

CLAIMS

1. An isolated anti-PD-L1 antibody or an antigen binding fragment, comprising:
 - a) a heavy chain variable region comprising SEQ ID NO: 1, SEQ ID NO: 3, and SEQ ID NO: 5; and a light chain variable region comprising SEQ ID NO: 7, SEQ ID NO: 9, and SEQ ID NO: 11;
 - b) a heavy chain variable region comprising SEQ ID NO: 13, SEQ ID NO: 15, and SEQ ID NO: 17; a light chain variable region comprising SEQ ID NO: 19, SEQ ID NO: 21, and SEQ ID NO: 23;
 - c) a heavy chain variable region comprising SEQ ID NO: 25, SEQ ID NO: 27, and SEQ ID NO: 29; a light chain variable region comprising SEQ ID NO: 31, SEQ ID NO: 33, and SEQ ID NO: 35; or
 - d) a heavy chain variable region comprising SEQ ID NO: 37, SEQ ID NO: 39, and SEQ ID NO: 41, and a light chain variable region comprising SEQ ID NO: 19, SEQ ID NO: 21, and SEQ ID NO: 23.
2. The antibody or an antigen binding fragment thereof of claim 1, comprising a heavy chain variable region selected from the group consisting of: SEQ ID NO: 43, SEQ ID NO: 47, SEQ ID NO: 51 and SEQ ID NO: 55.
3. The antibody or an antigen binding fragment thereof of claim 1, comprising a light chain variable region selected from the group consisting of: SEQ ID NO: 45, SEQ ID NO: 49 and SEQ ID NO: 53.
4. The antibody or an antigen binding fragment thereof of claim 1, comprising:
 - a) a heavy chain variable region comprising SEQ ID NO: 43; and a light chain variable region comprising SEQ ID NO: 45;
 - b) a heavy chain variable region comprising SEQ ID NO: 47; and a light chain variable region comprising SEQ ID NO: 49;
 - c) a heavy chain variable region comprising SEQ ID NO: 51; and a light chain variable region comprising SEQ ID NO: 53; or d) a heavy chain variable region comprising SEQ ID NO: 55; and a light chain variable region comprising SEQ ID NO: 49.
5. The antibody or an antigen binding fragment thereof of claim 1, capable of specifically binding to human PD-L1 at an K_d value no more than 10^{-8} M as measured by plasmon resonance binding assay.
6. The antibody or an antigen binding fragment thereof of claim 1, which binds to monkey PD-L1 at an EC_{50} of no more than 1 μ M, or no more than 1 nM, and/or does not bind to mouse PD-L1.
7. The antibody or an antigen binding fragment thereof of claim 1, capable of inhibiting binding of human or monkey PD-L1 to its receptor at an IC_{50} of no more than 100 nM.

8. The antibody or an antigen binding fragment thereof of claim 1, which does not substantially bind to PD-L2.
9. The antibody or an antigen binding fragment thereof of claim 1, which does not mediate ADCC or CDC or both.
10. The antibody or an antigen binding fragment thereof of claim 1, which is a fully human monoclonal antibody.
11. The antibody or an antigen binding fragment thereof of claim 10, wherein the fully human monoclonal antibody is produced by a transgenic rat.
12. The antibody or an antigen binding fragment thereof of claim 1, capable of blocking binding of human PD-L1 to its receptor and thereby providing at least one of the following activities:
 - a) inducing production of IL-2 in CD4⁺T cells;
 - b) inducing production of IFN γ in CD4⁺T cells;
 - c) inducing proliferation of CD4⁺T cells; and
 - d) reversing T reg's suppressive function.
13. The antibody or antigen-binding fragment thereof of claim 1, which is a camelized single domain antibody, a diabody, a scFv, an scFv dimer, a BsFv, a dsFv, a (dsFv)₂, a dsFv-dsFv', an Fv fragment, a Fab, a Fab', a F(ab')₂, a ds diabody, a nanobody, a domain antibody, or a bivalent domain antibody.
14. The antibody or antigen-binding fragment thereof of claim 1, further comprising an immunoglobulin constant region.
15. The antibody or antigen-binding fragment thereof of claim 1, further comprising a conjugate.
16. A kit comprising the antibody or antigen-binding fragment thereof of claim 1.
17. A pharmaceutical composition comprising the antibody or antigen-binding fragment thereof of claim 1 and one or more pharmaceutically acceptable carriers.