

Claims

1. ~~An isolated antigen-binding protein, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1.~~ An antibody or antigen binding fragment which is capable of specifically binding to a sialic acid-binding immunoglobulin-like lectin (Siglec) or a functionally active fragment thereof, comprising

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 14;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 3, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 12, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 3, SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 5, or SEQ ID NO: 6, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7 or SEQ ID NO: 8, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, SEQ ID NO: 12, or SEQ ID NO: 11, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13 or SEQ ID NO: 14;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 8, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 3, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid

sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 4, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 5, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13;

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 6, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13; or

HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 3, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 11, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13.

~~2. The isolated antigen binding protein according to claim 1, comprising HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 33.~~

~~3. The isolated antigen binding protein according to any one of claims 1-2, comprising HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, or SEQ ID NO: 6.~~

~~4. The isolated antigen binding protein according to any one of claims 1-3, comprising HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 34.~~

~~5. The isolated antigen binding protein according to any one of claims 1-4, comprising HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7 or SEQ ID NO: 8.~~

~~6. The isolated antigen binding protein according to any one of claims 1-5, comprising~~

~~LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9.~~

~~7. The isolated antigen binding protein according to any one of claims 1-6, comprising LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 35.~~

~~8. The isolated antigen binding protein according to any one of claims 1-7, comprising LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, SEQ ID NO: 11, or SEQ ID NO: 12.~~

~~9. The isolated antigen binding protein according to any one of claims 1-8, comprising LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 36.~~

~~10. The isolated antigen binding protein according to any one of claims 1-9, comprising LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13 or SEQ ID NO: 14.~~

~~11. The isolated antigen binding protein according to any one of claims 1-10, comprising H-FR1, wherein the C-terminus of the H-FR1 is directly or indirectly linked to the N-terminus of the HCDR1, and the H-FR1 comprises an amino acid sequence as set forth in SEQ ID NO: 15.~~

~~12. The isolated antigen binding protein according to any one of claims 1-11, comprising H-FR2, wherein the H-FR2 is located between the HCDR1 and the HCDR2, and the H-FR2 comprises an amino acid sequence set forth in SEQ ID NO: 16.~~

~~13. The isolated antigen binding protein according to any one of claims 1-12, comprising H-FR3, wherein the H-FR3 is located between the HCDR2 and the HCDR3, and the H-FR3 comprises an amino acid sequence set forth in SEQ ID NO: 17.~~

~~14. The isolated antigen binding protein according to any one of claims 1-13, comprising H-FR4, wherein the N-terminus of the H-FR4 is directly or indirectly linked to the C-terminus of the HCDR3, and the H-FR4 comprises an amino acid sequence as set forth in SEQ ID NO: 18.~~

~~15. The isolated antigen binding protein according to any one of claims 1-14, comprising L-FR1, wherein the C-terminus of the L-FR1 is directly or indirectly linked to the N-terminus of the LCDR1, and the L-FR1 comprises an amino acid sequence as set forth in SEQ ID NO: 19.~~

~~16. The isolated antigen binding protein according to any one of claims 1-15, comprising L-FR2, wherein the L-FR2 is located between the LCDR1 and the LCDR2, and the L-FR2 comprises an amino acid sequence as set forth in SEQ ID NO: 20.~~

~~17. The isolated antigen binding protein according to any one of claims 1-16, comprising L-FR3, wherein the L-FR3 is located between the LCDR2 and the LCDR3, and the L-FR3 comprises an amino acid sequence as set forth in SEQ ID NO: 21.~~

~~18. The isolated antigen binding protein according to any one of claims 1-17, comprising~~

~~L-FR4, wherein the N terminus of the L-FR4 is directly or indirectly linked to the C terminus of the LCDR3, and the L-FR4 comprises an amino acid sequence as set forth in SEQ ID NO: 22.~~

~~19. The isolated antigen-binding protein according to any one of claims 1-18, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 33, and HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 34.~~

~~20. The isolated antigen-binding protein according to any one of claims 1-19, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, or SEQ ID NO: 6, and HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7 or SEQ ID NO: 8.~~

~~21. The isolated antigen-binding protein according to any one of claims 1-20, comprising LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 35, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 36.~~

~~22. The isolated antigen-binding protein according to any one of claims 1-21, comprising LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, SEQ ID NO: 11 or SEQ ID NO: 12, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13 or SEQ ID NO: 14.~~

~~23. The isolated antigen-binding protein according to any one of claims 1-22, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 33, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 34, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 35, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 36.~~

~~24. The isolated antigen-binding protein according to any one of claims 1-23, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, or SEQ ID NO: 6, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7 or SEQ ID NO: 8, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, SEQ ID NO: 11, or SEQ ID NO: 12, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13 or SEQ ID NO: 14.~~

~~25. The isolated antigen-binding protein according to any one of claims 1-24, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2~~

~~ID NO: 13.~~

~~31. The isolated antigen-binding protein according to any one of claims 1-24, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 2, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 10, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 14.~~

~~32. The isolated antigen-binding protein according to any one of claims 1-24, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 3, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 11, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13.~~

~~33. The isolated antigen-binding protein according to any one of claims 1-24, comprising HCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 1, HCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 3, HCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 7, LCDR3 comprising an amino acid sequence as set forth in SEQ ID NO: 9, LCDR2 comprising an amino acid sequence as set forth in SEQ ID NO: 12, and LCDR1 comprising an amino acid sequence as set forth in SEQ ID NO: 13.~~

~~34. The isolated antigen-binding protein according to any one of claims 1-33, comprising a heavy chain variable region (VH) comprising an amino acid sequence as set forth in SEQ ID NO: 37.~~

~~352. The isolated antigen-binding proteinantibody or antigen binding fragment according to any one of claims 1-34claim 1, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 23, SEQ ID NO: 25, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 26, SEQ ID NO: 27, or SEQ ID NO: 28 or SEQ ID NO: 37.~~

~~36. The isolated antigen-binding protein according to any one of claims 1-35, comprising a light chain variable region (VL) comprising an amino acid sequence as set forth in SEQ ID NO: 38.~~

~~373. The antibody or antigen binding fragment according to claim 1 or claim 2,The isolated antigen-binding protein according to any one of claims 1-36, comprising VL comprising an amino acid sequence as set forth in SEQ ID NO: 30, SEQ ID NO: 32, SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO: 31, or SEQ ID NO: 32or SEQ ID NO: 38.~~

~~384. The antibody or antigen binding fragment according to The isolated antigen-binding protein according to any one of claims 1-372, comprising~~

VH comprising an amino acid sequence as set forth in SEQ ID NO: 23, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 30;

VH comprising an amino acid sequence as set forth in SEQ ID NO: 25, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 32;

VH comprising an amino acid sequence as set forth in SEQ ID NO: 37, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 38;

~~39. The isolated antigen-binding protein according to any one of claims 1-38, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 23, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 26, SEQ ID NO: 27, or SEQ ID NO: 28, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO: 31, or SEQ ID NO: 32;~~

~~40. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 23, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29;~~

~~41. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 24, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29;~~

~~42. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 25, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29;~~

~~43. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 26, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29;~~

~~44. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 27, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29;~~

~~45. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 28, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 29; or~~

~~46. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 23, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 30.~~

~~47. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH comprising an amino acid sequence as set forth in SEQ ID NO: 25, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 31;~~

~~48. The isolated antigen-binding protein according to any one of claims 1-39, comprising VH~~

~~comprising an amino acid sequence as set forth in SEQ ID NO: 25, and VL comprising an amino acid sequence as set forth in SEQ ID NO: 32.~~

~~495. The isolated antigen binding protein~~antibody or antigen binding fragment according to any one of claims 1-484, comprising an antibody heavy chain constant region, preferably -

~~50. The isolated antigen binding protein of claim 49, wherein the antibody heavy chain constant region comprises a heavy chain constant region derived from a human antibody,~~
more preferably -

~~51. The isolated antigen binding protein according to any one of claims 49-50, wherein the antibody heavy chain constant region comprises a heavy chain constant region derived from an IgG,~~
more preferably -

~~52. The isolated antigen binding protein according to any one of claims 49-51, wherein the antibody heavy chain constant region comprises a heavy chain constant region derived from an IgG1.~~

~~536. The antibody or antigen binding fragment~~isolated antigen binding protein according to any one of claims 1-52, comprising an antibody light chain constant region, preferably -

~~54. The isolated antigen binding protein of claim 53, wherein the antibody light chain constant region comprises a light chain constant region derived from a human antibody,~~
more preferably -

~~55. The isolated antigen binding protein according to any one of claims 53-54, wherein the antibody light chain constant region comprises a constant region derived from an Igk.~~

~~56. The isolated antigen binding protein according to any one of claims 1-55, including an antibody or an antigen binding fragment thereof.~~

~~577. The antibody or antigen binding fragment according to any one of claims 1-6~~isolated antigen binding protein of claim 56, wherein the antibody includes is a monoclonal antibody.

~~588. The antibody or antigen binding fragment according to any one of claims 1-7~~The isolated antigen binding protein according to any one of claims 56-57, wherein the antibody is selected from one or more of the groups consisting of a murine antibody, a chimeric antibody, a humanized antibody, and a fully human antibody.

~~599. The antibody or antigen binding fragment according to any one of claims 1-8~~The isolated antigen binding protein according to any one of claims 56-58, wherein the antigen-binding fragment is selected from one or more of the groups consisting of Fab, Fab', a Fv fragment, F(ab')₂, F(ab)₂, scFv, di-scFv, VHH, and dAb.

~~60. The isolated antigen binding protein according to any one of claims 1-59, which is capable of specifically binding to a sialic acid binding immunoglobulin-like lectin (Siglec) or a functionally active fragment thereof.~~

~~6110. The antibody or antigen binding fragment according to any one of claims 1-9 isolated antigen-binding protein of claim 60, wherein the Siglec includes Siglec-15, preferably -~~

~~62. The isolated antigen-binding protein according to any one of claims 60-61, wherein the Siglec includes human Siglec, monkey Siglec, and/or murine Siglec, preferably the Siglec-15 or functional fragment thereof includes Siglec-15 or a functional fragment thereof expressed on a cell, and optionally, the antibody or antigen binding fragment -~~

~~63. The isolated antigen-binding protein according to any one of claims 1-62, having the ability to bind to Siglec-15 or a functional fragment thereof with a K_D value of about 1.56×10^{-10} M or less; -~~

~~64. The isolated antigen-binding protein according to any one of claims 1-63, having the ability to bind to Siglec-15 or a functional fragment thereof with an EC_{50} value of about 3.25 nM or less; -~~

~~65. The isolated antigen-binding protein of claim 64, wherein the Siglec-15 or functional fragment thereof includes Siglec-15 or a functional fragment thereof expressed on a cell.~~

~~66. The isolated antigen-binding protein according to any one of claims 1-65, having the ability to affect immune cells proliferation, preferably -~~

~~67. The isolated antigen-binding protein of claim 66, wherein the affecting immune cells proliferation includes reducing the Siglec-15-associated immune cell proliferation inhibition, more preferably -~~

~~68. The isolated antigen-binding protein according to any one of claims 66-67, wherein the immune cells include immune cells derived from human, more preferably -~~

~~69. The isolated antigen-binding protein according to any one of claims 66-68, wherein the immune cells include lymphocytes; -~~

~~70. The isolated antigen-binding protein according to any one of claims 66-69, wherein the immune cells include peripheral blood lymphocytes;~~

~~71. The isolated antigen-binding protein according to any one of claims 66-70, wherein the immune cells include T cells;~~

~~72. The isolated antigen-binding protein according to any one of claims 66-71, wherein the immune cells include CD4+ and/or CD8+ cells;~~

~~73. The isolated antigen-binding protein according to any one of claims 1-72, having tumor inhibition ability, preferably~~

~~74. The isolated antigen-binding protein of claim 73, wherein the tumor inhibition ability includes affecting the tumor volume;~~

~~75. The isolated antigen-binding protein according to any one of claims 73-74, having the ability to inhibit a tumor with a tumor volume inhibition rate of about 23% or more; or~~

~~76. The isolated antigen-binding protein according to any one of claims 1-75, having the ability to affect cytokine secretion, preferably -~~

~~77. The isolated antigen-binding protein of claim 76, wherein the secretion includes in vivo, ex vivo, and/or in vitro secretion, preferably -~~

~~78. The isolated antigen-binding protein according to any one of claims 76-77, wherein the cytokine secretion includes lipopolysaccharide-induced cytokine secretion, preferably -~~

~~79. The isolated antigen-binding protein according to any one of claims 76-78, wherein the cytokine includes an inflammatory factor, -~~

~~80. The isolated antigen-binding protein according to any one of claims 76-79, wherein the cytokine includes TNF- α and/or IL-6.~~

~~81. A polypeptide, comprising the isolated antigen-binding protein according to any one of claims 1-80.~~

~~82. The polypeptide of claim 81, comprising a fusion protein.~~

~~8311. A nucleic acid molecule encoding the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10 and/or the polypeptide according to any one of claims 81-82.~~

~~8412. A vector comprising the nucleic acid molecule of claim 8311.~~

~~8513. An immunoconjugate comprising the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10 and/or the polypeptide according to any one of claims 81-82.~~

~~8614. A cell comprising and/or expressing the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10, comprising and/or expressing the polypeptide according to any one of claims 81-82, comprising the nucleic acid molecule of claim 8311, comprising the vector of claim 8412, and/or comprising the immunoconjugate of claim 8513.~~

~~8715. A pharmaceutical composition comprising the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10, the polypeptide according to any one of claims 81-82, the nucleic acid molecule of claim 8311, the vector of claim 8412, the immunoconjugate of claim 8513, and/or the cell of claim 8614, and an optional pharmaceutically acceptable vehicle.~~

~~8816. A pharmaceutical combination comprising the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10, the polypeptide according to any one of claims 81-82, the nucleic acid molecule of claim 8311, the vector of claim 8412, the immunoconjugate of claim 8513, the cell of claim 8614, and/or the pharmaceutical composition of claim 8715.~~

~~89-17. A kit comprising the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10, the polypeptide according to any one of claims 81-82, the nucleic acid molecule of claim 8311, the vector of claim 8412, the immunoconjugate of claim 8513, the cell of claim 8614, the pharmaceutical composition of claim 8715, and/or the pharmaceutical combination of claim 8816, preferably for -~~

~~90. A kit according to claim 89 for detecting the presence and/or amount of Siglec in a sample, more preferably -~~

~~91. The kit according to claim 90, wherein the Siglec includes Siglec-15.~~

~~9218. A method of preparing the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10 and/or the polypeptide according to any one of claims 81-82, comprising culturing the cell of claim 86-14 under conditions capable of expressing the antigen-binding proteinantibody or antigen binding fragment and/or the polypeptide.~~

~~93. The method of claim 92, comprising culturing the cell under conditions capable of expressing the antigen-binding protein.~~

~~94. The method of claim 92, comprising culturing the cell under conditions capable of expressing the polypeptide.~~

~~9519. A method of detecting Siglec in a sample, comprising administering the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10, administering the polypeptide according to any one of claims 81-82, administering the nucleic acid molecule of claim 8311, administering the vector of claim 8412, administering the immunoconjugate of claim 8513, administering the cell of claim 8614, administering the pharmaceutical composition of claim 8715, administering the pharmaceutical combination of claim 8816, and/or using the kit according to any one of claims 89-91claim 17, preferably, -~~

~~96. The method of claim 95, wherein the Siglec includes Siglec-15.~~

~~97. A method of affecting binding of Siglec or a functionally active fragment thereof to a ligand thereof, comprising administering the isolated antigen-binding protein according to any one of claims 1-80, administering the polypeptide according to any one of claims 81-82, administering the nucleic acid molecule of claim 83, administering the vector of claim 84, administering the immunoconjugate of claim 85, administering the cell of claim 86, administering the pharmaceutical composition of claim 87, administering the pharmaceutical combination of claim 88, and/or using the kit according to any one of claims 89-91.~~

~~98. The method of claim 97, wherein the method includes in vivo, ex vivo, and/or in vitro methods.~~

~~99. The method according to any one of claims 97-98, wherein the Siglec or a functionally~~

active fragment thereof includes ~~Siglec 15~~ or a functionally active fragment thereof.

~~100. The method according to any one of claims 97-99, wherein the ligand of Siglec includes Leucine-rich repeat-containing protein 4C and/or sialyl Tn.~~

~~101. A method of affecting immune cell proliferation, comprising administering the isolated antigen-binding protein according to any one of claims 1-80, administering the polypeptide according to any one of claims 81-82, administering the nucleic acid molecule of claim 83, administering the vector of claim 84, administering the immunoconjugate of claim 85, administering the cell of claim 86, administering the pharmaceutical composition of claim 87, administering the pharmaceutical combination of claim 88, and/or using the kit according to any one of claims 89-91.~~

~~102. The method of claim 101, wherein the method includes in vivo, ex vivo, and/or in vitro methods.~~

~~103. The method according to any one of claims 101-102, wherein the affecting immune cell proliferation includes reducing the Siglec-15-associated immune cell proliferation inhibition.~~

~~104. The method according to any one of claims 101-103, wherein the immune cells include immune cells derived from human.~~

~~105. The method according to any one of claims 101-104, wherein the immune cells include lymphocytes.~~

~~106. The method according to any one of claims 101-105, wherein the immune cells include peripheral blood lymphocytes.~~

~~107. The method according to any one of claims 101-106, wherein the immune cells include T cells.~~

~~108. The method according to any one of claims 101-107, wherein the immune cells include CD4⁺ cells and/or CD8⁺ cells.~~

~~109. A method of affecting cytokine secretion, comprising administering the isolated antigen-binding protein according to any one of claims 1-80, administering the polypeptide according to any one of claims 81-82, administering the nucleic acid molecule of claim 83, administering the vector of claim 84, administering the immunoconjugate of claim 85, administering the cell of claim 86, administering the pharmaceutical composition of claim 87, administering the pharmaceutical combination of claim 88, and/or using the kit according to any one of claims 89-91.~~

~~110. The method of claim 109, wherein the secretion includes in vivo, ex vivo, and/or in vitro secretions.~~

~~111. The method according to any one of claims 109-110, wherein the cytokine secretion includes lipopolysaccharide-associated cytokine secretion.~~

~~112. The method according to any one of claims 109-111, wherein the cytokine includes an inflammatory factor.~~

~~113. The method according to any one of claims 109-112, wherein the cytokine includes TNF- α and/or IL-6.~~

~~114. Use of the isolated antigen-binding protein according to any one of claims 1-80, the polypeptide according to any one of claims 81-82, the nucleic acid molecule of claim 83, the vector of claim 84, the immunoconjugate of claim 85, the cell of claim 86, the pharmaceutical composition of claim 87, and/or the pharmaceutical combination of claim 88 in the manufacture a kit.~~

~~115. The use of claim 114, wherein the kit is used to detect the presence and/or amount of Siglec in a sample.~~

~~116. The use of claim 115, wherein the Siglec includes Siglec-15.~~

~~117~~20. Use of the isolated antigen-binding protein according to any one of claims 1-80the antibody or antigen binding fragment according to any one of claims 1 to 10, the polypeptide according to any one of claims 81-82, the nucleic acid molecule of claim 8311, the vector of claim 8412, the immunoconjugate of claim 8513, the cell of claim 8614, the pharmaceutical composition of claim 8715, the pharmaceutical combination of claim 8816, and/or the kit according to any one of claims 89-91claim 17 in the manufacture of a medicament for the prevention and/or treatment of a disease and/or condition-, preferably

~~118. The use of claim 117, wherein the disease and/or condition includes a tumor, preferably-~~

~~119. The use according to any one of claims 117-118, wherein the tumor includes a Siglec-associated tumor, preferably -~~

~~120. The use of claim 119, wherein the Siglec includes Siglec-15, optionally -~~

~~121. The use according to any one of claims 117-120, wherein the disease and/or condition includes a solid tumor, preferably -~~

~~122. The use according to any one of claims 117-121, wherein the disease and/or condition includes colon cancer.~~