

WHAT IS CLAIMED IS:

- 1 1. A method of inhibiting proliferation of tumor cells, the method
2 comprising administering a therapeutically effective amount of an anti-Siglec-7 antibody to a
3 patient that has cancer, wherein the patient has a primary tumor or metastatic lesion that
4 comprises an elevated level of CD8+ infiltrating-T cells that express Siglec-7, and further,
5 wherein the tumor or metastatic lesion comprises cancer cells that express sialylated Siglec-7
6 ligands.
- 1 2. The method of claim 1, wherein the anti-Siglec-7 antibody has a
2 bivalent avidity of 50 pM or less.
- 1 3. The method of claim 1 or 2, wherein the anti-Siglec-7 antibody blocks
2 ligand binding at an IC₅₀ of less than about 4000 pM.
- 1 4. The method of claim 1 or 2, wherein the anti-Siglec-7 antibody blocks
2 ligand binding at an IC₅₀ of less than about 3500 pM.
- 1 5. The method of claim 1 or 2, wherein the anti-Siglec-7 antibody has an
2 internalization activity of less than about 70 pM.
- 1 6. The method of claim 1 or 2, wherein the anti-Siglec-7 antibody has an
2 internalization activity of less than about 25 pM.
- 1 7. The method of claim 5 or 6, wherein the anti-Siglec-7 antibody does
2 not block ligand binding.
- 1 8. The method of claim 1 or 2, wherein the anti-Siglec-7 antibody
2 competes with an antibody having a variable heavy chain sequence of SEQ ID NO:1 and a
3 variable light chain sequence of SEQ ID NO:15 for binding to Siglec-7.
- 1 9. The method of claim 8, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises at least one CDR, or at least two CDRs, of a heavy chain variable
3 region sequence of SEQ ID NO:1.
- 1 10. The method of claim 8, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR3 of a heavy chain variable region sequence of SEQ ID NO:1.

1 11. The method of claim 8, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR1, CDR2, and CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:1.

1 12. The method of any one of claims 8 to 11, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises at least one CDR, or at least two CDRs, of a light
3 chain variable region sequence of SEQ ID NO:15.

1 13. The method of any one of claims 8 to 11, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR3 of a light chain variable region sequence of
3 SEQ ID NO:15.

1 14. The method of any one of claims 8 to 11, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light chain variable
3 region sequence of SEQ ID NO:15.

1 15. The method of claim 8, wherein the anti-Siglec-7 antibody comprises a
2 heavy chain variable region comprising a CDR3 having a sequence as set forth in any one of
3 SEQ ID NOS:29-31, 33, and 35-61 in which 1, 2, or 3 amino acids are substituted.

1 16. The method of claim 8, wherein the anti-Siglec-7 antibody comprises a
2 heavy chain variable region comprising a CDR3 as set forth in any one of SEQ ID NOS:29-
3 31, 33, and 35-61.

1 17. The method of claim 15 or 16, where the heavy chain variable region
2 comprises a CDR1 having a sequence as set forth in any one of SEQ ID NOS:29-31, 33, and
3 35-61 in which 1, 2, or 3 amino acids are substituted; and/or a CDR2 having a sequence as set
4 forth in any one of SEQ ID NOS:29-31, 33, and 35-61 in which 1, 2, or 3 amino acids are
5 substituted.

1 18. The method of claim 15 or 16, where the heavy chain variable region
2 comprises a CDR1 having a sequence as set forth in any one of SEQ ID NOS:29-31, 33, and
3 35-61 and a CDR2 having a sequence as set forth in any one of SEQ ID NOS:29-31, 33, and
4 35-61.

1 19. The method of any one of claims 8, and 15-18, wherein the anti-Siglec-
2 7 antibody comprises a light chain variable region comprising a CDR3 having a sequence as
3 set forth in any one of SEQ ID NOS:62 and 64-78 in which 1, 2, or 3 amino acids are
4 substituted.

1 20. The method of any one of claims 8, and 15-18, wherein the anti-Siglec-
2 7 antibody comprises a light chain variable region comprising a CDR3 as set forth in any one
3 of SEQ ID NOS:62 and 64-78.

1 21. The method of claim 19 or 20, where the light chain variable region
2 comprises a CDR1 having a sequence as set forth in any one of SEQ ID NOS:62 and 64-78 in
3 which 1, 2, or 3 amino acids are substituted; and/or a CDR2 having a sequence as set forth in
4 any one of SEQ ID NOS:62 and 64-78 in which 1, 2, or 3 amino acids are substituted.

1 22. The method of claim 19 or 20, where the light chain variable region
2 comprises a CDR1 having a sequence as set forth in any one of SEQ ID NOS:62 and 64-78
3 and a CDR2 having a sequence as set forth in any one of SEQ ID NOS:62 and 64-78.

1 23. The method of claim 8, wherein the anti-Siglec-7 antibody comprises a
2 heavy chain variable region having at least 80%, or at least 85%, 90%, 91%, 92%, 93%, 94%,
3 95%, 96%, 97%, 98%, 99%, or 100% sequence identity to the amino acid sequence of a
4 heavy chain variable region of any one of SEQ ID NOS:29-31, 33, and 35-61.

1 24. The method of claim 8 or 23, wherein the anti-Siglec-7 antibody
2 comprises a light chain variable region having at least 80%, or at least 85%, 90%, 91%, 92%,
3 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% sequence identity to the amino acid
4 sequence of a light chain variable region of any one of SEQ ID NOS:62 and 64-78.

1 25. The method of claim 8, wherein the anti-Siglec-7 antibody comprises a
2 heavy chain variable region having at least 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%,
3 96%, 97%, 98%, 99%, or 100% sequence identity to the amino acid sequence of a heavy
4 chain variable region of any of SEQ ID NOS:41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53,
5 54, 55, 57, 58, 59, 60 or 61; and a light chain variable region having at least 80%, 85%, 90%,
6 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% sequence identity to the amino

7 acid sequence of a light chain variable region of SEQ ID NO:69, 70, 71, 72, 73, 74, 75, 76,
8 77, or 78.

1 26. The method of claim 8, wherein the anti-Siglec-7 antibody comprises a
2 heavy chain variable region comprising CDR1, CDR2, and CDR3 sequences as set forth in a
3 heavy chain variable region sequence selected from SEQ ID NO:43, 45, 46, 47, 48, 49, 50,
4 51, 54, 55, 57, and 58; and a light chain variable region comprising the CDR1, CDR2, and
5 CDR3 sequences of SEQ ID NO:69.

1 27. The method of claim 8, wherein the anti-Siglec-7 antibody comprises a
2 heavy chain variable region comprising CDR1, CDR2, and CDR3 sequences as set forth in a
3 heavy chain variable region sequence selected from SEQ ID NO:53, 54, 51, 55, 58, and 59;
4 and a light chain variable region comprising the CDR1, CDR2, and CDR3 sequences of SEQ
5 ID NO:78.

1 28. The method of claim 8, wherein the anti-Siglec-7 antibody comprises:
2 a) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
3 sequences as set forth in SEQ ID NO:43, and a light chain variable region comprising the
4 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

5 (b) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
6 sequences as set forth in SEQ ID NO:45, and a light chain variable region comprising the
7 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

8 (c) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
9 sequences as set forth in SEQ ID NO:46, and a light chain variable region comprising the
10 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

11 (d) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
12 sequences as set forth in SEQ ID NO:47, and a light chain variable region comprising the
13 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

14 (e) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
15 sequences as set forth in SEQ ID NO:48, and a light chain variable region comprising the
16 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

17 (f) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
18 sequences as set forth in SEQ ID NO:49, and a light chain variable region comprising the
19 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

- 20 (g) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
21 sequences as set forth in SEQ ID NO:50, and a light chain variable region comprising the
22 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;
- 23 (h) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
24 sequences as set forth in SEQ ID NO:51, and a light chain variable region comprising the
25 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;
- 26 (i) CDR1, CDR2, and CDR3 sequences as set forth in a heavy chain variable
27 region sequence SEQ ID NO:54, and a light chain variable region comprising the CDR1,
28 CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;
- 29 (j) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
30 sequences as set forth in SEQ ID NO:55, and a light chain variable region comprising the
31 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;
- 32 (k) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
33 sequences as set forth in SEQ ID NO:57, and a light chain variable region comprising the
34 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69; or
- 35 (l) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
36 sequences as set forth in SEQ ID NO:58, and a light chain variable region comprising the
37 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69.
- 1 29. The method of claim 8, wherein the anti-Siglec-7 antibody comprises:
- 2 a) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
3 sequences as set forth in SEQ ID NO:53; and a light chain variable region comprising the
4 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;
- 5 (b) heavy chain variable region comprising the CDR1, CDR2, and CDR3
6 sequences as set forth in SEQ ID NO:54; and a light chain variable region comprising the
7 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;
- 8 (c) heavy chain variable region comprising the CDR1, CDR2, and CDR3
9 sequences as set forth in SEQ ID NO:51; and a light chain variable region comprising the
10 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;
- 11 (d) heavy chain variable region comprising the CDR1, CDR2, and CDR3
12 sequences as set forth in SEQ ID NO:55; and a light chain variable region comprising the
13 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;

14 (e) heavy chain variable region comprising the CDR1, CDR2, and CDR3
15 sequences as set forth in SEQ ID NO:58; and a light chain variable region comprising the
16 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78; or

17 (f) heavy chain variable region comprising the CDR1, CDR2, and CDR3
18 sequences as set forth in SEQ ID NO:59; and a light chain variable region comprising the
19 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78.

1 30. The method of claim 1, wherein the anti-Siglec-7 antibody blocks
2 binding of ligand to Siglec-7 and competes with an antibody QA79 produced from the
3 hybridoma deposited under accession number ICLC PD99003 for binding to Siglec-7, but
4 does not compete with antibody Z176 or antibody S7.7 for binding to Siglec-7.

1 31. The method of claim 30, wherein the anti-Siglec-7 antibody competes
2 with an antibody comprising a V_H sequence and V_L sequence designated as 2G12 in Figures
3 1 and 2 for binding to Siglec-7.

1 32. The method of claim 30, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises at least one CDR, or at least two CDRs, of a heavy chain variable
3 region sequence of SEQ ID NO:2.

1 33. The method of claim 30, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR3 of a heavy chain variable region sequence of SEQ ID NO:2.

1 34. The method of claim 30, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR1, CDR2, and CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:2.

1 35. The method of any one of claims 30 to 34, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises at least one CDR, or at least two CDRs, of a light
3 chain variable region sequence of SEQ ID NO:16.

1 36. The method of any one of claims 30 to 34, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR3 of a light chain variable region sequence of
3 SEQ ID NO:16.

1 37. The method of any one of claims 30 to 34, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light chain variable
3 region sequence of SEQ ID NO:16.

1 38. The method of claim 1, wherein the anti-Siglec-7 antibody has
2 internalization activity, does not block ligand binding to Siglec-7, and competes with antibody
3 S7.7, but not with antibody QA79 or antibody Z176 for binding to Siglec-7.

1 39. The method of claim 38, wherein the anti-Siglec-7 antibody competes
2 with an antibody comprising a V_H sequence and V_L sequence designated as 8A2 in Figures 1
3 and 2.

1 40. The method of claim 38, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises at least one CDR, or at least two CDRs, as set forth in a heavy chain
3 variable region sequence of SEQ ID NO:4, SEQ ID NO:104, or SEQ ID NO:106.

1 41. The method of claim 38, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR3 as set forth in a heavy chain variable region sequence of SEQ
3 ID NO:4, SEQ ID NO:104, or SEQ ID NO:106.

1 42. The method of claim 38, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR1, CDR2, and CDR3 as set forth in a heavy chain variable region
3 sequence of SEQ ID NO:4, SEQ ID NO:104, or SEQ ID NO:106.

1 43. The method of any one of claims 38 to 42, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises at least one CDR, or at least two CDRs, as set forth
3 in a light chain variable region sequence of SEQ ID NO:18, SEQ ID NO:105, or SEQ ID
4 NO:107.

1 44. The method of any one of claims 38 to 42, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR3 as set forth in a light chain variable region
3 sequence of SEQ ID NO:18, SEQ ID NO:105, or SEQ ID NO:107.

1 45. The method of any one of claims 38 to 42, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 as set forth in a light
3 chain variable region sequence of SEQ ID NO:18, SEQ ID NO:105, or SEQ ID NO:107.

1 46. The method of claim 1, wherein the anti-Siglec-7 antibody has
2 internalization activity, does not block ligand binding to Siglec-7, and competes with
3 antibody Z176, but not with QA79 or S7.7 for binding to Siglec-7.

1 47. The method of claim 46, wherein the anti-Siglec-7 antibody competes
2 with an antibody comprising a V_H sequence and V_L sequence designated as 5D1 in Figures 1
3 and 2.

1 48. The method of claim 46, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises at least one CDR, or at least two CDRs, of a heavy chain variable
3 region sequence of SEQ ID NO:3.

1 49. The method of claim 46, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR3 of a heavy chain variable region sequence of SEQ ID NO:3.

1 50. The method of claim 46, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR1, CDR2, and CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:3.

1 51. The method of any one of claims 46 to 50, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises at least one CDR, or at least two CDRs, of a light
3 chain variable region sequence of SEQ ID NO:17.

1 52. The method of any one of claims 46 to 50, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR3 of a light chain variable region sequence of
3 SEQ ID NO:17.

1 53. The method of any one of claims 46 to 50, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light chain variable
3 region sequence of SEQ ID NO:17.

1 54. The method of claim 1, wherein the anti-Siglec-7 antibody has
2 internalization activity, does not block ligand binding to Siglec-7, and does not compete with
3 antibody Z176, QA79, or S7.7 for binding to Siglec-7.

1 55. The method of claim 54, wherein the anti-Siglec-7 antibody competes
2 with an antibody comprising a V_H sequence and V_L sequence designated as 4B12 in Figures 1
3 and 2.

1 56. The method of claim 54, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises at least one CDR, or at least two CDRs, of a heavy chain variable
3 region sequence of SEQ ID NO:11.

1 57. The method of claim 54, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR3 of a heavy chain variable region sequence of SEQ ID NO:11.

1 58. The method of claim 54, wherein the anti-Siglec-7 antibody has a V_H
2 region that comprises a CDR1, CDR2, and CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:11.

1 59. The method of any one of claims 54 to 58, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises at least one CDR, or at least two CDRs, of a light
3 chain variable region sequence of SEQ ID NO:25.

1 60. The method of any one of claims 54 to 58, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR3 of a light chain variable region sequence of
3 SEQ ID NO:25.

1 61. The method of any one of claims 54 to 58, wherein the anti-Siglec-7
2 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light chain variable
3 region sequence of SEQ ID NO:25.

1 62. The method of any one of claims 1 to 61, wherein the antibody is in a
2 monovalent format or a fragment format.

1 63. The method of claim 62, wherein the antibody is PEGylated.

1 64. The method of any one of claims 1 to 63, wherein the patient has
2 melanoma, lung cancer, or colorectal cancer.

1 65. An anti-Siglec-7 antibody that competes with an antibody having a
2 variable heavy chain sequence of SEQ ID NO:1 and a variable light chain sequence of SEQ
3 ID NO:15 for binding to Siglec-7.

1 66. The anti-Siglec-7 antibody of claim 65, wherein the antibody
2 comprises a heavy chain variable region comprising a CDR3 having a sequence as set forth in
3 any one of SEQ ID NOS:29-31, 33, and 35-61 in which 1, 2, or 3 amino acids are substituted.

1 67. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises a heavy chain variable region comprising a CDR3 as set forth in any one
3 of SEQ ID NOS:29-31, 33, and 35-61.

1 68. The anti-Siglec-7 antibody of claim 66 or 67, where the heavy chain
2 variable region comprises a CDR1 having a sequence as set forth in any one of SEQ ID
3 NOS:29-31, 33, and 35-61 in which 1, 2, or 3 amino acids are substituted; and/or a CDR2
4 having a sequence as set forth in any one of SEQ ID NOS:29-31, 33, and 35-61 in which 1, 2,
5 or 3 amino acids are substituted.

1 69. The anti-Siglec-7 antibody of claim 66 or 67, where the heavy chain
2 variable region comprises a CDR1 having a sequence as set forth in any one of SEQ ID
3 NOS:29-31, 33, and 35-61 and a CDR2 having a sequence as set forth in any one of SEQ ID
4 NOS:29-31, 33, and 35-61.

1 70. The anti-Siglec-7 antibody of any one of claims 65 to 69, wherein the
2 anti-Siglec-7 antibody comprises a light chain variable region comprising a CDR3 having a
3 sequence as set forth in any one of SEQ ID NOS:62 and 64-78 in which 1, 2, or 3 amino
4 acids are substituted.

1 71. The anti-Siglec-7 antibody of any one of claims 65 to 69, wherein the
2 anti-Siglec-7 antibody comprises a light chain variable region comprising a CDR3 as set forth
3 in any one of SEQ ID NOS:62 and 64-78.

1 72. The anti-Siglec-7 antibody of claim 70 or 71, where the light chain
2 variable region comprises a CDR1 having a sequence as set forth in any one of SEQ ID
3 NOS:62 and 64-78 in which 1, 2, or 3 amino acids are substituted; and/or a CDR2 having a

4 sequence as set forth in any one of SEQ ID NOS:62 and 64-78 in which 1, 2, or 3 amino
5 acids are substituted.

1 73. The anti-Siglec-7 antibody of claim 70 or 71, where the light chain
2 variable region comprises a CDR1 having a sequence as set forth in any one of SEQ ID
3 NOS:62 and 64-78 and a CDR2 having a sequence as set forth in any one of SEQ ID NOS:62
4 and 64-78.

1 74. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises a heavy chain variable region having at least 80%, or at least 85%, 90%,
3 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% sequence identity to the amino
4 acid sequence of a heavy chain variable region of any one of SEQ ID NOS:29-31, 33, and 35-
5 61.

1 75. The anti-Siglec-7 antibody of claim 65 or 74, wherein the anti-Siglec-7
2 antibody comprises a light chain variable region having at least 80%, or at least 85%, 90%,
3 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% sequence identity to the amino
4 acid sequence of a light chain variable region of any one of SEQ ID NOS:62 and 64-78.

1 76. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises a heavy chain variable region having at least 80%, 85%, 90%, 91%, 92%,
3 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% sequence identity to the amino acid
4 sequence of a heavy chain variable region of any of SEQ ID NOS:41, 42, 43, 44, 45, 46, 47,
5 48, 49, 50, 51, 52, 53, 54, 55, 57, 58, 59, 60 or 61; and a light chain variable region having at
6 least 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% sequence
7 identity to the amino acid sequence of a light chain variable region of SEQ ID NO:69, 70, 71,
8 72, 73, 74, 75, 76, 77, or 78.

1 77. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises a heavy chain variable region comprising the CDR1, CDR2, and CDR3
3 sequences as set forth in a heavy chain variable region sequence selected from SEQ ID
4 NO:43, 45, 46, 47, 48, 49, 50, 51, 54, 55, 57, and 58; and a light chain variable region
5 comprising the CDR1, CDR2, and CDR3 sequences of SEQ ID NO:69.

1 78. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises a heavy chain variable region comprising the CDR1, CDR2, and CDR3

3 sequences as set forth in a heavy chain variable region sequence selected from SEQ ID
4 NO:53, 54, 51, 55, 58, and 59; and a light chain variable region comprising the CDR1,
5 CDR2, and CDR3 sequences of SEQ ID NO:78.

1 79. The method of claim 8, wherein the anti-Siglec-7 antibody comprises:

2 a) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
3 sequences as set forth in SEQ ID NO:43, and a light chain variable region comprising the
4 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

5 (b) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
6 sequences as set forth in SEQ ID NO:45, and a light chain variable region comprising the
7 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

8 (c) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
9 sequences as set forth in SEQ ID NO:46, and a light chain variable region comprising the
10 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

11 (d) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
12 sequences as set forth in SEQ ID NO:47, and a light chain variable region comprising the
13 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

14 (e) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
15 sequences as set forth in SEQ ID NO:48, and a light chain variable region comprising the
16 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

17 (f) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
18 sequences as set forth in SEQ ID NO:49, and a light chain variable region comprising the
19 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

20 (g) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
21 sequences as set forth in SEQ ID NO:50, and a light chain variable region comprising the
22 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

23 (h) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
24 sequences as set forth in SEQ ID NO:51, and a light chain variable region comprising the
25 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

26 (i) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
27 sequences as set forth in a heavy chain variable region sequence SEQ ID NO:54, and a light
28 chain variable region comprising the CDR1, CDR2, and CDR3 sequences as set forth in SEQ
29 ID NO:69;

30 (j) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
31 sequences as set forth in SEQ ID NO:55, and a light chain variable region comprising the
32 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69;

33 (k) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
34 sequences as set forth in SEQ ID NO:57, and a light chain variable region comprising the
35 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69; or

36 (l) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
37 sequences as set forth in SEQ ID NO:58, and a light chain variable region comprising the
38 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:69.

1 80. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises:

3 a) a heavy chain variable region comprising the CDR1, CDR2, and CDR3
4 sequences as set forth in SEQ ID NO:53; and a light chain variable region comprising the
5 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;

6 (b) heavy chain variable region comprising the CDR1, CDR2, and CDR3
7 sequences as set forth in SEQ ID NO:54; and a light chain variable region comprising the
8 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;

9 (c) heavy chain variable region comprising the CDR1, CDR2, and CDR3
10 sequences as set forth in SEQ ID NO:51; and a light chain variable region comprising the
11 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;

12 (d) heavy chain variable region comprising the CDR1, CDR2, and CDR3
13 sequences as set forth in SEQ ID NO:55; and a light chain variable region comprising the
14 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78;

15 (e) heavy chain variable region comprising the CDR1, CDR2, and CDR3
16 sequences as set forth in SEQ ID NO:58; and a light chain variable region comprising the
17 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78; or

18 (f) heavy chain variable region comprising the CDR1, CDR2, and CDR3
19 sequences as set forth in SEQ ID NO:59; and a light chain variable region comprising the
20 CDR1, CDR2, and CDR3 sequences as set forth in SEQ ID NO:78.

1 81. The method of claim 8, wherein the anti-Siglec-7 antibody comprises:

- 2 a) a heavy chain variable region comprising the amino acid sequence of SEQ
3 ID NO:43 and a light chain variable region comprising the amino acid sequence of SEQ ID
4 NO:69;
- 5 (b) a heavy chain variable region comprising the amino acid sequence of SEQ
6 ID NO:45 and a light chain variable region comprising the amino acid sequence of SEQ ID
7 NO:69;
- 8 (c) a heavy chain variable region comprising the amino acid sequence of SEQ
9 ID NO:46 and a light chain variable region comprising the amino acid sequence of SEQ ID
10 NO:69;
- 11 (d) a heavy chain variable region comprising the amino acid sequence of ID
12 NO:47 and a light chain variable region comprising the amino acid sequence of SEQ ID
13 NO:69;
- 14 (e) a heavy chain variable region comprising the amino acid sequence of SEQ
15 ID NO:48 and a light chain variable region comprising the amino acid sequence of SEQ ID
16 NO:69;
- 17 (f) a heavy chain variable region comprising the amino acid sequence of SEQ
18 ID NO:49 and a light chain variable region comprising the amino acid sequence of SEQ ID
19 NO:69;
- 20 (g) a heavy chain variable region comprising the amino acid sequence of SEQ
21 ID NO:50 and a light chain variable region comprising the amino acid sequence of SEQ ID
22 NO:69;
- 23 (h) a heavy chain variable region comprising the amino acid sequence of SEQ
24 ID NO:51 and a light chain variable region comprising the amino acid sequence of SEQ ID
25 NO:69;
- 26 (i) a heavy chain variable region comprising the amino acid sequence of SEQ
27 ID NO:54 and a light chain variable region comprising the amino acid sequence of SEQ ID
28 NO:69;
- 29 (j) a heavy chain variable region comprising the amino acid sequence of SEQ
30 ID NO:55 and a light chain variable comprising the amino acid sequence of SEQ ID NO:69;
- 31 (k) a heavy chain variable region comprising the amino acid sequence of SEQ
32 ID NO:57 and a light chain variable region comprising the amino acid sequence of SEQ ID
33 NO:69; or
- 34 (l) a heavy chain variable region comprising the amino acid sequence of SEQ
35 ID NO:58 and a light chain variable comprising the amino acid sequence of SEQ ID NO:69.

1 82. The anti-Siglec-7 antibody of claim 65, wherein the anti-Siglec-7
2 antibody comprises:
3 a) a heavy chain variable region comprising the amino acid sequence of SEQ
4 ID NO:53 and a light chain variable region comprising the amino acid sequence of SEQ ID
5 NO:78;
6 (b) heavy chain variable region comprising the amino acid sequence of SEQ
7 ID NO:54 and a light chain variable region comprising the amino acid sequence of SEQ ID
8 NO:78;
9 (c) heavy chain variable region comprising the amino acid sequence of SEQ
10 ID NO:51 and a light chain variable region comprising the amino acid sequence of SEQ ID
11 NO:78;
12 (d) heavy chain variable region comprising the amino acid sequence of SEQ
13 ID NO:55 and a light chain variable region comprising the amino acid sequence of SEQ ID
14 NO:78;
15 (e) heavy chain variable region comprising the amino acid sequence of SEQ
16 ID NO:58 and a light chain variable region comprising the amino acid sequence of ; or
17 (f) heavy chain variable region comprising the amino acid sequence of SEQ
18 ID NO:59 and a light chain variable region comprising the amino acid sequence of SEQ ID
19 NO:78.

1 83. An anti-Siglec-7 antibody that blocks binding of ligand to Siglec-7 and
2 competes with antibody QA79 produced from the hybridoma deposited under accession
3 number ICLC PD99003 for binding to Siglec-7, but does not compete with antibody Z176 or
4 antibody S7.7 for binding to Siglec-7.

1 84. The anti-Siglect antibody of claim 83, wherein the anti-Siglec-7
2 antibody competes with an antibody comprising a V_H sequence and V_L sequence designated
3 as 2G12 in Figures 1 and 2.

1 85. The anti-Siglec-7 antibody of claim 83, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises at least one CDR, or at least two CDRs, of a heavy
3 chain variable region sequence of SEQ ID NO:2.

- 1 86. The anti-Siglec-7 antibody of claim 83, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:2.
- 1 87. The anti-Siglec-7 antibody of claim 83, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR1, CDR2, and CDR3 of a heavy chain
3 variable region sequence of SEQ ID NO:2.
- 1 88. The anti-Siglec-7 antibody of any one of claims 83 to 87, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises at least one CDR, or at least two CDRs,
3 of a light chain variable region sequence of SEQ ID NO:16.
- 1 89. The anti-Siglec-7 antibody of any one of claims 83 to 87, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises a CDR3 of a light chain variable region
3 sequence of SEQ ID NO:16.
- 1 90. The anti-Siglec-7 antibody of any one of claims 83 to 87, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light
3 chain variable region sequence of SEQ ID NO:16.
- 1 91. An anti-Siglec-7 antibody that has internalization activity, does not
2 block ligand binding to Siglec-7, and competes with antibody S7.7, but not with antibody
3 QA79 or antibody Z176, for binding to Siglec-7.
- 1 92. The anti-Siglec-7 antibody of claim 91, wherein the anti-Siglec-7
2 antibody competes with an antibody comprising a V_H sequence and V_L sequence designated
3 as 8A2 in Figures 1 and 2.
- 1 93. The anti-Siglec-7 antibody of claim 91, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises at least one CDR, or at least two CDRs, of a heavy
3 chain variable region sequence of SEQ ID NO:4, SEQ ID NO:104, or SEQ ID NO:106.
- 1 94. The anti-Siglec-7 antibody of claim 91, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:4, SEQ ID NO:104, or SEQ ID NO:106.

- 1 95. The anti-Siglec-7 antibody of claim 91, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR1, CDR2, and CDR3 of a heavy chain
3 variable region sequence of SEQ ID NO:4, SEQ ID NO:104, or SEQ ID NO:106.
- 1 96. The anti-Siglec-7 antibody of any one of claims 91 to 95, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises at least one CDR, or at least two CDRs,
3 of a light chain variable region sequence of SEQ ID NO:18, SEQ ID NO:105, or SEQ ID
4 NO:107.
- 1 97. The anti-Siglec-7 antibody of any one of claims 91 to 95, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises a CDR3 of a light chain variable region
3 sequence of SEQ ID NO:18, SEQ ID NO:105, or SEQ ID NO:107.
- 1 98. The anti-Siglec-7 antibody of any one of claims 91 to 95, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light
3 chain variable region sequence of SEQ ID NO:18, SEQ ID NO:105, or SEQ ID NO:107.
- 1 99. An anti-Siglec-7 antibody has internalization activity, does not block
2 ligand binding to Siglec-7, and competes with antibody Z176, but not with antibody QA79 or
3 antibody S7.7 for binding to Siglec-7.
- 1 100. The anti-Siglec antibody of claim 99, wherein the anti-Siglec-7
2 antibody competes with an antibody comprising a V_H sequence and V_L sequence designated
3 as 5D1 in Figures 1 and 2.
- 1 101. The anti-Siglec-7 antibody of claim 99, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises at least one CDR, or at least two CDRs, of a heavy
3 chain variable region sequence of SEQ ID NO:3.
- 1 102. The anti-Siglec-7 antibody of claim 99, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:3.
- 1 103. The anti-Siglec-7 antibody of claim 99, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR1, CDR2, and CDR3 of a heavy chain
3 variable region sequence of SEQ ID NO:3.

1 104. The anti-Siglec-7 antibody of any one of claims 99 to 103, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises at least one CDR, or at least two CDRs,
3 of a light chain variable region sequence of SEQ ID NO:17.

1 105. The anti-Siglec-7 antibody of any one of claims 99 to 103, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises a CDR3 of a light chain variable region
3 sequence of SEQ ID NO:17.

1 106. The anti-Siglec-7 antibody of any one of claims 99 to 103, wherein the
2 anti-Siglec-7 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a light
3 chain variable region sequence of SEQ ID NO:17.

1 107. The anti-Siglec-7 antibody of claim 1, wherein the anti-Siglec-7
2 antibody has internalization activity, does not block ligand binding to Siglec-7, and does not
3 compete with antibody Z176, antibody QA79, or antibody S7.7 for binding to Siglec-7.

1 108. The anti-Siglec-7 antibody of claim 107, wherein the anti-Siglec-7
2 antibody competes with an antibody comprising a V_H sequence and V_L sequence designated
3 as 4B12 in Figures 1 and 2.

1 109. The anti-Siglec-7 antibody of claim 107, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises at least one CDR, or at least two CDRs, of a heavy
3 chain variable region sequence of SEQ ID NO:11.

1 110. The anti-Siglec-7 antibody of claim 107, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR3 of a heavy chain variable region sequence
3 of SEQ ID NO:11.

1 111. The anti-Siglec-7 antibody of claim 107, wherein the anti-Siglec-7
2 antibody has a V_H region that comprises a CDR1, CDR2, and CDR3 of a heavy chain
3 variable region sequence of SEQ ID NO:11.

1 112. The anti-Siglec-7 antibody of any one of claims 107 to 111, wherein
2 the anti-Siglec-7 antibody has a V_L region that comprises at least one CDR, or at least two
3 CDRs, of a light chain variable region sequence of SEQ ID NO:25.

1 113. The anti-Siglec-7 antibody of any one of claims 107 to 111, wherein
2 the anti-Siglec-7 antibody has a V_L region that comprises a CDR3 of a light chain variable
3 region sequence of SEQ ID NO:25.

1 114. The anti-Siglec-7 antibody of any one of claims 107 to 111, wherein
2 the anti-Siglec-7 antibody has a V_L region that comprises a CDR1, CDR2, and CDR3 of a
3 light chain variable region sequence of SEQ ID NO:25.

1 115. An anti-Siglec-7 antibody having a V_H region that comprises at least
2 one CDR, or at least two CDRs, of a V_H region sequence set forth in Figure 1.

1 116. An anti-Siglec-7 antibody having a V_H region that comprises a CDR1,
2 CDR2, and CDR3 of one of the heavy chain variable region sequences set forth in Figure 1.

1 117. The anti-Siglec-7 antibody of claim 116, having a V_H region that
2 comprises a heavy chain variable region sequence set forth in Figure 1.

1 118. An anti-Siglec-7 antibody having a V_L region that comprises at least
2 one CDR, or at least two CDRs, of a V_L region sequence set forth in Figure 2.

1 119. An anti-Siglec-7 antibody having a V_H region that comprises a CDR1,
2 CDR2, and CDR3 of one of the light chain variable region sequences set forth in Figure 2.

1 120. The anti-Siglec-7 antibody of claim 119, having a V_L region that
2 comprises a light chain variable region sequence set forth in Figure 2.

1 121. The anti-Siglec-7 antibody of any one of claims 83 to 120, wherein the
2 antibody is in a monovalent form.

1 122. The anti-Siglec-7 antibody of any one of claims 83 to 120, wherein the
2 antibody is a multivalent Fab form.

1 123. The anti-Siglec-7 antibody of any one of claims 83 to 120, wherein the
2 antibody is an IgG.

1 124. A bispecific or multi-specific antibody that comprises an antibody of
2 any one of claims 83 to 120.

1 125. A method of inhibiting proliferation of tumor cells, the method
2 comprising administering a therapeutically effective amount of an antibody of any one of
3 claims 83 to 123, or a bispecific or multi-specific antibody of claim 124, to a patient that has
4 a tumor that expresses sialylated Siglec-7 ligands.

1 126. The method of claim 125, wherein the tumor has an elevated number
2 of CD8+ infiltrating T cells that express Siglec-7.

1 127. A method of identifying a patient that is a candidate for treatment with
2 an anti-Siglec-7 antibody, the method comprising determining the proportion of CD8+ T cells
3 that have infiltrated a tumor, or a metastatic lesion, that express Siglec-7.

1 128. A method of identifying a patient that has a tumor that is a candidate
2 for treatment with an anti-Siglec-7 antibody, the method comprising determining that at least
3 10% of tumor-infiltrating CD8+ T cells in the tumor or a metastatic lesion, express Siglec-7.

1 129. A method of identifying a patient that has a tumor that is a candidate
2 for treatment with an anti-Siglec-7 antibody, the method comprising determining the
3 proportion of CD8+ infiltrating T cells in a tumor or metastatic lesion that express Siglec-7,
4 wherein a patient that has a tumor or metastatic lesion in which at least 10% of infiltrating
5 CD8+ T express Siglec-7 is a candidate for treatment with an anti-Siglec-7 antibody.

1 130. The method of claim 127, 128, or 129, wherein the level of Siglec-7
2 expression is determined using an anti-Siglec-7 antibody.

1 131. The method of claim 130, wherein the level of expression is
2 determined by flow cytometry or immunohistochemistry.

1