

CLAIM

1. An antibody or an antigen-binding fragment thereof, which binds to a CD38 protein at a K_D value of 1×10^{-9} M or below, when binding to the CD38 protein, the antibody or the antigen-binding fragment binds to one or more residues corresponding to amino acid residues 60-89 of human CD38 protein.
2. The antibody or the antigen-binding fragment thereof according to claim 1, wherein the antibody is selected from the group comprising monoclonal antibody, single-strand antibody, chimeric antibody, humanized antibody and fully human antibody.
3. The antibody or the antigen-binding fragment thereof according to any one of claims 1-2, wherein the antigen-binding fragment is selected from the group comprising Fab, Fab', F(ab)2, F(ab')2, Fv and ScFv fragments.
4. The antibody or the antigen-binding fragment thereof according to any one of claims 1-3, wherein the CD38 protein is human CD38 protein or monkey CD38 protein.
5. The antibody or the antigen-binding fragment thereof according to any one of claims 1-4, which competes with a reference antibody to bind to the CD38 protein, wherein the reference antibody comprises a light chain variable region and a heavy chain variable region, the light chain variable region of the reference antibody comprises LCDR1, LCDR2 and LCDR3, the LCDR1 comprises an amino acid sequence as shown in SEQ ID NO:1; the LCDR2 comprises an amino acid sequence as shown in SEQ ID NO:2; the LCDR3 comprises an amino acid sequence as shown in SEQ ID NO:3, the heavy chain variable region of the reference antibody comprises HCDR1, HCDR2 and HCDR3, the HCDR1 comprises an amino acid sequence as shown in SEQ ID NO:4; the HCDR2 comprises an amino acid sequence as shown in SEQ ID NO:5; and the HCDR3 comprises an amino acid sequence as shown in SEQ ID NO:6.
6. The antibody or the antigen-binding fragment thereof according to any one of claims 1-5, wherein the antibody comprises a light chain of antibody or a fragment thereof, the light chain of antibody or the fragment thereof comprises LCDR1-3 which comprises LCDR1, LCDR2 and LCDR3, the LCDR1 comprises an amino acid sequence as shown in SEQ ID NO:1; the LCDR2 comprises an amino acid sequence as shown in SEQ ID NO:2; the LCDR3 comprises an amino acid sequence as shown in SEQ ID NO:3.
7. The antibody or an antigen-binding fragment thereof according to claim 6, wherein the light chain of antibody or the fragment thereof comprises a light chain variable region VL, and the

light chain variable region VL comprises an amino acid sequence as shown in SEQ ID NO:7.

8. The antibody or the antigen-binding fragment thereof according to any one of claims 6-7, wherein the light chain of antibody or the fragment thereof comprises an amino acid sequence as shown in SEQ ID NO:22.

9. The antibody or the antigen-binding fragment thereof according to claim 8, wherein the light chain of antibody or the fragment thereof comprises an amino acid sequence as shown in any one of SEQ ID NO:11, SEQ ID NO:16, SEQ ID NO:18 and SEQ ID NO:20.

10. The antibody or the antigen-binding fragment thereof according to any one of claims 1-9, wherein the antibody comprises an antibody heavy chain or a fragment thereof, the antibody heavy chain or the fragment thereof comprises HCDR1, HCDR2 and HCDR3, the HCDR1 comprises an amino acid sequence as shown in SEQ ID NO:4; the HCDR2 comprises an amino acid sequence as shown in SEQ ID NO:5; and the HCDR3 comprises an amino acid sequence as shown in SEQ ID NO:6.

11. The antibody or the antigen-binding fragment thereof according to claim 10, wherein, the antibody heavy chain or the fragment thereof comprises a heavy chain variable region VH, and the heavy chain variable region VH comprises an amino acid sequence as shown in SEQ ID NO:8.

12. The antibody or the antigen-binding fragment thereof according to any one of claims 10-11, wherein, the antibody heavy chain comprises an amino acid sequence as shown in SEQ ID NO:23.

13. The antibody or the antigen-binding fragment thereof according to claim 12, wherein the antibody heavy chain comprises an amino acid sequence as shown in any one of SEQ ID NO:13, SEQ ID NO:17, SEQ ID NO:19 and SEQ ID NO:21.

14. An isolated nucleic acid molecule, comprising a polynucleotide encoding the antibody or the antigen-binding fragment thereof according to any one of claims 1-13.

15. The nucleic acid molecule according to claim 14, wherein at least one of the nucleic acid molecules is codon optimized.

16. The nucleic acid molecule according to any one of claims 14-15, wherein the nucleic acid molecule comprises one or more polynucleotide sequences selected from the group comprising SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:12 and SEQ ID NO:14.

17. A vector comprising the nucleic acid molecule according to any one of claims 14-16.

18. A cell comprising the nucleic acid molecule according to any one of claims 14-16 or the vector according to claim 17.

19. A method for preparing the antibody or an antigen-binding fragment thereof according to any one of claims 1-13, comprising culturing the cell according to claim 18 under conditions which allow an expression of the antibody or the antigen-binding fragment thereof.

20. A pharmaceutical composition comprising the antibody or the antigen-binding fragment thereof according to any one of claims 1-13, the nucleic acid molecule according to any one of claims 14-16, the vector according to claim 17 and/or the cell according to claim 18, and optionally a pharmaceutically acceptable adjuvant.

21. The antibody or the antigen-binding fragment thereof according to any one of claims 1-13 for use in preventing or treating tumors.

22. The antibody or the antigen-binding fragment thereof according to claim 21, wherein the tumors comprise a CD38 positive tumor.

23. The antibody or the antigen-binding fragment thereof according to claim 22, wherein the CD38 positive tumor is selected from the group comprising multiple myeloma, lymphoma and leukemia.

24. A method for inhibiting the binding of a CD38 protein to a CD38 ligand, comprising administering the antibody or an antigen-binding fragment thereof according to any one of claims 1-13, the nucleic acid molecule according to any one of claims 14-16, the vector according to claim 17 and/or the cell according to claim 18.

25. The method according to claim 24, wherein the CD38 ligand comprises CD31.