Anti-Fucosyl GM1 3C4 VH

V-segment: VH 3-48
D-segment: D1-1
J-segment: JH6b

```
      E   V   Q   L   V   E   S   G   G   G   L   V   Q   P   G   E   S   L
1     GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTA CAG CCT GGG GAG TCC CTG

                                                         CDR1
                                                  ~~~~~~~~~~~~~~~~~~~~~
      R   L   S   C   V   A   S   G   F   T   F   S   R   Y   K   M   N   W
55    AGA CTC TCC TGT GTA GCC TCT GGA TTC ACC TTC AGT AGG TAT AAG ATG AAC TGG

                                                             CDR2
                                                          ~~~~~~~~~~~~~~~~~~~
      V   R   Q   A   P   G   K   G   L   E   W   I   S   Y   I   S   R   S
109   GTC CGC CAG GCT CCA GGG AAG GGA CTG GAA TGG ATT TCA TAC ATT AGT CGT AGT

                      CDR2
      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
      G   R   D   I   Y   Y   A   D   S   V   K   G   R   F   T   I   S   R
163   GGT CGT GAC ATA TAC TAC GCA GAC TCT GTG AAG GGC CGA TTC ACC ATC TCC AGA

      D   N   A   K   N   S   L   Y   L   Q   M   S   S   L   R   D   E   D
217   GAC AAT GCC AAG AAC TCA CTG TAT CTG CAA ATG AGC AGC CTG AGA GAC GAG GAC

                                                 CDR3
                                  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
      T   A   V   Y   Y   C   A   G   T   V   T   T   Y   Y   Y   Y   F   G
271   ACG GCT GTG TAT TAC TGT GCG GGA ACT GTC ACG ACA TAT TAT TAT TAC TTC GGT
                                     D1-1            -> JH6b
        CDR3
      ~~~~~~~~~~~~
      M   D   V   W   G   L   G   T   T   V   T   V   S   S
325   ATG GAC GTC TGG GGC CTA GGG ACC ACG GTC ACC GTC TCC TCA
```

Fig. 1A

FIG. 1B

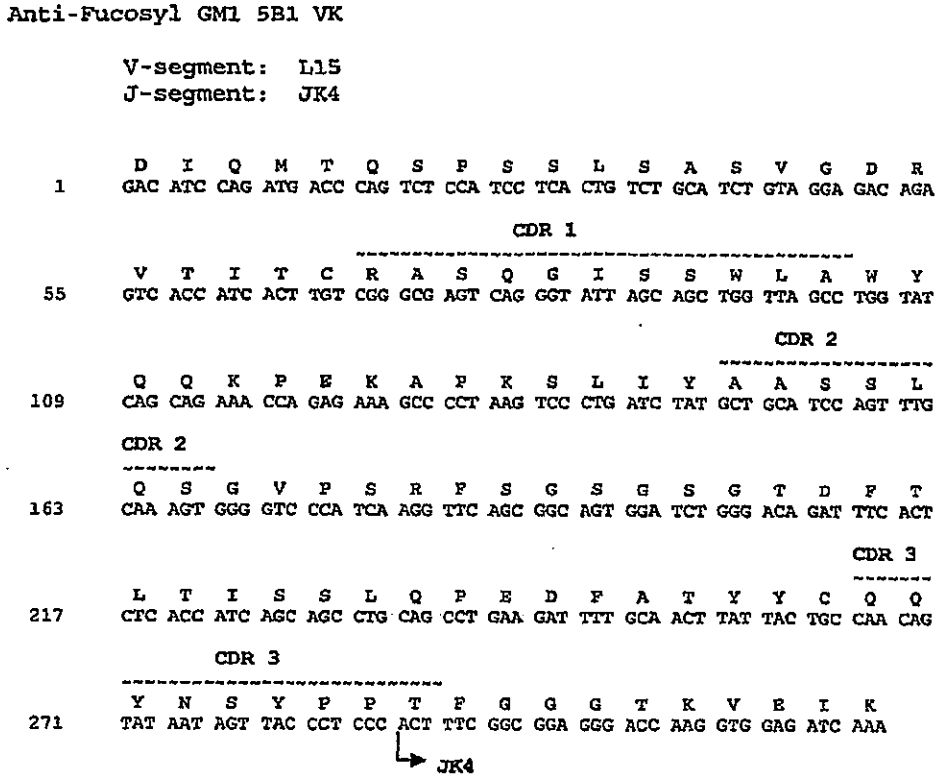

Anti-Fucosyl GM1 5B1 VK
V-segment: L15
J-segment: JK4
D I Q M T Q S P S S L S A S V G D R
1 GAC ATC CAG ATG ACC CAG TCT CCA TCC TCA CTG TCT GCA TCT GTA GGA GAC AGA
CDR 1
V T I T C R A S Q G I S S W L A W Y
55 GTC ACC ATC ACT TGT CGG GCG AGT CAG GGT ATT AGC AGC TGG TTA GCC TGG TAT
CDR 2
Q Q K P E K A F K S L I Y A A S S L
109 CAG CAG AAA CCA GAG AAA GCC CCT AAG TCC CTG ATC TAT GCT GCA TCC AGT TTG
CDR 2
Q S G V P S R F S G S G S G T D F T
163 CAA AGT GGG GTC CCA TCA AGG TTC AGC GGC AGT GGA TCT GGG ACA GAT TTC ACT
CDR 3
L T I S S L Q P E D F A T Y Y C Q Q
217 CTC ACC ATC AGC AGC CTG CAG CCT GAA GAT TTT GCA ACT TAT TAC TGC CAA CAG
CDR 3
Y N S Y P P T F G G G T K V E I K
271 TAT AAT AGT TAC CCT CCC ACT TTC GGC GGA GGG ACC AAG GTG GAG ATC AAA
JK4

FIG. 2A

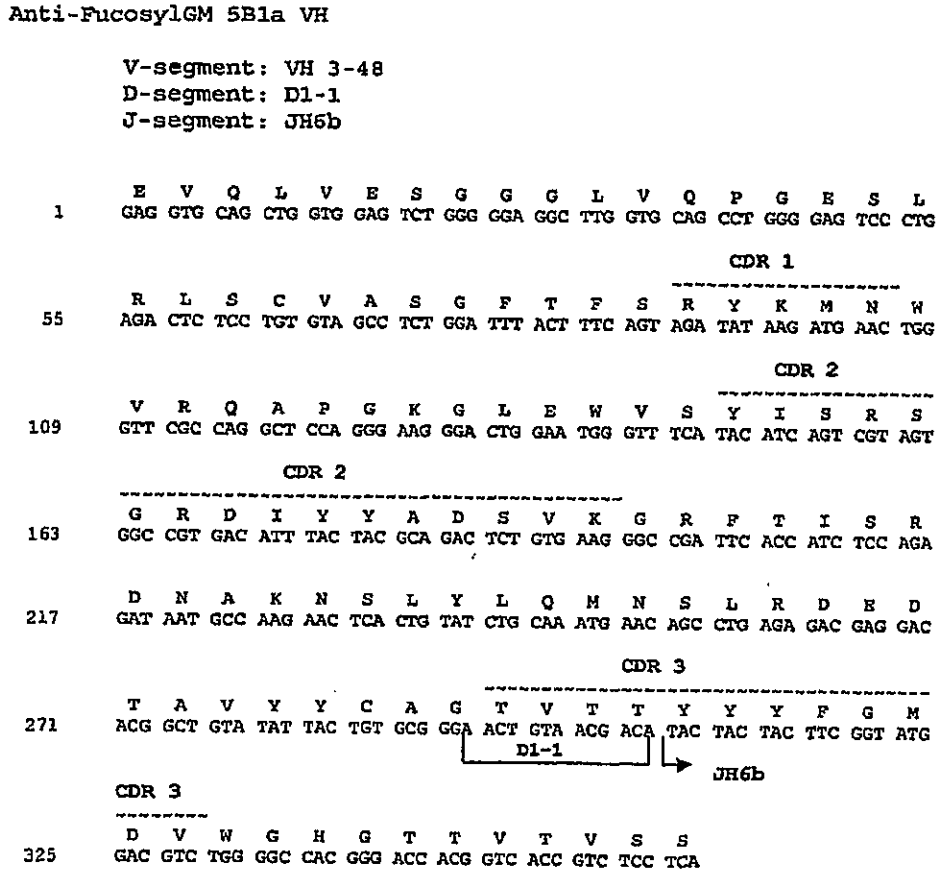

Anti-FucosylGM 5B1a VH
V-segment: VH 3-48
D-segment: D1-1
J-segment: JH6b
E V Q L V E S G G G L V Q P G E S L
1 GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTG CAG CCT GGG GAG TCC CTG
CDR 1
R L S C V A S G F T F S R Y K M N W
55 AGA CTC TCC TGT GTA GCC TCT GGA TTT ACT TTC AGT AGA TAT AAG ATG AAC TGG
CDR 2
V R Q A P G K G L E W V S Y I S R S
109 GTT CGC CAG GCT CCA GGG AAG GGA CTG GAA TGG GTT TCA TAC ATC AGT CGT AGT
CDR 2
G R D I Y Y A D S V K G R F T I S R
163 GGC CGT GAC ATT TAC TAC GCA GAC TCT GTG AAG GGC CGA TTC ACC ATC TCC AGA
D N A K N S L Y L Q M N S L R D E D
217 GAT AAT GCC AAG AAC TCA CTG TAT CTG CAA ATG AAC AGC CTG AGA GAC GAG GAC
CDR 3
T A V Y Y C A G T V T T Y Y Y F G M
271 ACG GCT GTA TAT TAC TGT GCG GGA ACT GTA ACG ACA TAC TAC TAC TTC GGT ATG
D1-1
JH6b
CDR 3
D V W G H G T T V T V S S
325 GAC GTC TGG GGC CAC GGG ACC ACG GTC ACC GTC TCC TCA

FIG. 2B

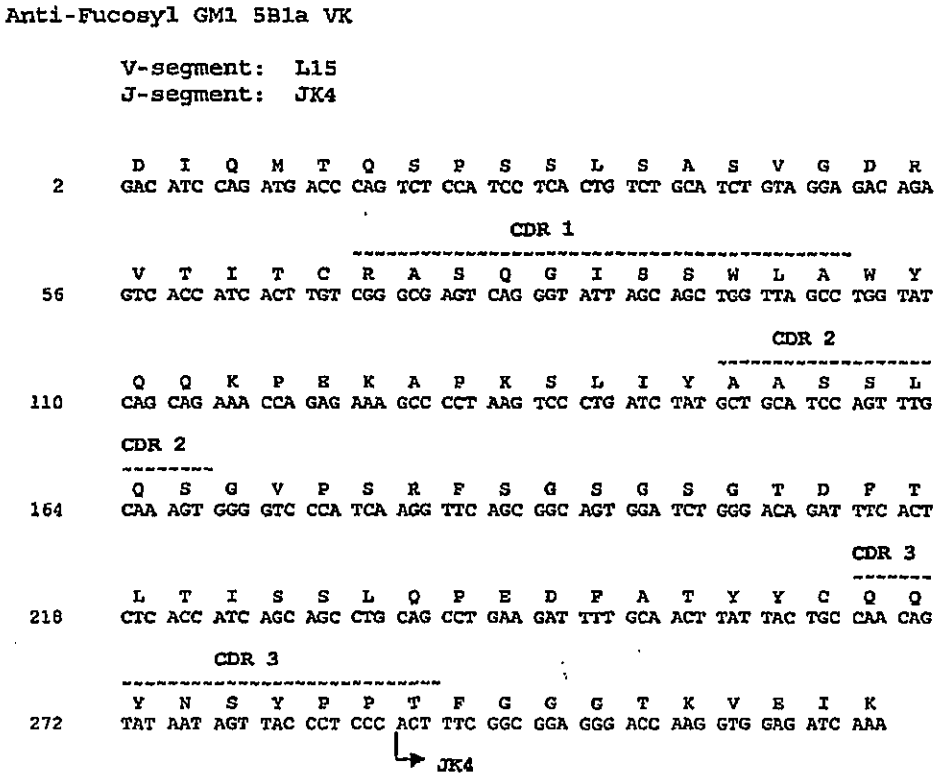

Anti-Fucosyl GM1 5B1a VK
V-segment: L15
J-segment: JK4
D I Q M T Q S P S S L S A S V G D R
2 GAC ATC CAG ATG ACC CAG TCT CCA TCC TCA CTG TCT GCA TCT GTA GGA GAC AGA
CDR 1
V T I T C R A S Q G I S S W L A W Y
56 GTC ACC ATC ACT TGT CGG GCG AGT CAG GGT ATT AGC AGC TGG TTA GCC TGG TAT
CDR 2
Q Q K P E K A P K S L I Y A A S S L
110 CAG CAG AAA CCA GAG AAA GCC CCT AAG TCC CTG ATC TAT GCT GCA TCC AGT TTG
CDR 2
Q S G V P S R F S G S G S G T D F T
164 CAA AGT GGG GTC CCA TCA AGG TTC AGC GGC AGT GGA TCT GGG ACA GAT TTC ACT
CDR 3
L T I S S L Q P E D F A T Y Y C Q Q
218 CTC ACC ATC AGC AGC CTG CAG CCT GAA GAT TTT GCA ACT TAT TAC TGC CAA CAG
CDR 3
Y N S Y P P T F G G G T K V E I K
272 TAT AAT AGT TAC CCT CCC ACT TTC GGC GGA GGG ACC AAG GTG GAG ATC AAA
JK4

FIG. 3A

Anti-Fucosyl GM1 7D4 VH

V-segment: VH 3-48
D-segment: D1-1
J-segment: JH6b

```
         E   V   Q   L   V   E   S   G   G   G   L   V   Q   P   G   E   S   L
1        GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTA CAG CCT GGG GAG TCC CTG

                                                              CDR1
                                                     ~~~~~~~~~~~~~~~~~~~~~~~~
         R   L   S   C   V   V   S   G   F   T   F   S   R   Y   K   M   N   W
55       AGA CTC TCC TGT GTA GTC TCT GGA TTC ACC TTC AGT AGG TAT AAG ATG AAC TGG

                                                                  CDR2
                                                             ~~~~~~~~~~~~~~~~~~
         V   R   Q   A   P   G   K   G   L   E   W   I   S   Y   I   S   R   S
109      GTC CGC CAG GCT CCA GGG AAG GGA CTG GAA TGG ATT TCA TAC ATT AGT CGT AGT

                     CDR2
         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
         G   R   D   I   Y   Y   A   D   S   V   K   G   R   F   T   I   S   R
163      GGT CGT GAC ATA TAC TAC GCA GAC TCT GTG AAG GGC CGA TTC ACC ATC TCC AGA

         D   N   A   K   N   S   L   Y   L   Q   M   S   S   L   R   D   E   D
217      GAC AAT GCC AAG AAC TCA CTG TAT CTG CAA ATG AGC AGC CTG AGA GAC GAG GAC

                                                      CDR3
                                         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
         T   A   V   Y   Y   C   A   G   T   V   T   T   Y   Y   Y   Y   F   G
271      ACG GCT GTG TAT TAC TGT GCG GGA ACT GTA ACG ACA TAT TAT TAT TAC TTC GGT
                                         |      D1-1     |                 |
          CDR3                           |_______________|                 |__>
         JH6b
         ~~~~~~~~
         M   D   V   W   G   L   G   T   T   V   T   V   S   S
325      ATG GAC GTC TGG GGC CTA GGG ACC ACG GTC ACC GTC TCC TCA
```

FIG. 3B

Anti-Fucosyl GM1 7D4 VK

V-segment: VK L15
J-segment: JK4

```
   1   GAC ATC CAG ATG ACC CAG TCT CCA TCC TCA CTG TCT GCA TCT GTA GGA GAC AGA

                                CDR1
                           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  55   GTC ACC ATC ACT TGT CGG GCG AGT CAG GGT ATT AGC AGC TGG TTA GCC TGG TAT

                                                                CDR2
                                                           ~~~~~~~~~~~~~~~~~~~
 109   CAG CAG AAA CCA GAG AAA GCC CCT AAG TCC CTG ATC TAT GCT GCA TCC AGT TTG

        CDR2
       ~~~~~~~~
 163   CAA AGT GGG GTC CCA TCA AGG TTC AGC GGC AGT GGA TCT GGG ACA GAT TTC ACT

                                                                      CDR3
                                                                     ~~~~~~~~
 217   CTC ACC ATC AGC TGC CTG CAG CCT GAA GAT TTT GCG ACT TAT TAC TGC CAA CAG

              CDR3
       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 271   TAT AAT AGT TAC CCT CCC ACT TTC GGC GGA GGG ACC AAG GTG GAG ATC AAA
                           └──► JK4
```

FIG. 4A

Anti-Fucosyl GM1 7E4 VH

V-segment: VH3-48
D-segment: D1-1
J-segment: JH6b

```
        E   V   Q   L   V   E   S   G   G   G   S   V   Q   P   G   R   S   L
1       GAA GTG CAG CTG GTG GAG TCT GGG GGA GGC TCG GTA CAG CCT GGG GAG TCC CTG

                                                            CDR 1
                                                        ~~~~~~~~~~~~~~~~~~~
        R   L   S   C   V   A   S   G   F   T   F   S   R   Y   K   M   N   W
55      AGA CTC TCC TGT GTA GCC TCT GGA TTC ACC TTC AGT AGG TAC AAG ATG AAC TGG

                                                                CDR 2
                                                            ~~~~~~~~~~~~~~~~~~~
        V   R   Q   A   P   G   K   G   L   E   W   V   S   Y   I   S   R   S
109     GTC CGC CAG GCT CCA GGG AAG GGA CTG GAA TGG GTT TCA TAC ATT AGT CGT AGT

                        CDR 2
        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
        G   R   D   I   Y   Y   A   D   S   V   K   G   R   F   T   I   S   R
163     GGT CGT GAC ATA TAC TAC GCA GAC TCT GTG AAG GGC CGA TTC ACC ATC TCC AGA

        D   N   A   K   N   S   L   Y   L   Q   M   N   S   L   R   D   E   D
217     GAC AAT GCC AAG AAC TCA CTG TAT CTG CAA ATG AAC AGC CTG AGA GAC GAG GAC

                                                    CDR 3
                                                ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
        T   A   V   Y   Y   C   A   G   T   V   T   T   Y   Y   Y   D   F   G
271     ACG GCT GTG TAT TAC TGT GCG GGA ACT GTA ACG ACA TAC TAC TAC GAC TTC GGT

          CDR 3                         |_____D1-1_____|  |_|
        ~~~~~~~~~~~~                                        |
        M   D   V   W   G   Q   G   T   T   V   T   V   S   S
325     ATG GAC GTC TGG GGC CAA GGG ACC ACG GTC ACC GTC TCC TCA
                                                            JH6b
```

Anti-Fucosyl GM1 7D4 VK

V-segment: L15
J-segment: JK4

```
                D   I   Q   M   T   Q   S   P   S   S   L   S   A   S   V   G   D   R
1               GAC ATC CAG ATG ACC CAG TCT CCA TCC TCA CTG TCT GCA TCT GTA GGA GAC AGA

                                        CDR1
                                        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
                V   T   I   T   C   R   A   S   Q   G   I   S   S   W   L   A   W   Y
55              GTC ACC ATC ACT TGT CGG GCG AGT CAG GGT ATT AGC AGC TGG TTA GCC TGG TAT

                                                                    CDR2
                                                                    ~~~~~~~~~~~~~~~~~~~
                Q   Q   K   P   E   K   A   P   K   S   L   I   Y   A   A   S   S   L
109             CAG CAG AAA CCA GAG AAA GCC CCT AAG TCC CTG ATC TAT GCT GCA TCC AGT TTG

                CDR2
                ~~~~~~~~
                Q   S   G   V   P   S   R   F   S   G   S   G   S   G   T   D   F   T
163             CAA AGT GGG GTC CCA TCA AGG TTC AGC GGC AGT GGA TCT GGG ACA GAT TTC ACT

                                                                                CDR3
                                                                                ~~~~~~~
                L   T   I   S   C   L   Q   P   E   D   F   A   T   Y   Y   C   Q   Q
217             CTC ACC ATC AGC TGC CTG CAG CCT GAA GAT TTT GCG ACT TAT TAC TGC CAA CAG
-------------------------------------------------------------------------------------------
                        CDR3
                        ~~~~~~~~~~~~~~~~~~~~~~~~~~~
                Y   N   S   Y   P   P   T   F   G   G   G   T   K   V   E   I   K
271             TAT AAT AGT TAC CCT CCC ACT TTC GGC GGA GGG ACC AAG GTG GAG ATC AAA
                                    |
                                    └──► JK4
```

Fig. 4B

FIG. 5A

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Anti-Fucosyl GM1 13B8 VH

V-segment: VH3-48
D-segment: D1-1
J-segment: JH6b

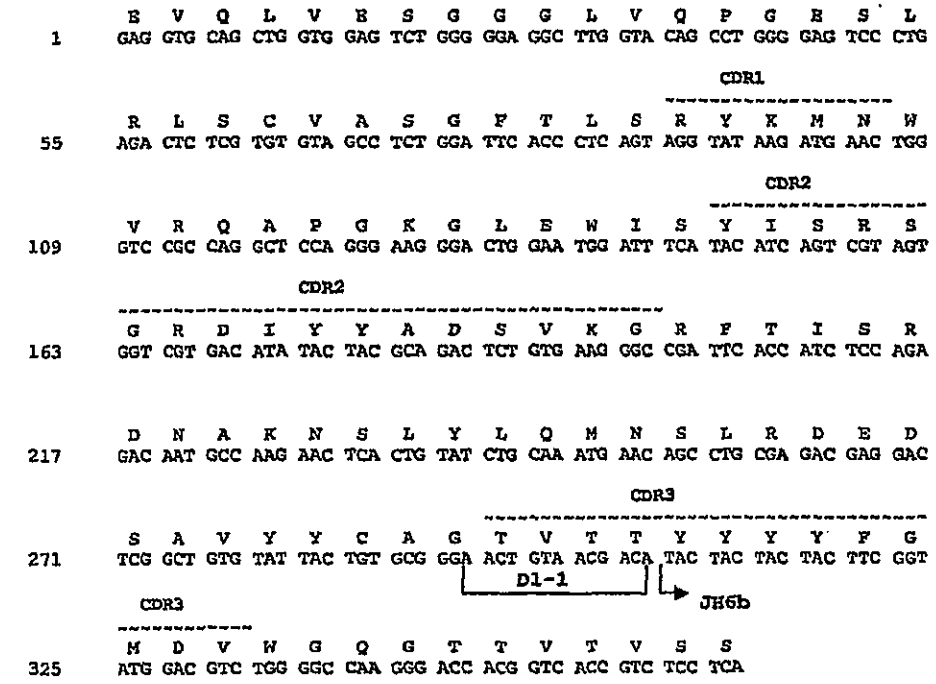
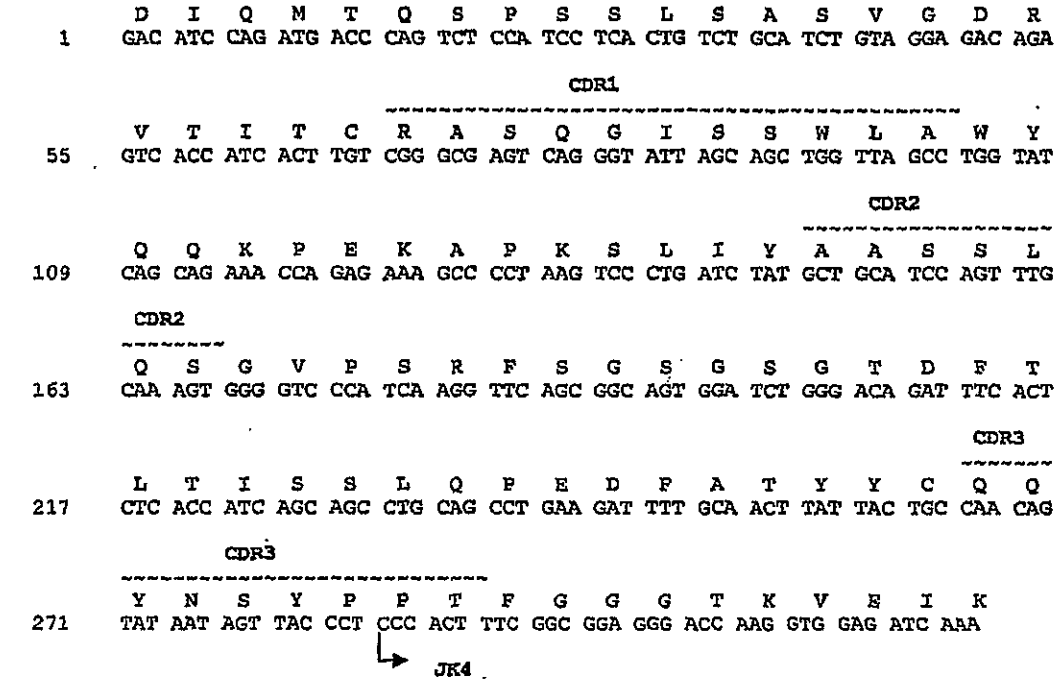


FIG. 5B

Anti-Fucosyl GM1 13B8 VK

V-segment: L15
J-segment: JK4



Anti-Fucosyl GM1 13B8 VH

V-segment: VH3-48
D-segment: D1-1
J-segment: JH6b

```
       E   V   Q   L   V   E   S   G   G   G   L   V   Q   P   G   E   S   L
  1    GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTA CAG CCT GGG GAG TCC CTG

                                                           CDR1
                                                       ~~~~~~~~~~~~~~~~~~~~~~
       R   L   S   C   V   A   S   G   F   T   L   S   R   Y   K   M   N   W
 55    AGA CTC TCG TGT GTA GCC TCT GGA TTC ACC CTC AGT AGG TAT AAG ATG AAC TGG

                                                               CDR2
                                                           ~~~~~~~~~~~~~~~~~~
       V   R   Q   A   P   G   K   G   L   E   W   I   S   Y   I   S   R   S
109    GTC CGC CAG GCT CCA GGG AAG GGA CTG GAA TGG ATT TCA TAC ATC AGT CGT AGT

                   CDR2
       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
       G   R   D   I   Y   Y   A   D   S   V   K   G   R   F   T   I   S   R
163    GGT CGT GAC ATA TAC TAC GCA GAC TCT GTG AAG GGC CGA TTC ACC ATC TCC AGA

       D   N   A   K   N   S   L   Y   L   Q   M   N   S   L   R   D   E   D
217    GAC AAT GCC AAG AAC TCA CTG TAT CTG CAA ATG AAC AGC CTG CGA GAC GAG GAC

                                                       CDR3
                                       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
       S   A   V   Y   Y   C   A   G   T   V   T   T   Y   Y   Y   Y   F   G
271    TCG GCT GTG TAT TAC TGT GCG GGA ACT GTA ACG ACA TAC TAC TAC TAC TTC GGT
                                      |______D1-1______| |->  JH6b
        CDR3
       ~~~~~~~~~~
       M   D   V   W   G   Q   G   T   T   V   T   V   S   S
325    ATG GAC GTC TGG GGC CAA GGG ACC ACG GTC ACC GTC TCC TCA
```

Fig. 6A

Anti-Fucosyl GM1 13B8 VK

V-segment: L15
J-segment: JK4

```
      D   I   Q   M   T   Q   S   P   S   S   L   S   A   S   V   G   D   R
1     GAC ATC CAG ATG ACC CAG TCT CCA TCC TCA CTG TCT GCA TCT GTA GGA GAC AGA

                              CDR1
                          ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
      V   T   I   T   C   R   A   S   Q   G   I   S   S   W   L   A   W   Y
55    GTC ACC ATC ACT TGT CGG GCG AGT CAG GGT ATT AGC AGC TGG TTA GCC TGG TAT

                                                                CDR2
                                                            ~~~~~~~~~~~~~~~~~~
      Q   Q   K   P   E   K   A   P   K   S   L   I   Y   A   A   S   S   L
109   CAG CAG AAA CCA GAG AAA GCC CCT AAG TCC CTG ATC TAT GCT GCA TCC AGT TTG

      CDR2
      ~~~~~~~~
      Q   S   G   V   P   S   R   F   S   G   S   G   S   G   T   D   F   T
163   CAA AGT GGG GTC CCA TCA AGG TTC AGC GGC AGT GGA TCT GGG ACA GAT TTC ACT

                                                                    CDR3
                                                                    ~~~~~~~
      L   T   I   S   S   L   Q   P   E   D   F   A   T   Y   Y   C   Q   Q
217   CTC ACC ATC AGC AGC CTG CAG CCT GAA GAT TTT GCA ACT TAT TAC TGC CAA CAG

              CDR3
      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
      Y   N   S   Y   P   P   T   F   G   G   G   T   K   V   E   I   K
271   TAT AAT AGT TAC CCT CCC ACT TTC GGC GGA GGG ACC AAG GTG GAG ATC AAA
                          └──►
                          JK4
```

Fig. 6B

Anti-Fucosyl GM1 13B8, 18D5, 5B1, 7D4, 7E4 VH regions

3-48 germline	E	V	Q	L	V	E	S	G	G	G	L	V	Q	P	G	G	S	L	R	L	S	C	A	A	S	G	F	T	F	S
13B8 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	-	-	-	-	-	-	V	-	-	-	-	-	L	-
18D5 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	-	-	-	-	-	-	V	-	-	-	-	-	-	-
5B1 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	-	-	-	-	-	-	V	-	-	-	-	-	-	-
5B1a VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	-	-	-	-	-	-	V	-	-	-	-	-	-	-
7D4 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	-	-	-	-	-	-	V	V	-	-	-	-	-	-
7E4 VH	-	-	-	-	-	-	-	-	-	-	S	-	-	-	-	E	-	-	-	-	-	-	V	-	-	-	-	-	-	-
	CDR1																			CDR2										
3-48 germline	S	Y	S	M	N	W	V	R	Q	A	P	G	K	G	L	E	W	V	S	Y	I	S	S	S	S	S	T	I	Y	Y
13B8 VH	R	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	-	-	-	-	R	-	G	R	D	-	-	-
18D5 VH	R	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	-	-	-	-	R	-	G	R	D	-	-	-
5B1 VH	R	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	G	R	D	-	-	-
5B1a VH	R	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	G	R	D	-	-	-
7D4 VH	R	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	-	-	-	-	R	-	G	R	D	-	-	-
7E4 VH	R	-	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	G	R	D	-	-	-
	CDR2																													
3-48 germline	A	D	S	V	K	G	R	F	T	I	S	R	D	N	A	K	N	S	L	Y	L	Q	M	N	S	L	R	D	E	D
13B8 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18D5 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S	-	-	-	-	-	-
5B1 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1a VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7D4 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S	-	-	-	-	-	-
7E4 VH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								CDR3																						
3-48 germline	T	A	V	Y	Y	C	A	R																						
13B8 VH	S	-	-	-	-	-	-	G	T	V	T	T	Y	Y	Y	Y	F	G	M	D	V	W	G	Q	G	T	T	V	T	V
18D5 VH	-	-	-	-	-	-	-	G	T	V	T	T	Y	Y	Y	Y	F	G	M	D	V	W	G	L	G	T	T	V	T	V
5B1 VH	-	-	-	-	-	-	-	G	T	V	T	T	Y	Y	Y	Y	F	G	M	D	V	W	G	H	G	T	T	V	T	V
5B1a VH	-	-	-	-	-	-	-	G	T	V	T	T	*	Y	Y	Y	F	G	M	D	V	W	G	H	G	T	T	V	T	V
7D4 VH	-	-	-	-	-	-	-	G	T	V	T	T	Y	Y	Y	Y	F	G	M	D	V	W	G	L	G	T	T	V	T	V
7E4 VH	-	-	-	-	-	-	-	G	T	V	T	T	Y	Y	Y	D	F	G	M	D	V	W	G	Q	G	T	T	V	T	V

13B8 VH	S	S
18D5 VH	S	S
5B1 VH	S	S
5B1a VH	S	S
7D4 VH	S	S
7E4 VH	S	S

Fig. 7

Anti-FucosylGM 13B8, 18D5, 5B1, 5B1a, 7D4, 7E4 VK regions

																						CDR1						
L15 germline	D	I	Q	M	T	Q	S	P	S	S	L	S	A	S	V	G	D	R	V	T	I	T	C	R	A	S	Q	G	I	S
13B8 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18D5 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1a VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7D4 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7E4 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			CDR1																CDR2											
L15 germline	S	W	L	A	W	Y	Q	Q	K	P	E	K	A	P	K	S	L	I	Y	A	A	S	S	L	Q	S	G	V	P	S
13B8 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18D5 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1a VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7D4 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7E4 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

																												CDR3	
L15 germline	R	F	S	G	S	G	S	G	T	D	F	T	L	T	I	S	S	L	Q	P	E	D	F	A	T	Y	Y	C	Q	Q
13B8 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18D5 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5B1a VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7D4 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-
7E4 VK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	CDR3																
L15 germline	Y	N	S	Y	P												
13B8 VK	-	-	-	-	-	P	T	F	G	G	G	T	K	V	E	I	K (JK4)
18D5 VK	-	-	-	-	-	P	T	F	G	G	G	T	K	V	E	I	K (JK4)
5B1 VK	-	-	-	-	-	P	T	F	G	G	G	T	K	V	E	I	K (JK4)
5B1a VK	-	-	-	-	-	P	T	F	G	G	G	T	K	V	E	I	K (JK4)
7D4 VK	-	-	-	-	-	P	T	F	G	G	G	T	K	V	E	I	K (JK4)
7E4 VK	-	-	-	-	-	P	T	F	G	G	G	T	K	V	E	I	K (JK4)

Fig. 8

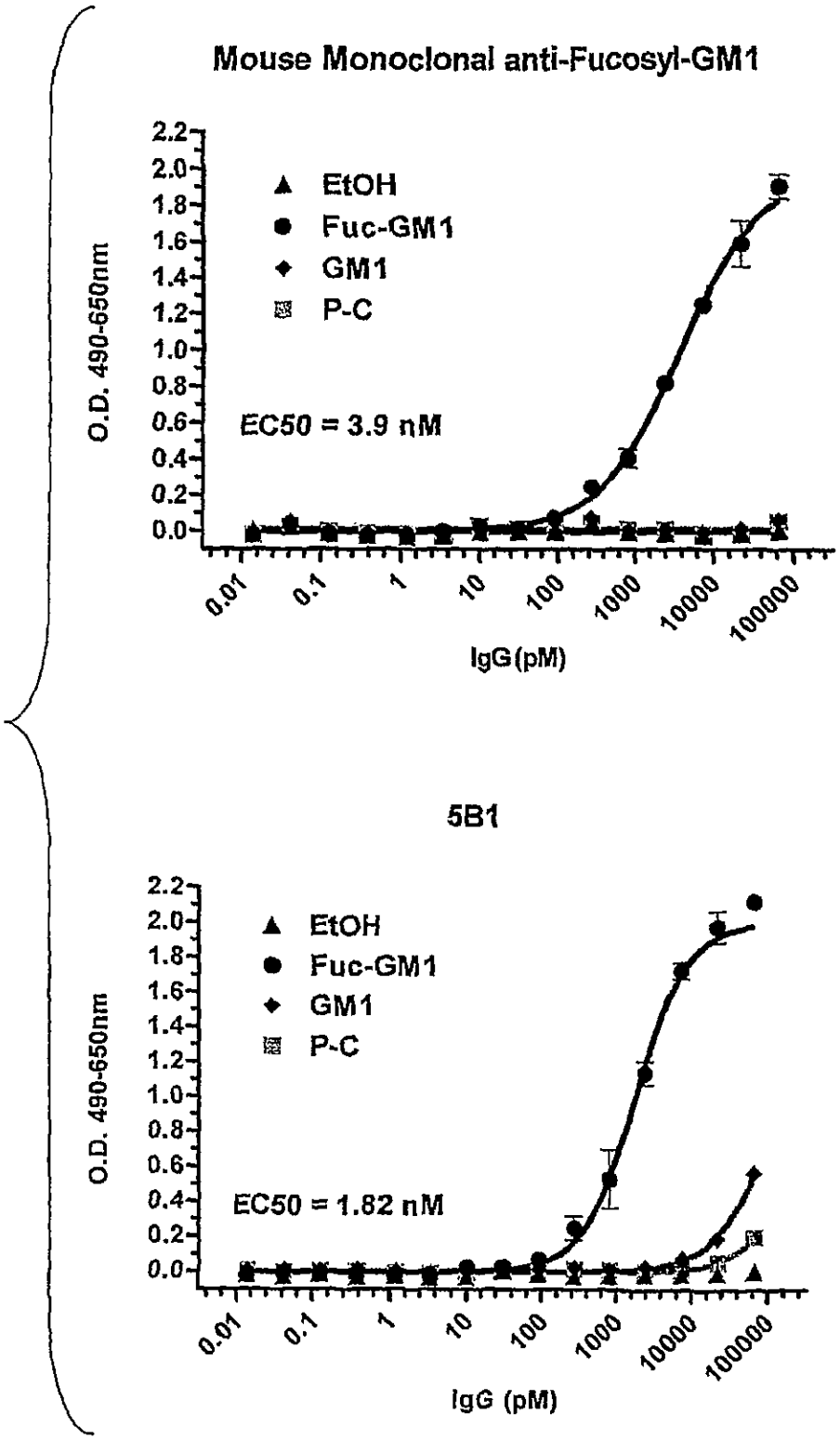

Mouse Monoclonal anti-Fucosyl-GM1
O.D. 490-650nm
EtOH
Fuc-GM1
GM1
P-C
EC50 = 3.9 nM
IgG(pM)
5B1
O.D. 490-650nm
EtOH
Fuc-GM1
GM1
P-C
EC50 = 1.82 nM
IgG (pM)

Fig. 9A

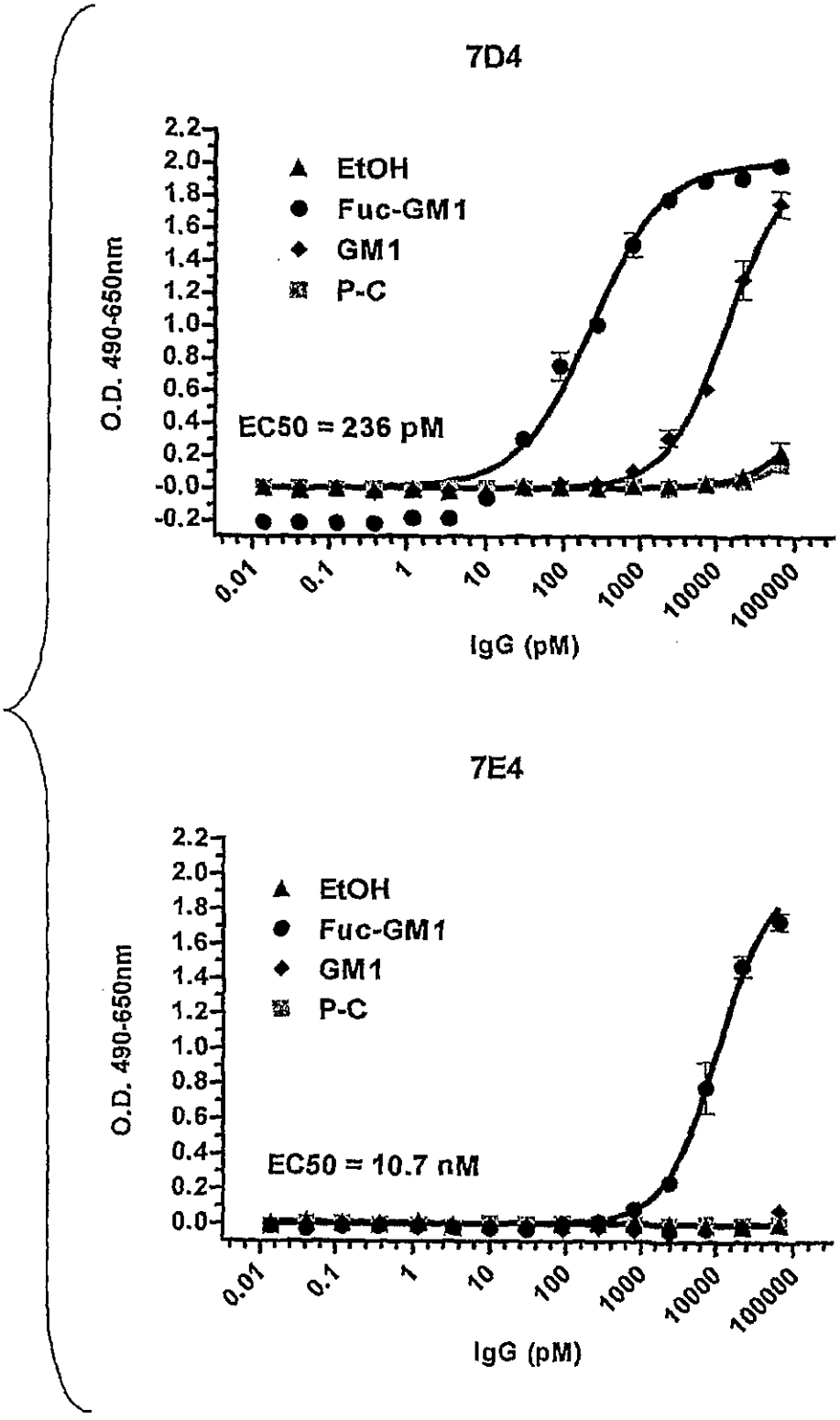

7D4
O.D. 490-650nm
EtOH
Fuc-GM1
GM1
P-C
EC50 = 236 pM
IgG (pM)
7E4
O.D. 490-650nm
EtOH
Fuc-GM1
GM1
P-C
EC50 = 10.7 nM
IgG (pM)

Fig. 9B

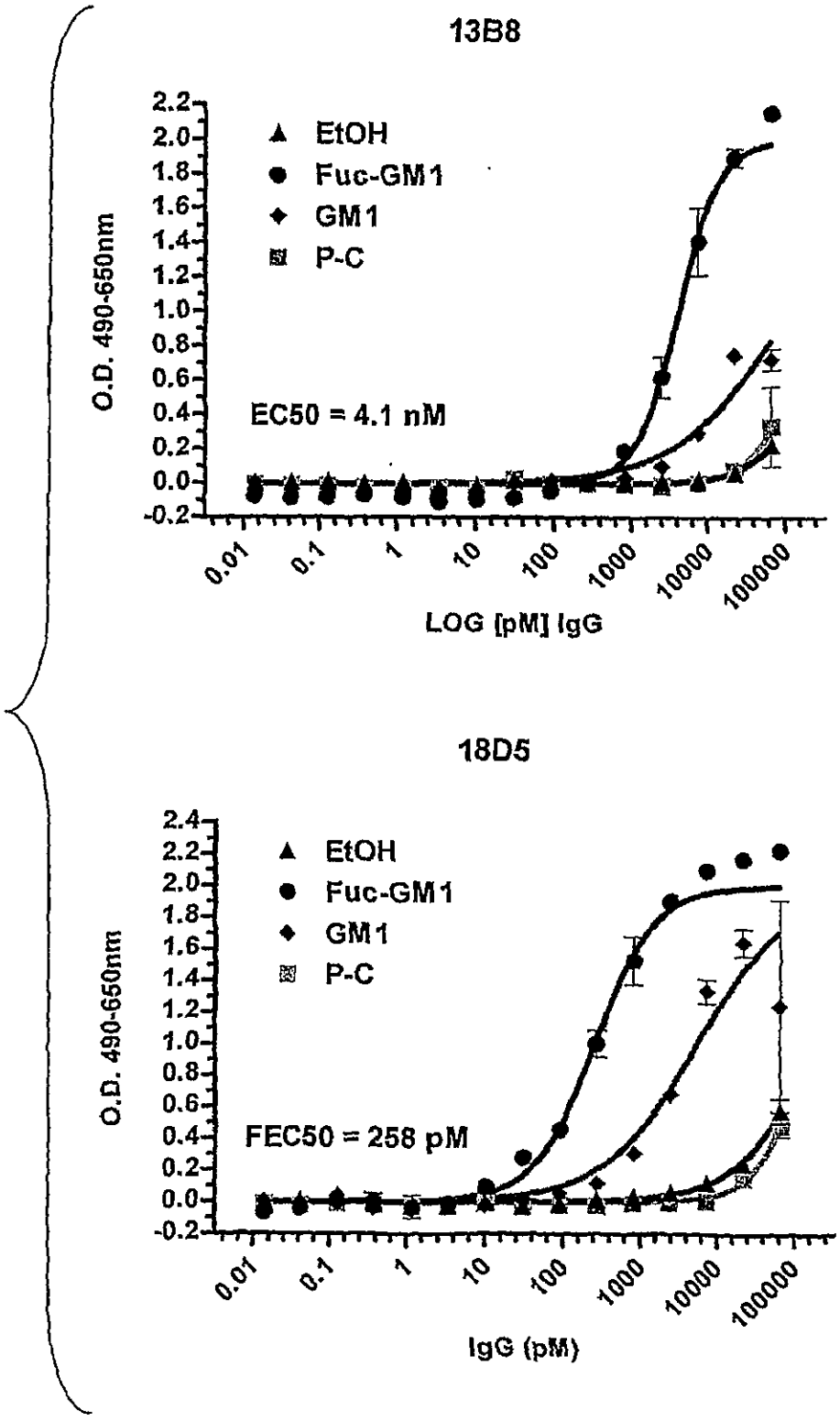

13B8
O.D. 490-650nm
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
EtOH
Fuc-GM1
GM1
P-C
EC50 = 4.1 nM
0.01
0.1
1
10
100
1000
10000
100000
LOG [pM] IgG
18D5
O.D. 490-650nm
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
EtOH
Fuc-GM1
GM1
P-C
FEC50 = 258 pM
0.01
0.1
1
10
100
1000
10000
100000
IgG (pM)

Fig. 9C

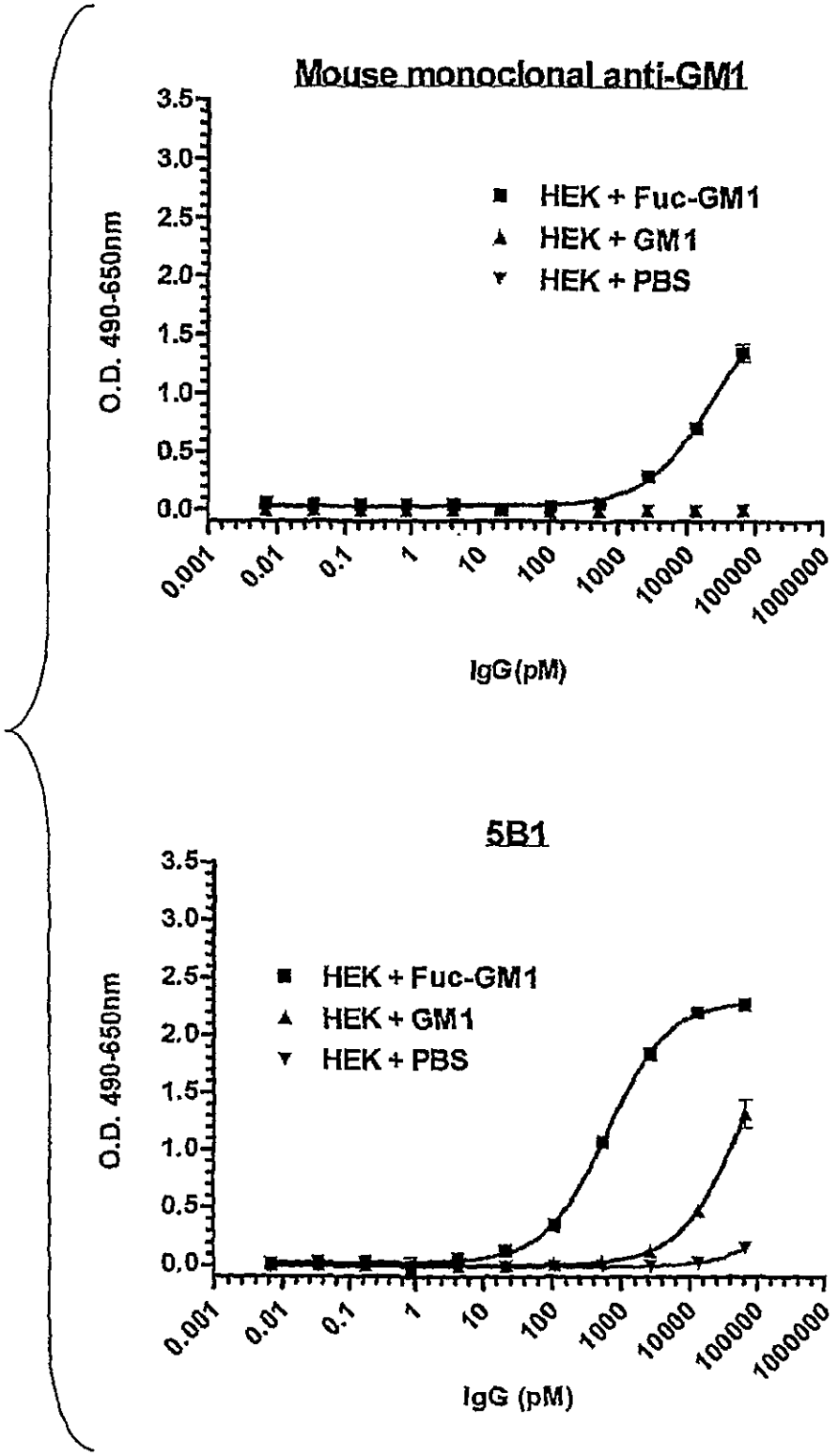

Mouse monoclonal anti-GM1
O.D. 490-650nm
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
HEK + Fuc-GM1
HEK + GM1
HEK + PBS
0.001
0.01
0.1
1
10
100
1000
10000
100000
1000000
IgG (pM)
5B1
O.D. 490-650nm
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
HEK + Fuc-GM1
HEK + GM1
HEK + PBS
0.001
0.01
0.1
1
10
100
1000
10000
100000
1000000
IgG (pM)

Fig. 10A

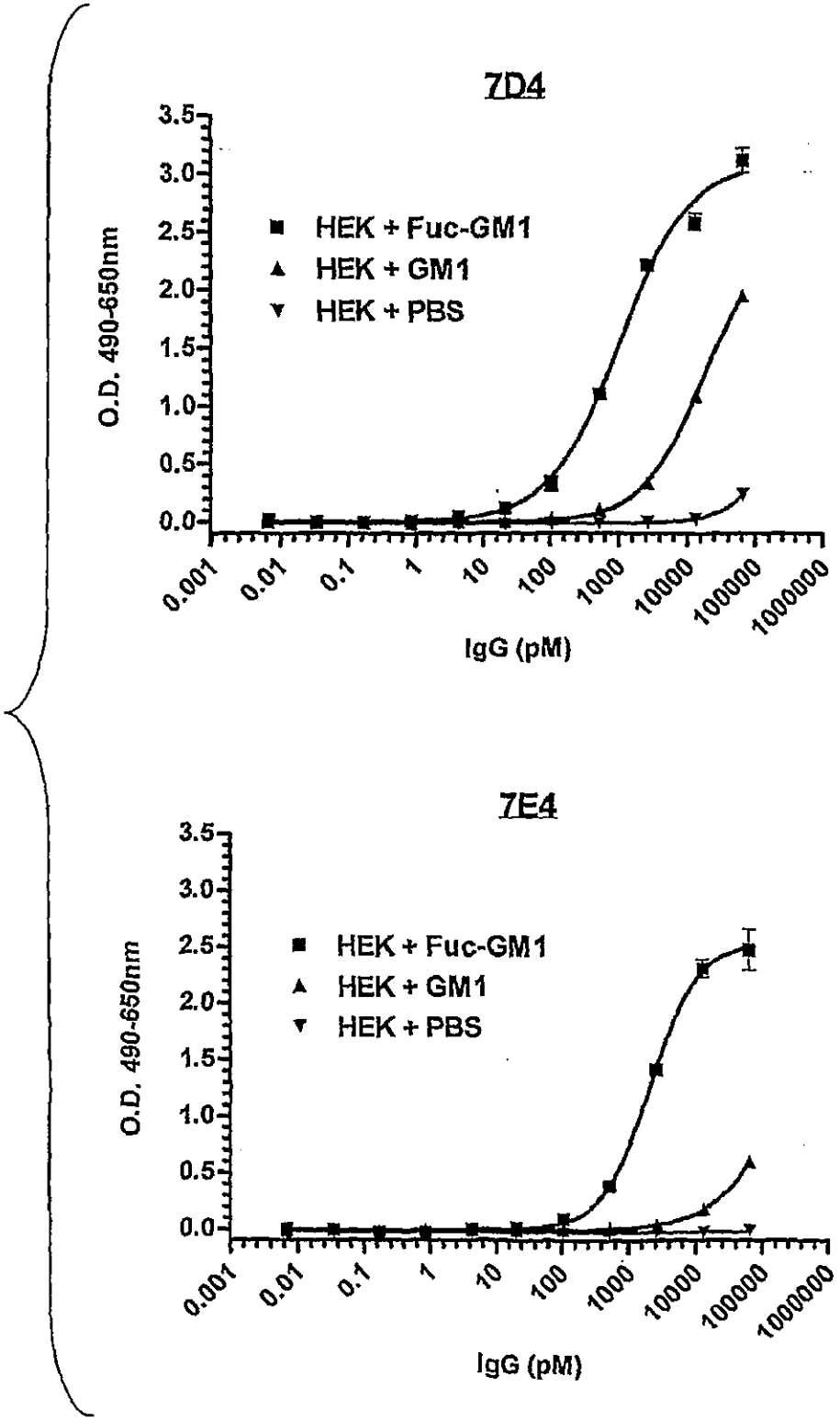

7D4
O.D. 490-650nm
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
HEK + Fuc-GM1
HEK + GM1
HEK + PBS
0.001
0.01
0.1
1
10
100
1000
10000
100000
1000000
IgG (pM)
7E4
O.D. 490-650nm
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
HEK + Fuc-GM1
HEK + GM1
HEK + PBS
0.001
0.01
0.1
1
10
100
1000
10000
100000
1000000
IgG (pM)

Fig. 10B

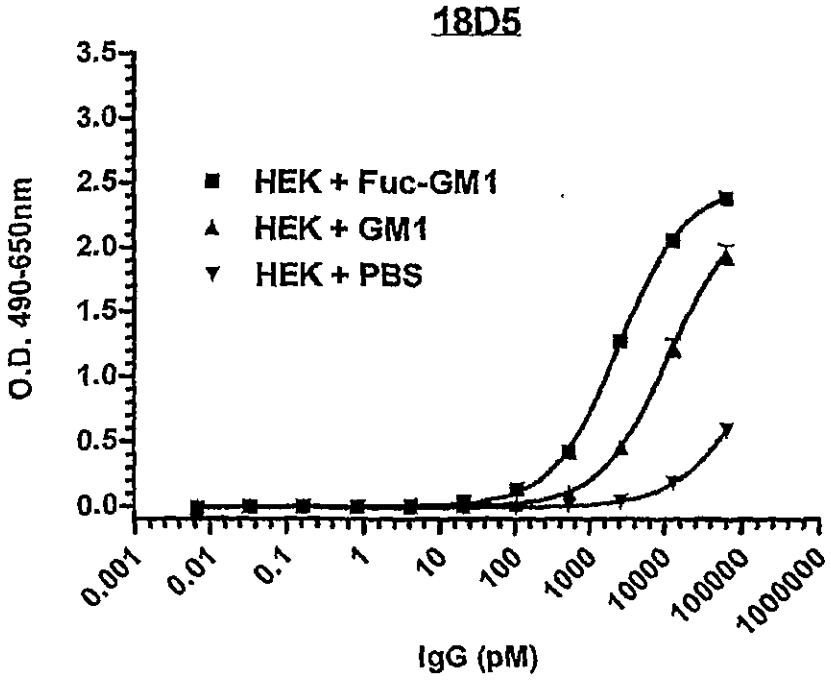

18D5
O.D. 490-650nm
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
HEK + Fuc-GM1
HEK + GM1
HEK + PBS
0.001
0.01
0.1
1
10
100
1000
10000
100000
1000000
IgG (pM)

Fig. 10C

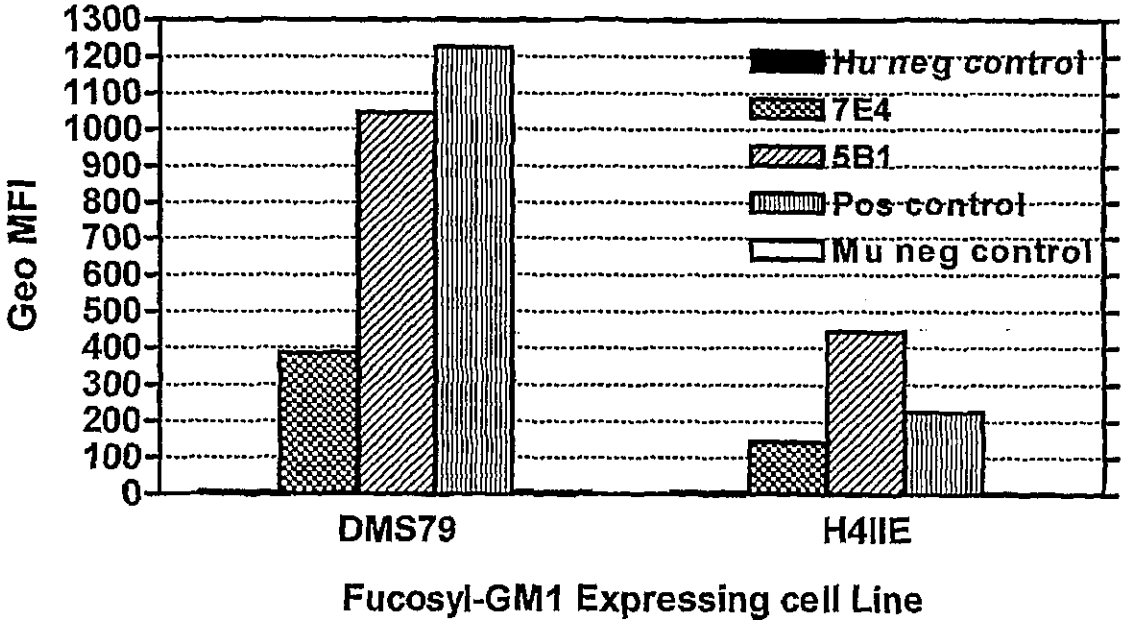

1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
Geo MFI
Hu neg control
7E4
5B1
Pos control
Mu neg control
DMS79
H4IIE
Fucosyl-GM1 Expressing cell Line

Fig. 11A

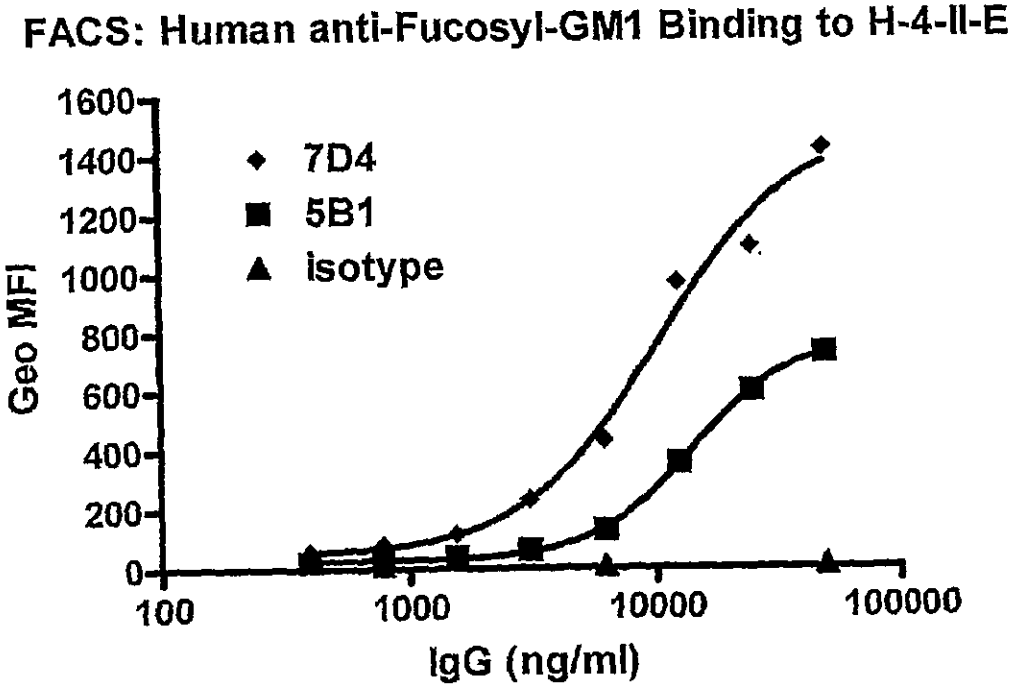

FACS: Human anti-Fucosyl-GM1 Binding to H-4-II-E
Geo MFI
1600
1400
1200
1000
800
600
400
200
0
7D4
5B1
isotype
100
1000
10000
100000
IgG (ng/ml)

Fig. 11B

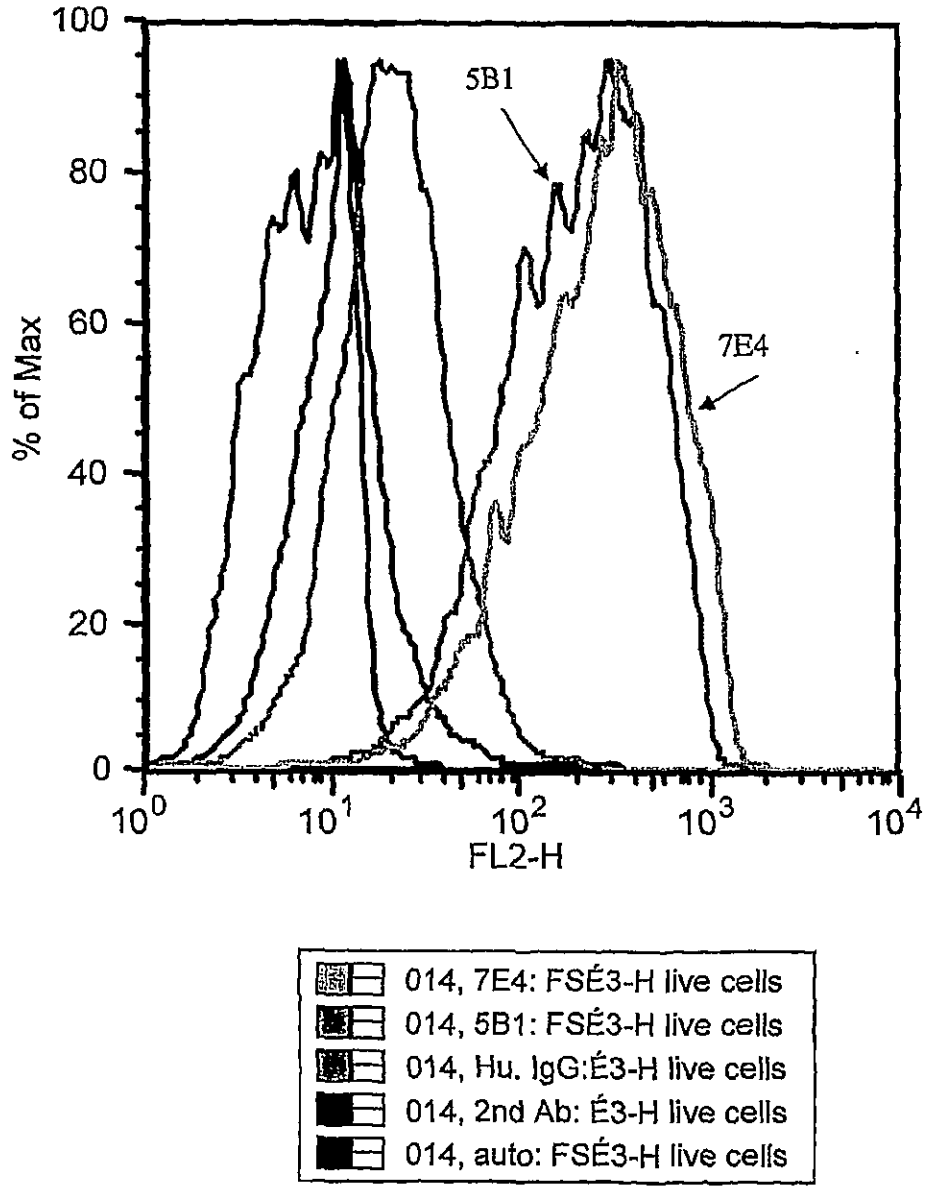
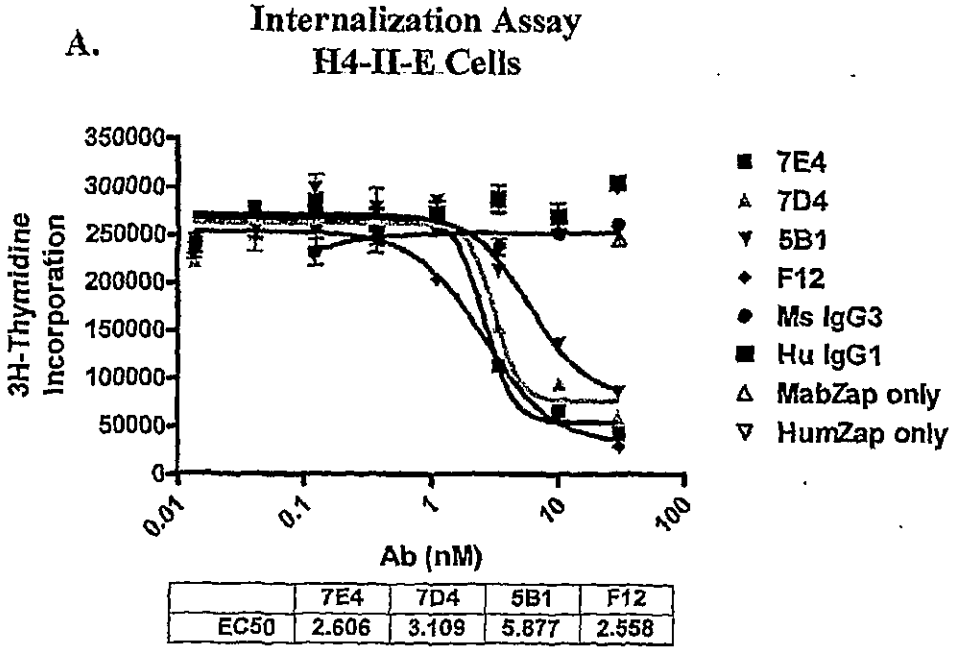

100
80
60
40
20
0
% of Max
5B1
7E4
10^0
10^1
10^2
10^3
10^4
FL2-H
014, 7E4: FSÉ3-H live cells
014, 5B1: FSÉ3-H live cells
014, Hu. IgG:É3-H live cells
014, 2nd Ab: É3-H live cells
014, auto: FSÉ3-H live cells

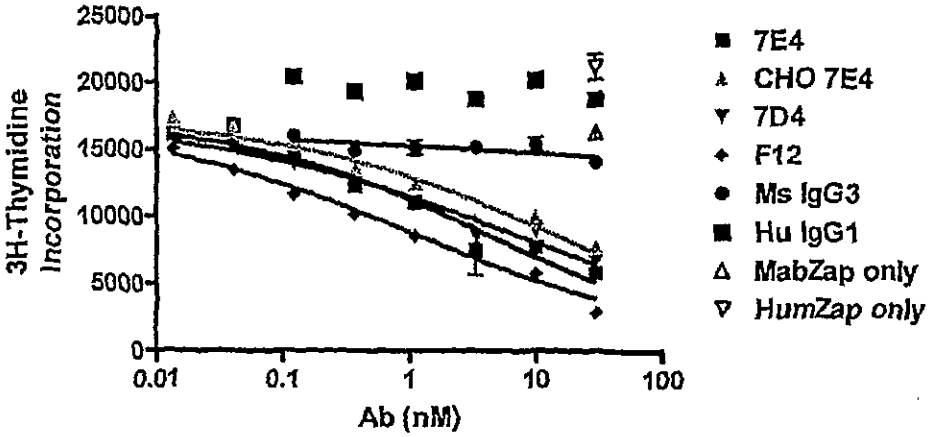
Fig. 11C

A.



	7E4	7D4	5B1	F12
EC50	2.606	3.109	5.877	2.558

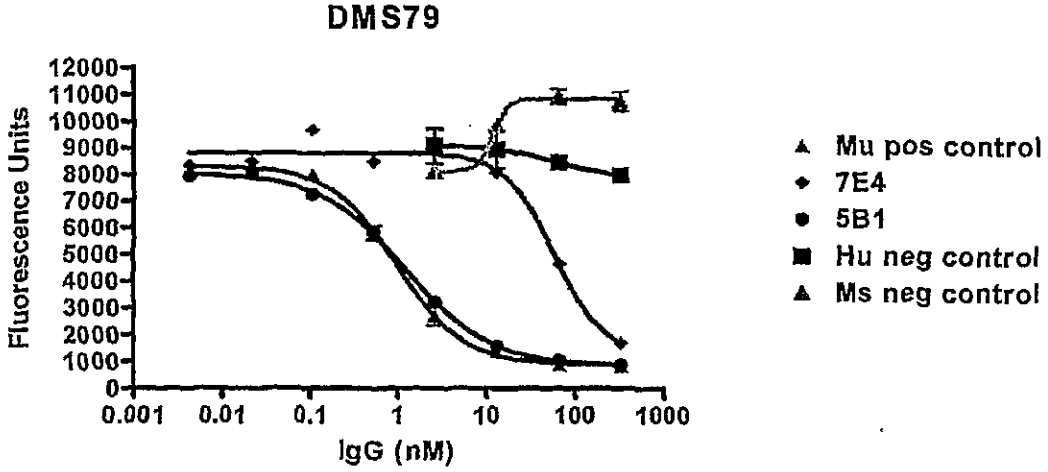
B.



	7E4	CHO 7E4	7D4	F12
EC50	4.049	13.80	6.692	1.105

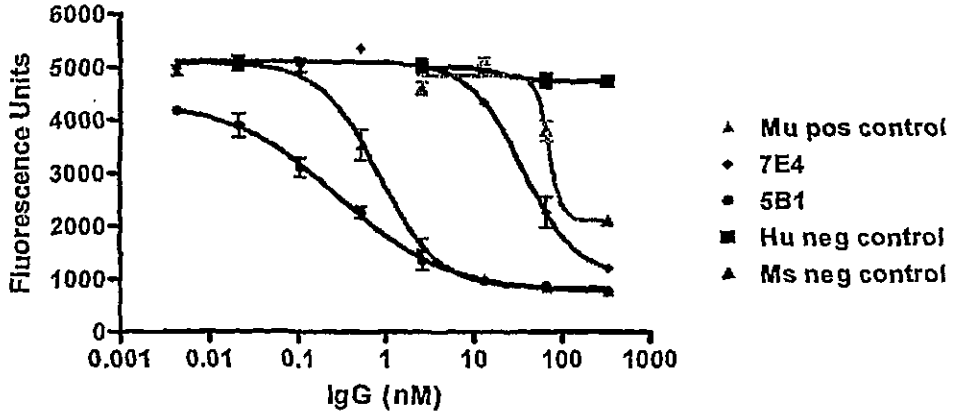
Fig. 12

A.



	F12	7E4	5B1
EC50	0.9833	58.88	1.231

B.



	F12	7E4	5B1
EC50	0.8727	36.73	0.2960

Fig. 13

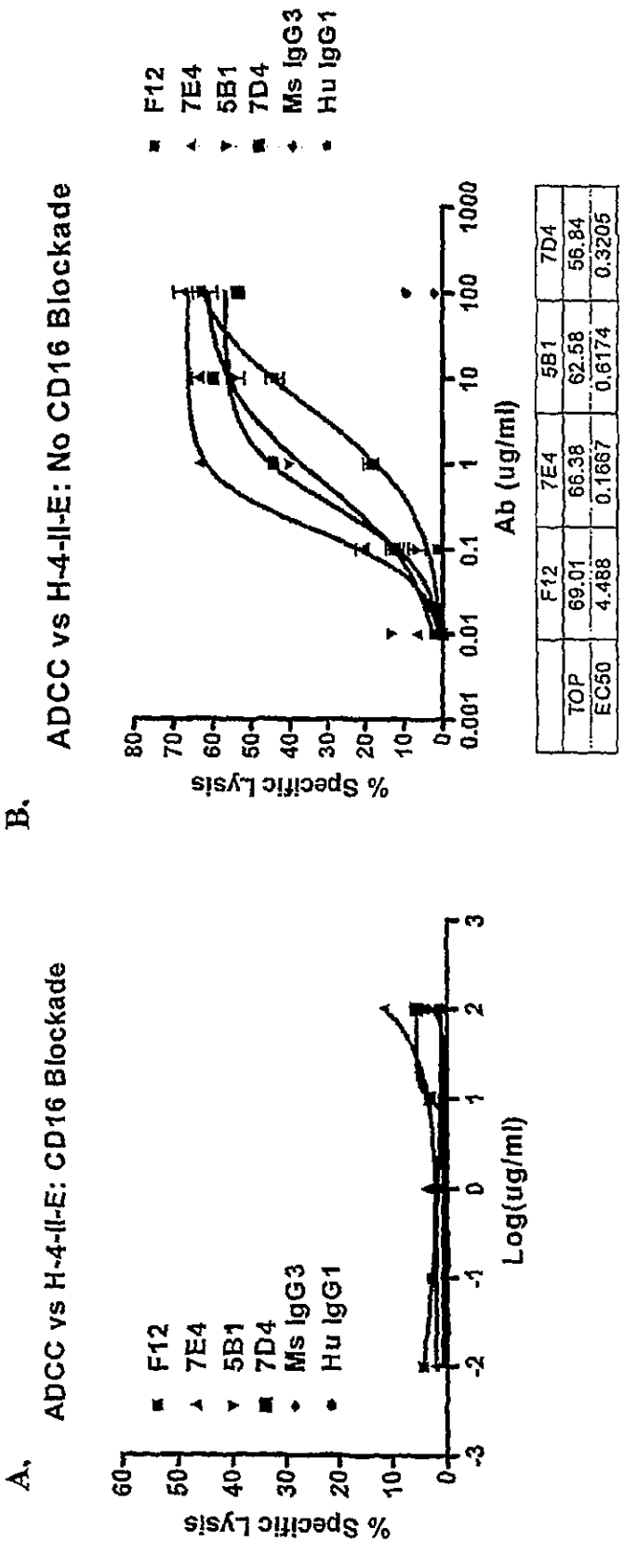

A.
ADCC vs H-4-II-E: CD16 Blockade
F12
7E4
5B1
7D4
Ms IgG3
Hu IgG1
% Specific Lysis
Log(ug/ml)
B.
ADCC vs H-4-II-E: No CD16 Blockade
% Specific Lysis
Ab (ug/ml)
TOP
EC50
F12 69.01 4.488
7E4 66.38 0.1667
5B1 62.58 0.6174
7D4 56.84 0.3205

Fig. 14

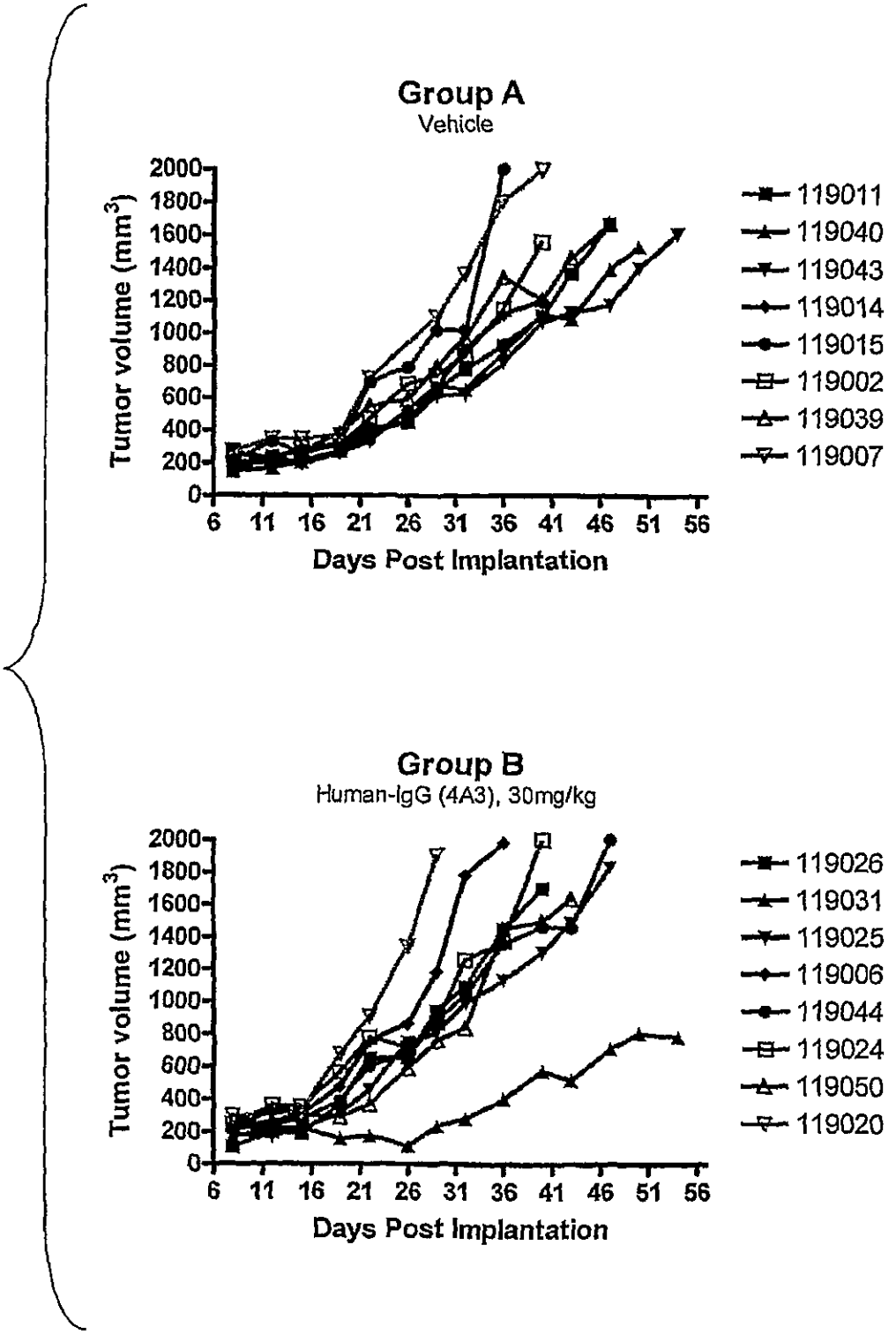

Group A
Vehicle
Tumor volume (mm3)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6 11 16 21 26 31 36 41 46 51 56
Days Post Implantation
119011
119040
119043
119014
119015
119002
119039
119007
Group B
Human-IgG (4A3), 30mg/kg
Tumor volume (mm3)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6 11 16 21 26 31 36 41 46 51 56
Days Post Implantation
119026
119031
119025
119006
119044
119024
119050
119020

Fig. 15A

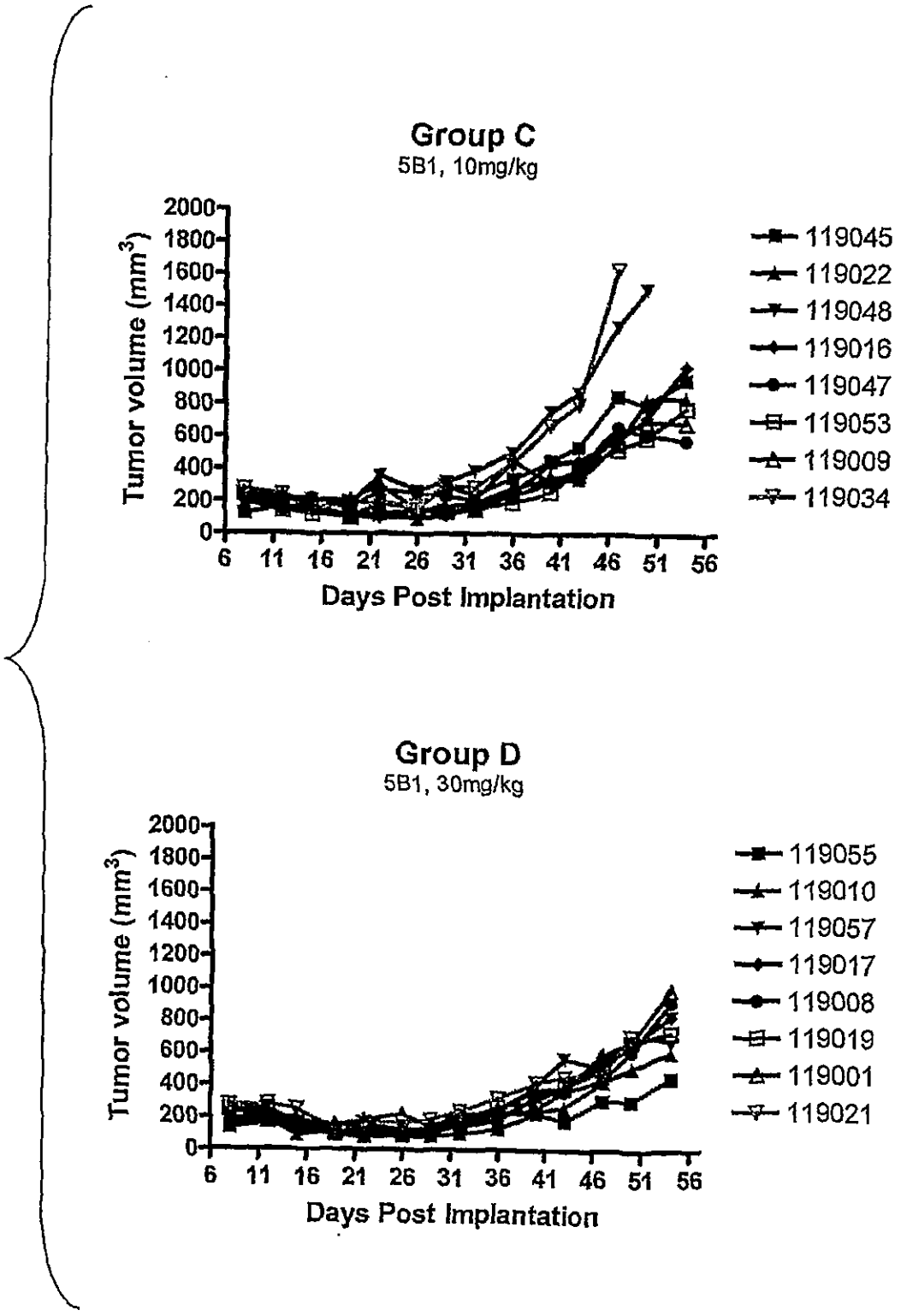

Group C
5B1, 10mg/kg
Tumor volume (mm3)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6 11 16 21 26 31 36 41 46 51 56
Days Post Implantation
119045
119022
119048
119016
119047
119053
119009
119034
Group D
5B1, 30mg/kg
Tumor volume (mm3)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6 11 16 21 26 31 36 41 46 51 56
Days Post Implantation
119055
119010
119057
119017
119008
119019
119001
119021

Fig. 15B

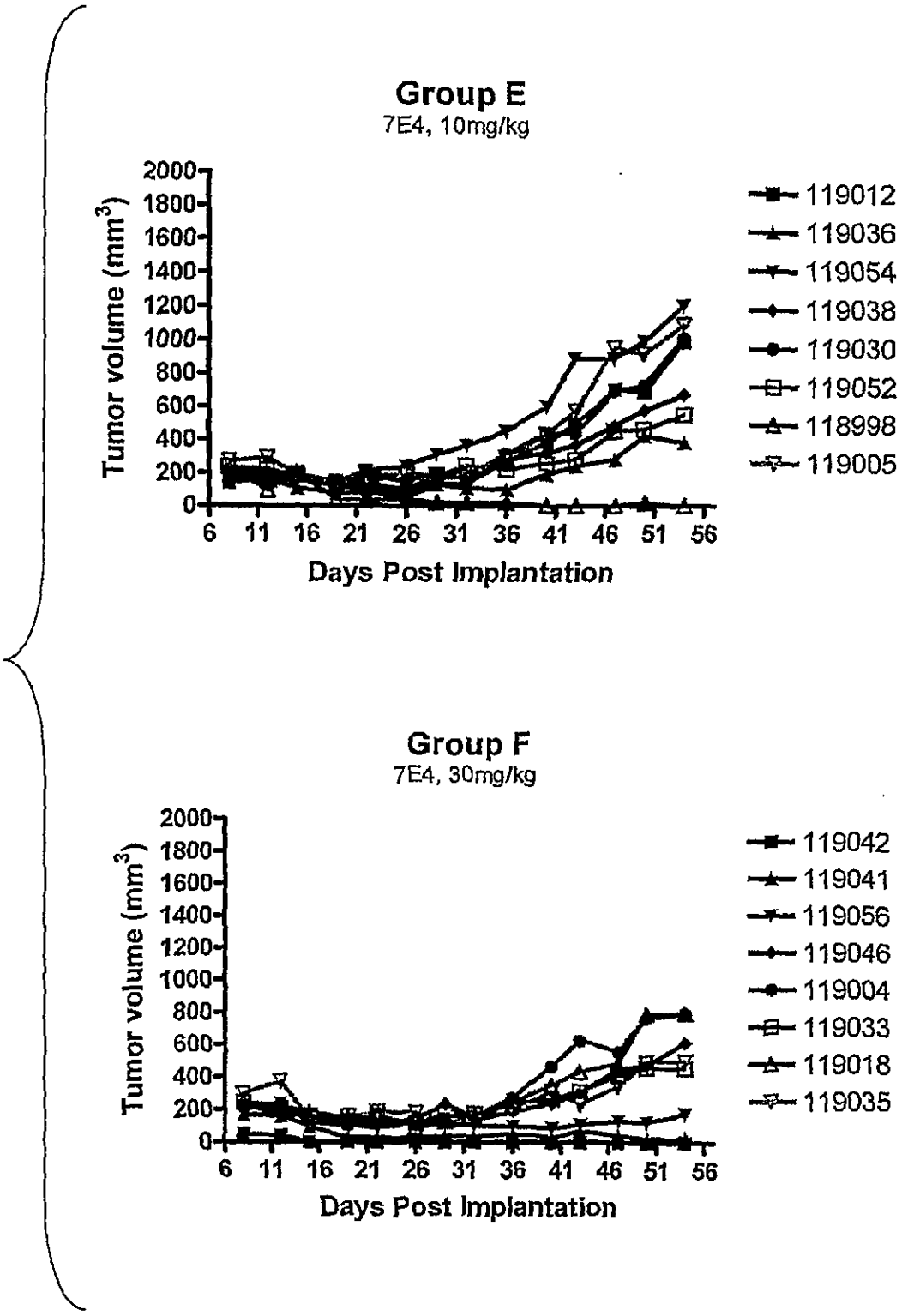
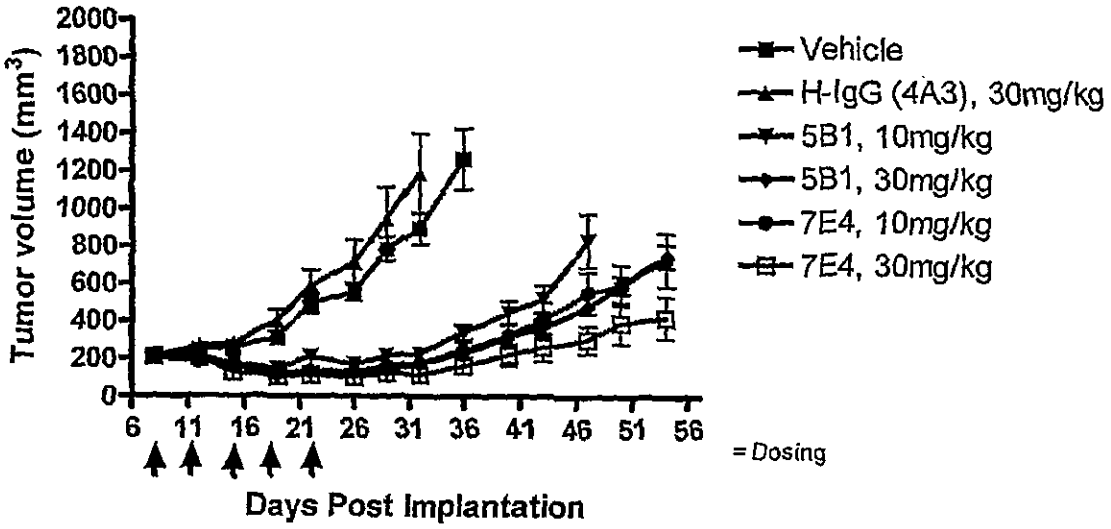

Group E
7E4, 10mg/kg
Tumor volume (mm3)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6 11 16 21 26 31 36 41 46 51 56
Days Post Implantation
119012
119036
119054
119038
119030
119052
118998
119005
Group F
7E4, 30mg/kg
Tumor volume (mm3)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6 11 16 21 26 31 36 41 46 51 56
Days Post Implantation
119042
119041
119056
119046
119004
119033
119018
119035

Fig. 15C

A. Efficacy of anti-5B1 and 7E4 in DMS 79 Bearing SCID Mice
(mean, n=8)



B. Efficacy of anti-5B1 and 7E4 in DMS 79 Bearing SCID Mice
(median, n=8)

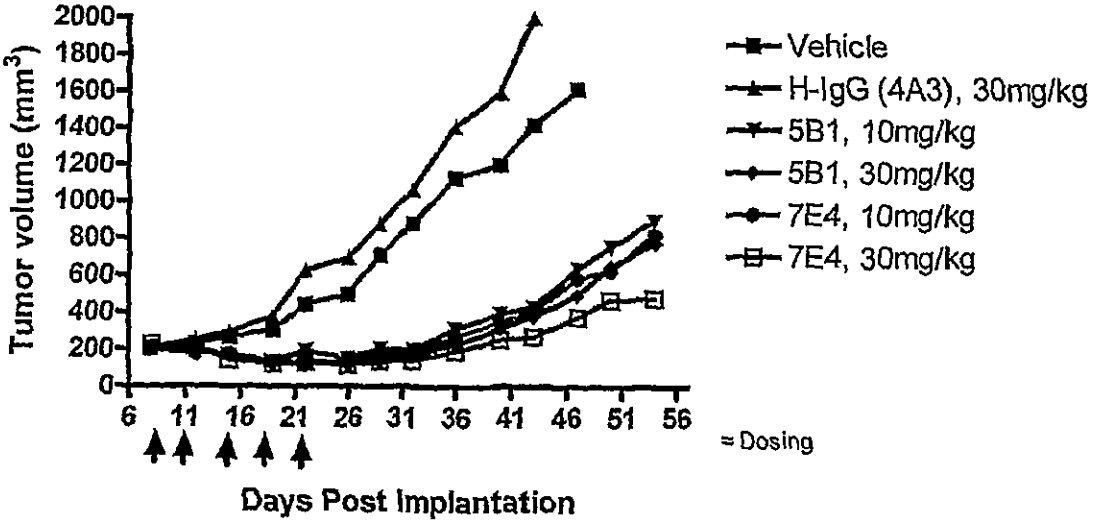


Fig. 16

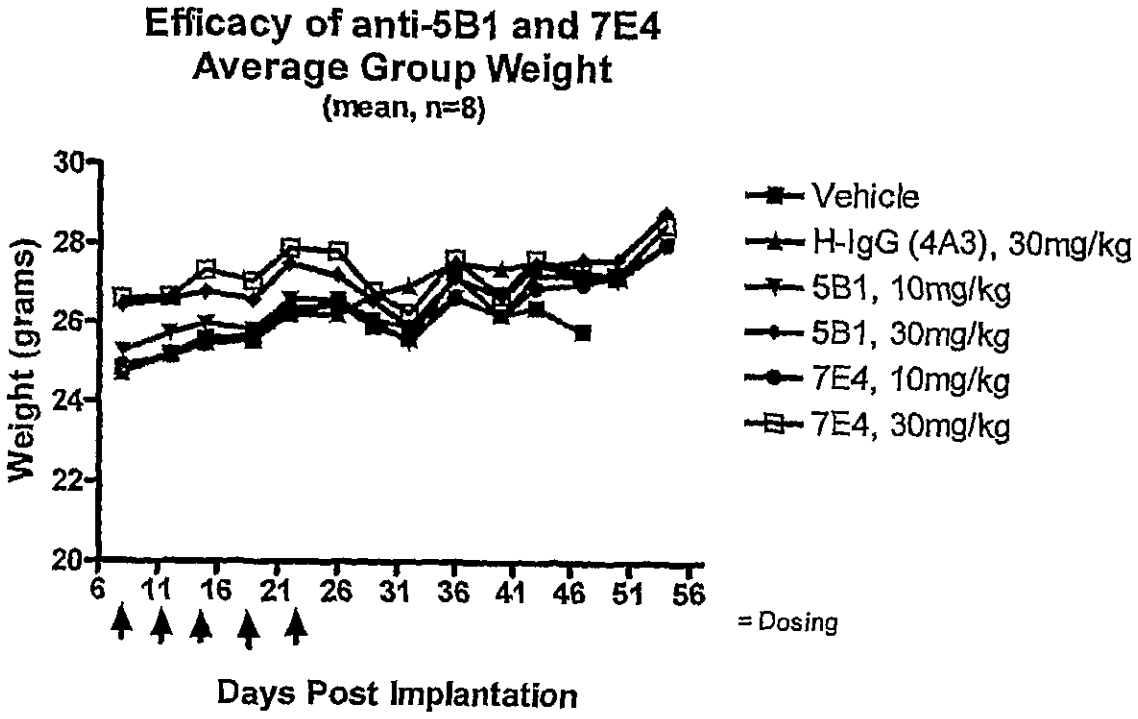

Efficacy of anti-5B1 and 7E4
Average Group Weight
(mean, n=8)
Weight (grams)
30
28
26
24
22
20
6
11
16
21
26
31
36
41
46
51
56
Days Post Implantation
Vehicle
H-IgG (4A3), 30mg/kg
5B1, 10mg/kg
5B1, 30mg/kg
7E4, 10mg/kg
7E4, 30mg/kg
= Dosing

Fig. 17