CLAIMS

1. An antibody or an antigen binding fragment thereof, wherein said antibody or said antigen binding fragment thereof comprises a light chain variable region VL comprising LCDR1-3 and a heavy chain variable region VH comprising HCDR1-3 and is capable of binding to PD-L1 protein, and wherein said antibody or said antigen binding fragment thereof comprises a combination of LCDR1-3 and HCDR1-3 selected from any one of the following groups:

(1) LCDR1: SEQ ID NO:54, LCDR2: SEQ ID NO:60, LCDR3: SEQ ID NO:63, HCDR1: SEQ ID NO:46, HCDR2: SEQ ID NO:48 and HCDR3: SEQ ID NO:50;

(2) LCDR1: SEQ ID NO:55, LCDR2: SEQ ID NO:60, LCDR3: SEQ ID NO:64, HCDR1: SEQ ID NO:47, HCDR2: SEQ ID NO:48 and HCDR3: SEQ ID NO:51;

(3) LCDR1: SEQ ID NO:55, LCDR2: SEQ ID NO:60, LCDR3: SEQ ID NO:64, HCDR1: SEQ ID NO:47, HCDR2: SEQ ID NO:48 and HCDR3: SEQ ID NO:52;

(4) LCDR1: SEQ ID NO:56, LCDR2: SEQ ID NO:61, LCDR3: SEQ ID NO:64, HCDR1: SEQ ID NO:47, HCDR2: SEQ ID NO:48 and HCDR3: SEQ ID NO:52;

(5) LCDR1: SEQ ID NO:57, LCDR2: SEQ ID NO:61, LCDR3: SEQ ID NO:64, HCDR1: SEQ ID NO:47, HCDR2: SEQ ID NO:48 and HCDR3: SEQ ID NO:52; and

(6) LCDR1: SEQ ID NO:58, LCDR2: SEQ ID NO:61, LCDR3: SEQ ID NO:64, HCDR1: SEQ ID NO:47, HCDR2: SEQ ID NO:48 and HCDR3: SEQ ID NO:52.

2. The antibody or the antigen binding fragment 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 or the antigen binding fragment thereof according to any one of claims 1-2, which comprises a light chain comprising 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 or the antigen binding fragment thereof according to any one of claims 1-3, wherein said heavy chain variable regionVH 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.

5. The antibody or the antigen binding fragment thereof according to any one of claims 1-4, which comprises a heavy chain comprising 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.

6. 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, or the antigen binding fragment thereof according to any one of claims 1-5.

7. The bispecific antibody according to claim 6 which comprises a second targeting moiety that specifically binds to a CD137 protein, wherein said second targeting moiety comprises an antibody or an antigen binding fragment thereof, which comprises a light chain variable region VL which comprises LCDR1-3 and a heavy chain variable region VH which comprises HCDR1-3, the amino acid sequences of said LCDR1-3 are sequentially shown in SEQ ID NO: 80-82, and the amino acid sequences of said HCDR1-3 are sequentially shown in SEQ ID NO: 77-79.

8. The bispecific antibody according to claim 7, wherein said light chain variable region VL of the antibody or the antigen binding fragment that binds to the CD137 comprises an amino acid sequence shown in SEQ ID NO: 20.

9. The bispecific antibody according to claim 7, wherein said heavy chain variable region VH of the antibody or the antigen binding fragment 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.

10. The bispecific antibody according to any one of claims 7-9, wherein said antigen binding fragment of the antibody that binds to the CD137 protein comprises a scFv, and said scFv comprises an amino acid sequence shown in SEQ ID NO: 83.

11. The bispecific antibody according to any one of claims 7-10 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.

12. The bispecific antibody according to claim 11, 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.

13. The bispecific antibody according to any one of claims 11-12, 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.

14. The bispecific antibody according to any one of claims 11-13, 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.

15. The bispecific antibody according to any one of claims 11-14, 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.

16. A pharmaceutical composition, comprising said antibody or the antigen binding fragment thereof according to any one of claims 1-5, and/or said bispecific antibody according to any one of claims 6-15.

17. A medicament for relieving or treating tumors, comprising said antibody or the antigen binding fragment thereof according to any one of claims 1-5, said bispecific antibody according to any one of claims 6-15, or said pharmaceutical composition according to claim 16.