

CLAIMS

1. An antigen-binding polypeptide that binds to a human PD-L1 epitope, comprising a heavy chain variable domain and a light chain variable domain, wherein the respective sequences thereof consist essentially of:
 - (a) SEQ ID NO: 18 and SEQ ID NO: 20;
 - (b) SEQ ID NO: 42 and SEQ ID NO: 44;or
 - (c) SEQ ID NO: 34 and SEQ ID NO: 36.
2. An antigen-binding polypeptide that binds to a human PD-L1 epitope, comprising a heavy chain variable domain and a light chain variable domain, wherein the respective sequences thereof consist essentially of:
 - (a) SEQ ID NO: 22 and SEQ ID NO: 24;
 - (b) SEQ ID NO: 2 and SEQ ID NO: 4;
 - (c) SEQ ID NO: 62 and SEQ ID NO: 64;or
 - (d) SEQ ID NO: 82 and SEQ ID NO: 84.
3. An antigen-binding polypeptide that binds to a human PD-L1 epitope, comprising a heavy chain variable domain and a light chain variable domain, wherein the respective sequences thereof consist essentially of:
 - (a) SEQ ID NO: 70 and SEQ ID NO: 72;
 - (b) SEQ ID NO: 50 and SEQ ID NO: 52;
 - (c) SEQ ID NO: 102, and SEQ ID NO: 104;or
 - (d) SEQ ID NO: 30 and SEQ ID NO: 32.
4. An antigen-binding polypeptide that binds to a human PD-L1 epitope, comprising a heavy chain variable domain and a light chain variable domain, wherein the respective sequences thereof consist essentially of:
 - (a) SEQ ID NO: 6 and SEQ ID NO: 8;
 - (b) SEQ ID NO: 10 and SEQ ID NO: 12;

- (c) SEQ ID NO: 14 and SEQ ID NO: 16;
 - (d) SEQ ID NO: 26 and SEQ ID NO: 28;
 - (e) SEQ ID NO: 38 and SEQ ID NO: 40;
 - (f) SEQ ID NO: 46 and SEQ ID NO: 48;
 - (g) SEQ ID NO: 54 and SEQ ID NO: 56;
- or
- (h) SEQ ID NO: 58 and SEQ ID NO: 60.
5. An antigen-binding polypeptide that binds to a human PD-L1 epitope, comprising a heavy chain variable domain and a light chain variable domain, wherein the respective sequences thereof consist essentially of:
 - (a) SEQ ID NO: 66 and SEQ ID NO: 68;
 - (b) SEQ ID NO: 74 and SEQ ID NO: 76;
 - (c) SEQ ID NO: 78 and SEQ ID NO: 80;
 - (d) SEQ ID NO: 86 and SEQ ID NO: 88;
 - (e) SEQ ID NO: 90 and SEQ ID NO: 92;
 - (f) SEQ ID NO: 94 and SEQ ID NO: 96;
 - (g) SEQ ID NO: 98 and SEQ ID NO: 100;

or

 - (h) SEQ ID NO: 106 and SEQ ID NO: 108.
 6. The antigen-binding polypeptide of claim 1, wherein the polypeptide has a heavy chain variable domain sequence that is at least 95% identical to SEQ ID NO: 18 and a light chain variable domain sequence that is at least 95% identical to SEQ ID NO: 20.
 7. The antigen-binding polypeptide of any of claims 1-6 wherein the polypeptide is a fully human antibody or humanized.
 8. The antigen-binding polypeptide of claim 7, wherein the antibody further comprises a human constant region, wherein the human constant region has ADCC and/or CDC activities.

9. A nucleic acid molecule that encodes the antigen-binding polypeptide of any of claims 1-6, wherein the nucleic acid molecule is a DNA molecule or RNA molecule.
10. The nucleic acid molecule of claim 9, wherein the nucleic acid molecule consists essentially of: (a) SEQ ID NO: 17 and SEQ ID NO:19; (b) SEQ ID NO:33 and SEQ ID NO:35; or (c) SEQ ID NO:41 and SEQ ID NO:43.
11. An antibody that binds to a human PD-L1 epitope, comprising a substantially identical pair of a heavy chain variable domain and a light chain variable domain of any of claims 1-6.
12. A pharmaceutical composition comprising the antigen-binding polypeptide of claims 1-8 or the antibody of claim 11, and a pharmaceutically acceptable excipient, carrier or diluent.
13. Use of a pharmaceutical composition in the manufacture of a medicament for treating a subject in need thereof for a condition therapeutically, said use comprising a therapeutically effective amount of the pharmaceutical composition of claim 12 is to be administered to said subject.
14. Use of a pharmaceutical composition in the manufacture of a medicament for treating a subject in need thereof for a condition therapeutically, said use comprising a therapeutically effective amount of the pharmaceutical composition of claim 12 in combination with (a) antibodies targeting other immunosuppressive pathways; (b) chemotherapy or radiation therapy; (c) other mechanisms of blocking immunosuppressive pathways; or (d) other immunotherapy agents is to be administered to said subject.
15. The use of any of claims 13-14, wherein said condition is mammalian cancer selected from the group consisting of: ovarian cancer, colon cancer, breast cancer, lung cancer, myelomas, neuroblastic-derived CNS tumors, monocytic leukemias, B-cell derived leukemias, T-cell derived leukemias, B-cell derived lymphomas, T-cell derived lymphomas, mast cell derived tumors, melanoma, bladder cancer, gastric cancer, liver cancer, urothelial carcinoma, cutaneum

carcinoma, renal cancer, head and neck cancer, pancreatic cancer, and combinations thereof.

16. The use of claim 15, wherein said mammalian cancer has at least a fraction of the tumor cells expressing detectable amount of PD-L1.
17. A mammalian expression system that produces the polypeptide of any of claims 1-8.