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CLAIMS

1. An anti-Siglec-9 antibody molecule or an anti-Siglec-9 binding fragment thereof comprising:
- 5 a heavy chain variable region (VH) comprising a heavy chain complementarity determining region 1 (VHCDR1) amino acid sequence of SEQ ID NO: 1 or a sequence having one, two, three, or four amino acid substitutions, a heavy chain complementarity determining region 2 (VHCDR2) amino acid sequence of SEQ ID NO: 51 or a sequence having one, two, three, or four amino acid substitutions, and a
- 10 heavy chain complementarity determining region 3 (VHCDR3) amino acid sequence of SEQ ID NO: 3 or a sequence having one, two, three, or four amino acid substitutions; and
- a light chain variable region (VL) comprising a light chain complementarity determining region 1 (VLCDR1) amino acid sequence of SEQ ID NO: 52 or a
- 15 sequence having one, two, three, or four amino acid substitutions, a light chain complementarity determining region 2 (VLCDR2) amino acid sequence of SEQ ID NO: 5 or a sequence having one, two, three, or four amino acid substitutions, and a light chain complementarity determining region 3 (VLCDR3) amino acid sequence of SEQ ID NO: 6 or a sequence having one, two, three, or four amino acid
- 20 substitutions.
2. The antibody molecule or binding fragment thereof of claim 1, comprising:
- (i) a heavy chain variable region (VH) comprising a heavy chain complementarity determining region 1 (VHCDR1) amino acid sequence of SEQ ID NO: 1 or a
- 25 sequence having one, two, three, or four amino acid substitutions, a heavy chain complementarity determining region 2 (VHCDR2) amino acid sequence of SEQ ID NO: 2 or a sequence having one, two, three, or four amino acid substitutions, and a heavy chain complementarity determining region 3 (VHCDR3) amino acid sequence of SEQ ID NO: 3 or a sequence having one, two, three, or four amino acid
- 30 substitutions; and
- a light chain variable region (VL) comprising a light chain complementarity determining region 1 (VLCDR1) amino acid sequence of SEQ ID NO: 4 or a sequence having one, two, three, or four amino acid substitutions, a light chain complementarity determining region 2 (VLCDR2) amino acid sequence of SEQ ID
- 35 NO: 5 or a sequence having one, two, three, or four amino acid substitutions, and a light chain complementarity determining region 3 (VLCDR3) amino acid sequence of SEQ ID NO: 6 or a sequence having one, two, three, or four amino acid substitutions;
- or
- 40 (ii) a heavy chain variable region (VH) comprising a heavy chain

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complementarity determining region 1 (VHCDR1) amino acid sequence of SEQ ID NO: 1 or a sequence having one, two, three, or four amino acid substitutions, a heavy chain complementarity determining region 2 (VHCDR2) amino acid sequence of SEQ ID NO: 45 or a sequence having one, two, three, or four amino acid
5 substitutions, and a heavy chain complementarity determining region 3 (VHCDR3) amino acid sequence of SEQ ID NO: 3 or a sequence having one, two, three, or four amino acid substitutions; and

a light chain variable region (VL) comprising a light chain complementarity determining region 1 (VLCDR1) amino acid sequence of SEQ ID NO: 46 or a
10 sequence having one, two, three, or four amino acid substitutions, a light chain complementarity determining region 2 (VLCDR2) amino acid sequence of SEQ ID NO: 5 or a sequence having one, two, three, or four amino acid substitutions, and a light chain complementarity determining region 3 (VLCDR3) amino acid sequence of
15 SEQ ID NO: 6 or a sequence having one, two, three, or four amino acid substitutions;.

3. The antibody molecule or binding fragment thereof of claim 1, comprising:
a heavy chain variable region (VH) comprising a heavy chain complementarity determining region 1 (VHCDR1) amino acid sequence of SEQ ID NO: 1, a heavy
20 chain complementarity determining region 2 (VHCDR2) amino acid sequence of SEQ ID NO: 51, and a heavy chain complementarity determining region 3 (VHCDR3) amino acid sequence of SEQ ID NO: 3; and

a light chain variable region (VL) comprising a light chain complementarity determining region 1 (VLCDR1) amino acid sequence of SEQ ID NO: 52, a light
25 chain complementarity determining region 2 (VLCDR2) amino acid sequence of SEQ ID NO: 5, and a light chain complementarity determining region 3 (VLCDR3) amino acid sequence of SEQ ID NO: 6.

4. The antibody molecule or binding fragment thereof of claim 1, comprising:
30 (i) a heavy chain variable region (VH) comprising a heavy chain complementarity determining region 1 (VHCDR1) amino acid sequence of SEQ ID NO: 1, a heavy chain complementarity determining region 2 (VHCDR2) amino acid sequence of SEQ ID NO: 2, and a heavy chain complementarity determining region 3 (VHCDR3) amino acid sequence of SEQ ID NO: 3; and

a light chain variable region (VL) comprising a light chain complementarity determining region 1 (VLCDR1) amino acid sequence of SEQ ID NO: 4, a light chain
35 complementarity determining region 2 (VLCDR2) amino acid sequence of SEQ ID NO: 5, and a light chain complementarity determining region 3 (VLCDR3) amino acid sequence of SEQ ID NO: 6;

40 or

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(ii) a heavy chain variable region (VH) comprising a heavy chain complementarity determining region 1 (VHCDR1) amino acid sequence of SEQ ID NO: 1, a heavy chain complementarity determining region 2 (VHCDR2) amino acid sequence of SEQ ID NO: 45, and a heavy chain complementarity determining region 3 (VHCDR3) amino acid sequence of SEQ ID NO: 3; and
5 a light chain variable region (VL) comprising a light chain complementarity determining region 1 (VLCDR1) amino acid sequence of SEQ ID NO: 46, a light chain complementarity determining region 2 (VLCDR2) amino acid sequence of SEQ ID NO: 5, and a light chain complementarity determining region 3 (VLCDR3) amino acid sequence of SEQ ID NO: 6.
10

5. The antibody molecule or binding fragment thereof of any one of claims 1-4, comprising:

(i) a heavy chain variable region (VH) comprising the amino acid sequence of SEQ ID NO: 7, and a light chain variable region (VL) comprising the amino acid sequence of SEQ ID NO: 8;
15 or
(ii) a heavy chain variable region (VH) comprising the amino acid sequence of SEQ ID NO: 47, and a light chain variable region (VL) comprising the amino acid sequence of SEQ ID NO: 48.
20

6. The antibody molecule or binding fragment thereof of any one of claims 1-5, comprising one or more (e.g., 2, 3, 4, 5, 6, 7, 8 or 9) of the following properties:

(i) binds to human Siglec-9 with a EC50 of less than about 10 nM, 1 nM, 0.9 nM, 0.8 nM, 0.7 nM, 0.6 nM, 0.5 nM, 0.4 nM, 0.3 nM, 0.2 nM, 0.1 nM, or 0.05 nM, e.g.,
25 when the antibody molecule or binding fragment thereof is tested as a bivalent molecule using ELISA, e.g., as described in Example 3;
(ii) binds to human Siglec-9 with a dissociation constant (KD) of less than about 10 nM, 1 nM, 0.9 nM, 0.8 nM, 0.7 nM, 0.6 nM, 0.5 nM, 0.4 nM, 0.3 nM, 0.2 nM or 0.1
30 nM, when the antibody molecule or binding fragment thereof is tested as a bivalent molecule using surface plasmon resonance, e.g. Carterra LSA, e.g., as described in Example 4;
(iii) binds to human CD14+ monocytes with a EC50 of less than about 10 nM, 1 nM, 0.9 nM, 0.8 nM, 0.7 nM, 0.6 nM, 0.5 nM, 0.4 nM, 0.3 nM, 0.2 nM or 0.1 nM, e.g.,
35 when the antibody molecule or binding fragment thereof is tested as a bivalent molecule using flow cytometer, e.g., as described in Example 5;
(vi) inhibits interaction between Siglec-9 and one or more Siglec-9 ligands, e.g., inhibits the binding of sialic-acid expressing A549 tumour cells to Siglec-9, e.g., when the antibody molecule or binding fragment thereof is tested as a bivalent
40 molecule using ELISA, e.g., as described in Example 6;

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- (v) increases proliferation of anti-CD3/anti-CD28 stimulated CD8+ T cells, e.g., when the antibody molecule or binding fragment thereof is tested as a bivalent molecule in a T cell activation assay using Cell Trace Violet and flow cytometer, e.g., as described in Example 7;
- 5 (vi) upregulates activation markers CD69 and CD25 of anti-CD3/anti-CD28 stimulated CD8+ T cells, e.g., when the antibody molecule or binding fragment thereof is tested as a bivalent molecule in a T cell activation assay using staining and flow cytometer, e.g., as described in Example 7;
- 10 (vii) increases proliferation of anti-CD3/anti-CD28 stimulated CD4+ T cells, e.g., when the antibody molecule or binding fragment thereof is tested as a bivalent molecule in a T cell activation assay using Cell Trace Violet and flow cytometer, e.g., as described in Example 7;
- 15 (viii) upregulates activation markers CD69 and CD25 of anti-CD3/anti-CD28 stimulated CD4+ T cells, e.g., when the antibody molecule or binding fragment thereof is tested as a bivalent molecule in a T cell activation assay using staining and flow cytometer, e.g., as described in Example 7; or
- 20 (ix) increases NK cell-mediated killing activity, e.g., increases killing of K562 cells by NK92 cells overexpressing Siglec-9, e.g., when the antibody molecule or binding fragment thereof is tested as a bivalent molecule using Calcein-AM labelled K562 cells, e.g., as described in Example 8.
7. An antibody molecule or a binding fragment thereof that competes for binding to human Siglec-9 with the antibody molecule or binding fragment thereof of any one of claims 1-6.
- 25 8. The antibody molecule or binding fragment thereof of claim 7 that competes for binding to the same epitope of human Siglec-9 with the antibody molecule or binding fragment thereof of any one of claims 1-6.
- 30 9. A pharmaceutical composition comprising the antibody molecule or binding fragment thereof of any one of claims 1-8 and a pharmaceutically acceptable carrier, excipient or stabilizer.
- 35 10. An antibody molecule or binding fragment thereof according to any one of claims 1-8 or a pharmaceutical composition according to claim 9 for use in the treatment of a disease selected from the group consisting of cancer, acute and chronic hepatitis B.
- 40 11. An antibody molecule or binding fragment thereof according to any one of claims 1-8 or a pharmaceutical composition according to claim 9 for the use of claim

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10, wherein the cancer is selected from the group consisting of non small cell lung cancer, colorectal cancer, breast cancer, epithelial ovarian cancer, hepatocellular carcinoma and prostate cancer.

5 12. A nucleic acid encoding the antibody heavy and/or light chain variable region of the antibody molecule or binding fragment thereof of any one of claims 1-8.

 13. An expression vector comprising the nucleic acid of claim 12.

10 14. A host cell comprising the nucleic acid of claim 12 or the expression vector of claim 13.

 15. A method of producing an antibody molecule, the method comprising
15 culturing the host cell of claim 14 under conditions suitable for gene expression.