

CLAIMS

1. An antibody or an antigen binding fragment thereof which specifically binds to a human Programmed Death Ligand 1 (PD-L1), in which the antibody or antigen binding fragment comprises:
 - 5 a heavy chain variable region comprising a CDRH1 amino acid sequence of SEQ ID NO: 7 or SEQ ID NO: 10, a CDRH2 amino acid sequence of SEQ ID NO: 8 or SEQ ID NO: 11, and a CDRH3 amino acid sequence of SEQ ID NO: 9 or SEQ ID NO: 12; and a light chain variable region comprising a CDRL1 amino acid sequence of SEQ ID NO: 17 or SEQ ID NO: 20, a CDRL2 amino acid sequence of SEQ ID NO: 18 or SEQ ID NO: 21, and a CDRL3 amino acid sequence of SEQ ID NO: 19 or SEQ ID NO: 22.
2. An antibody or antigen binding fragment according to Claim 1, comprising the heavy chain variable region of amino acid sequence SEQ ID NO: 13 and the light chain variable region of amino acid sequence SEQ ID NO: 23.
3. A pharmaceutical composition comprising an antibody or antigen binding fragment as
 - 15 defined in Claim 1 or 2 and a pharmaceutically acceptable excipient, diluent or carrier.
4. An antibody or antigen binding fragment according to Claim 1, in which the heavy chain variable region comprises an amino acid sequence at least 90% identical to SEQ ID NO: 13.
5. An antibody or antigen binding fragment thereof according to Claim 1 or 4, in which the
 - 20 light chain variable region comprises an amino acid sequence at least 95% identical to SEQ ID NO: 23.
6. An antibody or antigen binding fragment thereof that specifically binds to a human Programmed Death Ligand 1 (PD-L1), the antibody or antigen binding fragment thereof comprising a heavy chain variable (V_H) domain and a light chain variable (V_L) domain, in
 - 25 which:
 - (a) the V_H domain has an amino acid sequence of SEQ ID NO: 13 and the V_L domain has an amino acid sequence of SEQ ID NO: 23; or

(b) the V_H domain being encoded by a nucleic acid sequence of SEQ ID NO: 14 and the V_L domain being encoded by a nucleic acid sequence of SEQ ID NO: 24.

7. An antibody or antigen binding fragment thereof that specifically binds to a human Programmed Death Ligand 1 (PD-L1), the antibody or antigen binding fragment thereof comprising a heavy chain and a light chain, in which:

(a) the heavy chain has an amino acid sequence of SEQ ID NO: 15 and the light chain has an amino acid sequence of SEQ ID NO: 25; or

(b) the heavy chain being encoded by a nucleic acid sequence of SEQ ID NO: 16 and the light chain being encoded by a nucleic acid sequence of SEQ ID NO: 26.

8. An antibody or antigen binding fragment thereof according to any of Claims 1, 2 and 4 to 7, further comprising a light chain constant region.

9. An antibody or antigen binding fragment thereof according to Claim 8, in which the light chain constant region is a kappa light chain or a lambda light chain.

10. An antibody or antigen binding fragment thereof according to Claim 8, in which the light chain constant region has an amino acid sequence of SEQ ID NO: 207, SEQ ID NO: 209, SEQ ID NO: 211, SEQ ID NO: 213, SEQ ID NO: 215, SEQ ID NO: 217, SEQ ID NO: 219, SEQ ID NO: 221, SEQ ID NO: 223, SEQ ID NO: 225, SEQ ID NO: 227, SEQ ID NO: 229, SEQ ID NO: 231, SEQ ID NO: 233, SEQ ID NO: 235, SEQ ID NO: 237, SEQ ID NO: 536, or SEQ ID NO: 538.

11. An antibody or antigen binding fragment thereof according to any Claims 1, 2 and 4 to 10, further comprising a heavy chain constant region.

12. An antibody or antigen binding fragment thereof according to Claim 11, in which the heavy chain constant region has an amino acid sequence of SEQ ID NO: 193, SEQ ID NO: 195, SEQ ID NO: 197, SEQ ID NO: 199, SEQ ID NO: 201, SEQ ID NO: 203, SEQ ID NO: 205, SEQ ID NO: 340, SEQ ID NO: 524, SEQ ID NO: 526, SEQ ID NO: 528, SEQ ID NO: 530, SEQ ID NO: 532 or SEQ ID NO: 534.

13. An antibody or antigen binding fragment thereof according to Claim 11, in which the heavy chain constant region is effector-null.

14. An antibody or antigen binding fragment thereof according to Claim 13, in which the effector-null heavy chain constant region is an IgG4 constant region or an IgG1 constant region.
15. An antibody or antigen binding fragment thereof according to any of Claims 1, 2 and 4 to 14, capable of inhibiting PD-L1-mediated suppression of T-cells
16. An antibody or antigen binding fragment thereof according to any of Claims 1, 2 and 4 to 15, in which the human PD-L1 is of SEQ ID NO: 1.
17. An antibody or antigen binding fragment thereof according to any of Claims 1, 2 and 4 to 16, which competes for binding to the human PD-L1 with an antibody comprising a V_H amino acid sequence of SEQ ID NO: 13 and the V_L amino acid sequence of SEQ ID NO: 23.
18. An antibody or antigen binding fragment thereof according to any of Claims 1, 2 and 4 to 17, in which the antibody or antigen binding fragment thereof is a human antibody or antigen binding fragment thereof or a humanized antibody or antigen binding fragment thereof.
19. A bispecific antibody or fusion protein (e.g. an antibody-cytokine fusion protein) comprising an antibody or antigen binding fragment thereof as defined in any of Claims 1, 2 and 4 to 18.
20. A pharmaceutical composition comprising an antibody or antigen binding fragment thereof as defined in any of Claims 4 to 19 and a pharmaceutically acceptable excipient, diluent or carrier.
21. A kit comprising an antibody or antigen binding fragment thereof as defined in any of Claims 1, 2 and 4 to 19 or a pharmaceutical composition as defined in Claim 3 or 20 and optionally further comprising a therapeutic agent comprising an immune checkpoint inhibitor, an immune stimulator, a chemokine receptor antagonist, a targeted kinase inhibitor, an angiogenesis inhibitor, a chemokine, a cytokine, a bi-specific molecule or a cell-based therapy.
22. A kit according to Claim 21, which further comprises a label or instructions for use to treat and/or prevent a hPD-L1 mediated disease in a human, optionally in which the label or

instructions comprise a marketing authorization number; optionally in which the kit comprises an IV or injection device that comprises the antibody or antigen binding fragment.

23. A vector comprising a nucleic acid encoding an antibody or antigen binding fragment thereof as defined in any of Claims 1, 2 and 4 to 19.

5 24. Use of an antibody or antigen binding fragment thereof as defined in any of Claims 1, 2 and 4 to 19 in the manufacture of a medicament for treating or preventing a hPD-L1 mediated disease in a human.

25. Use according to Claim 24, in which the hPD-L1 mediated disease is Alzheimer's disease.

10 26. Use according to Claim 24 or 25, in which a therapeutic agent for treating or preventing the hPD-L1 mediated disease is to be administered, the therapeutic agent comprising an immune checkpoint inhibitor, an immune stimulator, a chemokine receptor antagonist, a targeted kinase inhibitor, an angiogenesis inhibitor, a chemokine, a cytokine, a bi-specific molecule or a cell-based therapy.

15 27. An antibody or antigen binding fragment thereof as defined in any of Claims 1, 2 and 4 to 19 or a pharmaceutical composition as defined in Claim 3 and 20 for use in treating or preventing a hPD-L1 mediated disease in a human.

28. An antibody or antigen binding fragment or a pharmaceutical composition for use according to Claim 27, in which the hPD-L1-mediated disease is Alzheimer's disease.

20 29. An antibody or antigen binding fragment or a pharmaceutical composition for use according to Claim 27 or 28, in which a therapeutic agent for treating or preventing the hPD-L1 mediated disease is to be administered, the therapeutic agent comprising an immune checkpoint inhibitor, an immune stimulator, a chemokine receptor antagonist, a targeted kinase inhibitor, an angiogenesis inhibitor, a chemokine, a cytokine, a bi-specific molecule or
25 a cell-based therapy.