Claims

1. A PD-1 antibody or an antigen-binding fragment thereof, comprising a light chain variable region comprising a LCDR1, a LCDR2 and a LCDR3 as shown in SEQ ID NO: 6, SEQ ID NO: 7 and SEQ ID NO: 8, respectively; and a heavy chain variable region comprising a HCDR1, a HCDR2 and a HCDR3 as shown in SEQ ID NO: 3, SEQ ID NO: 4 and SEQ ID NO: 5, respectively.

2. The PD-1 antibody or the antigen-binding fragment thereof according to claim 1, wherein the antibody or the antigen-binding fragment thereof is a murine antibody or a fragment thereof.

3. The PD-1 antibody or the antigen-binding fragment thereof according to claim 1, wherein the antibody or the antigen-binding fragment thereof is a chimeric antibody or a fragment thereof.

4. The PD-1 antibody or the antigen-binding fragment thereof according to claim 3 , wherein the light chain variable region sequence of the chimeric antibody is: SEQ ID NO: 10.

5. The PD-1 antibody or the antigen-binding fragment thereof according to claim 3 or claim 4, wherein the heavy chain variable region sequence of the chimeric antibody is: SEQ ID NO: 9.

6. The PD-1 antibody or the antigen-binding fragment thereof according to claim 1, wherein the antibody or the antigen-binding fragment is a humanized antibody or a fragment thereof.

7. The PD-1 antibody or the antigen-binding fragment thereof according to claim 6, wherein the light chain FR sequence of the light chain variable region of the humanized antibody is derived from a combination sequence of human germline light chains IGKV1-39 and JK4 as shown in SEQ ID NO: 14, comprising FR1, FR2 and FR3 of IGKV 1-39 and FR4 of JK4.

8. The PD-1 antibody or the antigen-binding fragment thereof according to claim 6, wherein the sequence of the humanized antibody light chain is a sequence as shown in SEQ ID NO: 12 or a variant thereof.

9. The PD-1 antibody or the antigen-binding fragment thereof according to claim 8, wherein the variant comprises a 0-10 amino acid mutation in the light chain variable region.

10. The PD-1 antibody or the antigen-binding fragment thereof according to claim 9, wherein the variant comprises A43S amino acid mutation in the light chain variable region.

11. The PD-1 antibody or the antigen-binding fragment thereof according to claim 6, wherein the heavy chain variable region of the humanized antibody further comprises a heavy chain FR of human IgG1, IgG2, IgG3 or IgG4, or a variant thereof.

12. The PD-1 antibody or the antigen-binding fragment thereof according to claim 6, wherein the heavy chain variable region of the humanized antibody comprises a heavy chain FR of human IgG2 or IgG4.

13. The PD-1 antibody or the antigen-binding fragment thereof according to claim 6, wherein the heavy chain FR sequence of the heavy chain variable region of the humanized antibody is derived from a combination sequence of human germline heavy chains IgHV3-7 and JH6 as shown in SEQ ID NO:13, comprising FR1, FR2 and FR3 of IgHV3-7 and FR4 of JH6.

14. The PD-1 antibody or the antigen-binding fragment thereof according to claim 6 or claim 8, wherein the sequence of the humanized antibody heavy chain is a sequence as shown in SEQ ID NO: 11 or a variant thereof.

15. The PD-1 antibody or the antigen-binding fragment thereof according to claim 14, wherein the variant comprises a 0-10 amino acid mutation in the heavy chain variable region.

16. The PD-1 antibody or the antigen-binding fragment thereof according to claim 15, wherein the variant comprises G44R amino acid mutation in the heavy chain variable region.

17. A DNA molecule encoding the antibody according to any one of claims 1-16.

18. An expression vector comprising the DNA molecule according to claim 17.

19. A host cell transformed with the expression vector according to claim 18.

20. The host cell according to claim 19, wherein the host cell is bacteria.

21. The host cell according to claim 20, wherein the host cell is *E. coli*.

22. The host cell according to claim 19, wherein the host cell is yeast.

23. The host cell according to claim 22, wherein the host cell is *Pichia pastoris*.

24. A pharmaceutical composition comprising the PD-1 antibody or the antigen-binding fragment according to any one of claims 1-16 and a pharmaceutically acceptable excipient, diluent or carrier.

25. Use of the PD-1 antibody or the antigen-binding fragment according to any one of claims 1-16 in the preparation of a medicament for treating a PD-1 mediated disease or disorder.

26. The pharmaceutical composition according to claim 24, wherein the pharmaceutical composition is for treating a PD-1 mediated disease or disorder.

27. The pharmaceutical composition according to claim 26, wherein the disease or disorder is cancer.

28. The pharmaceutical composition according to claim 27, wherein the cancer is PD-L1-expressing cancer.

29. The pharmaceutical composition according to claim 27, wherein the cancer is selected from the group consisting of breast cancer, lung cancer, stomach cancer, intestinal cancer, renal cancer, melanoma and non-small cell lung cancer.

30. The pharmaceutical composition according to claim 29, wherein the cancer is selected from the group consisting of non-small cell lung cancer, melanoma and renal cancer.