

[0018] In another aspect, there is provided a method of treating an infectious disease in a subject comprising administering to the subject the antibody, or antigen-binding fragment thereof as described herein such that the subject is treated for the infectious disease.

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[0018a] In another aspect, there is provided a use of the antibody, or antigen-binding portion thereof as described herein in the manufacture of a medicament for modifying an immune response in a subject.

10 [0018b] In another aspect, there is provided a use of the antibody, or antigen-binding portion thereof as described herein in the manufacture of a medicament for inhibiting growth of tumor cells in a subject.

15 [0018c] In another aspect, there is provided a use of the antibody, or antigen-binding portion thereof as described herein in the manufacture of a medicament for treating an infectious disease in a subject.

BRIEF DESCRIPTION OF THE DRAWINGS

20 [0019] The invention will be better understood with reference to the detailed description when considered in conjunction with the non-limiting examples and the accompanying drawings, in which:

[0020] **Fig.1A and 1B** show the binding of PD-L1-Fc to PD-1-transfected CHO cells (CHO/PD-1).

[0021] **Fig.2** shows the binding of PD-1-Fc-biotin to PD-L1-Fc.

25 [0022] **Fig.3** shows amino acid sequences of heavy (A) and light (B) chain variable regions of 67D9 and hu67D9. 67D9VH and 67D9VL indicate heavy and light chain variable regions of 67D9, respectively. The humIII was chosen as framework for the humanized heavy chains and the humkIII was chosen for the humanized light chains. hu67D9VH and hu67D9VL indicate heavy and light chain variable regions of hu67D9, respectively. The dashes represent amino acids
30 that are the same as the corresponding residues in human antibody framework. The CDRs are enclosed with brackets.

[0023] **Fig.4A-4D** show the results of experiments demonstrating that all of the three anti-PD-1 antibodies, 67D9, c67D9, and hu67D9, effectively inhibit the binding of PD-L1-Fc to PD-1 expressed on transfected CHO-K1 cells.

35 [0024] **Figs.5A-5D** show the results of experiments demonstrating that each of the anti-PD-1 antibodies 67D9 (mouse Ab), c67D9 (chimeric Ab), and hu67D9 (humanized Ab) binds to PD-I (A), but not to ICOS (B), CTLA-4 (C) and CD28(D).

[0025] **Figs.6A-6C** show the results of experiments demonstrating that each of the three anti-PD-1 antibodies, 67D9 (mouse Ab), c67D9 (chimeric Ab), and hu67D9 (humanized Ab),
40 promote T-cell proliferation (A), IL-2 (B) secretion and IFN-gamma (C) secretion in a mixed lymphocyte reaction assay.

[0026] **Figs.7A-7C** show the results of experiments demonstrating that each of the anti-PD-1 antibodies 67D9 (mouse Ab), c67D9 (chimeric Ab), and hu67D9 (humanized Ab) binds to human PD-1-Fc (A) and Cynomolgus monkey PD-1-Fc (B), but not to mouse PD-1-Fc (C).

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