

CLAIMS

1. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4, comprising heavy chain variable region (VH) complementarity determining region (CDR) 1, VH CDR2, VH CDR3 and light chain variable region (VL) CDR1, CDR2, and CDR3 sequences selected from the group consisting of:
 - (a) SEQ ID NOs:458-463, respectively; and
 - (b) SEQ ID NOs:35-40, respectively.
2. The antibody or antigen-binding fragment thereof of claim 1, wherein the antibody or antigen-binding fragment thereof comprises a VH comprising the amino acid sequence of SEQ ID NO: 41 or 464.
3. The antibody or antigen-binding fragment thereof of claim 1 or claim 2, wherein the antibody or antigen-binding fragment thereof comprises a VL comprising the amino acid sequence of SEQ ID NO: 42.
4. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4, comprising a heavy chain variable region and a light chain variable region comprising the amino acid sequences of:
 - (a) SEQ ID NOs:464 and 42, respectively; or
 - (b) SEQ ID NOs:41 and 42, respectively.
5. The antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment further comprises a heavy chain constant region.
6. The antibody or antigen-binding fragment thereof of claim 5, wherein the heavy chain constant region is selected from the group consisting of human immunoglobulins IgG₁, IgG₂, IgG₃, IgG₄, IgA₁, and IgA₂ heavy chain constant regions.

7. The antibody or antigen-binding fragment thereof of any one of claims 1-6, wherein the antibody or antigen-binding fragment further comprises a light chain constant region.
8. The antibody or antigen-binding fragment thereof of claim 7, wherein the light chain constant region is selected from the group consisting of human immunoglobulins IgG κ and IgG λ light chain constant regions.
9. The antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment further comprises a heavy chain constant region and a light chain constant region, wherein the heavy chain constant region is a human IgG₁ heavy chain constant region, and wherein the light chain constant region is a human IgG κ light chain constant region.
10. The antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment thereof comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 43 or 469.
11. The antibody or antigen-binding fragment thereof of any one of claims 1-4 or 10, wherein the antibody or antigen-binding fragment thereof comprises a light chain comprising the amino acid sequence of SEQ ID NO: 44.
12. The antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment thereof comprises a heavy chain and light chain comprising the amino acid sequences of:
 - (a) SEQ ID NOs:469 and 44, respectively; or
 - (b) SEQ ID NOs:43 and 44, respectively.
13. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4, wherein the antibody or antigen-binding fragment thereof comprises the VH CDR1, VH CDR2, VH CDR3, VL CDR1, VL CDR2, and VL CDR3 of an antibody comprising (i) a VH sequence of SEQ ID NO: 464 and a VL sequence of SEQ ID NO: 42 or (ii) a VH sequence of SEQ ID NO: 41 and a VL sequence of SEQ ID NO: 42.

14. The antibody or antigen-binding fragment thereof of claim 13, wherein the CDRs are the Kabat-defined CDRs, the Chothia-defined CDRs, or the AbM-defined CDRs.
15. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4, wherein the antibody or antigen-binding fragment thereof comprises the Chothia-defined or AbM-defined VH CDR1, VH CDR2, VH CDR3, VL CDR1, VL CDR2, and VL CDR3 of an antibody comprising SEQ ID NOs: 41 and 42.
16. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4, comprising the heavy chain variable region (VH) complementarity determining region (CDR) 1, VH CDR2, VH CDR3 and light chain variable region (VL) CDR1, CDR2, and CDR3 sequences of SEQ ID NOs: 458-463, respectively.
17. The antibody or antigen-binding fragment thereof of claim 16, wherein (i) the antibody or antigen-binding fragment thereof comprises a variable heavy chain region comprising the amino acid sequence of SEQ ID NO:464 and a variable light chain region comprising the amino acid sequence of SEQ ID NO:42 or (ii) the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO:469 and a light chain comprising the amino acid sequence of SEQ ID NO:44.
18. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4, comprising the heavy chain variable region (VH) complementarity determining region (CDR) 1, VH CDR2, VH CDR3 and light chain variable region (VL) CDR1, CDR2, and CDR3 sequences of SEQ ID NOs:35-40, respectively.
19. The antibody or antigen-binding fragment thereof of claim 18, wherein (i) the antibody or antigen-binding fragment thereof comprises a variable heavy chain region comprising the amino acid sequence of SEQ ID NO:41 and a variable light chain region comprising the amino acid sequence of SEQ ID NO:42 or (ii) the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO:43 and a light chain comprising the amino acid sequence of SEQ ID NO:44.

20. The antibody or antigen-binding fragment thereof of any one of claims 1-19, wherein the antibody or antigen-binding fragment thereof is a human antibody or antigen-binding fragment thereof.
21. The antibody or antigen-binding fragment thereof of any one of claims 1 or 13-18, wherein the antibody or antigen-binding fragment thereof is a murine, humanized, or chimeric antibody or antigen-binding fragment thereof.
22. The antibody or antigen-binding fragment thereof of any one of claims 1-21, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof induces T cell proliferation when the B7-H4 cell is in a population of cells comprising T cells.
23. The antibody or antigen-binding fragment thereof of claim 22, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment increases T cell proliferation by at least 21% as compared to treatment with a control antibody.
24. The antibody or antigen-binding fragment thereof of claim 22, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment increases T cell proliferation by 5% to 35% as compared to treatment with a control antibody.
25. The antibody or antigen-binding fragment thereof of any one of claims 1-24, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof induces CD4⁺ T cell proliferation when the B7-H4 cell is in a population of cells comprising T cells.
26. The antibody or antigen-binding fragment thereof of claim 25, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof increases CD4⁺ T cell proliferation by at least 9% as compared to treatment with a control antibody.

27. The antibody or antigen-binding fragment thereof of claim 25, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof increases CD4⁺ T cell proliferation by 5% to 15% as compared to treatment with a control antibody.
28. The antibody or antigen-binding fragment thereof of any one of claims 1-27, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof induces CD8⁺ T cell proliferation when the B7-H4 cell is in a population of cells comprising T cells.
29. The antibody or antigen-binding fragment thereof of claim 28, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof increases CD8⁺ T cell proliferation by at least 11% as compared to treatment with a control antibody.
30. The antibody or antigen-binding fragment thereof of claim 29, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof increases CD8⁺ T cell proliferation by 5% to 15% as compared to treatment with a control antibody.
31. The antibody or antigen-binding fragment thereof of any one of claims 1-30, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof induces interferon-gamma (IFN γ) production when the B7-H4 cell is in a population of cells comprising T cells.
32. The antibody or antigen-binding fragment thereof of claim 31, wherein contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof is capable of increasing production of IFN γ by at least 2 fold, at least 3 fold, at least 4 fold, and at least 5 fold, at least 6 fold, at least 7 fold, at least 8 fold, 2 fold to 10 fold, or 3 fold to 10 fold.
33. The antibody or antigen-binding fragment thereof of any one of claims 1-32, wherein the antibody or antigen-binding fragment thereof is capable of inducing antibody dependent cell mediated cytotoxicity (ADCC) in a B7-H4-expressing cell.

34. The antibody or antigen-binding fragment thereof of claim 33, wherein the antibody or antigen-binding fragment thereof induces specific lysis in at least 20%, at least 30%, at least 40%, 20% to 50%, or 30% to 50% of B7-H4 expressing cells.
35. The antibody or antigen-binding fragment thereof of any one of claims 1-34, wherein the antibody or antigen-binding fragment thereof inhibits tumor growth in a murine CT26 colorectal carcinoma model, a murine breast carcinoma 4T1 model, or a melanoma cell line B16-moB7-H4/H3 model.
36. The antibody or antigen-binding fragment thereof of claim 35, wherein the antibody or antigen-binding fragment thereof reduces tumor growth by at least 25%, at least 30%, at least 40%, at least 45%, or at least 50% as compared to treatment with a control antibody.
37. The antibody or antigen-binding fragment thereof of any one of claims 22-36, wherein the induction of T cell proliferation, the induction of CD4⁺ T cell proliferation, the induction of CD8⁺ T cell proliferation, the induction of IFN γ production, the ADCC activity, and/or the inhibition of tumor growth is dose-dependent.
38. The antibody or antigen-binding fragment thereof of any one of claims 1-37, wherein the antibody or antigen-binding fragment thereof binds to cynomolgus monkey B7-H4.
39. The antibody or antigen-binding fragment thereof of any one of claims 1-38, wherein the antibody or antigen-binding fragment thereof binds to rat B7-H4.
40. The antibody or antigen-binding fragment thereof of any one of claims 1-39 wherein the antibody or antigen-binding fragment thereof binds to mouse B7-H4.
41. The antibody or antigen-binding fragment thereof of any one of claims 1-40, wherein the antibody or antigen-binding fragment thereof binds to the IgV domain of human B7-H4.
42. The antibody or antigen-binding fragment thereof of any one of claims 1-41, wherein the antibody or antigen-binding fragment thereof is afucosylated.

43. The antibody or antigen binding fragment thereof of any one of claims 1-42, which is a full length antibody.
44. The antibody or antigen binding fragment thereof of any one of claims 1-42, which is an antigen binding fragment.
45. The antigen binding fragment of claim 44, wherein said antigen binding fragment comprises a Fab, Fab', F(ab')₂, single chain Fv (scFv), disulfide linked Fv, V-NAR domain, IgNar, intrabody, IgGΔCH2, minibody, F(ab')₃, tetrabody, triabody, diabody, single-domain antibody, DVD-Ig, Fcab, mAb², (scFv)₂, or scFv-Fc.
46. The antibody or antigen-binding fragment thereof of any one of claims 1-45, further comprising a detectable label.
47. The antibody or antigen-binding fragment thereof of any one of claims 1-45, wherein the antibody or antigen-binding fragment thereof is conjugated to a toxin.
48. The antibody or antigen-binding fragment thereof of claim 47, wherein the toxin is cytostatic or cytotoxic.
49. The antibody or antigen-binding fragment thereof of claim 47 or claim 48, wherein the toxin is cytotoxic.
50. An isolated polynucleotide comprising a nucleic acid molecule encoding the heavy chain variable region or heavy chain of the antibody or antigen-binding fragment thereof of any one of claims 1-49.
51. The isolated polynucleotide of claim 50, wherein the nucleic acid molecule encodes the VH of SEQ ID NO: 41 or 464 or the heavy chain of SEQ ID NO: 43 or 469.
52. The isolated polynucleotide of claim 50, wherein the nucleic acid molecule comprises the sequence of SEQ ID NO: 243 or 470.

53. The isolated polynucleotide of claim 50, wherein the nucleic acid molecule comprises (i) the sequence of SEQ ID NO: 243 or 470 and (ii) the sequence of SEQ ID NO:408.
54. An isolated polynucleotide comprising a nucleic acid molecule encoding the light chain variable region or light chain of the antibody or antigen-binding fragment thereof of any one of claims 1-49.
55. The isolated polynucleotide of claim 54, wherein the nucleic acid molecule encodes the VL of SEQ ID NO: 42 or the light chain of SEQ ID NO: 44.
56. The isolated polynucleotide of claim 54, wherein the nucleic acid molecule comprises the sequence of SEQ ID NO: 244.
57. The isolated polynucleotide of claim 54, wherein the nucleic acid molecule comprises (i) the sequence of SEQ ID NO: 244 and (ii) the sequence of SEQ ID NO:406.
58. An isolated polynucleotide comprising a nucleic acid molecule encoding the heavy chain variable region or heavy chain of the antibody or antigen-binding fragment thereof of any one of claims 1-49 and the light chain variable region or light chain of the antibody or antigen-binding fragment thereof of any one of claims 1-49.
59. An isolated vector comprising the polynucleotide of any one of claims 50-58.
60. A host cell comprising the polynucleotide of any one of claims 50-58, the vector of claim 59, or a first vector comprising the polynucleotide of any one of claims 50-53 and a second vector comprising the polynucleotide of any one of claims 54-57.
61. The host cell of claim 60, which is selected from the group consisting of *E. coli*, *Pseudomonas*, *Bacillus*, *Streptomyces*, yeast, CHO, YB/20, NS0, PER-C6, HEK-293T, NIH-3T3, HeLa, BHK, Hep G2, SP2/0, R1.1, B-W, L-M, COS 1, COS 7, BSC1, BSC40, BMT10 cell, plant cell, insect cell, and human cell in tissue culture.

62. The host cell of claim 60 or 61, wherein the host cell lacks a functional alpha-1,6-fucosyltransferase gene (FUT8) gene.
63. A method of producing an antibody or antigen-binding fragment thereof that binds to human B7-H4 comprising culturing the host cell of any one of claims 60-62 so that the nucleic acid molecule is expressed and the antibody or antigen-binding fragment thereof is produced.
64. An isolated antibody or antigen-binding fragment thereof that specifically binds to human B7-H4 and is encoded by the polynucleotide of any one of claims 50-58.
65. A pharmaceutical composition comprising the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 and a pharmaceutically acceptable excipient.
66. A pharmaceutical composition comprising (i) antibodies or antigen-binding fragments of any one of claims 1-49 or 64 and (ii) a pharmaceutically acceptable excipient, wherein at least 95% of the antibodies or antigen-binding fragments thereof in the composition are afucosylated.
67. A pharmaceutical composition comprising (i) antibodies or antigen-binding fragments thereof that specifically bind to human B7-H4 and comprise the heavy chain variable region (VH) complementarity determining region (CDR) 1, VH CDR2, VH CDR3 and light chain variable region (VL) CDR1, CDR2, and CDR3 sequences of SEQ ID NOs:458-463, respectively and (ii) a pharmaceutically acceptable excipient, wherein at least 95% of the antibodies or antigen-binding fragments thereof in the composition are afucosylated.
68. The pharmaceutical composition of claim 67, wherein (i) the antibody or antigen-binding fragment thereof comprises a variable heavy chain region comprising the amino acid sequence of SEQ ID NO:464 and a variable light chain region comprising the amino acid sequence of SEQ ID NO:42 or (ii) the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO:469 and a light chain comprising the amino acid sequence of SEQ ID NO:44.

69. A pharmaceutical composition comprising (i) antibodies or antigen-binding fragments thereof that specifically bind to human B7-H4 and comprise the heavy chain variable region (VH) complementarity determining region (CDR) 1, VH CDR2, VH CDR3 and light chain variable region (VL) CDR1, CDR2, and CDR3 sequences of SEQ ID NOs:35-40, respectively and (ii) a pharmaceutically acceptable excipient, wherein at least 95% of the antibodies or antigen-binding fragments thereof in the composition are afucosylated.
70. The pharmaceutical composition of claim 69, wherein (i) the antibody or antigen-binding fragment thereof comprises a variable heavy chain region comprising the amino acid sequence of SEQ ID NO:41 and a variable light chain region comprising the amino acid sequence of SEQ ID NO:42 or (ii) the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO:43 and a light chain comprising the amino acid sequence of SEQ ID NO:44.
71. The pharmaceutical composition of any one of claims 65-70, wherein fucosylation is undetectable in the composition.
72. The pharmaceutical composition of any one of claims 65-71 further comprising an anti-PD-1 antibody or antigen-binding fragment thereof.
73. The pharmaceutical composition of claim 72, wherein the anti-PD-1 antibody or antigen-binding fragment thereof is nivolumab or pembrolizumab.
74. The pharmaceutical composition of claim 72, wherein the anti-PD-1 antibody or antigen-binding fragment thereof is AMP-514, camrelizumab, tislelizumab, or spartalizumab.
75. The pharmaceutical composition of any one of claims 65-71 further comprising an anti-PD-L1 antibody or antigen-binding fragment thereof.
76. An *in vitro* method for inducing T cell proliferation, wherein the method comprises contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75, wherein the B7-H4 expressing cell is in a population of cells comprising T cells.

77. The method of claim 76, wherein T cell proliferation is increased by at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, or at least 80%.
78. An *in vitro* method for inducing CD4⁺ T cell proliferation, wherein the method comprises contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75, wherein the B7-H4 expressing cell is in a population of cells comprising T cells.
79. The method of claim 78, wherein CD4⁺ T cell proliferation is increased by at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, or at least 80%.
80. An *in vitro* method for inducing CD8⁺ T cell proliferation, wherein the method comprises contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75, wherein the B7-H4 expressing cell is in a population of cells comprising T cells.
81. The method of claim 80, wherein CD8⁺ T cell proliferation is increased by at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, or at least 80%.
82. An *in vitro* method for inducing interferon gamma production, wherein the method comprises contacting a cell expressing B7-H4 with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75, wherein the B7-H4 expressing cell is in a population of cells comprising T cells.
83. The method of claim 82, wherein interferon gamma production is increased by at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, or at least 80%.
84. An *in vitro* method for killing a cell expressing B7-H4, wherein the method comprises contacting the cell with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75.

85. An *in vitro* method for depleting B7-H4-expressing cells from a population of cells, wherein the method comprises contacting the population of cells with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75.
86. The method of claim 84 or 85, wherein the killing or depletion occurs via ADCC.
87. The method of any one of claims 76-86, further comprising contacting the T cell, the CD4+ T cell, the CD8+ T cell, the cell, or the population of cells with an anti-PD-1 antibody or antigen-binding fragment thereof.
88. The method of claim 87, wherein the contacting with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75 and the contacting with the anti-PD-1 antibody or antigen-binding fragment thereof occur simultaneously.
89. The method of claim 87, wherein the contacting with the antibody or antigen-binding fragment thereof of any one of claims 1-45 or 64 or the pharmaceutical composition of any one of claims 65-75 and the contacting with the anti-PD-1 antibody or antigen-binding fragment thereof occur sequentially.
90. The method of any one of claims 76-86, further comprising contacting the T cell, the CD4+ T cell, the CD8+ T cell, the cell, or the population of cells with an anti-PD-L1 antibody or antigen-binding fragment thereof.
91. The method of claim 90, wherein the contacting with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-71 and the contacting with the anti-PD-L1 antibody or antigen-binding fragment thereof occur simultaneously.
92. The method of claim 90, wherein the contacting with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any

one of claims 65-71 and the contacting with the anti-PD-L1 antibody or antigen-binding fragment thereof occur sequentially.

93. The antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 for use as a medicament.

94. Use of an effective amount of the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75 in the manufacture of a medicament for treating a B7-H4 expressing cancer in a subject.

95. The use of claim 94, wherein the cancer is selected from the group consisting of breast cancer, ductal carcinoma, endometrial carcinoma, ovarian cancer, non-small cell lung cancer, pancreatic cancer, thyroid cancer, kidney cancer and bladder cancer.

96. The use of claim 95, wherein the breast cancer is triple negative breast cancer or wherein the non-small cell lung cancer is squamous cell carcinoma.

97. The use of claim 95, wherein the non-small cell lung cancer is an adenocarcinoma.

98. The use of claim 94, wherein the cancer is selected from the group consisting of head and neck cancer, small cell lung cancer, gastric cancer, and melanoma.

99. The use of claim 95, wherein the cancer is ovarian cancer that is a serous adenocarcinoma.

100. The use of claim 96, wherein the cancer is breast cancer that is a ductal adenocarcinoma.

101. The use of any one of claims 94-100, wherein the cancer does not adequately respond to a PD-1 inhibitor.

102. The use of any one of claims 94-101, wherein the cancer does not adequately respond to a PD-L1 inhibitor.

103. The use of any one of claims 94-102, wherein the cancer expresses a low level of PD-L1.

104. The use of any one of claims 94-103, wherein the subject is human.
105. The use of any one of claims 94-104, wherein the medicament is for use in combination with an anti-PD-1 antibody or antigen-binding fragment thereof.
106. The use of claim 105, wherein medicament is for use simultaneously with the anti-PD-1 antibody or antigen-binding fragment thereof.
107. The use of claim 105, wherein medicament is for use sequentially with the anti-PD-1 antibody or antigen-binding fragment thereof.
108. The use of claim 107, wherein the medicament is for use before the anti-PD-1 antibody or antigen-binding fragment thereof.
109. The use of any one of claims 87-89 or 105-108, wherein the anti-PD-1 antibody or antigen-binding fragment thereof is nivolumab or pembrolizumab.
110. The use of any one of claims 87-89 or 105-108, wherein the anti-PD-1 antibody or antigen-binding fragment thereof is AMP-514, camrelizumab, tislelizumab, or spartalizumab.
111. A method for detecting B7-H4 in a sample comprising contacting said sample with the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64.
112. The method of claim 111, wherein the sample is obtained from a cancer in a human subject.
113. A kit comprising the antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64 or the pharmaceutical composition of any one of claims 65-75 and a) a detection reagent, b) a B7-H4 antigen, c) a notice that reflects approval for use or sale for human administration, or d) a combination thereof.

114. An isolated antibody or antigen-binding fragment thereof of any one of claims 1-49 or 64, wherein the antibody or antigen-binding fragment thereof inhibits the inhibitory activity of B7-H4 against T cells.

115. The isolated antibody or antigen-binding fragment thereof of claim 114, wherein the inhibition of the B7-H4 activity against T cells is measured by an increase in IL-2 production relative to control cells.

116. A pharmaceutical composition comprising (i) antibodies or antigen-binding fragments of any one of claims 1-49 or 64 and (ii) a pharmaceutically acceptable excipient, wherein the antibodies or antigen-binding fragments inhibit the inhibitory activity of B7-H4 against T cells.

117. The pharmaceutical composition of claim 116, wherein the inhibition of the B7-H4 activity against T cells is measured by an increase in IL-2 production relative to control cells.