065	1070
Ser	Lys	Gly	Arg	Arg	Ser	Gln	Thr	Val	Ser	Ala	Ile	Ala	Thr	Thr	Ala	1075	1080	1085
Met	Gly	Ser	Pro	Lys	Glu	Val	Ile	Phe	Ser	Asp	Ile	Thr	Glu	Asn	Ser	1090	1095	1100
Ala	Thr	Val	Ser	Trp	Arg	Ala	Pro	Thr	Ala	Gln	Val	Glu	Ser	Phe	Arg	1105	1110	1115
Ile	Thr	Tyr	Val	Pro	Ile	Thr	Gly	Gly	Thr	Pro	Ser	Met	Val	Thr	Val	1125	1130	1135
Asp	Gly	Thr	Lys	Thr	Gln	Thr	Arg	Leu	Val	Lys	Leu	Ile	Pro	Gly	Val	1140	1145	1150
Glu	Tyr	Leu	Val	Ser	Ile	Ile	Ala	Met	Lys	Gly	Phe	Glu	Glu	Ser	Glu	1155	1160	1165
Pro	Val	Ser	Gly	Ser	Phe	Thr	Thr	Ala	Leu	Asp	Gly	Pro	Ser	Gly	Leu	1170	1175	1180
Val	Thr	Ala	Asn	Ile	Thr	Asp	Ser	Glu	Ala	Leu	Ala	Arg	Trp	Gln	Pro	1185	1190	1195
Ala	Ile	Ala	Thr	Val	Asp	Ser	Tyr	Val	Ile	Ser	Tyr	Thr	Gly	Glu	Lys	1205	1210	1215
Val	Pro	Glu	Ile	Thr	Arg	Thr	Val	Ser	Gly	Asn	Thr	Val	Glu	Tyr	Ala	1220	1225	1230
Leu	Thr	Asp	Leu	Glu	Pro	Ala	Thr	Glu	Tyr	Thr	Leu	Arg	Ile	Phe	Ala	1235	1240	1245
Glu	Lys	Gly	Pro	Gln	Lys	Ser	Ser	Thr	Ile	Thr	Ala	Lys	Phe	Thr	Thr	1250	1255	1260
Asp	Leu	Asp	Ser	Pro	Arg	Asp	Leu	Thr	Ala	Thr	Glu	Val	Gln	Ser	Glu	1265	1270	1275
Thr	Ala	Leu	Leu	Thr	Trp	Arg	Pro	Pro	Arg	Ala	Ser	Val	Thr	Gly	Tyr	1285	1290	1295
Leu	Leu	Val	Tyr	Glu	Ser	Val	Asp	Gly	Thr	Val	Lys	Glu	Val	Ile	Val	1300	1305	1310
Gly	Pro	Asp	Thr	Thr	Ser	Tyr	Ser	Leu	Ala	Asp	Leu	Ser	Pro	Ser	Thr	1315	1320	1325
His	Tyr	Thr	Ala	Lys	Ile	Gln	Ala	Leu	Asn	Gly	Pro	Leu	Arg	Ser	Asn	1330	1335	1340

PCT - Sequence listing

Met Ile Gln Thr Ile Phe Thr Thr
1345 1350

<210> 147
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<223> Human Tenascin-C FBG domain

<400> 147
Ile Gly Leu Leu Tyr Pro Phe Pro Lys Asp Cys Ser Gln Ala Met Leu
1 5 10 15
Asn Gly Asp Thr Thr Ser Gly Leu Tyr Thr Ile Tyr Leu Asn Gly Asp
20 25 30
Lys Ala Gln Ala Leu Glu Val Phe Cys Asp Met Thr Ser Asp Gly Gly
35 40 45
Gly Trp Ile Val Phe Leu Arg Arg Lys Asn Gly Arg Glu Asn Phe Tyr
50 55 60
Gln Asn Trp Lys Ala Tyr Ala Ala Gly Phe Gly Asp Arg Arg Glu Glu
65 70 75 80
Phe Trp Leu Gly Leu Asp Asn Leu Asn Lys Ile Thr Ala Gln Gly Gln
85 90 95
Tyr Glu Leu Arg Val Asp Leu Arg Asp His Gly Glu Thr Ala Phe Ala
100 105 110
Val Tyr Asp Lys Phe Ser Val Gly Asp Ala Lys Thr Arg Tyr Lys Leu
115 120 125
Lys Val Glu Gly Tyr Ser Gly Thr Ala Gly Asp Ser Met Ala Tyr His
130 135 140
Asn Gly Arg Ser Phe Ser Thr Phe Asp Lys Asp Thr Asp Ser Ala Ile
145 150 155 160
Thr Asn Cys Ala Leu Ser Tyr Lys Gly Ala Phe Trp Tyr Arg Asn Cys
165 170 175
His Arg Val Asn Leu Met Gly Arg Tyr Gly Asp Asn Asn His Ser Gln
180 185 190
Gly Val Asn Trp Phe His Trp Lys Gly His Glu His Ser Ile Gln Phe
195 200 205
Ala Glu Met Lys Leu Arg Pro Ser Asn Phe Arg Asn Leu Glu Gly Arg
210 215 220
Arg Lys Arg Ala
225

<210> 148
<211> 7616
<212> DNA
<213> Homo sapiens

<220>
<221> source
<222> 1..7616
<223> /mol_type="unassigned DNA"

PCT - Sequence listing
 /note="Human Tenascin-C nucleotide sequence"
 /organism="Homo sapiens"

```

<400> 148
attacagagg aaggagctcg ctatataagc cagccaaagt tggctgcacc ggccacagcc      60
tgcctactgt caccgcctc tccgcgcgc agatacacgc cccgcctcc gtgggcacaa      120
aggcagcgct gctggggaac tcgggggaac gcgcacgtgg gaaccgccgc agtccacac      180
tccaggtact tcttccaagg acctaggtct ctgcccacgc ggaaagaaaa taattctttc      240
aagaagatca gggacaactg atttgaagtc tactctgtgc ttctaaatcc ccaattctgc      300
tgaaagtgag ataccctaga gccctagagc cccagcagca cccagccaaa cccacctcca      360
ccatggggggc catgactcag ctgttggcag gtgtctttct tgctttcctt gccctcgcta      420
ccgaagggtgg ggtcctcaag aaagtcatcc ggcacaagcg acagagtggg gtgaacgcca      480
ccctgccaga agagaaccag ccagtgggtgt ttaaccacgt ttacaacatc aagctgccag      540
tgggatccca gtgttcggtg gatctggagt cagccagtgg ggagaaagac ctggcaccgc      600
cttcagagcc cagcgaaagc tttcaggagc acacagtgga tggggaaaac cagattgtct      660
tcacacatcg catcaacatc cccgcgcggg cctgtggctg tgccgcagcc cctgatgtta      720
aggagctgct gagcagactg gaggagctgg agaacctggt gtcttccttg agggagcaat      780
gtactgcagg agcaggctgc tgtctccagc ctgccacagg ccgcttggac accaggccct      840
tctgtagcgg tcggggcaac ttcagcactg aaggatgtgg ctgtgtctgc gaacctggct      900
ggaaaggccc caactgctct gagcccgaat gtccaggcaa ctgtcacctt cgaggccggt      960
gcattgatgg gcagtgcac tgtgacgacg gcttcacggg cgaggactgc agccagctgg      1020
cttgccccag cgactgcaat gaccagggca agtgcgtaaa tggagtctgc atctgtttcg      1080
aaggctacgc cggggctgac tgcagccgtg aaatctgccc agtgccctgc agtgaggagc      1140
acggcacatg tgtagatggc ttgtgtgtgt gccacgatgg ctttgcaggc gatgactgca      1200
acaagcctct gtgtctcaac aattgctaca accgtggacg atgcgtggag aatgagtgcg      1260
tgtgtgatga gggtttcacg ggcgaagact gcagtgaact catctgcccc aatgactgct      1320
tcgaccgggg ccgctgcac aatggcacct gctactgcga agaaggcttc acaggtgaag      1380
actgcgggaa acccacctgc ccacatgcct gccacacca gggccggtgt gaggaggggc      1440
  
```

PCT - Sequence listing

agtgtgtatg	tgatgagggc	tttgccggtg	tggactgcag	cgagaagagg	tgtcctgctg	1500
actgtcacia	tcgtggccgc	tgtgtagacg	ggcgggtgtga	gtgtgatgat	ggtttcactg	1560
gagctgactg	tggggagctc	aagtgtccca	atggctgcag	tggccatggc	cgctgtgtca	1620
atgggcagtg	tgtgtgtgat	gagggctata	ctggggagga	ctgcagccag	ctacggtgcc	1680
ccaatgactg	tcacagtcgg	ggccgctgtg	tcgagggcaa	atgtgtatgt	gagcaaggct	1740
tcaagggcta	tgactgcagt	gacatgagct	gccctaata	ctgtcaccag	cacggccgct	1800
gtgtgaatgg	catgtgtgtt	tgtgatgacg	gctacacagg	ggaagactgc	cgggatcgcc	1860
aatgccccag	ggactgcagc	aacagggggc	tctgtgtgga	cggacagtgc	gtctgtgagg	1920
acggccttac	cggccctgac	tgtgcagaac	tctcctgtcc	aaatgactgc	catggccagg	1980
gtcgctgtgt	gaatgggcag	tgctgtgtcc	atgaaggatt	tatgggcaaa	gactgcaagg	2040
agcaaagatg	tcccagtgac	tgtcatggcc	agggccgctg	cgtggacggc	cagtgcattc	2100
gccacgaggg	cttcacaggc	ctggactgtg	gccagcactc	ctgccccagt	gactgcaaca	2160
acttaggaca	atgcgtctcg	ggccgctgca	tctgcaacga	gggctacagc	ggagaagact	2220
gctcagaggt	gtctcctccc	aaagacctcg	ttgtgacaga	agtgcaggaa	gagacgggtca	2280
acctggcctg	ggacaatgag	atgcgggtca	cagagtacct	tgtcgtgtac	acgcccaccc	2340
acgaggggtg	tctggaaatg	cagttccgtg	tgcttgggga	ccagacgtcc	accatcatcc	2400
aggagctgga	gcctgggtgtg	gagtacttta	tccgtgtatt	tgccatcctg	gagaacaaga	2460
agagcattcc	tgtcagcgcc	agggtggcca	cgtacttacc	tgcacctgaa	ggcctgaaat	2520
tcaagtccat	caaggagaca	tctgtggaag	tggagtggga	tcctctagac	attgcttttg	2580
aaacctggga	gatcatcttc	cggaatatga	ataaagaaga	tgaggagagag	atcaccaaaa	2640
gcctgaggag	gccagagacc	tcttaccggc	aaactggtct	agctcctggg	caagagtatg	2700
agatatctct	gcacatagtg	aaaaacaata	cccggggccc	tggcctgaag	agggtgacca	2760
ccacacgctt	ggatgcccc	agccagatcg	agggtgaaaga	tgtcacagac	accactgcct	2820
tgatcacctg	gttcaagccc	ctggctgaga	tcgatggcat	tgagctgacc	tacggcatca	2880
aagacgtgcc	aggagaccgt	accaccatcg	atctcacaga	ggacgagaac	cagtactcca	2940
tcgggaacct	gaagcctgac	actgagtacg	aggtgtccct	catctcccgc	agaggtgaca	3000

PCT - Sequence listing

tgtcaagcaa	cccagccaaa	gagaccttca	caacaggcct	cgatgctccc	aggaatcttc	3060
gacgtgtttc	ccagacagat	aacagcatca	ccctggaatg	gaggaatggc	aaggcagcta	3120
ttgacagtta	cagaattaag	tatgccccca	tctctggagg	ggaccacgct	gaggttgatg	3180
ttccaaagag	ccaacaagcc	acaaccaaaa	ccacactcac	aggtctgagg	ccgggaactg	3240
aatatgggat	tggagtttct	gctgtgaagg	aagacaagga	gagcaatcca	gcgaccatca	3300
acgcagccac	agagttggac	acgcccgaag	accttcaggt	ttctgaaact	gcagagacca	3360
gcctgaccct	gctctggaag	acaccgttgg	ccaaatttga	ccgctaccgc	ctcaattaca	3420
gtctccccac	aggccagtgg	gtgggagtgc	agcttccaag	aaacaccact	tcctatgtcc	3480
tgagaggcct	ggaaccagga	caggagtaca	atgtcctcct	gacagccgag	aaaggcagac	3540
acaagagcaa	gcccgcacgt	gtgaaggcat	ccactgaaca	agccccctgag	ctggaaaacc	3600
tcaccgtgac	tgaggttggc	tgggatggcc	tcagactcaa	ctggaccgca	gctgaccagg	3660
cctatgagca	ctttatcatt	caggtgcagg	aggccaacaa	ggtggaggca	gctcggaacc	3720
tcaccgtgcc	tggcagcctt	cgggctgttg	acataccggg	cctcaaggct	gctacgcctt	3780
atacagtctc	catctatggg	gtgatccagg	gctatagaac	accagtgtct	tctgctgagg	3840
cctccacagg	ggaaactccc	aatttgggag	aggtcgtggt	ggccgagggtg	ggctgggatg	3900
ccctcaaact	caactggact	gctccagaag	gggcctatga	gtactttttc	attcaggtgc	3960
aggaggctga	cacagtagag	gcagcccaga	acctcaccgt	cccaggagga	ctgaggtcca	4020
cagacctgcc	tgggctcaaa	gcagccactc	attataccat	caccatccgc	ggggtcactc	4080
aggacttcag	cacaaccctt	ctctctgttg	aagtcttgac	agaggagggtt	ccagatatgg	4140
gaaacctcac	agtgaccgag	gttagctggg	atgctctcag	actgaactgg	accacgccag	4200
atggaacctc	tgaccagttt	actattcagg	tccaggaggc	tgaccagggtg	gaagaggctc	4260
acaatctcac	ggttcctggc	agcctgcgtt	ccatggaaat	cccaggcctc	agggctggca	4320
ctccttacac	agtcaccctg	cacggcgagg	tcagggggcca	cagcactcga	ccccttgctg	4380
tagaggctcg	cacagaggat	ctcccacagc	tgggagattt	agccgtgtct	gaggttggct	4440
gggatggcct	cagactcaac	tggaccgcag	ctgacaatgc	ctatgagcac	tttgtcattc	4500
aggtgcagga	ggtcaacaaa	gtggaggcag	cccagaacct	cacgttgcct	ggcagcctca	4560

PCT - Sequence listing

gggctgtgga	catcccgggc	ctcgaggctg	ccacgcctta	tagagtctcc	atctatgggg	4620
tgatccgggg	ctatagaaca	ccagtactct	ctgctgaggc	ctccacagcc	aaagaacctg	4680
aaattggaaa	cttaaagtgt	tctgacataa	ctcccagagag	cttcaatctc	tcctggatgg	4740
ctaccgatgg	gatcttcgag	acctttacca	ttgaaattat	tgattccaat	aggttgctgg	4800
agactgtgga	atataatatc	tctgggtgctg	aacgaactgc	ccatatctca	gggctacccc	4860
ctagtactga	ttttattgtc	tacctctctg	gacttgctcc	cagcatccgg	acaaaaacca	4920
tcagtgccac	agccacgaca	gaggccctgc	cccttctgga	aaacctaacc	atttccgaca	4980
ttaatcccta	cgggttcaca	gtttcctgga	tggcatcgga	gaatgccttt	gacagctttc	5040
tagtaacggg	ggtggattct	gggaagctgc	tggaccccc	ggaattcaca	ctttcaggaa	5100
cccagaggaa	gctggagctt	agaggcctca	taactggcat	tggctatgag	gttatggctc	5160
ctggcttcac	ccaagggcat	caaaccaagc	ccttgagggc	tgagattggt	acagaagccg	5220
aaccggaagt	tgacaacctt	ctggtttcag	atgccacccc	agacggtttc	cgtctgtcct	5280
ggacagctga	tgaaggggtc	ttcgacaatt	ttgttctcaa	aatcagagat	acaaaaagc	5340
agtctgagcc	actggaaata	accctacttg	ccccgaacg	taccagggac	ataacaggtc	5400
tcagagaggc	tactgaatac	gaaattgaac	tctatggaat	aagcaaagga	aggcgatccc	5460
agacagtcat	tgctatagca	acaacagcca	tgggctcccc	aaaggaagtc	attttctcag	5520
acatcactga	aaattcgggt	actgtcagct	ggagggcacc	cacagcccaa	gtggagagct	5580
tccggattac	ctatgtgccc	attacaggag	gtacaccctc	catggtaact	gtggacggaa	5640
ccaagactca	gaccaggctg	gtgaaactca	tacctggcgt	ggagtacctt	gtcagcatca	5700
tcgccatgaa	gggctttgag	gaaagtgaac	ctgtctcagg	gtcattcacc	acagctctgg	5760
atggcccatc	tggcctgggt	acagccaaca	tcactgactc	agaagccttg	gccaggtggc	5820
agccagccat	tgccactgtg	gacagttatg	tcattctccta	cacaggcgag	aaagtgccag	5880
aaattacacg	cacggtgtcc	gggaacacag	tggagtatgc	tctgaccgac	ctcgagcctg	5940
ccacggaata	cacactgaga	atctttgcag	agaaagggcc	ccagaagagc	tcaaccatca	6000
ctgccaagtt	cacaacagac	ctcgattctc	caagagactt	gactgctact	gaggttcagt	6060
cggaaactgc	cctccttacc	tggcgacccc	cccgggcata	agtcaccggg	tacctgctgg	6120

PCT - Sequence listing

tctatgaatc agtggatggc acagtcaagg aagtcattgt ggggccagat accacctcct	6180
acagcctggc agacctgagc ccatccaccc actacacagc caagatccag gcactcaatg	6240
ggcccctgag gagcaatatg atccagacca tcttcaccac aattggactc ctgtaccct	6300
tccccaagga ctgctcccaa gcaatgctga atggagacac gacctctggc ctctacacca	6360
tttatctgaa tggtgataag gctgaggcgc tggaagtctt ctgtgacatg acctctgatg	6420
ggggtggatg gatttgtgtc ctgagacgca aaaacggacg cgagaacttc taccaaaact	6480
ggaaggcata tgctgctgga tttggggacc gcagagaaga attctggctt gggctggaca	6540
acctgaacaa aatcacagcc caggggcagt acgagctccg ggtggacctg cgggaccatg	6600
gggagacagc ctttgctgtc tatgacaagt tcagcgtggg agatgccaag actcgctaca	6660
agctgaaggt ggaggggtac agtgggacag caggtgactc catggcctac cacaatggca	6720
gatccttctc cacctttgac aaggacacag attcagccat caccaactgt gctctgtcct	6780
acaaaggggc tttctggtac aggaactgtc accgtgtcaa cctgatgggg agatatgggg	6840
acaataacca cagtcagggc gttaactggt tccactggaa gggccacgaa cactcaatcc	6900
agtttgctga gatgaagctg agaccaagca acttcagaaa tcttgaaggc aggcgcaaac	6960
gggcataaat tccagggacc actgggtgag agaggaataa ggcccagagc gaggaaagga	7020
ttttaccaa gcatcaatac aaccagccca accatcggtc cacacctggg catttggtga	7080
gagtcaaagc tgacctgga tccctggggc caacggcaac agcatgggcc tcacctctc	7140
tgtgatttct ttctttgcac caaagacatc agtctccaac atgtttctgt tttgttgtt	7200
gattcagcaa aaatctccca gtgacaacat cgcaatagtt ttttacttct cttaggtggc	7260
tctgggaatg ggagaggggt aggatgtaca ggggtagttt gttttagaac cagccgtatt	7320
ttacatgaag ctgtataatt aattgtcatt atttttgtta gcaaagatta aatgtgtcat	7380
tggaagccat cccttttttt acatttcata caacagaaac cagaaaagca atactgtttc	7440
cattttaagg atatgattaa tattattaat ataataatga tgatgatgat gatgaaaact	7500
aaggattttt caagagatct ttctttccaa aacatttctg gacagtacct gattgtattt	7560
tttttttaa taaaagcaca agtacttttg agtttggtta aaaaaaaaa aaaaaa	7616

PCT - Sequence listing

<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..22
<223> /mol_type="unassigned DNA"
/note="Human FBG-X primer minus"
/organism="Artificial Sequence"

<400> 149
ggtacctcgc gaatgcatct ag 22

<210> 150
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..58
<223> /mol_type="unassigned DNA"
/note="Human FBG-X plus"
/organism="Artificial Sequence"

<400> 150
ttttttccat ggcccagatt ggactcctgt accccttccc caaagattgc tctcaggc 58

<210> 151
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..22
<223> /mol_type="unassigned DNA"
/note="Mouse FBG-X primer minus "
/organism="Artificial Sequence"

<400> 151
ggtacctcgc gaatgcatct ag 22

<210> 152
<211> 56
<212> DNA
<213> Artificial Sequence

PCT - Sequence listing

```

<220>
<221> source
<222> 1..56
<223> /mol_type="unassigned DNA"
      /note="Mouse FBG-X primer plus"
      /organism="Artificial Sequence"

<400> 152
ttttttccat ggcccagatt ggactcctgt accccttccc tcgcgactgc tcacag      56

<210> 153
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..53
<223> /mol_type="unassigned DNA"
      /note="Human X-FBG primer minus"
      /organism="Artificial Sequence"

<400> 153
ttttttggat cccatcatca tcaccatcac ttccccaag attgctctca ggc      53

<210> 154
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..71
<223> /mol_type="unassigned DNA"
      /note="Human X-FBG primer plus"
      /organism="Artificial Sequence"

<400> 154
ttttttggat cccatcatca tcaccatcac attggactcc tgtaccctt ccccaaagat      60
tgctctcagg c      71

<210> 155
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<221> source

```

PCT - Sequence listing

```

<222> 1..51
<223> /mol_type="unassigned DNA"
      /note="Mouse X-FBG primer minus"
      /organism="Artificial Sequence"

<400> 155
ttttttggat cccatcatca tcaccatcac ttccctcgcg actgctcaca g          51

<210> 156
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..69
<223> /mol_type="unassigned DNA"
      /note="Mouse X-FBG primer plus"
      /organism="Artificial Sequence"

<400> 156
ttttttggat cccatcatca tcaccatcac attggactcc tgtaccctt ccctcgcgac    60
tgctcacag                                     69

<210> 157
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..39
<223> /mol_type="unassigned DNA"
      /note="BamHI-His6-HindIII primer"
      /organism="Artificial Sequence"

<400> 157
ttttttggat cccatcatca tcaccatcac taataaaag          39

<210> 158
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..40
<223> /mol_type="unassigned DNA"

```

PCT - Sequence listing
/note="Human His-FBG primer plus"
/organism="Artificial Sequence"

<400> 158
ttttttctcg agcatcatca tcaccatcac attggactcc 40

<210> 159
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<222> 1..40
<223> /mol_type="unassigned DNA"
/note="Mouse His-FBG primer plus"
/organism="Artificial Sequence"

<400> 159
ttttttctcg agcatcatca tcaccatcac attggactcc 40