

## CLAIMS

1. An antibody, an antigen binding fragment or a variant thereof, comprising a light chain variable region VL which comprises LCDR1-3, said LCDR1 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 54-58, said LCDR2 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 60-61, and said LCDR3 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 63-64.

2. The antibody, the antigen binding fragment or the variant thereof according to claim 1, wherein said light chain variable region VL comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 11, SEQ ID NO: 33, SEQ ID NO: 37, SEQ ID NO: 39 and SEQ ID NO: 41.

3. The antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-2, comprising an antibody light chain or a fragment thereof, wherein said antibody light chain or the fragment thereof comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 8, SEQ ID NO: 15, SEQ ID NO: 34, SEQ ID NO: 38, SEQ ID NO: 40 and SEQ ID NO: 42.

4. The antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-3, comprising a heavy chain variable region VH which comprises HCDR1-3, said HCDR1 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 46-47, said HCDR2 comprises an amino acid sequence shown in SEQ ID NO: 48, and said HCDR3 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 50-52.

5. The antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-4, wherein said heavy chain variable region VH comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 9, SEQ ID NO: 31 and SEQ ID NO: 35.

6. The antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-5, comprising an antibody heavy chain or a fragment thereof, wherein said antibody heavy chain or the fragment thereof comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 6, SEQ ID NO: 13, SEQ ID NO: 32 and SEQ ID NO: 36.

7. A bispecific antibody which comprises a first targeting moiety that specifically binds to a PD-L1 protein, wherein said first targeting moiety comprises the antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-6.

8. The bispecific antibody according to claim 7 which comprises a second targeting moiety that specifically binds to a CD137 protein, wherein said second targeting moiety comprises an antibody, an antigen binding fragment or a variant thereof, which comprises a light chain variable region VL which comprises LCDR1-3, and the amino acid sequences of said LCDR1-3 are sequentially shown in SEQ ID NO: 80-82.

9. The bispecific antibody according to claim 8, wherein said light chain variable region VL of antibody that binds to the CD137 comprises an amino acid sequence shown in SEQ ID NO: 20.

10. The bispecific antibody according to any one of claims 8-9, wherein said second targeting moiety comprises an antibody, an antigen binding fragment or a variant thereof, which comprises a heavy chain variable region VH which comprises HCDR1-3, and the amino acid sequences of said HCDR1-3 are sequentially shown in SEQ ID NO: 77-79.

11. The bispecific antibody according to claim 10, wherein said heavy chain variable region VH of antibody that binds to the CD137 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 18 and SEQ ID NO: 25.

12. The bispecific antibody according to any one of claims 8-11, wherein said antibody that binds to the CD137 protein comprises a scFv, and said scFv comprises an amino acid sequence shown in SEQ ID NO: 83.

13. The bispecific antibody according to any one of claims 10-12 which comprises a first polypeptide chain and a second polypeptide chain, wherein said first polypeptide chain comprises said heavy chain variable region of the antibody that binds to the PD-L1 protein, said heavy chain variable region of the antibody that binds to the CD137 protein, and said light chain variable region of the antibody that binds to the CD137 protein; and said second polypeptide chain comprises said light chain variable region of the antibody that binds to the PD-L1 protein.

14. The bispecific antibody according to claim 13, wherein in said first polypeptide chain, said heavy chain variable region of the antibody that binds to the PD-L1 protein is located at an N-terminus of said heavy chain variable region of the antibody that binds to the CD137 protein, and said heavy chain variable region of the antibody that binds to the CD137 protein is located at an N-terminus of said light chain variable region of the antibody that binds to the CD137 protein;

alternatively, said heavy chain variable region of the antibody that binds to the PD-L1 protein is located at the N-terminus of said light chain variable region of the antibody that binds to the CD137

protein, and said light chain variable region of the antibody that binds to the CD137 protein is located at the N-terminus of said heavy chain variable region of the antibody that binds to the CD137 protein.

15. The bispecific antibody according to any one of claims 13-14, wherein said first polypeptide chain comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 30, SEQ ID NO: 43 and SEQ ID NO: 44.

16. The bispecific antibody according to any one of claims 13-15, wherein said second polypeptide chain comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 15 and SEQ ID NO: 34.

17. The bispecific antibody according to any one of claims 13-16, wherein said first polypeptide chain comprises an amino acid sequence shown in SEQ ID NO: 43, and said second polypeptide chain comprises an amino acid sequence shown in SEQ ID NO: 34.

18. A pharmaceutical composition, comprising said antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-6, and/or said bispecific antibody according to any one of claims 7-17, and optionally a pharmaceutical acceptable adjuvant.

19. Use of said antibody, the antigen binding fragment or the variant thereof according to any one of claims 1-6, said bispecific antibody according to any one of claims 7-17, and/or said pharmaceutical composition according to claim 18 in manufacture of a medicament for relieving or treating tumors.