CLAIMS

1. A monoclonal antibody characterized in that said antibody has dual specificity and high affinity for the N-acetyl GM3 and N-glycolyl GM3 gangliosides.

2. The monoclonal antibody of claim 1, characterized in that the heavy chain variable region contains the following CDRs:

CDR-H1: GYRFRSYQIH, SEQ ID NO: 3
CDR-H2: YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H3: ESPRLRRGIYYYAMDY, SEQ ID NO: 34

3. The antibody of claim 1, characterized in that the sequence of the heavy chain variable region is SEQ ID NO: 1:
QVQLQQSGNELAKPGASMKMSCRASGYRFRSYQIHWLKQRPDQGLEWIGYIDP
ATAYTESNQKFKDKAILTADRSSNTAFMYLNSLTSEDSAVYYCARESPRLRRGIY
YYAMDYWGQGTSVTVSS

4. The antibody of claim 1, characterized in that the sequence of CDR-H1 is selected from a group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

5. The antibody of claim 1, characterized in that the sequence of CDR-H2 is selected from a group consisting of the following sequences:

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22

CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

6. The antibody of claim 1, characterized in that the sequence of CDR-H3 is selected from a group consisting of the following sequences:

CDR-H3....ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3....ESPRFRRGRYYYAMDY, SEQ ID NO: 35
CDR-H3....ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3....ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3....ESPRLRRGLYYYAMDY, SEQ ID NO: 38

7. An anti-ganglioside monoclonal antibody characterized in that said antibody has dual specificity and high affinity for the N-acetyl GM3 and N-glycolyl GM3 gangliosides and characterized in that said antibody comprises any combination of sequences of CDRs H1, H2 and H3 from the group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19

CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

CDR-H3 ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3 ESPRFRRGIYYYAMDY, SEQ ID NO: 35
CDR-H3 ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3 ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3 ESPRLRRGLYYYAMDY, SEQ ID NO: 38

8. The monoclonal antibody of claims 1 to 7 characterized in that the sequence of the light chain variable region is SEQ ID NO: 2:
DLVLTQSPATLSVTPGDSVSFSCRASQSISNNLHWYQQRTHESPRLLIKYASQSIS
GIPSRFSGSGSGTDFTLSIISVETEDFGMYFCQQSNRWPLTFGAGTKLELKRA

9. The monoclonal antibody of claims 1 to 7 characterized in that the sequence of the light chain variable region is any sequence of an antibody light chain variable region.

10. The monoclonal antibody of claims 1 to 7 characterized in that the sequence of the light chain variable region is any light chain variable region sequence of a humanized antibody.

11. The antibody of claim 2, characterized in that the sequence of CDR-H2 and/or the sequence of CDR-H3 comprise at least one of the amino acid substitutions selected from the group that consist of:

CDR-H2 Asp 52 substituted by Ala, Glu, Asn, Ser or Thr
CDR-H2 Ala 53 substituted by Asp, Glu, Gly, His, Leu, Ser, Thr or Tyr
CDR-H3 Arg 100 - Arg 100A substituted by Ala-Lys, His-Arg or Thr-Arg
CDR-H3 Gly 100B substituted by Ala, Asp, Phe, Leu, Gln, Arg or Ser
CDR-H3 Tyr 100 D substituted by Phe

12. A fragment derived from an antibody of any of the claims 1 to 11.

13. The fragment according to claim 12 characterized by:

a CDR-H1 sequence that is selected from a group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

a CDR-H2 sequence that is selected from a group consisting of the following sequences:

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

a CDR-H3 sequence that is selected from a group consisting of the following sequences:

CDR-H3 ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3 ESPRFRRGRYYYAMDY, SEQ ID NO: 35
CDR-H3 ESPRMRRGIYYYAMDY, SEQ ID NO: 36

CDR-H3 ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3 ESPRLRRGLYYYAMDY, SEQ ID NO: 38

14. The fragment of claim 13 characterized in that said fragment comprises any combination of sequences of CDRs H1, H2 and H3 from the group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

CDR-H3 ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3 ESPRFRRGRYYYAMDY, SEQ ID NO: 35
CDR-H3 ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3 ESPRVRRGIYYYAMDY, SEQ ID NO: 37

CDR-H3 ESPRLRRGLYYYAMDY, SEQ ID NO: 38

15. A fragment according to claim 13 or 14, characterized in that said fragment is of the Fab type.

16. A fragment according to claim 13 or 14, characterized in that said fragment is of the Fab' type.

17. A fragment according to claim 13 or 14, characterized in that said fragment is of the (Fab)2 type.

18. A fragment according to claim 13 or 14, characterized in that said fragment is of the scFv type.

19. A pharmaceutical composition for the treatment of malignant tumors expressing the N-acetyl GM3 and/or the N-glycolyl GM3 gangliosides, characterized in that said pharmaceutical composition comprises any of the antibodies of claims 1 to 11, or a fragment derived from any of these antibodies, and a stable pharmaceutical vehicle.

20. A kit of reagents for the diagnosis of diseases that express the N-acetyl GM3 and/or the N-glycolyl GM3 gangliosides, characterized in that said kit of reagents comprises any of the antibodies of claims 1 to 11, or a fragment derived from any of these antibodies.

CLAIMS

1. A monoclonal antibody that binds to both N-acetyl GM3 and N-glycolyl GM3 gangliosides, but not to other N-acetyl and N-glycolyl gangliosides wherein the constant regions are human IgG.

2. The antibody of claim 1, comprising the light chain variable region of SEQ ID NO. 2 and the heavy chain variable region contains the following CDRs:

CDR-H1: GYRFRSYQIH, SEQ ID NO: 3
CDR-H2: YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H3: ESPRLRRGIYYYAMDY, SEQ ID NO: 34

3. The antibody of claim 2, characterized by the sequence of CDR-H2 and/or the sequence of CDR-H3 comprise at least one of the amino acid substitutions selected from the group that consist of:

CDR-H2 Asp 52 substituted by Ala, Glu, Asn, Ser or Thr
CDR-H2 Ala 53 substituted by Asp, Glu, Gly, His, Leu, Ser, Thr or Tyr
CDR-H3 Arg 100 - Arg 100A substituted by Ala-Lys, His-Arg or Thr-Arg
CDR-H3 Gly 100B substituted by Ala, Asp, Phe, Leu, Gln, Arg or Ser
CDR-H3 Tyr 100 D substituted by Phe

4. The antibody of claim 1, characterized by comprising the light chain variable region of SEQ ID NO. 2 and the sequence of CDR-H1 is selected from a group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12

CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

5. The antibody of claim 1, characterized by comprising the light chain variable region of SEQ ID NO. 2 and the sequence of CDR-H2 is selected from a group consisting of the following sequences:

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

6. The antibody of claim 1, characterized by comprising the light chain variable region of SEQ ID NO. 2 and the sequence of CDR-H3 is selected from a group consisting of the following sequences:

CDR-H3....ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3....ESPRFRRGRYYYAMDY, SEQ ID NO: 35
CDR-H3....ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3....ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3....ESPRLRRGLYYYAMDY, SEQ ID NO: 38

7. The antibody of claim 1, characterized by comprising the light chain variable region of SEQ ID NO. 2 and wherein said antibody comprises any combination of sequences of CDRs H1, H2 and H3 from the group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3

CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

CDR-H3 ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3 ESPRFRRGRYYYAMDY, SEQ ID NO: 35
CDR-H3 ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3 ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3 ESPRLRRGLYYYAMDY, SEQ ID NO: 38

8. An antibody fragment which binds to both N-acetyl GM3 and N-glycolyl GM3 gangliosides, but not to other N-acetyl and N-glycolyl gangliosides characterized by

comprising the light chain variable region of SEQ ID NO. 2 and a CDR-H1 sequence that is selected from a group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

a CDR-H2 sequence that is selected from a group consisting of the following sequences:

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

a CDR-H3 sequence that is selected from a group consisting of the following sequences:

CDR-H3 ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3 ESPRFRRGRYYYAMDY, SEQ ID NO: 35

CDR-H3 ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3 ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3 ESPRLRRGLYYYAMDY, SEQ ID NO: 38

9. The fragment of claim 8 characterized by comprising the light chain variable region of SEQ ID NO. 2 and any combination of sequences of CDRs H1, H2 and H3 from the group consisting of the following sequences:

CDR-H1 GYRFRSYQIH, SEQ ID NO: 3
CDR-H1 GYSFTRYQIH, SEQ ID NO: 4
CDR-H1 GYRFTSNQIH, SEQ ID NO: 5
CDR-H1 GYSFNRYQIH, SEQ ID NO: 6
CDR-H1 GYSFRRYQIH, SEQ ID NO: 7
CDR-H1 GYSITRYQIH, SEQ ID NO: 8
CDR-H1 GYSFTRYQIH, SEQ ID NO: 9
CDR-H1 GYSFKSYQIH, SEQ ID NO: 10
CDR-H1 GYSFTSYQIH, SEQ ID NO: 11
CDR-H1 GYRFTRYWIH, SEQ ID NO: 12
CDR-H1 GYTFTRYQIH, SEQ ID NO: 13
CDR-H1 GYPFTRYQIH, SEQ ID NO: 14
CDR-H1 GYSFSRYQIV, SEQ ID NO: 15
CDR-H1 GYHFTRYQIH, SEQ ID NO: 16

CDR-H2 YIDPATAYTESNQKFKD, SEQ ID NO: 17
CDR-H2 YINPATASTESNQKFKD, SEQ ID NO: 18
CDR-H2 FIDPATAYTESNQKFKD, SEQ ID NO: 19
CDR-H2 DIDPGRAYTESNQKFKD, SEQ ID NO: 20
CDR-H2 YIDPATANTESNQKFKD, SEQ ID NO: 21
CDR-H2 FINPATAYTESNQKFKD, SEQ ID NO: 22
CDR-H2 FIDPASAYTVSNQKFKD, SEQ ID NO: 23
CDR-H2 YIDPATAKTESNQKFKD, SEQ ID NO: 24
CDR-H2 YINPGSAYTESNQKFKD, SEQ ID NO: 25
CDR-H2 YLDPANAYTESNQKFKD, SEQ ID NO: 26
CDR-H2 YVDPANAYTESNQKFKD, SEQ ID NO: 27
CDR-H2 YINPATAYTESNQKFKD, SEQ ID NO: 28
CDR-H2 YIDPATAWTESNQKFKD, SEQ ID NO: 29
CDR-H2 YIDPGTAYTESNQKFKD, SEQ ID NO: 30
CDR-H2 YIDPRTAYTESNQKFKD, SEQ ID NO: 31
CDR-H2 YVDPATAHTESNQKFKD, SEQ ID NO: 32
CDR-H2 YINPATAYTDSNQKFKD, SEQ ID NO: 33

CDR-H3 ESPRLRRGIYYYAMDY, SEQ ID NO: 34
CDR-H3 ESPRFRRGRYYYAMDY, SEQ ID NO: 35

CDR-H3 ESPRMRRGIYYYAMDY, SEQ ID NO: 36
CDR-H3 ESPRVRRGIYYYAMDY, SEQ ID NO: 37
CDR-H3 ESPRLRRGLYYYAMDY, SEQ ID NO: 38

10. A pharmaceutical composition for the treatment of malignant tumors expressing the N-acetyl GM3 and/or the N-glycolyl GM3 gangliosides, characterized in that said pharmaceutical composition comprises any of the antibodies of claims 1 to 7, and a stable pharmaceutical vehicle.

11. The antibody of any of the claims 1-7 for the preparation of a medicament for the treatment of malignant tumors expressing the N-acetyl GM3 and/or the N-glycolyl GM3 gangliosides.

12. A kit of reagents for the diagnosis of tumors that express the N-acetyl GM3 and/or the N-glycolyl GM3 gangliosides, characterized in that said kit of reagents comprises any of the antibodies of claims 1 to 7.

13. A kit of reagents for the diagnosis of tumors that express the N-acetyl GM3 and/or the N-glycolyl GM3 gangliosides, characterized in that said kit of reagents comprises any of the fragments of claims 8-9.