

CLAIMS

What is claimed is:

1. An antibody or fragment thereof, wherein the antibody or fragment thereof has specificity to a human PD-L1 protein and comprises:
 - (a) a VH CDR1 comprising the amino acid sequence of SEQ ID NO: 1;
 - (b) a VH CDR2 comprising the amino acid sequence of SEQ ID NO: 116;
 - (c) a VH CDR3 comprising the amino acid sequence of SEQ ID NO: 117;
 - (d) a VL CDR1 comprising the amino acid sequence of SEQ ID NO: 4;
 - (e) a VL CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and
 - (f) a VL CDR3 comprising the amino acid sequence of SEQ ID NO: 6.
2. The antibody or fragment thereof of claim 1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 149 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 150.
3. An antibody or fragment thereof, wherein the antibody or fragment thereof has specificity to a human PD-L1 protein and comprises:
 - (a) a VH CDR1 comprising the amino acid sequence of SEQ ID NO: 1;
 - (b) a VH CDR2 comprising the amino acid sequence of SEQ ID NO: 116;
 - (c) a VH CDR3 comprising the amino acid sequence of SEQ ID NO: 3;
 - (d) a VL CDR1 comprising the amino acid sequence of SEQ ID NO: 4;
 - (e) a VL CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and
 - (f) a VL CDR3 comprising the amino acid sequence of SEQ ID NO: 140.
4. The antibody or fragment thereof of claim 3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 159 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 160.
5. An antibody or fragment thereof, wherein the antibody or fragment thereof has specificity to a human PD-L1 protein and comprises:
 - (a) a VH CDR1 comprising the amino acid sequence of SEQ ID NO: 1;
 - (b) a VH CDR2 comprising the amino acid sequence of SEQ ID NO: 116;
 - (c) a VH CDR3 comprising the amino acid sequence of SEQ ID NO: 3;

- (d) a VL CDR1 comprising the amino acid sequence of SEQ ID NO: 4;
 - (e) a VL CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and
 - (f) a VL CDR3 comprising the amino acid sequence of SEQ ID NO: 6.
6. The antibody or fragment thereof of claim 5, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 141 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 142.
7. The antibody or fragment thereof of any one of claims 1-6, further comprising a heavy chain constant region, a light chain constant region, an Fc region, or the combination thereof.
8. The antibody or fragment thereof of any one of claims 1-6, wherein the antibody or fragment thereof is a chimeric antibody or a humanized antibody.
9. A polynucleotide nucleotide encoding one of the polypeptide chains of the antibody or fragment thereof of any one of claims 1-6.
10. An isolated cell comprising one or more polynucleotide encoding the antibody or fragment thereof of any one of claims 1-6.
11. A pharmaceutical composition for treating cancer or infection in a patient in need thereof, comprising the antibody or fragment thereof of any one of claims 1-6.
12. The pharmaceutical composition of claim 11, wherein the cancer is a solid tumor.
13. The pharmaceutical composition of claim 11, wherein the cancer is selected from the group consisting of bladder cancer, liver cancer, colon cancer, rectal cancer, endometrial cancer, leukemia, lymphoma, pancreatic cancer, small cell lung cancer, non-small cell lung cancer, breast cancer, urethral cancer, head and neck cancer, gastrointestinal cancer, stomach cancer, oesophageal cancer, ovarian cancer, renal cancer, melanoma, prostate cancer and thyroid cancer.

14. The pharmaceutical composition of claim 11, wherein the infection is viral infection, bacterial infection, fungal infection or infection by a parasite.
15. A pharmaceutical composition for treating cancer or infection in a patient in need thereof, comprising a cell which has been treated, *in vitro*, with the antibody or fragment thereof of any one of claims 1-6, wherein the cell is a tumor-infiltrating T lymphocyte, a CD4⁺ T cell, a CD8⁺ T cell, or a combination thereof.
16. The pharmaceutical composition of claim 15, wherein the cell is isolated from the patient.
17. The pharmaceutical composition of claim 15, wherein the cell is isolated from a donor individual different from the patient.
18. A method of detecting expression of PD-L1 in a sample, comprising contacting the sample with an antibody or fragment thereof of any one of claims 1-6 under conditions for the antibody or fragment thereof to bind to the PD-L1, and detecting the binding which indicates expression of PD-L1 in the sample.
19. The method of claim 18, wherein the sample comprises a tumor cell, a tumor tissue, an infected tissue, or a blood sample.