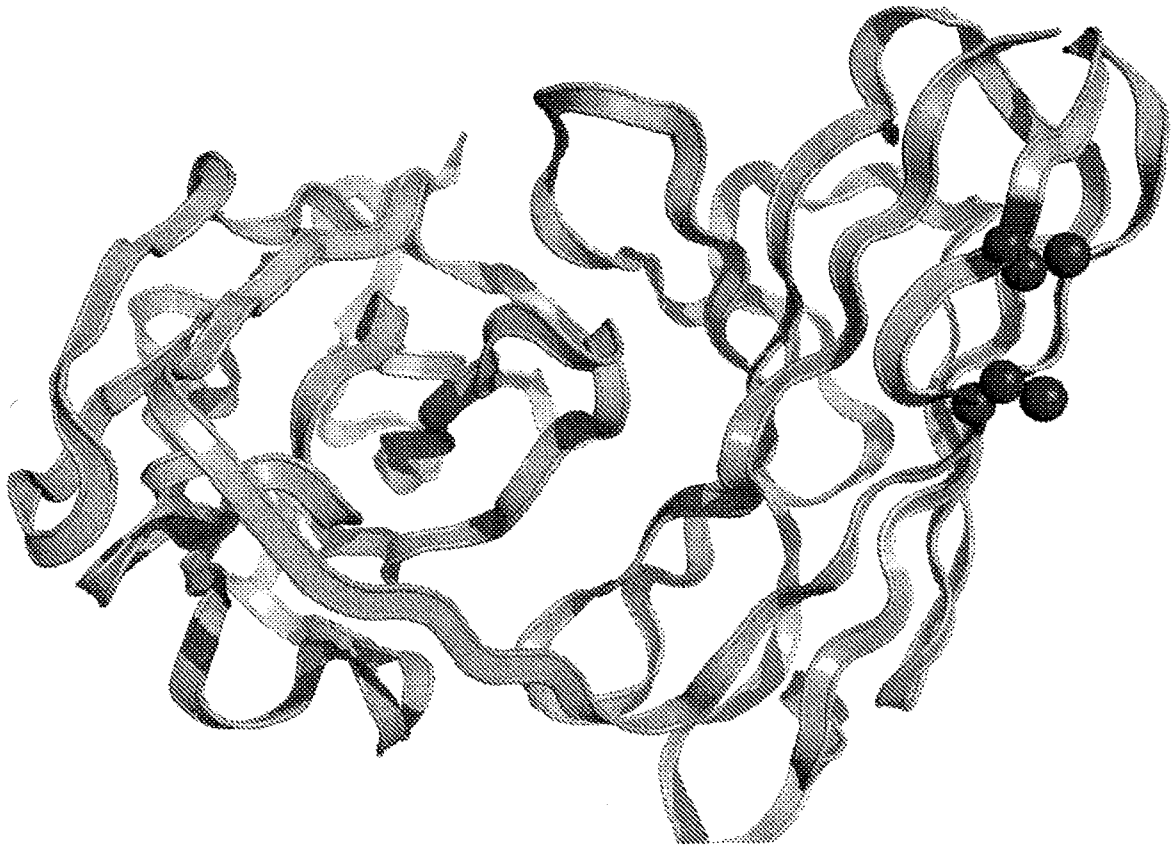


Figure 1A

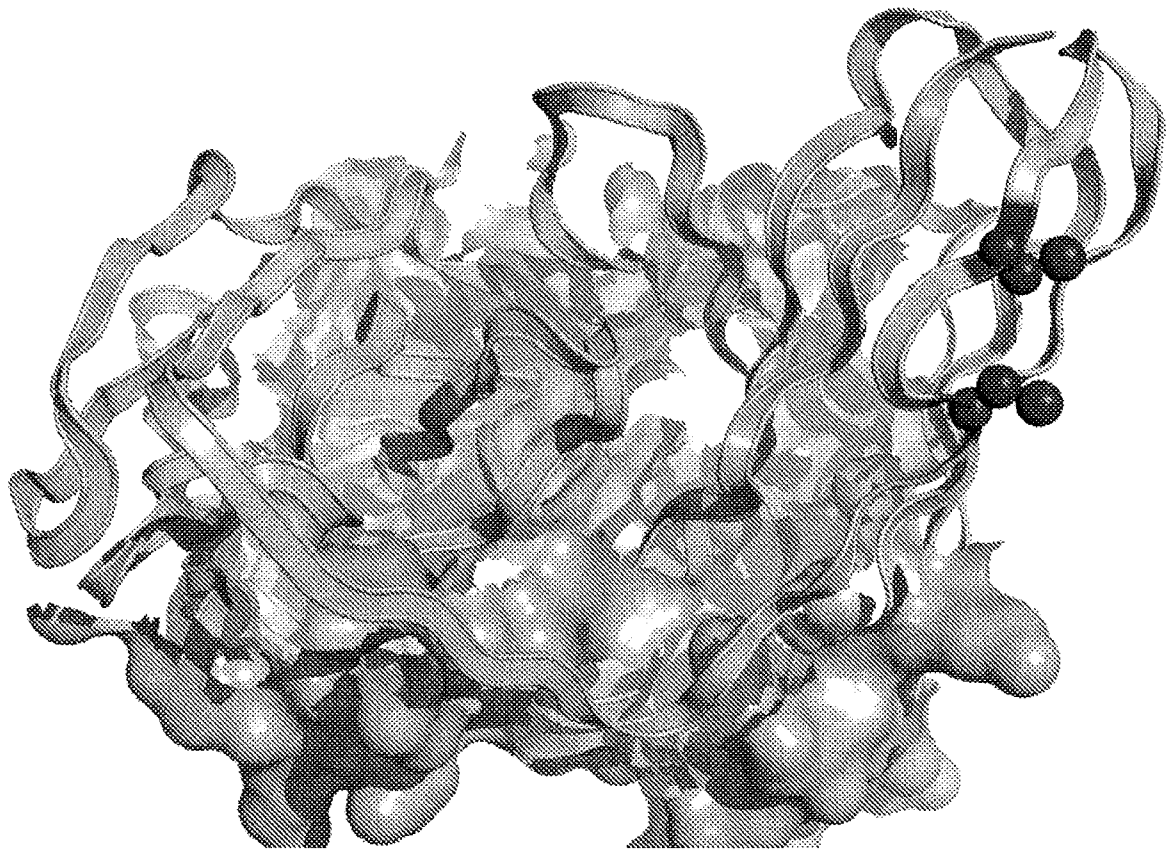


Figure 1B

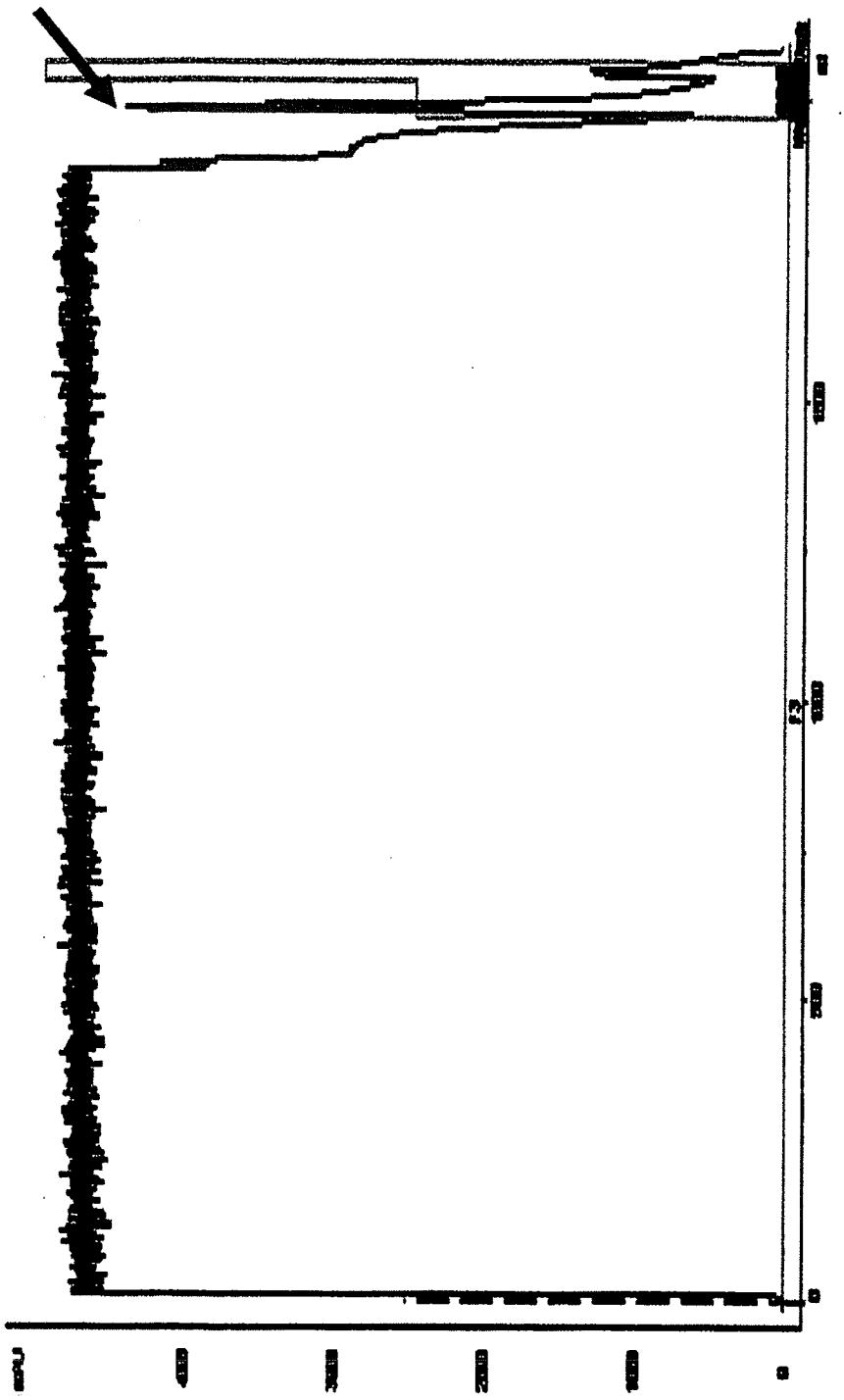


Figure 2A

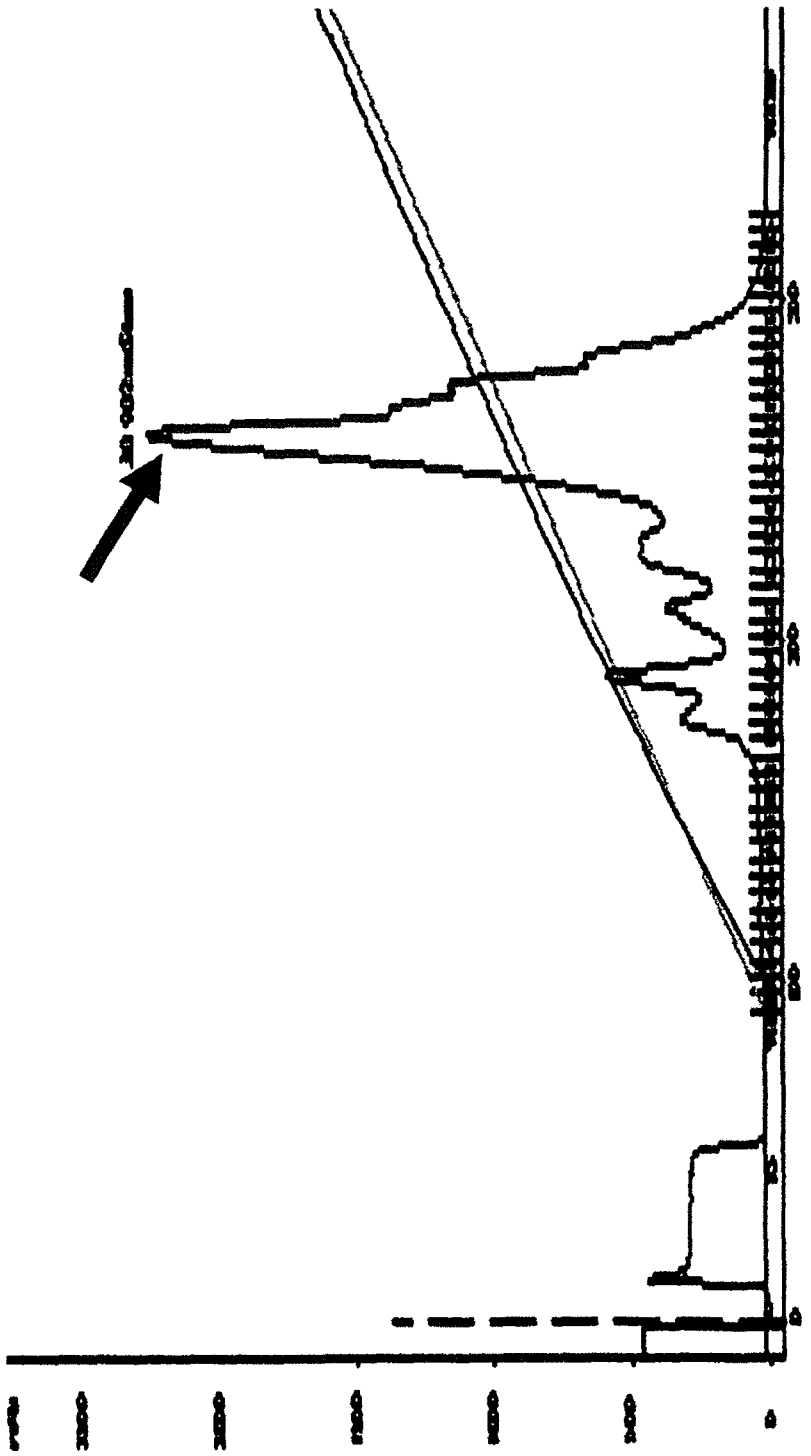


Figure 2B

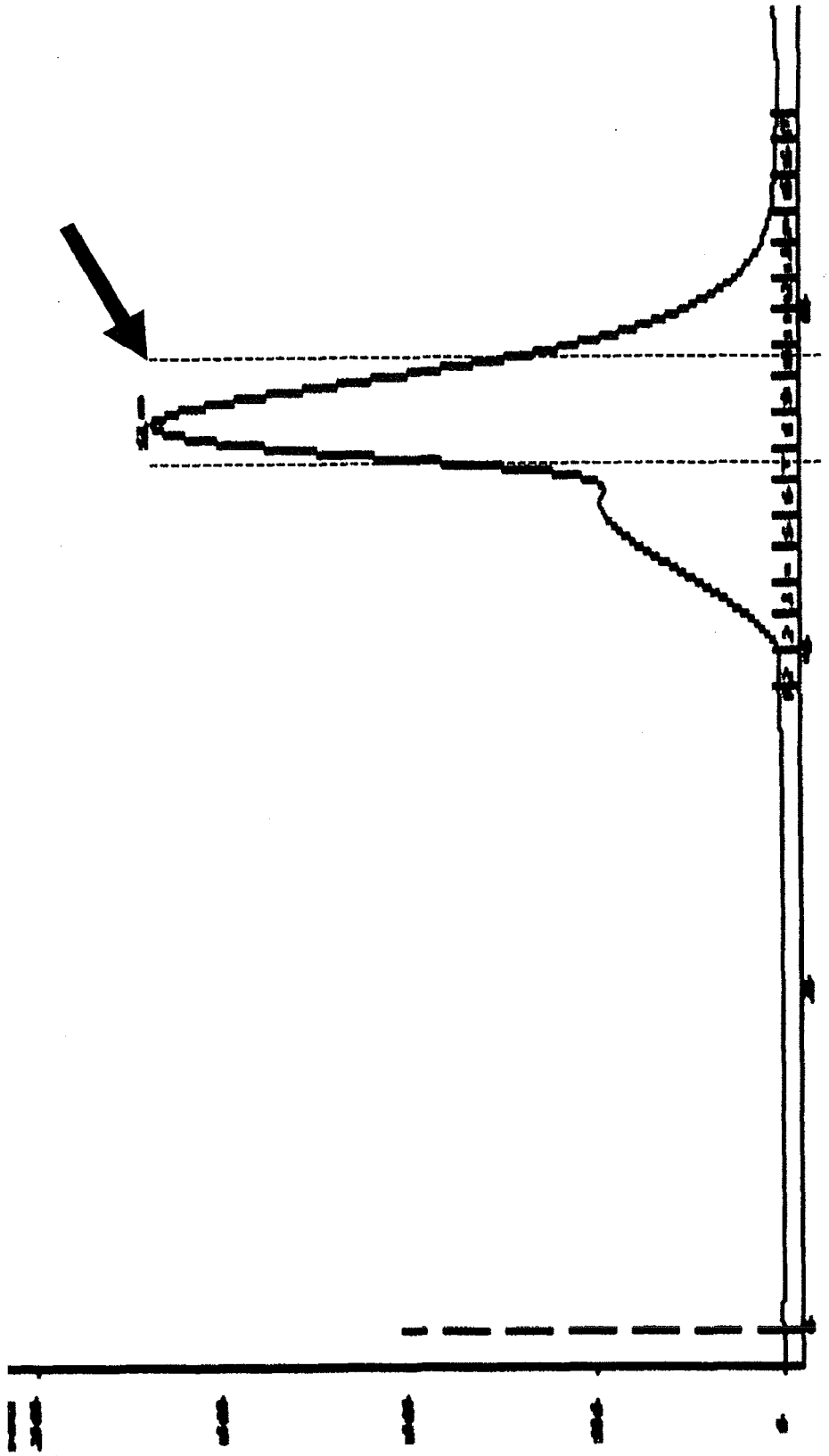


Figure 2C

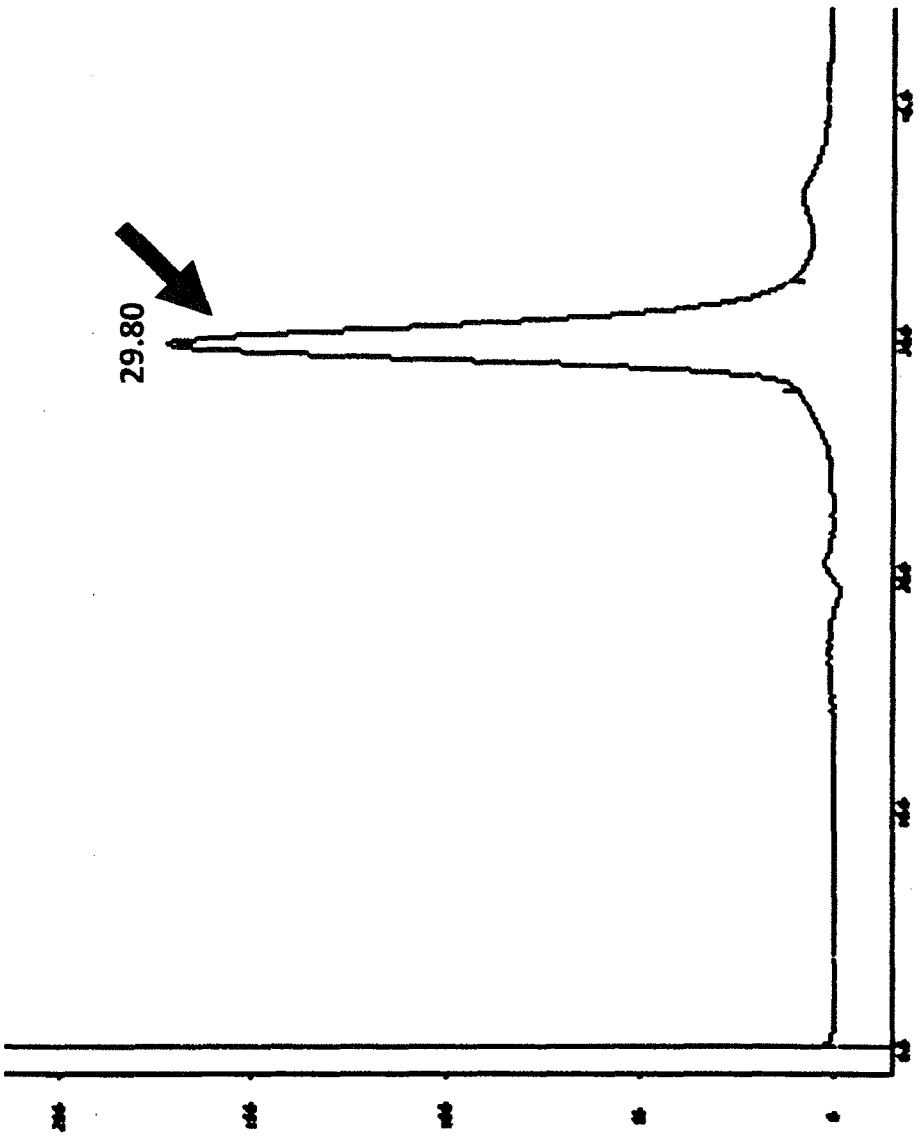



Figure 2D

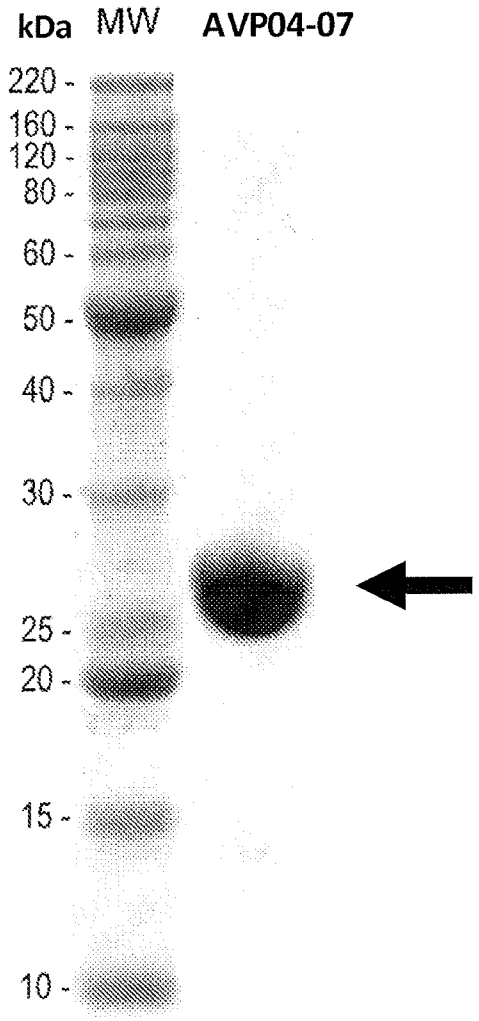



Figure 2E

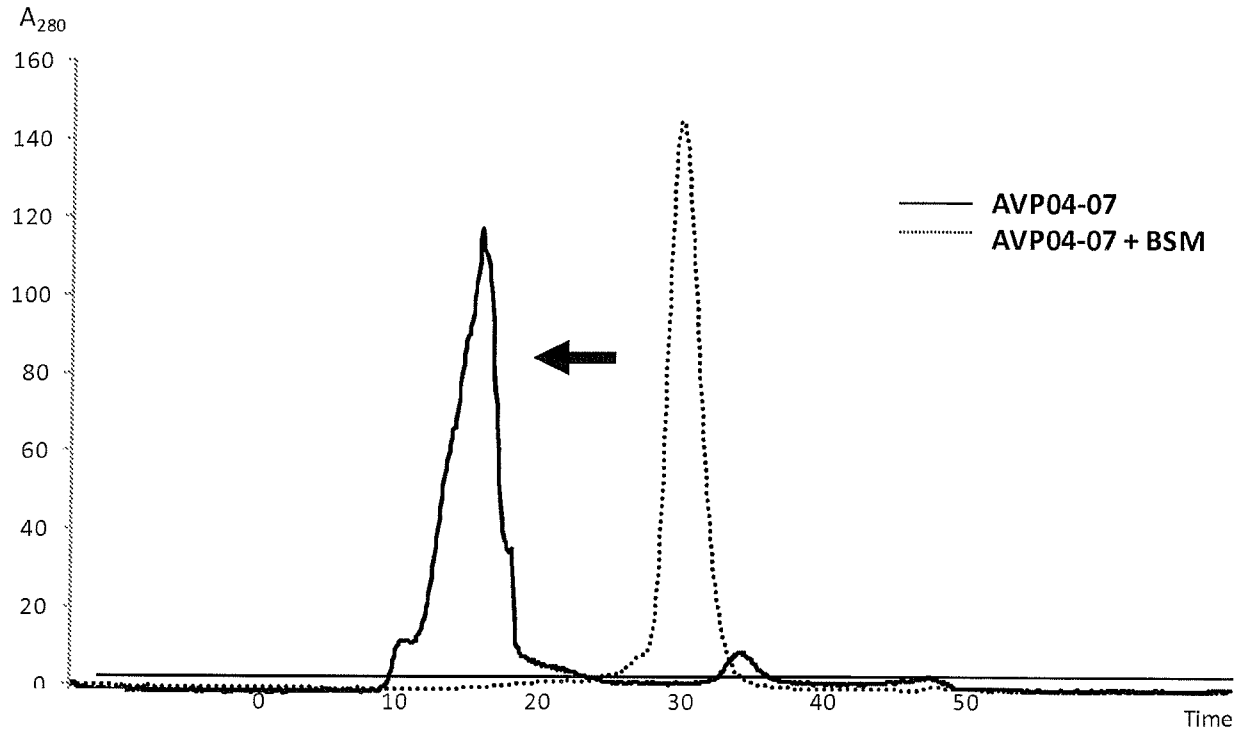



Figure 3A

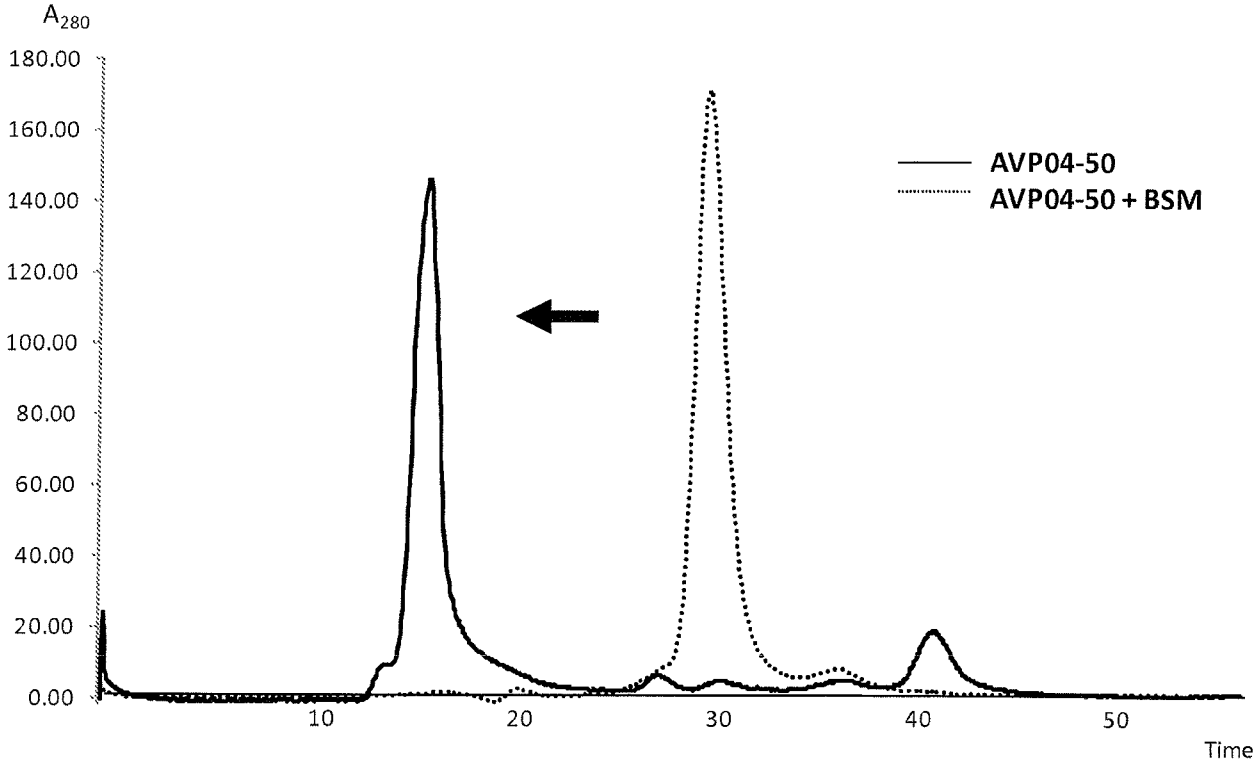



Figure 3B

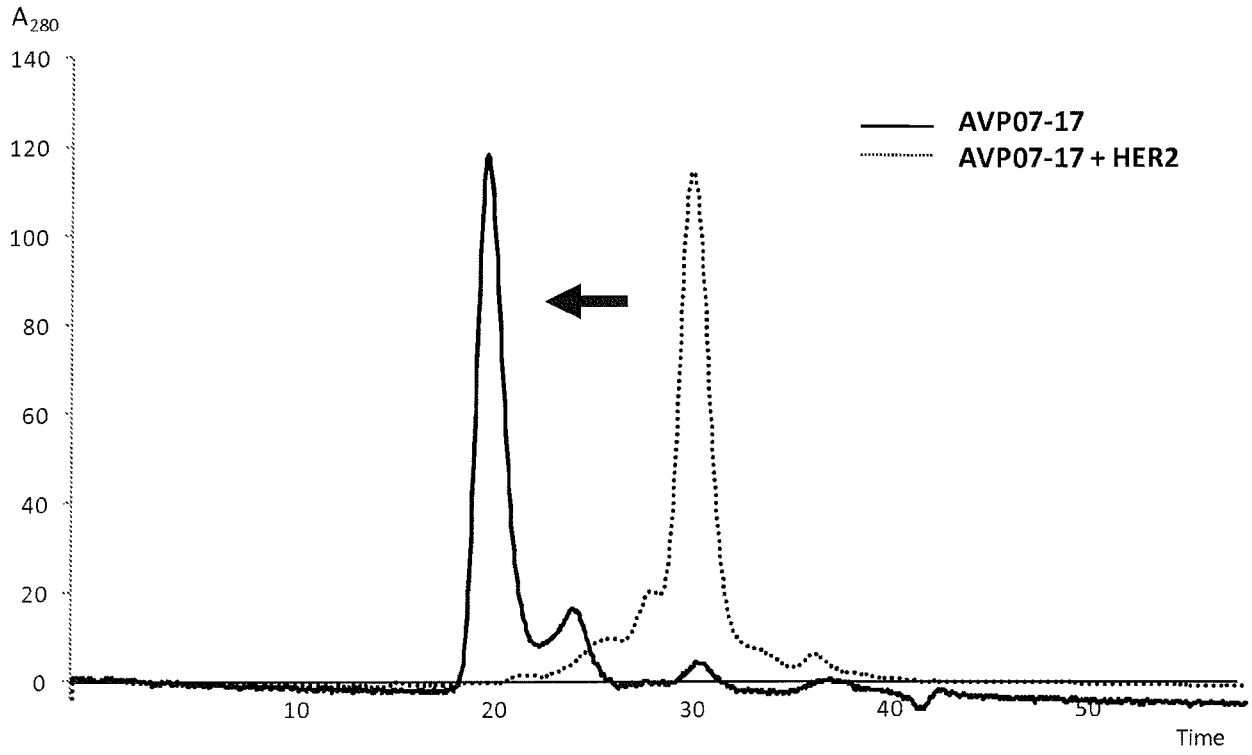



Figure 3C

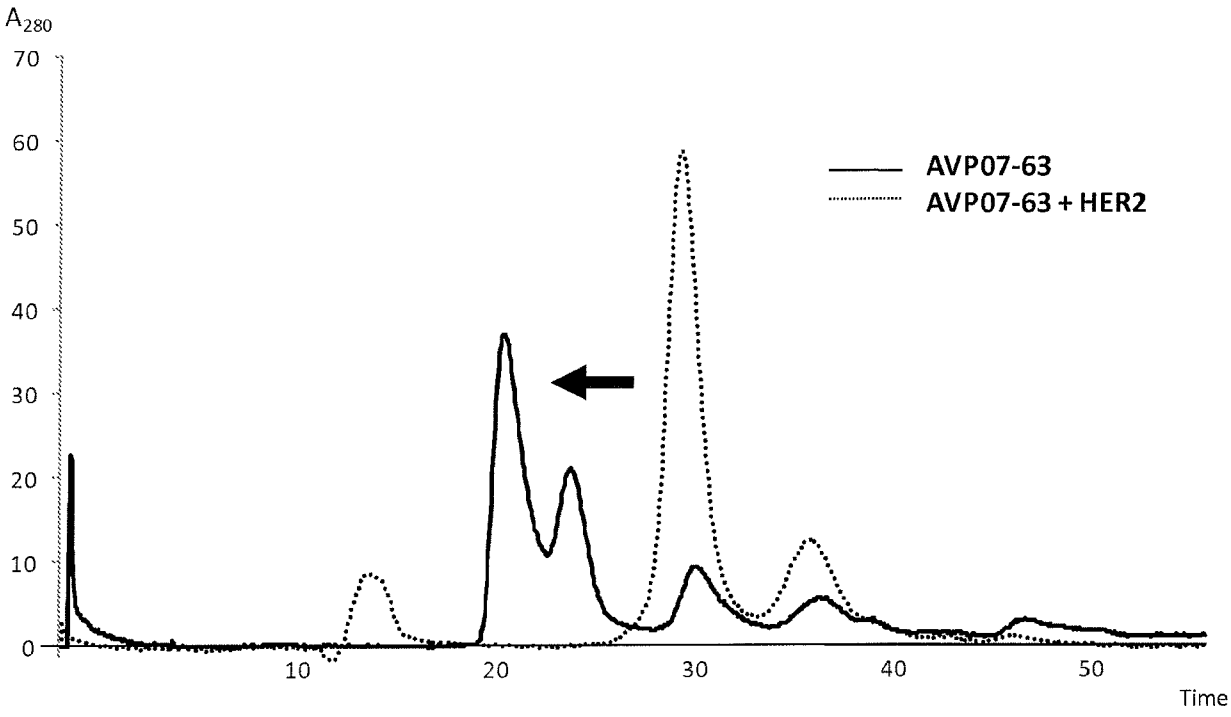



Figure 3D

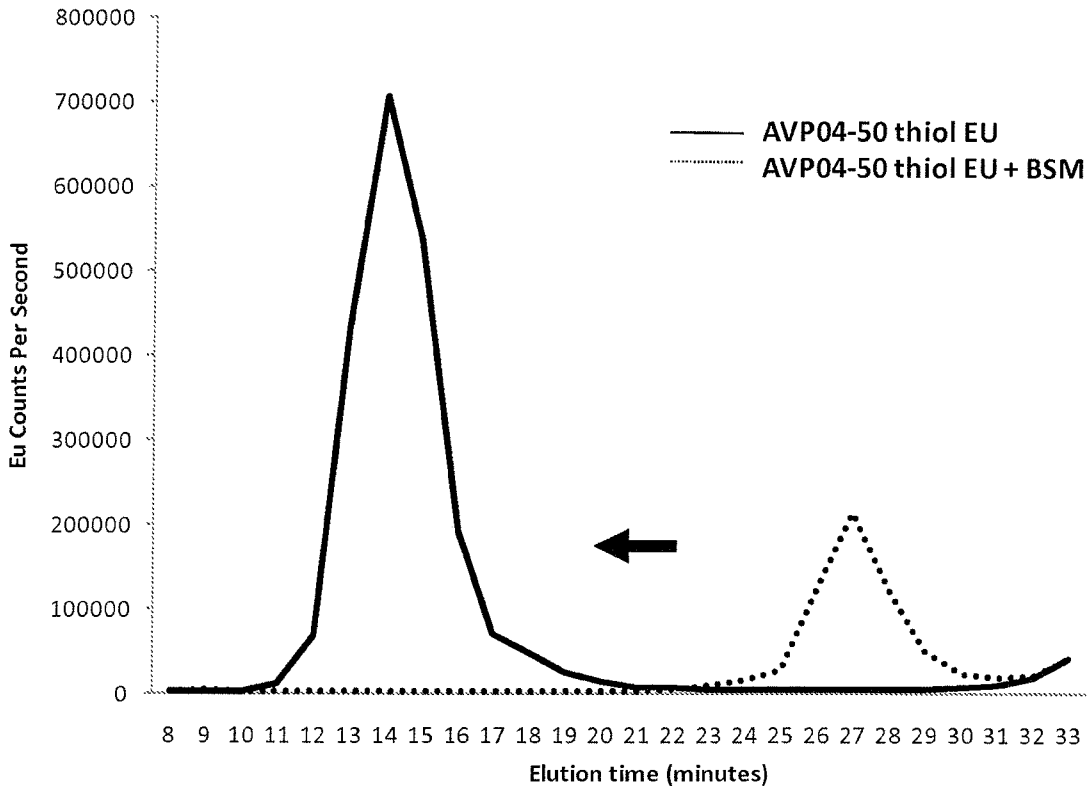

800000
700000
600000
500000
400000
300000
200000
100000
0
Eu Counts Per Second
AVP04-50 thiol EU
AVP04-50 thiol EU + BSM
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
Elution time (minutes)

Figure 4

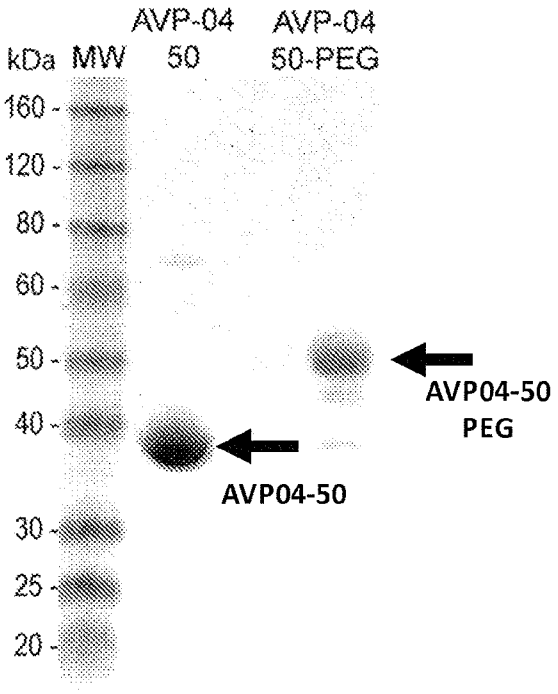



Figure 5A

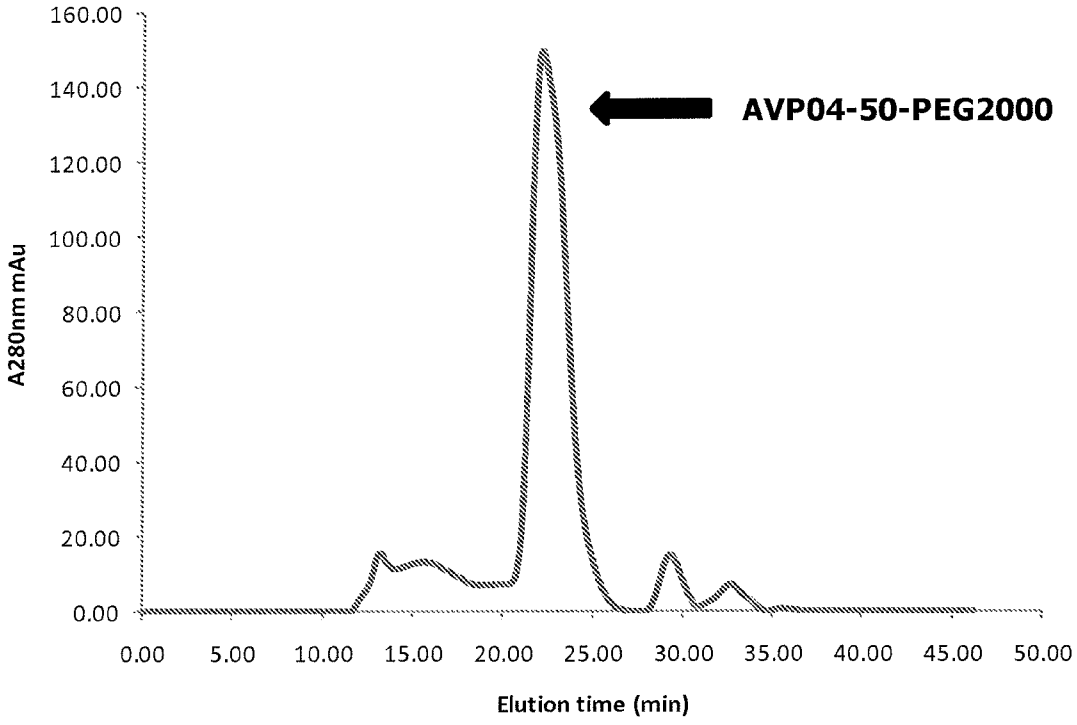



Figure 5B

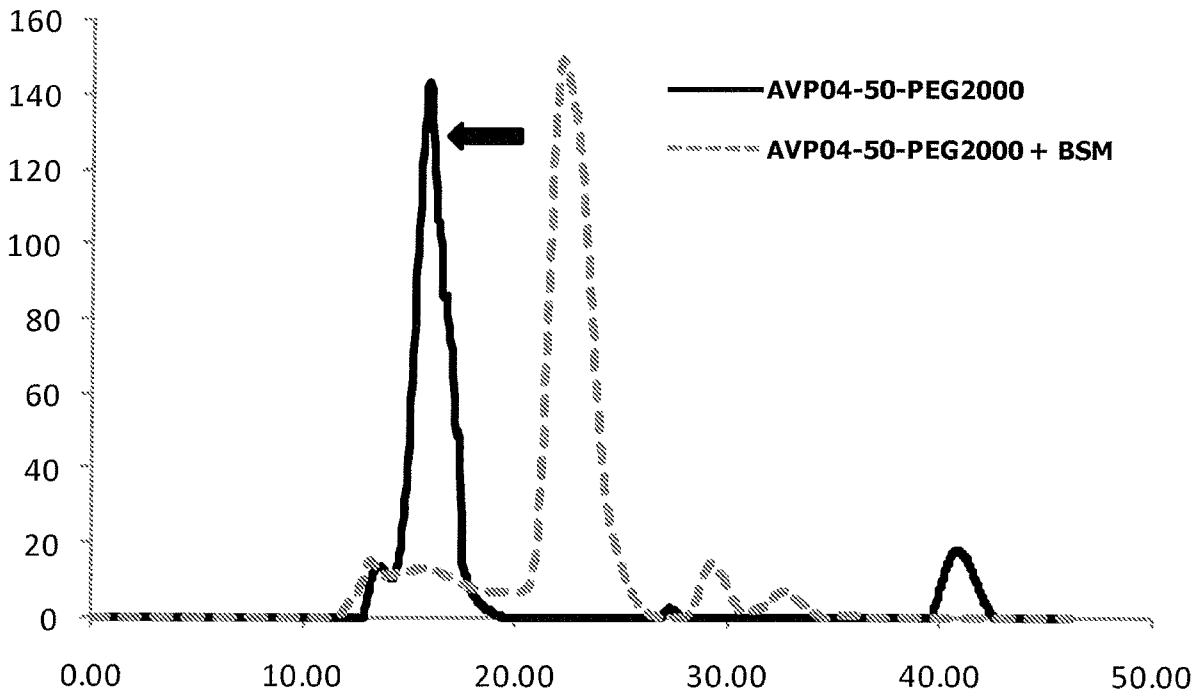

160
140
120
100
80
60
40
20
0
0.00
10.00
20.00
30.00
40.00
50.00
AVP04-50-PEG2000
AVP04-50-PEG2000 + BSM

Figure 5C

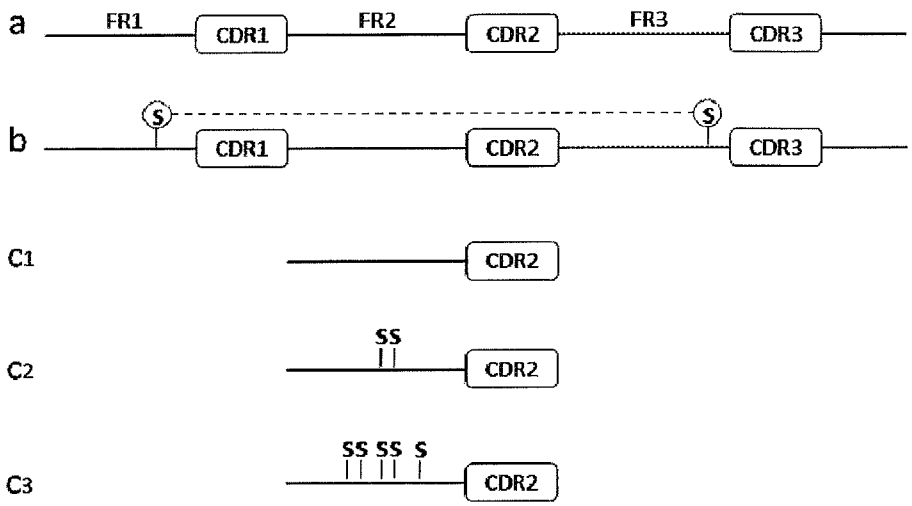



Figure 6A

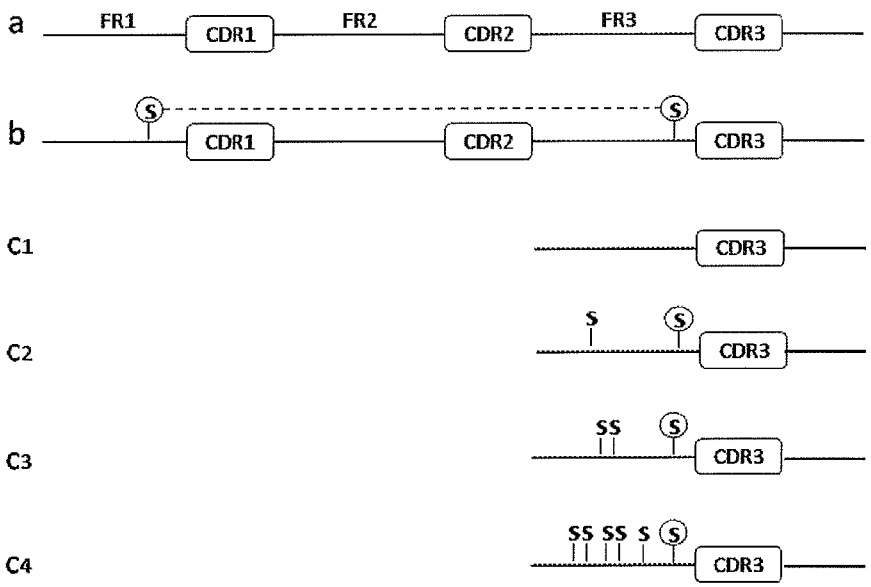



Figure 6B

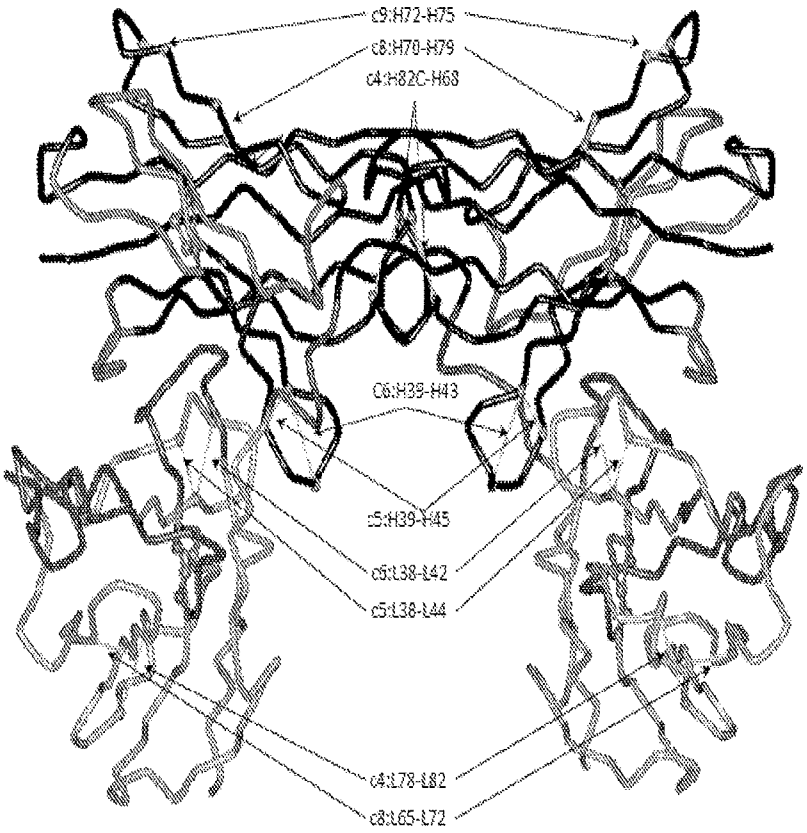

c9:H72-H75
c8:H70-H79
c4:H82C-H68
C6:H39-H43
c5:H39-H45
c5:L38-L42
c5:L38-L44
c4:L78-L82
c8:L65-L72

Figure 7

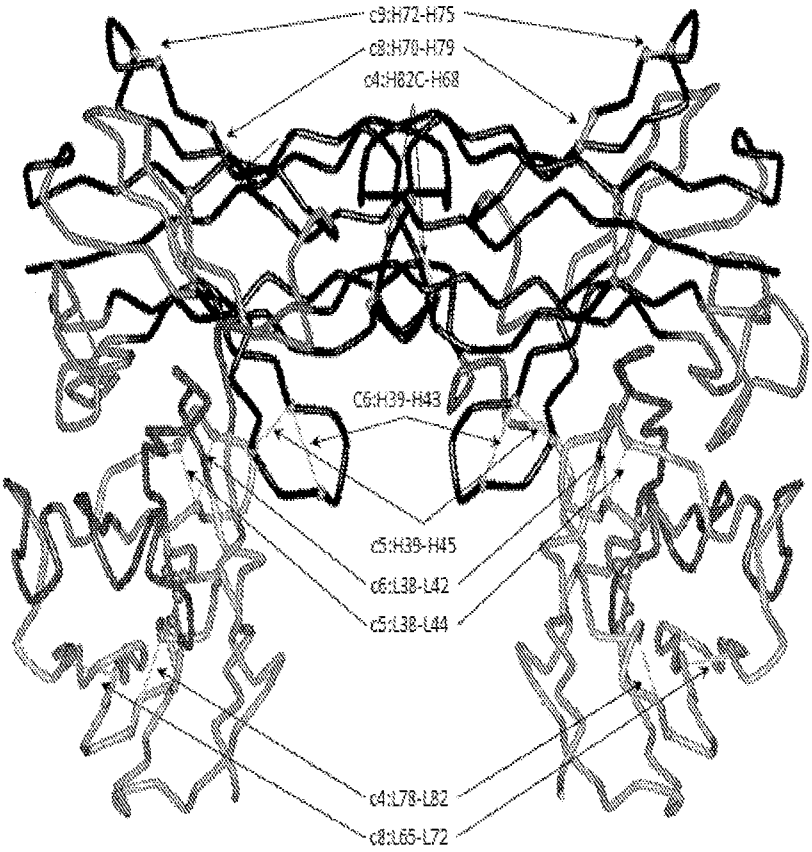

c9:H72-H75
c8:H70-H79
c4:H82C-H68
C6:H39-H43
c5:H39-H45
c6:L38-L42
c5:L38-L44
c4:L78-L82
c8:L65-L72

Figure 8

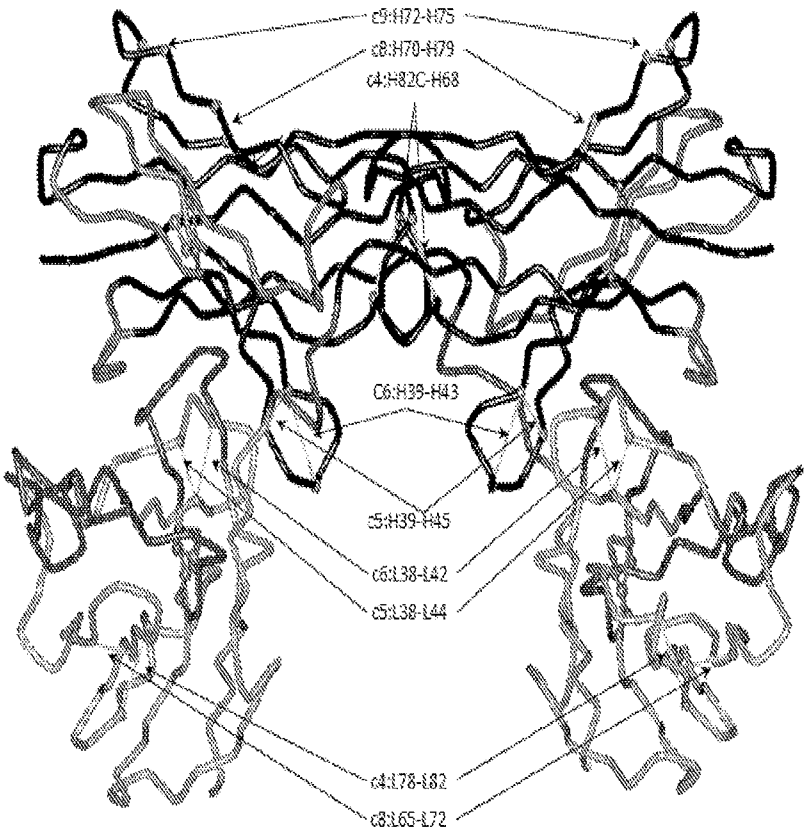

c9:H72-H75
c8:H70-H79
c4:H82C-H68
C6:H39-H43
c5:H39-H45
c6:L38-L42
c5:L38-L44
c4:L78-L82
c8:L65-L72

Figure 9

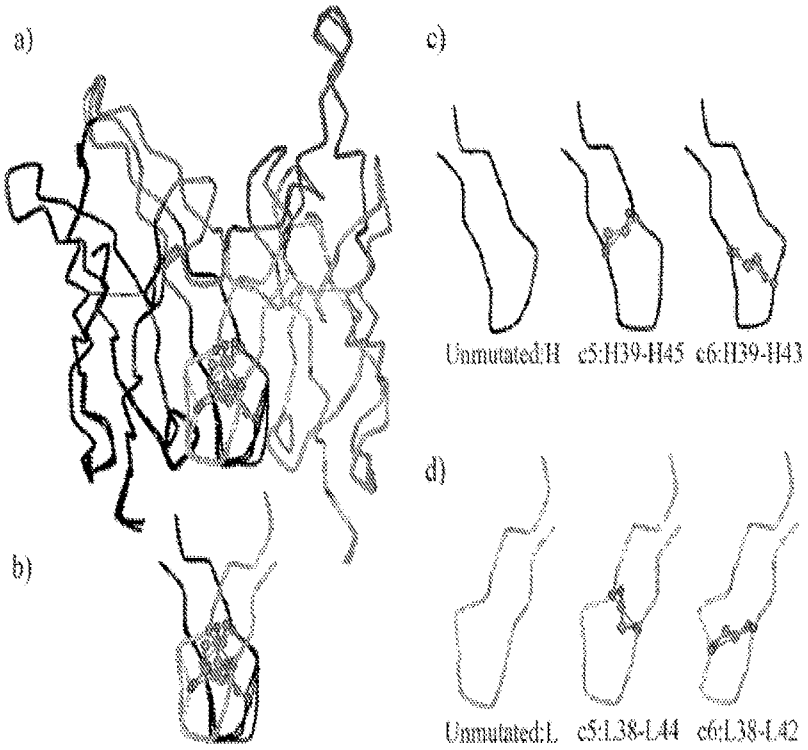

a)
b)
c)
Unmutated:H
c5:H39-H45
c6:H39-H43
d)
Unmutated:L
c5:L38-L44
c6:L38-L42

Figure 10A

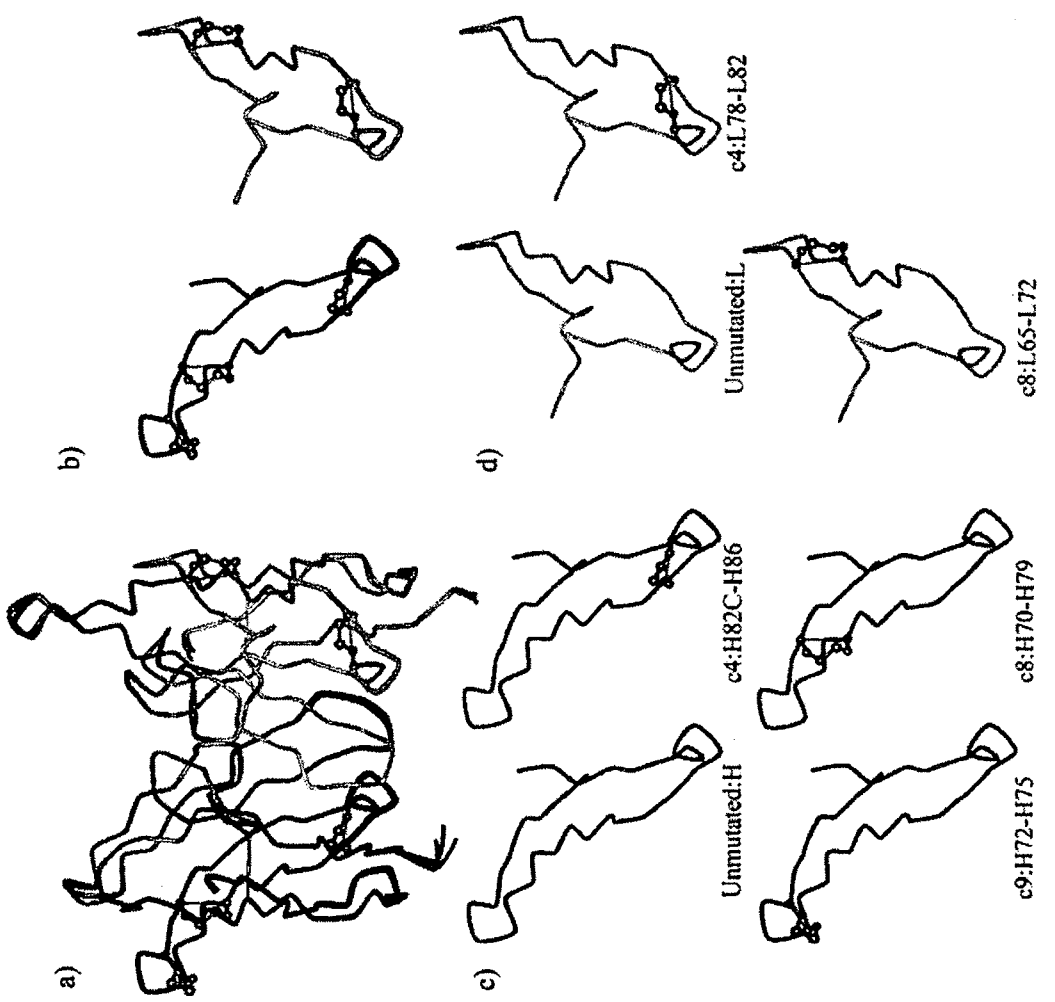

a)
b)
c)
d)
Unmutated:H
c4:H82C-H86
c9:H72-H75
c8:H70-H79
Unmutated:L
c4:L78-L82
c8:L65-L72

**Figure 10B**

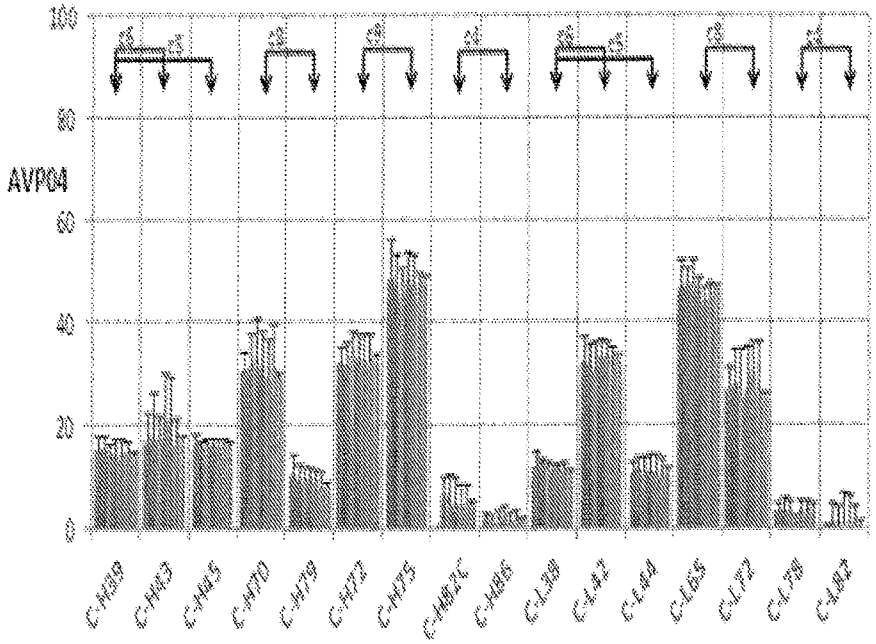



Figure 11

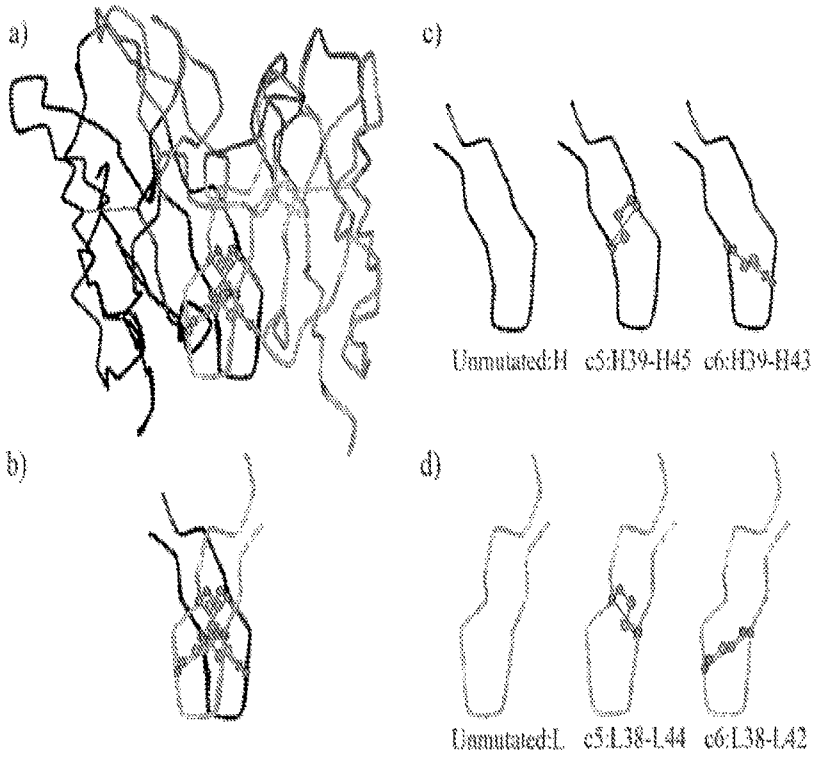

a)
c)
Unmutated:H
c5:H39-H45
c6:H39-H43
b)
d)
Unmutated:L
c5:L38-L44
c6:L38-L42

**Figure 12A**

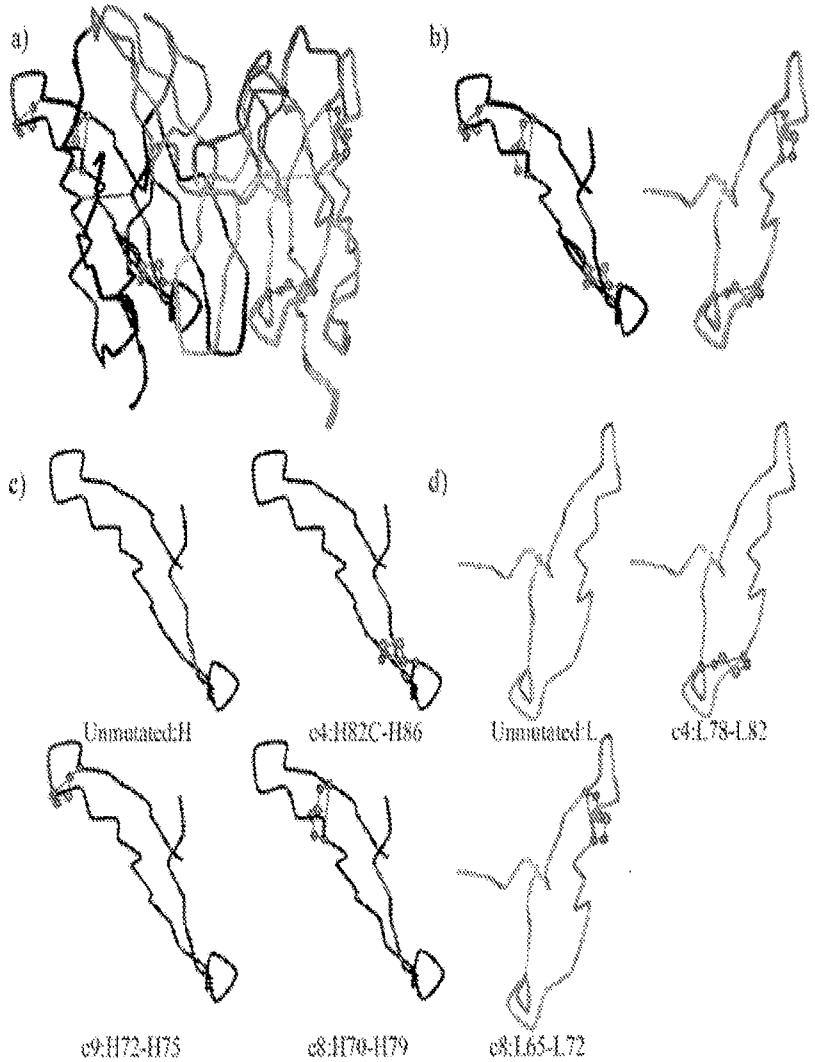

a)
b)
c)
d)
Unmutated:H
c4:H82C-H86
Unmutated:L
c4:L78-L82
c9:H72-H75
c8:H70-H79
c8:L65-L72

Figure 12B

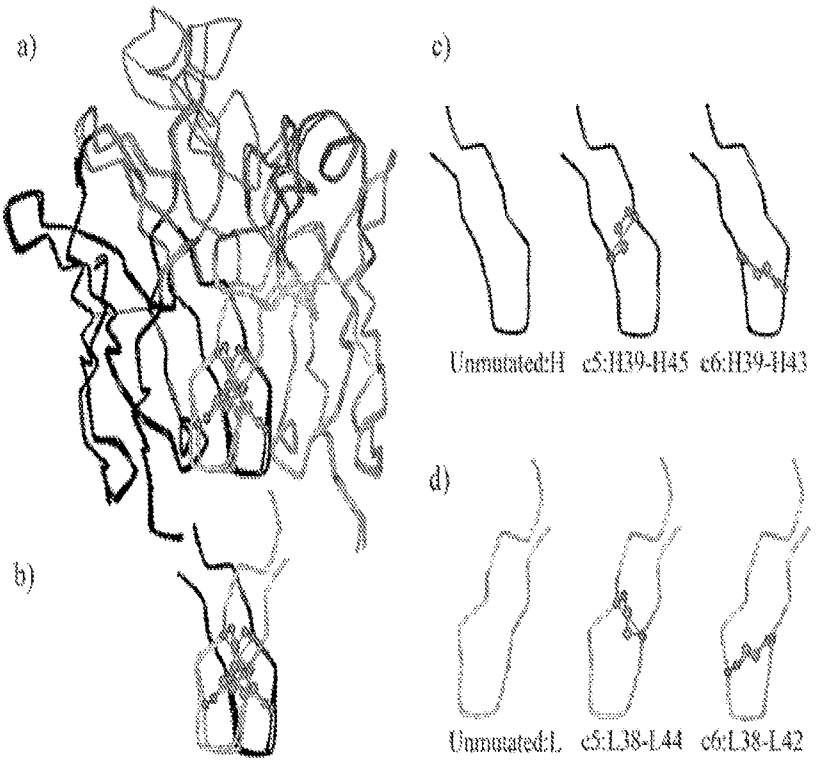

a)
b)
c)
Unmutated:H
c5:H39-H45
c6:H39-H43
d)
Unmutated:L
c5:L38-L44
c6:L38-L42

Figure 13A

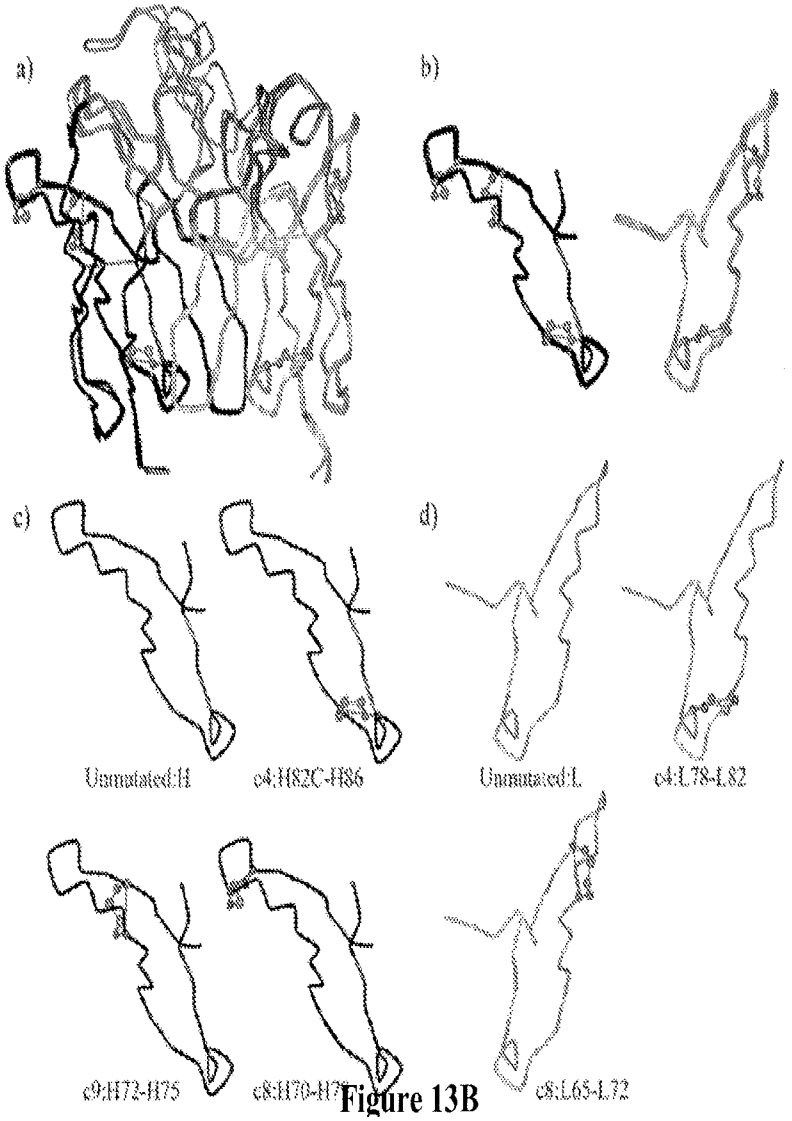

a)
b)
c)
d)
Unmutated:H
c4:H82C-H86
Unmutated:L
c4:L78-L82
c9:H72-H75
c8:L65-L72

Figure 13B

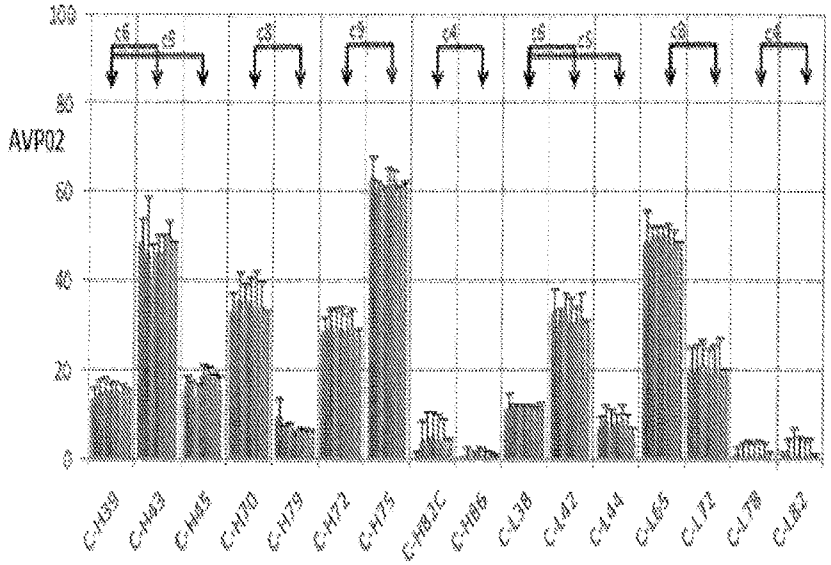

AVP02
100
80
60
40
20
0
C-H39
C-H43
C-H45
C-H70
C-H79
C-H72
C-H75
C-H83C
C-H86
C-L38
C-L42
C-L44
C-L65
C-L72
C-L78
C-L82

Figure 14

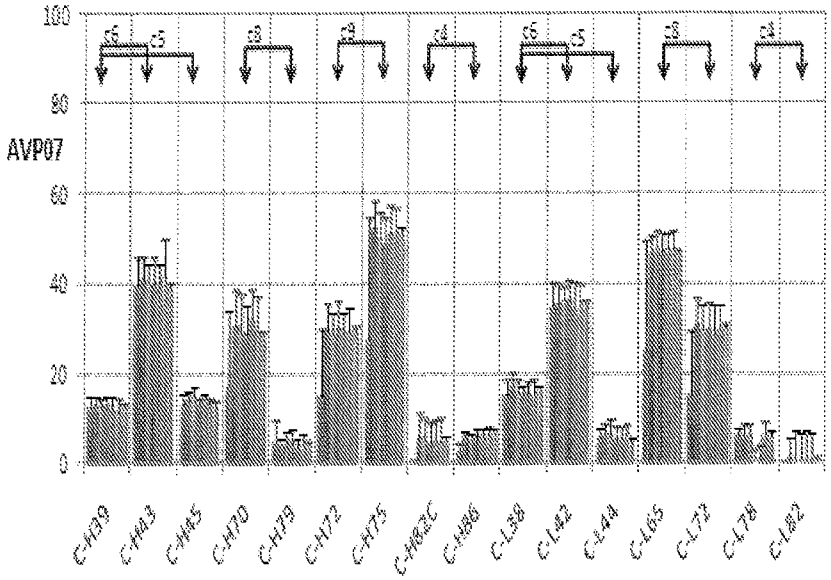

AVP07
100
80
60
40
20
0
c6
c5
c8
c3
c4
c6
c5
c8
c4
C-H39
C-H43
C-H45
C-H70
C-H79
C-H72
C-H75
C-H82C
C-H86
C-L38
C-L42
C-L44
C-L65
C-L72
C-L78
C-L82

Figure 15

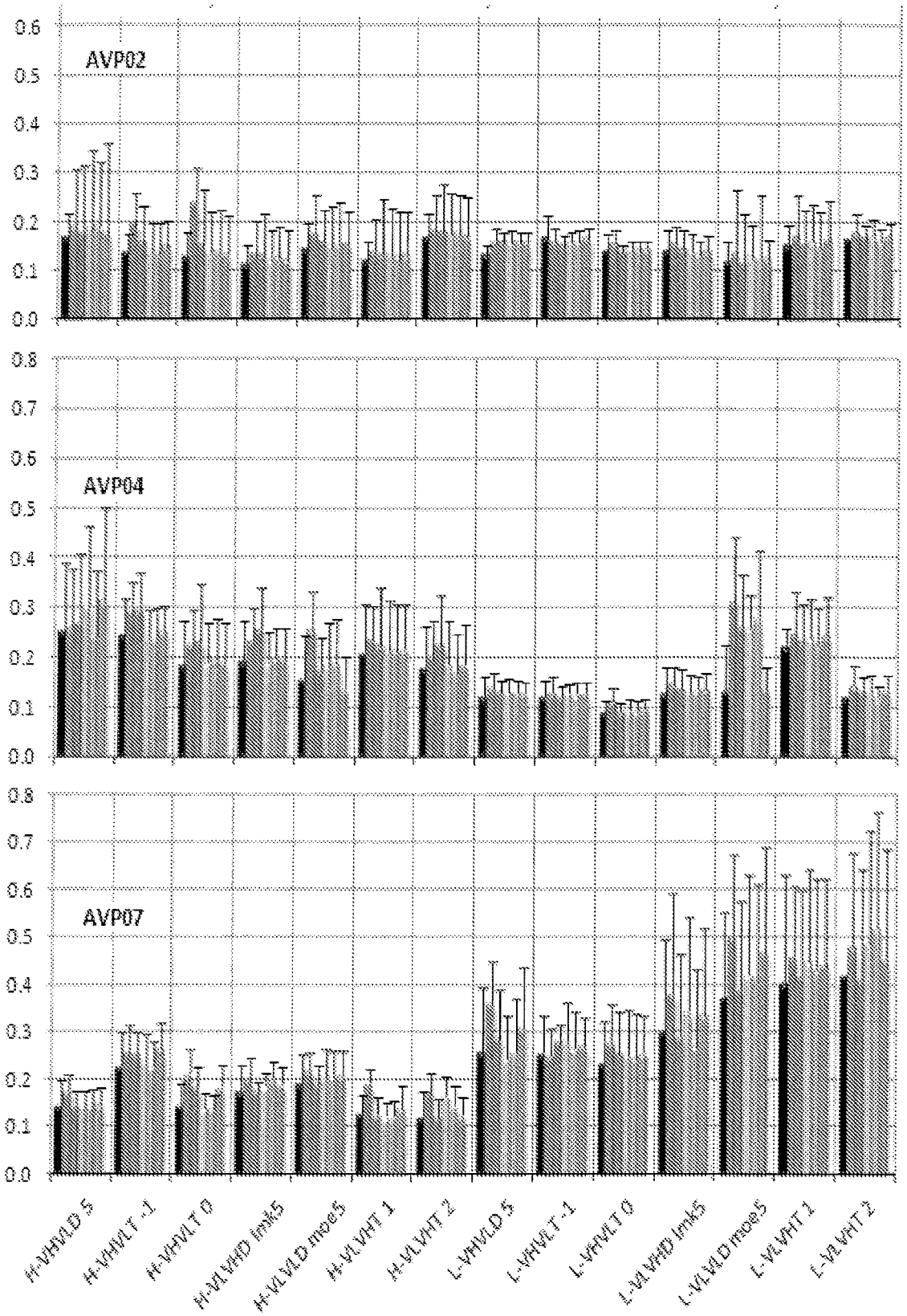

AVP02
AVP04
AVP07
H-VHVLD 5
H-VHVLT -1
H-VHVLT 0
H-VLVHD link5
H-VLVLD nse5
H-VLVHT 1
H-VLVHT 2
L-VHVLD 5
L-VHVLT -1
L-VHVLT 0
L-VLVHD link5
L-VLVLD nse5
L-VLVHT 1
L-VLVHT 2

**Figure 16B**

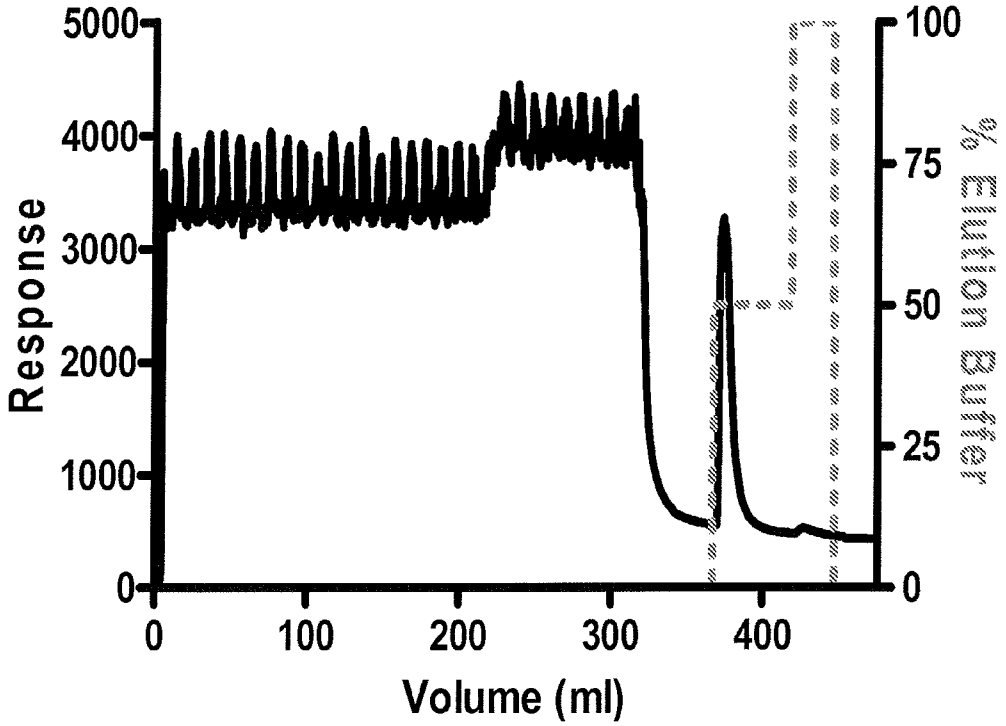

5000
4000
3000
2000
1000
0
Response
0
100
200
300
400
Volume (ml)
100
75
50
25
0
% Elution Buffer

Figure 17A

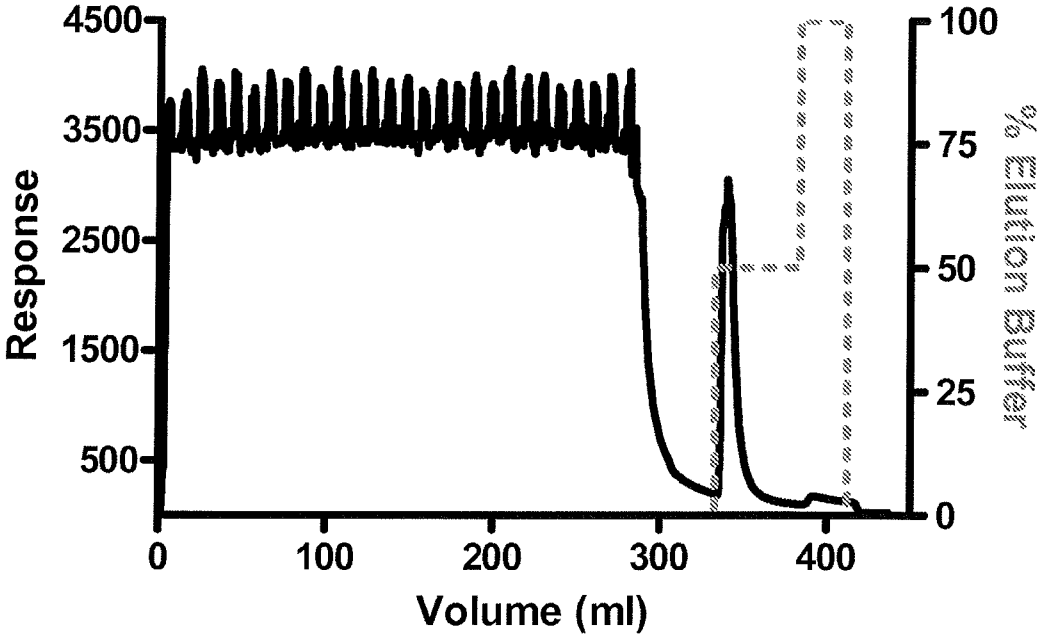

4500
3500
2500
1500
500
Response
0
100
200
300
400
Volume (ml)
100
75
50
25
0
% Elution Buffer

Figure 17B

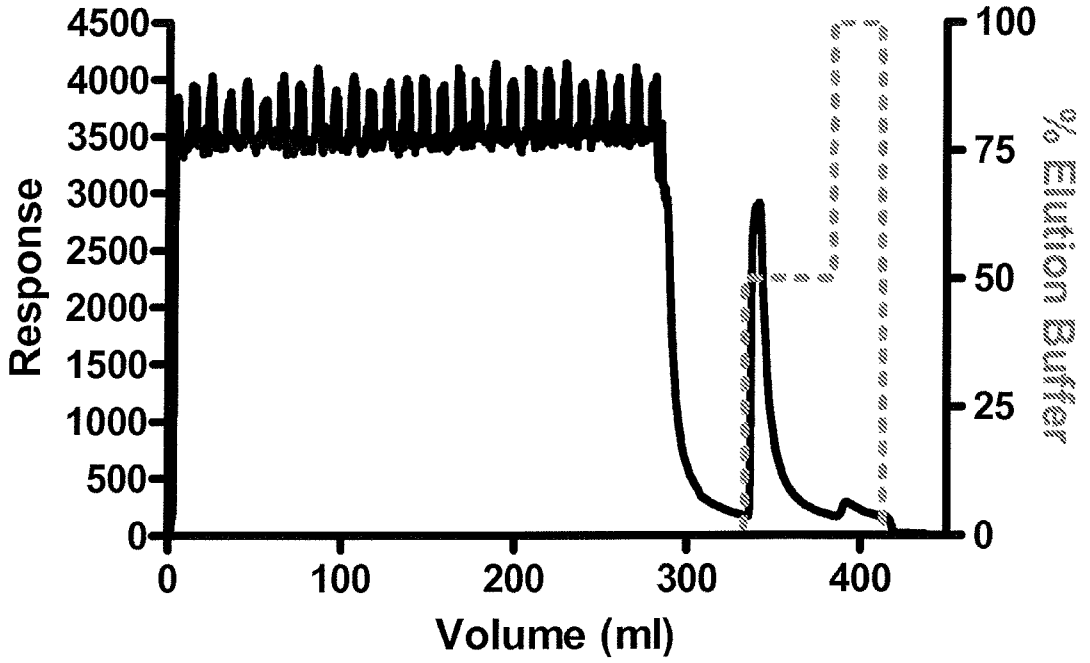

4500
4000
3500
3000
2500
2000
1500
1000
500
0
Response
0
100
200
300
400
Volume (ml)
100
75
50
25
0
% Elution Buffer

Figure 17C

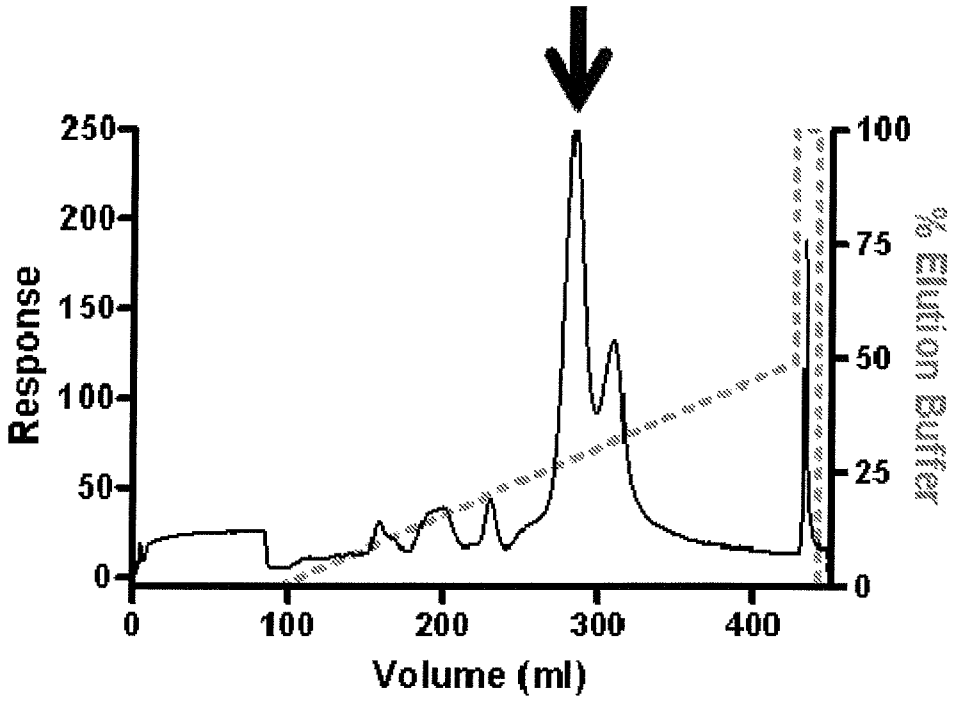

Response
250
200
150
100
50
0
0
100
200
300
400
Volume (ml)
100
75
50
25
0
% Elution buffer

Figure 18A

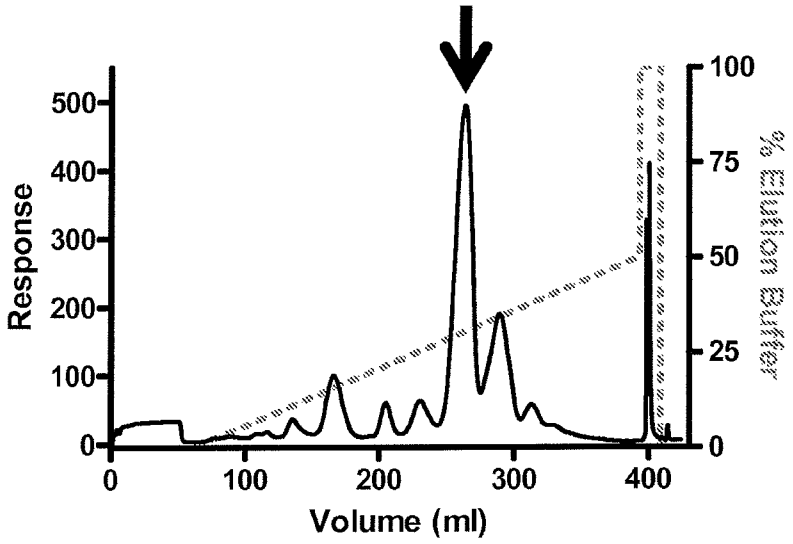

Response
500
400
300
200
100
0
0
100
200
300
400
Volume (ml)
100
75
50
25
0
% Elution Buffer

Figure 18B

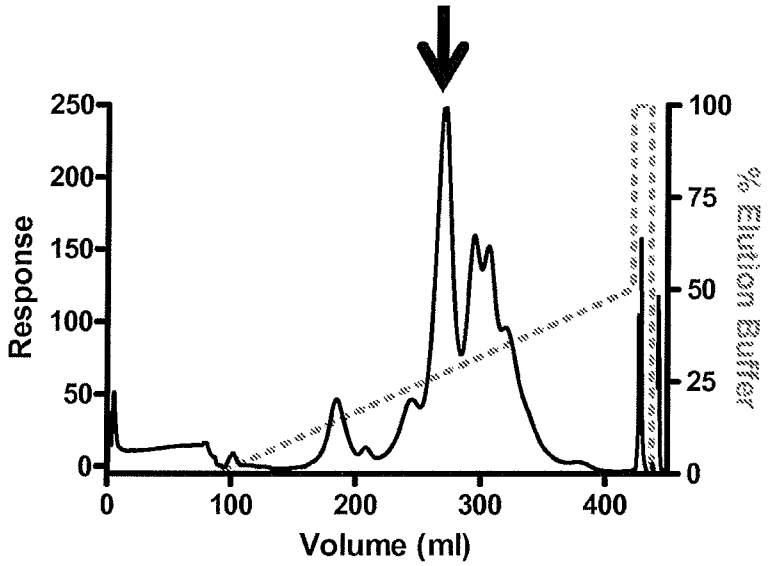

250
200
150
100
50
0
Response
0
100
200
300
400
Volume (ml)
100
75
50
25
0
% Elution Buffer

Figure 18C

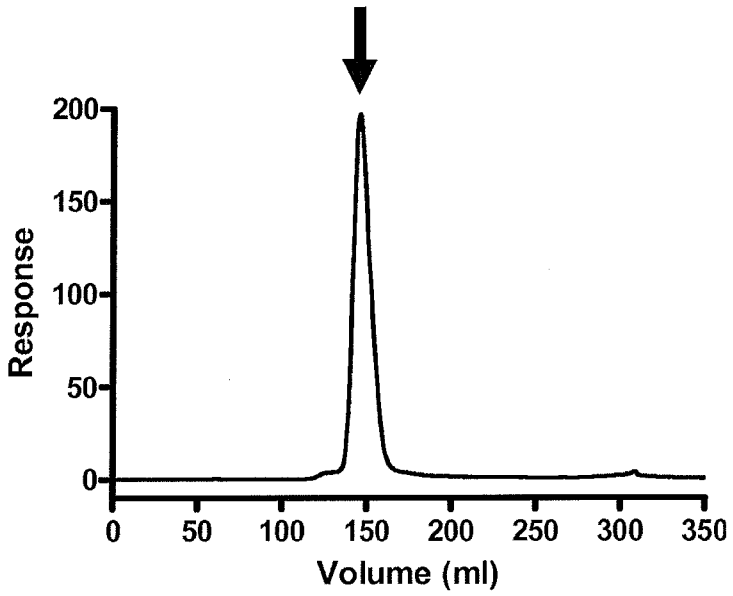



Figure 19A

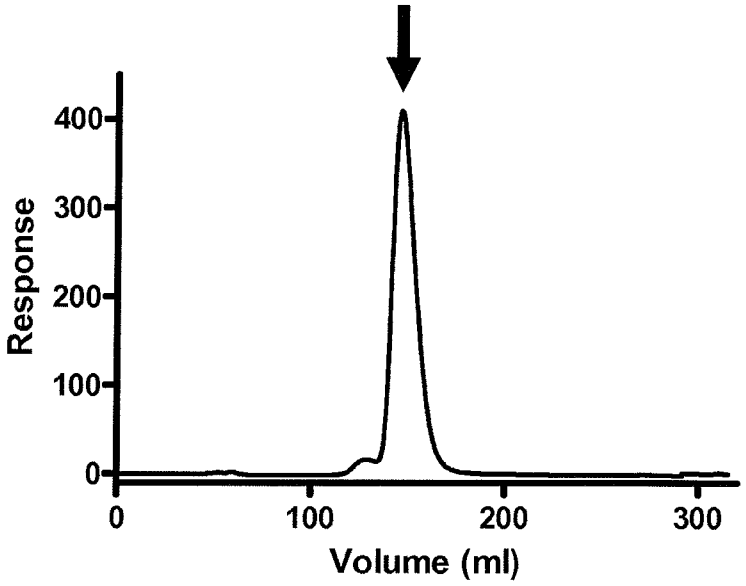



Figure 19B

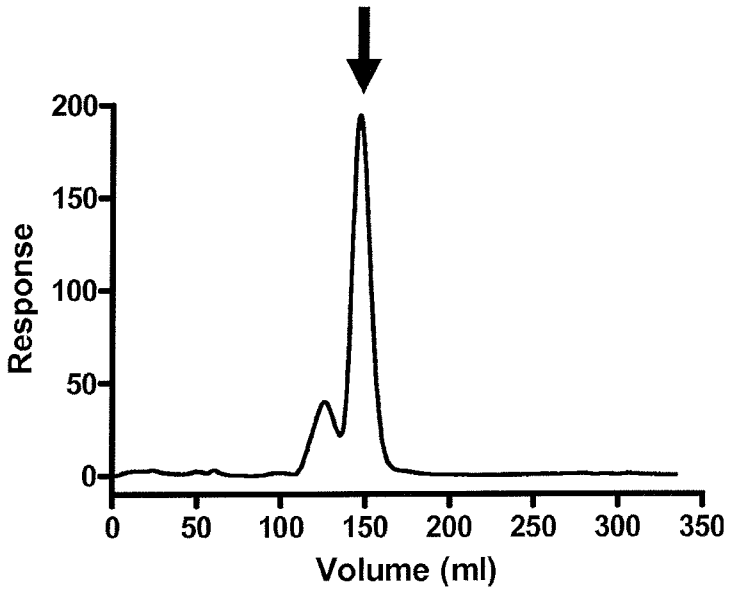



Figure 19C

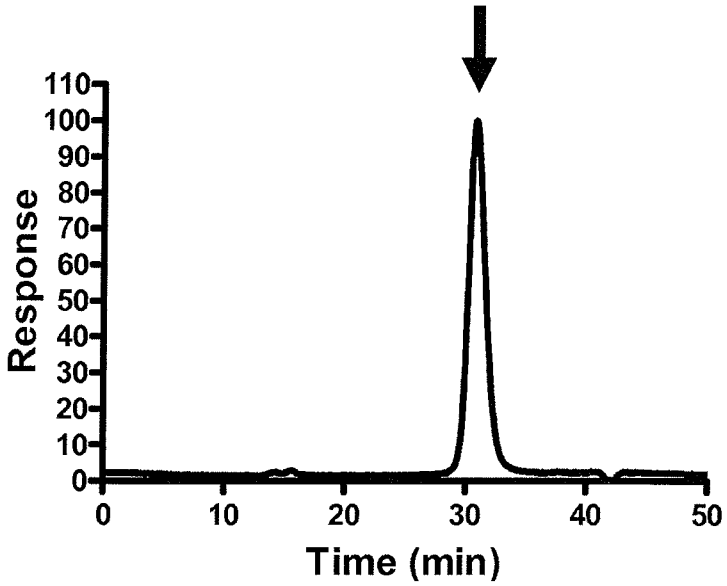

Response
110
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
Time (min)

Figure 20A

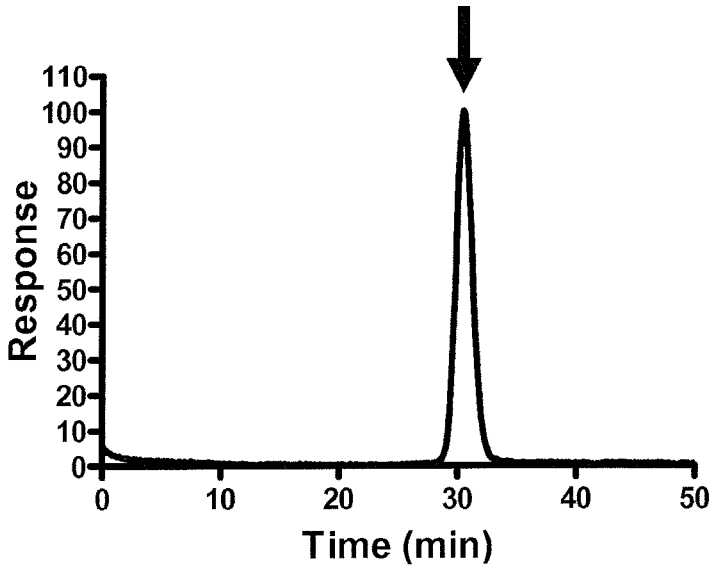

110
100
90
80
70
60
50
40
30
20
10
0
Response
0
10
20
30
40
50
Time (min)

Figure 20B

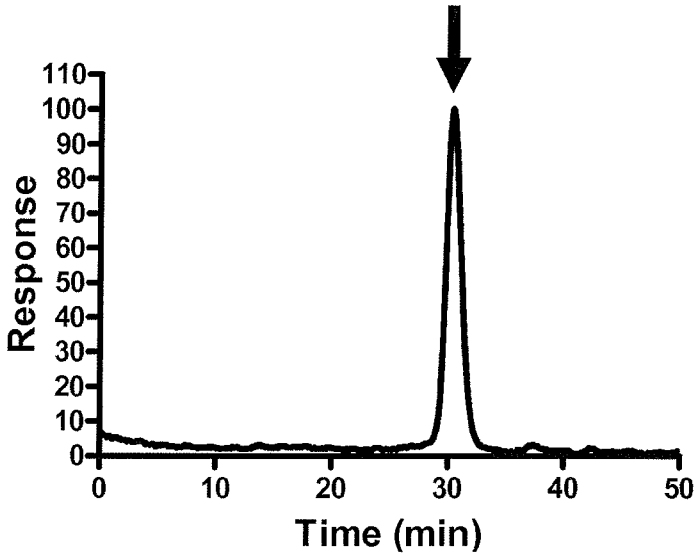

Response
110
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
Time (min)

Figure 20C

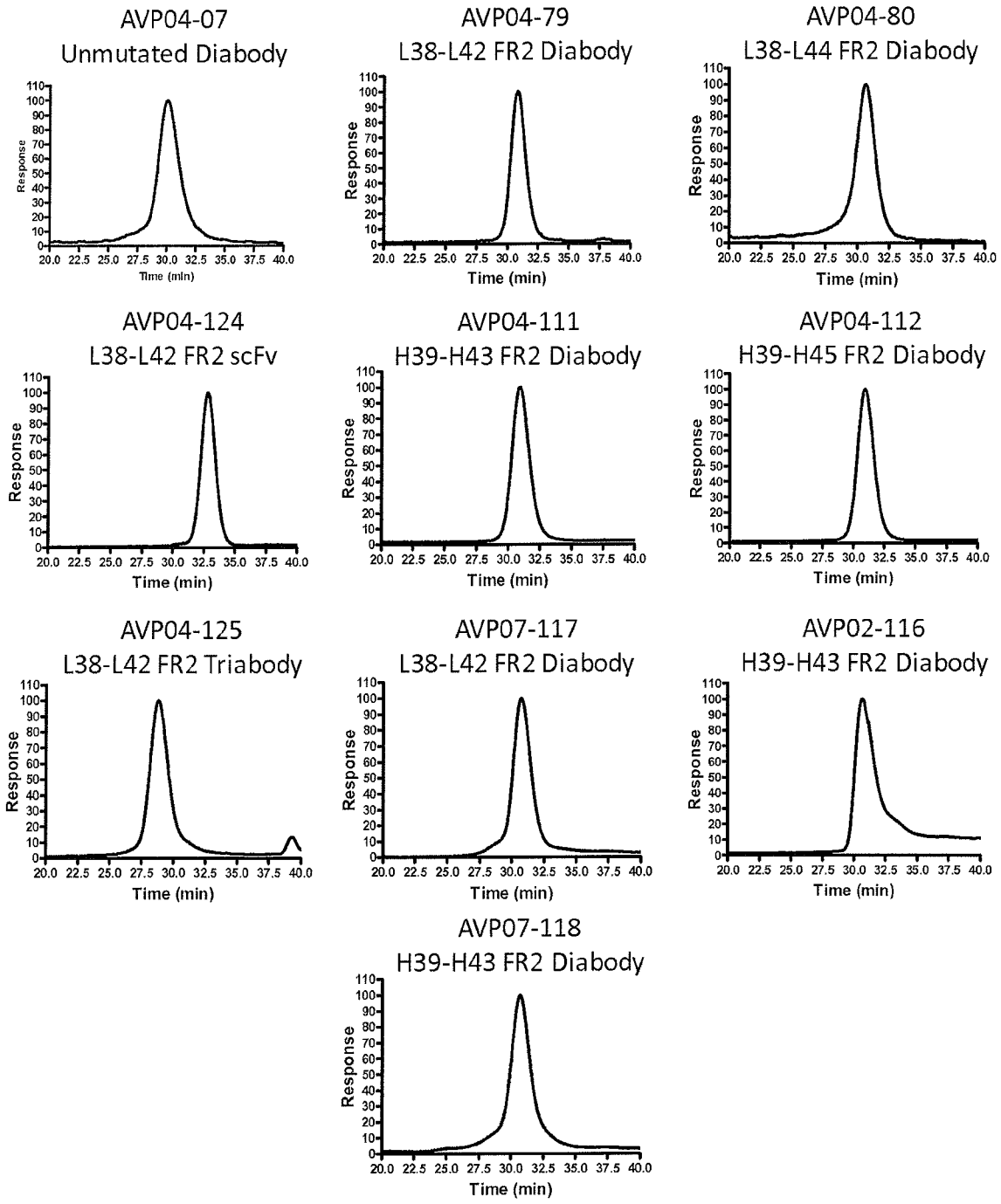

AVP04-07
Unmutated Diabody
AVP04-79
L38-L42 FR2 Diabody
AVP04-80
L38-L44 FR2 Diabody
AVP04-124
L38-L42 FR2 scFv
AVP04-111
H39-H43 FR2 Diabody
AVP04-112
H39-H45 FR2 Diabody
AVP04-125
L38-L42 FR2 Triabody
AVP07-117
L38-L42 FR2 Diabody
AVP02-116
H39-H43 FR2 Diabody
AVP07-118
H39-H43 FR2 Diabody
Response
Time (min)

**Figure 21A**

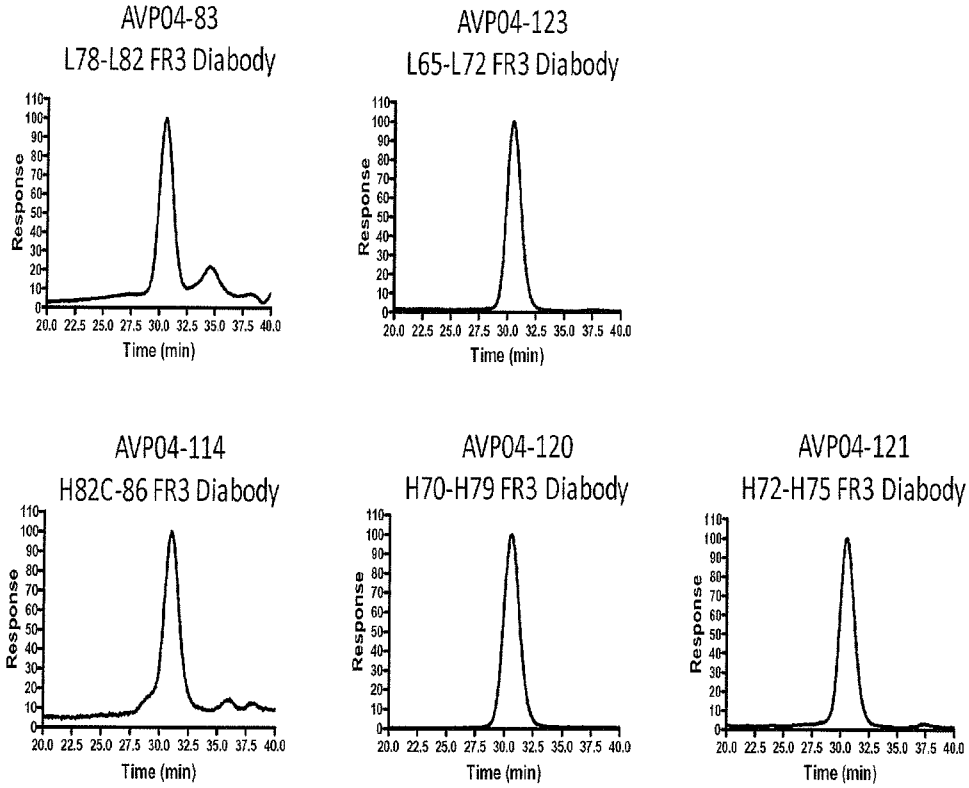

AVP04-83
L78-L82 FR3 Diabody
AVP04-123
L65-L72 FR3 Diabody
AVP04-114
H82C-86 FR3 Diabody
AVP04-120
H70-H79 FR3 Diabody
AVP04-121
H72-H75 FR3 Diabody
Response
Time (min)
20.0 22.5 25.0 27.5 30.0 32.5 35.0 37.5 40.0

Figure 21B

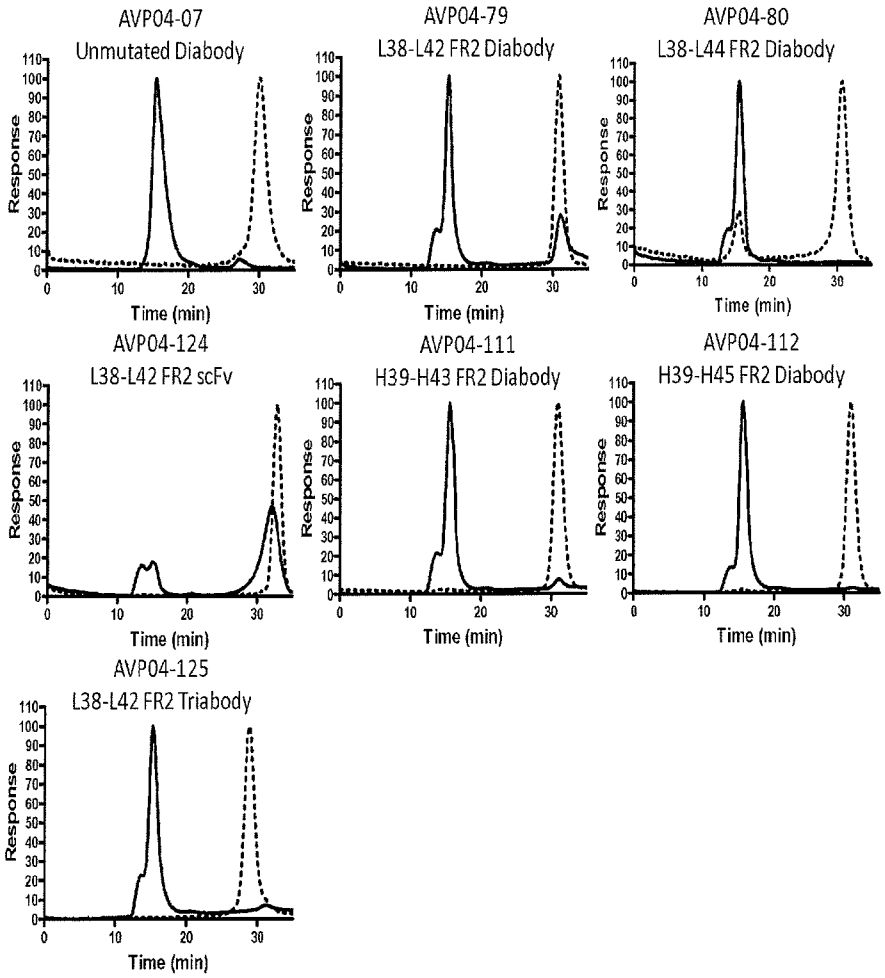

AVP04-07
Unmutated Diabody
AVP04-79
L38-L42 FR2 Diabody
AVP04-80
L38-L44 FR2 Diabody
AVP04-124
L38-L42 FR2 scFv
AVP04-111
H39-H43 FR2 Diabody
AVP04-112
H39-H45 FR2 Diabody
AVP04-125
L38-L42 FR2 Triabody
Response
Time (min)

Figure 22A

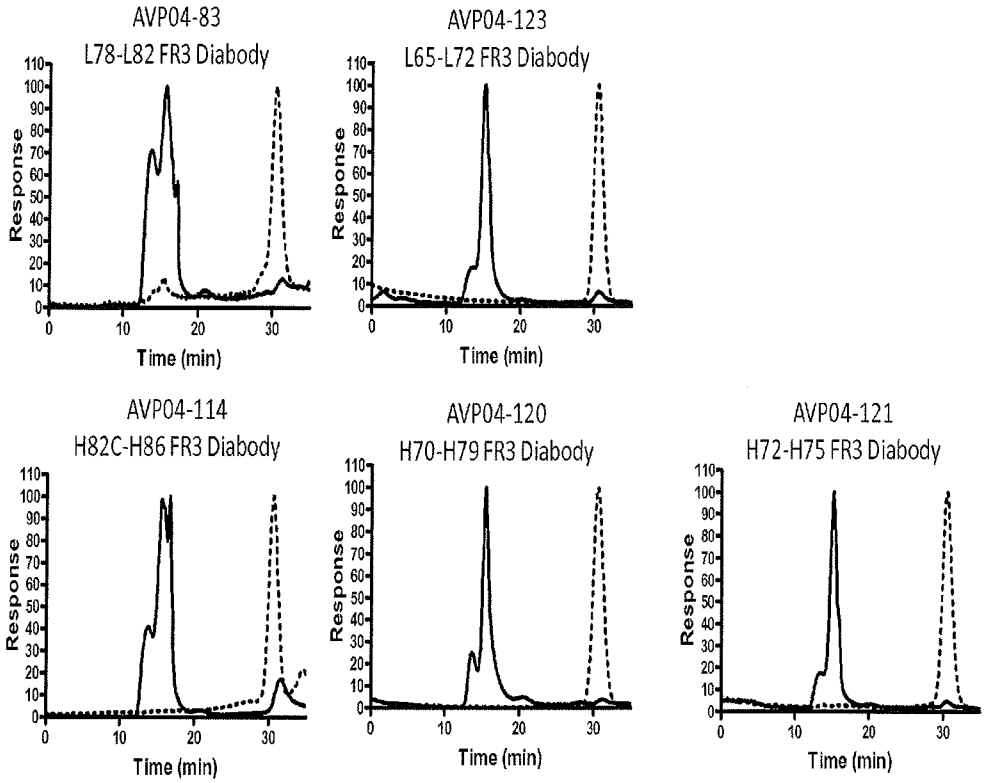

AVP04-83
L78-L82 FR3 Diabody
AVP04-123
L65-L72 FR3 Diabody
AVP04-114
H82C-H86 FR3 Diabody
AVP04-120
H70-H79 FR3 Diabody
AVP04-121
H72-H75 FR3 Diabody
Response
Time (min)

Figure 22B

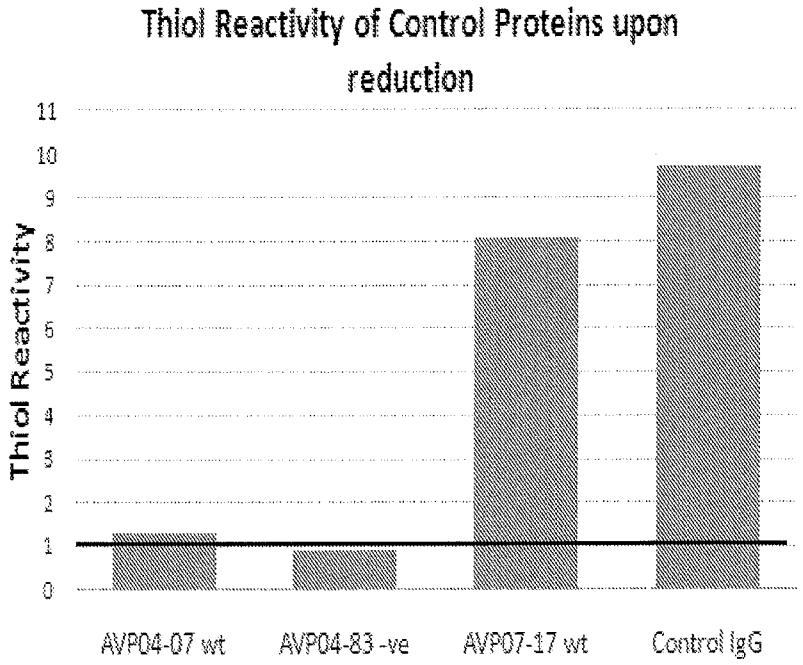

Thiol Reactivity of Control Proteins upon reduction
Thiol Reactivity
11
10
9
8
7
6
5
4
3
2
1
0
AVP04-07 wt
AVP04-83 -ve
AVP07-17 wt
Control IgG

Figure 23A

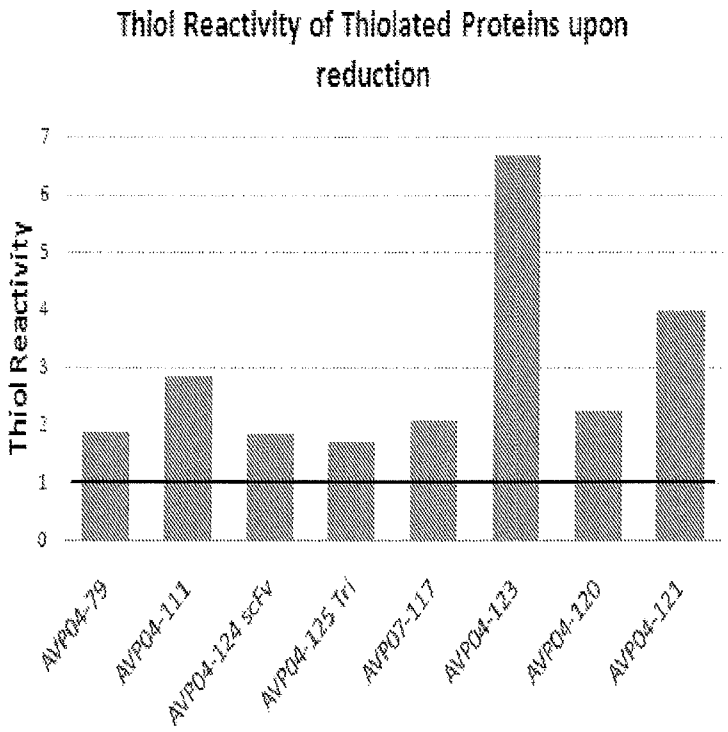
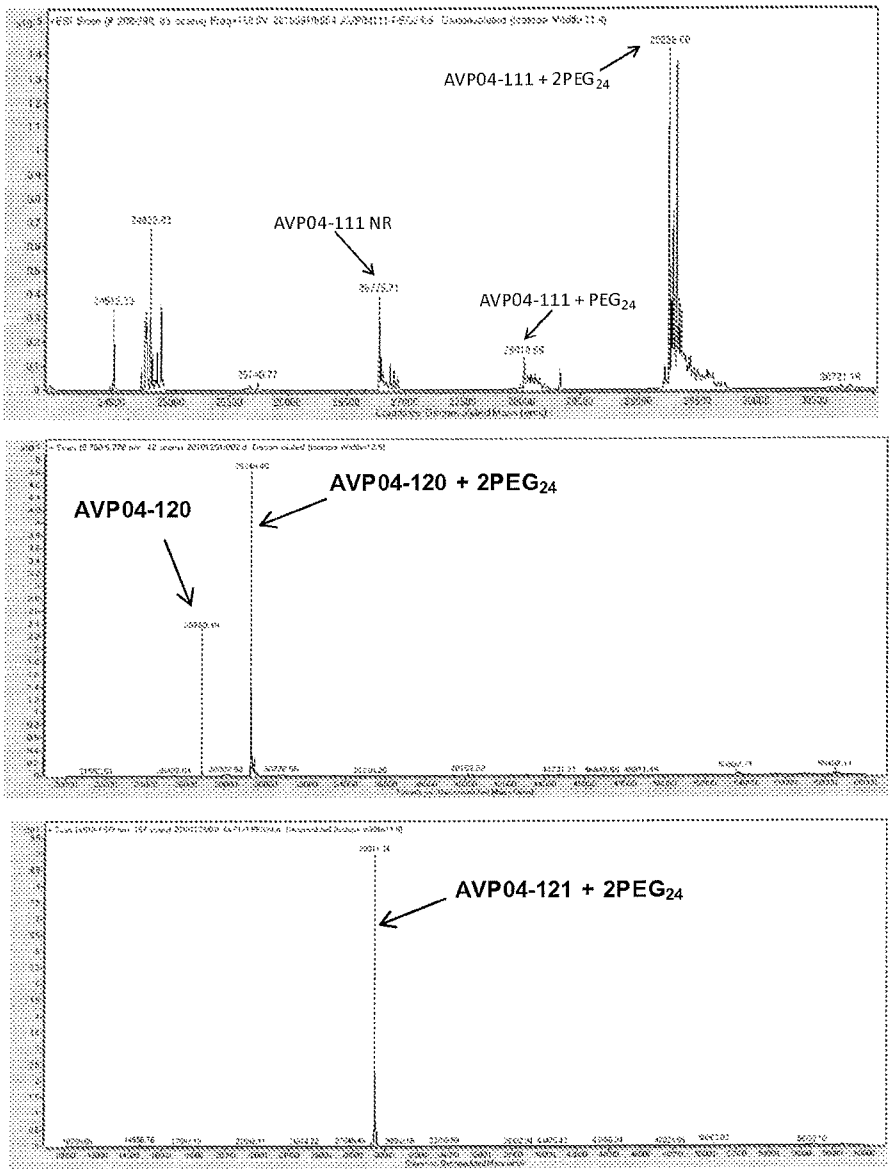

Thiol Reactivity of Thiolated Proteins upon reduction
Thiol Reactivity
0
1
2
3
4
5
6
7
AVP04-79
AVP04-111
AVP04-124 scFv
AVP04-125 Tri
AVP07-117
AVP04-123
AVP04-120
AVP04-121

Figure 23B




**AVP04-111-PEG$_{24}$**

**AVP04-120-PEG$_{24}$**

**AVP04-121-PEG$_{24}$**

**Figure 24**

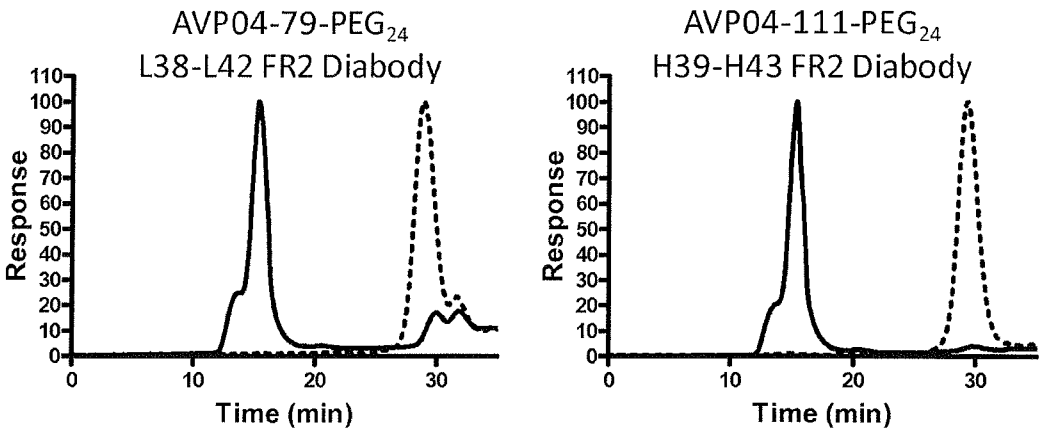

AVP04-79-PEG24
L38-L42 FR2 Diabody
Response
Time (min)
AVP04-111-PEG24
H39-H43 FR2 Diabody
Response
Time (min)

**Figure 25A**

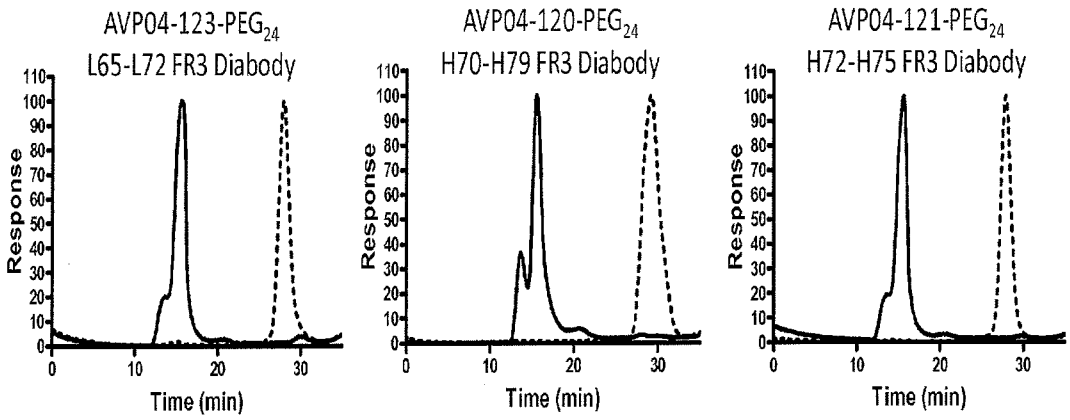

AVP04-123-PEG24
L65-L72 FR3 Diabody
AVP04-120-PEG24
H70-H79 FR3 Diabody
AVP04-121-PEG24
H72-H75 FR3 Diabody
Response
Time (min)

Figure 25B