

What is claimed:

1. An antibody or a fragment thereof that binds to human programmed death-ligand 1 (PD-L1), wherein the antibody or fragment thereof comprises:

a heavy chain comprising: CDRH1 comprising amino acids 1-3 and 7-9 of SEQ ID NO: 1, wherein amino acids 4-6 are not SSY; CDRH2 comprising amino acids 9-17 of SEQ ID NO: 8; and CDRH3 comprising SEQ ID NO: 15; and

a light chain comprising CDRL1 comprising SEQ ID NO: 20; CDRL2 comprising SEQ ID NO: 21; and CDRL3 comprising SEQ ID NO: 22, SEQ ID NO: 75, or SEQ ID NO: 76.

2. The antibody or fragment thereof according to claim 1, wherein the CDRH1 region comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 2, 3, 4, 5, 6 and 7.

3. The antibody or fragment thereof according to claim 1, wherein the CDRH2 region comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 8, 9, 10, 11, 12, 13 and 14.

4. The antibody or fragment thereof according to claim 1, wherein the variable heavy framework region 1 comprises SEQ ID NO. 26.

5. The antibody or fragment thereof according to claim 1, wherein the variable heavy framework region 1 comprises SEQ ID NO. 27.

6. The antibody or fragment thereof according to claim 1, wherein the variable heavy framework region 2 comprises SEQ ID NO. 28.

7. The antibody or fragment thereof according to claim 1, wherein the variable heavy framework region 3 comprises SEQ ID NO. 29.

8. The antibody or fragment thereof according to claim 1, wherein the variable heavy framework region 4 comprises SEQ ID NO. 30.

9. The antibody or fragment thereof according to claim 1, wherein the variable light framework region 1 comprises SEQ ID NO. 31.

10. The antibody or fragment thereof according to claim 1, wherein the variable light framework region 2 comprises SEQ ID NO. 32.

11. The antibody or fragment thereof according to claim 1, wherein the variable light framework region 3 comprises SEQ ID NO. 33, SEQ ID NO. 77, or SEQ ID NO. 78.

12. The antibody or fragment thereof according to claim 1, wherein the variable light framework region 4 comprises SEQ ID NO. 34.

13. The antibody or fragment thereof according to claim 1, wherein the variable heavy chain sequence comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 36, 37, 38, 39, 40 and 41.

14. The antibody or fragment thereof according to claim 1, wherein the variable heavy chain sequence comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 51, 52, 53, 54, 55 and 56.

15. The antibody or fragment thereof according to claim 1, wherein the variable light chain sequence comprises SEQ ID NO: 42.

16. A pharmaceutical composition comprising the antibody or fragment thereof according to claim 1.

17. An antibody or a fragment thereof that binds to human programmed death-ligand 1 (PD-L1), wherein the antibody or fragment thereof comprises a heavy chain comprising SEQ ID NO: 35.

18. An antibody or fragment thereof that binds human PD-L1 for use in treating cancer in a subject, wherein the antibody or fragment thereof binds to human PD-L1 with a K_D of at least 8.30×10^{-9} , comprises a CDRH2 comprising SEQ ID NO: 9, 10, 11, 12, 13, or 14, and comprises CDRH3 comprising SEQ ID NO: 15.

19. The antibody or fragment thereof of claim 18, wherein the cancer is a hematological cancer, a neurological cancer, breast cancer, a gastrointestinal cancer, renal cell carcinoma, or a genitourinary cancer.

20. The antibody or fragment thereof of claim 18, wherein the antibody or fragment thereof is to be administered to the subject in combination with an additional therapeutic compound.

21. The antibody or fragment thereof of claim 20, wherein the additional therapeutic compound is a CAR-T cell, a tumor-targeting antibody, an immune response potentiating modality, or a small molecule drug.

22. An antibody or fragment thereof that binds human PD-L1 for use in treating cancer in a subject, wherein the antibody or fragment thereof binds to human PD-L1 with a K_D of at least 2.50×10^{-8} and comprises a CDRH3 comprising amino acids 6-13 of SEQ ID NO: 18.

23. The antibody or fragment thereof of claim 22, wherein the antibody or fragment thereof is to be administered to the subject in combination with an additional therapeutic compound.

24. The antibody or fragment thereof of claim 23, wherein the additional therapeutic compound is a CAR-T cell, a tumor-targeting antibody, an immune response potentiating modality, or a small molecule drug.

25. The antibody or fragment thereof of claim 18, wherein the antibody or fragment that binds human PD-L1 comprises a CDRH1 comprising SEQ ID NO: 2, 3, 4, 5, 6, or 7.

26. The antibody or fragment thereof of claim 25, wherein the antibody or fragment that binds human PD-L1 comprises a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22.

27. The antibody or fragment thereof of claim 25, wherein the antibody or fragment that binds human PD-L1 comprises a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 75 or 76.

28. The antibody or fragment thereof of claim 22, wherein the antibody or fragment that binds human PD-L1 comprises a CDRH1 comprising SEQ ID NO: 16 and a CDRH2 comprising SEQ ID NO: 17.

29. The antibody or fragment thereof of claim 28, wherein the antibody or fragment that binds human PD-L1 comprises a CDRL1 comprising SEQ ID NO: 23, a CDRL2 comprising SEQ ID NO: 24, and a CDRL3 comprising SEQ ID NO: 25.

30. An anti-PD-L1 antibody for use as a medicine, the anti-PD-L1 antibody comprising:
(i) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 2, a CDRH2 comprising SEQ ID NO: 9, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22;

(ii) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 3, a CDRH2 comprising SEQ ID NO: 10, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22;

(iii) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 4, a CDRH2 comprising SEQ ID NO: 11, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22;

(iv) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 5, a CDRH2 comprising SEQ ID NO: 12, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22;

(v) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 6, a CDRH2 comprising SEQ ID NO: 13, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22;

(vi) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 7, a CDRH2 comprising SEQ ID NO: 14, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 22;

(vii) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 2, a CDRH2 comprising SEQ ID NO: 9, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 75; or

(viii) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 2, a CDRH2 comprising SEQ ID NO: 9, and a CDRH3 comprising SEQ ID NO: 15; and a light chain comprising a CDRL1 comprising SEQ ID NO: 20, a CDRL2 comprising SEQ ID NO: 21, and a CDRL3 comprising SEQ ID NO: 76.

31. An anti-PD-L1 antibody for use as a medicine, the anti-PD-L1 antibody comprising:

(i) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 16, a CDRH2 comprising SEQ ID NO: 17, and a CDRH3 comprising SEQ ID NO: 18; and a light chain comprising a CDRL1 comprising SEQ ID NO: 23, a CDRL2 comprising SEQ ID NO: 24, and a CDRL3 comprising SEQ ID NO: 25; or

(ii) a heavy chain comprising a CDRH1 comprising SEQ ID NO: 16, a CDRH2 comprising SEQ ID NO: 17, and a CDRH3 comprising SEQ ID NO: 19; and a light chain comprising a CDRL1 comprising SEQ ID NO: 23, a CDRL2 comprising SEQ ID NO: 24, and a CDRL3 comprising SEQ ID NO: 25.