

selected from SEQ ID NOs: 294, 302, 310 and 318; (c) HCDR3 comprising an amino acid sequence selected from SEQ ID NOs: 295, 303, 311 and 319; (d) LCDR1 comprising an amino acid sequence selected from SEQ ID NOs: 297, 305, 313, and 321; (e) LCDR2 comprising an amino acid sequence selected from SEQ ID NOs: 298, 306, 314 and 322; and (f) LCDR3 comprising an amino acid sequence selected from SEQ ID NOs: 299, 307, 315, and 323.

[0012a] In one aspect, there is provided an antibody that binds to Programmed Death 1 (PD-1), wherein the antibody comprises:

- i) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 5; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 6; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 7; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 9; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 10; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 11; or
- ii) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 13; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 14; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 15; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 17; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 18; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 19; or
- iii) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 21; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 22; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 23; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 25; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 26; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 27; or
- iv) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 29; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 30; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 31; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 33; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 34; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 35; or
- v) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 37; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 38; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 39; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 41; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 42; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 43.

[0013] In some examples, an antibody that binds PD-1 is provided, which comprises a heavy chain variable region (V_H) and a light chain variable region (V_L), wherein:

- i) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 4 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 8; or
- ii) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 12 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 16; or
- iii) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 20 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 24; or
- iv) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 28 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 32; or
- v) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 36 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 40; or
- vi) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to an amino acid sequence selected from SEQ ID NOs: 44, 52, 60, 68, 76, 84, 92, 100, 108 and 116; and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to an amino acid sequence selected from SEQ ID NOs: 48, 56, 64, 72, 80, 88, 96, 104, 112, and 120; or
- vii) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to an amino acid sequence selected from SEQ ID NOs: 124, 132,

- xxix) the V_H comprises the amino acid sequence of SEQ ID NO: 228 and the V_L comprises the amino acid sequence of SEQ ID NO: 232; or
- xxx) the V_H comprises the amino acid sequence of SEQ ID NO: 236 and the V_L comprises the amino acid sequence of SEQ ID NO: 240; or
- xxxix) the V_H comprises the amino acid sequence of SEQ ID NO: 244 and the V_L comprises the amino acid sequence of SEQ ID NO: 248; or
- xxxii) the V_H comprises the amino acid sequence of SEQ ID NO: 252 and the V_L comprises the amino acid sequence of SEQ ID NO: 256; or
- xxxiii) the V_H comprises the amino acid sequence of SEQ ID NO: 260 and the V_L comprises the amino acid sequence of SEQ ID NO: 264; or
- xxxiv) the V_H comprises the amino acid sequence of SEQ ID NO: 268 and the V_L comprises the amino acid sequence of SEQ ID NO: 272; or
- xxxv) the V_H comprises the amino acid sequence of SEQ ID NO: 276 and the V_L comprises the amino acid sequence of SEQ ID NO: 280; or
- xxxvi) the V_H comprises the amino acid sequence of SEQ ID NO: 284 and the V_L comprises the amino acid sequence of SEQ ID NO: 288; or
- xxxvii) the V_H comprises the amino acid sequence of SEQ ID NO: 292 and the V_L comprises the amino acid sequence of SEQ ID NO: 296; or
- xxxviii) the V_H comprises the amino acid sequence of SEQ ID NO: 300 and the V_L comprises the amino acid sequence of SEQ ID NO: 304; or
- xxxix) the V_H comprises the amino acid sequence of SEQ ID NO: 308 and the V_L comprises the amino acid sequence of SEQ ID NO: 312; or
- xl) the V_H comprises the amino acid sequence of SEQ ID NO: 316 and the V_L comprises the amino acid sequence of SEQ ID NO: 320.

[0015] In another example, an antibody that competes with an antibody provided herein for binding to human PD-1 is provided, wherein the antibody binds to human PD-1 and mouse PD-1, and where in the antibody inhibits binding of human PD-1 to human PD-L1, inhibits binding of human PD-1 to human PD-L2, inhibits binding of mouse PD-1 to mouse PD-L1, and inhibits binding of mouse PD-1 to mouse PD-L2. In one example, there is provided an antibody that competes for binding to human PD-1 with an antibody provided herein, wherein the antibody binds to human PD-1 and mouse PD-1, and wherein the antibody inhibits binding of human PD-1 to human PD-L1, inhibits binding of human PD-1 to human PD-L2, inhibits binding of mouse PD-1 to mouse PD-L1, and inhibits binding of mouse PD-1 to mouse PD-L2.

[0016] In some examples, an antibody provided herein binds to human PD-1 with an affinity (K_D) of less than 5 nM. In some examples, an antibody provided herein binds to mouse PD-1 with an affinity (K_D) of less than 10 nM. In some examples, affinity is determined using biolayer interferometry.

[0017] In some examples, an antibody provided herein is a monoclonal antibody. In some examples, an antibody provided herein is a human antibody, chimeric antibody, or a

[0022] In some aspects, an isolated nucleic acid is provided, which encodes an antibody provided herein. In some aspects, a vector is provided, which comprises the nucleic acid provided herein. In some aspects, a host cell is provided, which comprises the vector provided herein. In some aspects, a host cell is provided, which produces an antibody provided herein. In some aspects, a method for making an anti-PD-1 antibody is provided, comprising culturing the host cell provided herein under conditions suitable for expression of the antibody. In some examples, the method further comprises recovering the antibody produced by the host cell.

[0023] In some aspects, a pharmaceutical composition is provided, comprising an anti-PD-1 antibody provided herein and a pharmaceutically acceptable carrier.

[0024] In one aspect, there is provided use of the anti-PD-1 antibody provided herein or the pharmaceutical composition provided herein for the manufacture of a medicament for treating cancer in a mammal. In some examples, a method of treating cancer in a mammal is provided, comprising administering an effective amount of an anti-PD-1 antibody provided herein, or a pharmaceutical composition comprising an anti-PD-1 antibody provided herein and a pharmaceutically acceptable carrier. In some examples, the cancer is selected from melanoma, non-small cell lung cancer (NSCLC), renal cell carcinoma (RCC), gastric cancer, bladder cancer, diffuse large B-cell lymphoma (DLBCL), Hodgkin's lymphoma, ovarian cancer, head & neck squamous cell cancer (HNSCC), mesothelioma, and triple negative breast cancer (TNBC). In some examples, the cancer is selected from melanoma, gastric cancer, head & neck squamous cell cancer (HNSCC), non-small cell lung cancer (NSCLC), and triple negative breast cancer (TNBC).

[0025] In one example, there is provided use of the anti-PD-1 antibody provided herein or the pharmaceutical composition provided herein for the manufacture of a medicament for enhancing an immune response in a mammal. In one aspect, there is provided use of the anti-PD-1 antibody provided herein or the pharmaceutical composition provided herein for the manufacture of a medicament for enhancing an immune response in a mammal for treating cancer. In some examples, a method of enhancing an immune response in a mammal is provided, comprising administering an effective amount of an anti-PD-1 antibody provided herein, or a pharmaceutical composition comprising an anti-PD-1 antibody provided herein and a pharmaceutically acceptable carrier.

[0026] In one example, there is provided use of the anti-PD-1 antibody provided herein or the pharmaceutical composition provided herein for the manufacture of a medicament for increasing activation of a T cell in a mammal. In one aspect, there is provided use of the anti-PD-1 antibody provided herein or the pharmaceutical composition provided herein for the manufacture of a medicament for increasing activation of a T cell in a mammal for treating cancer. In some examples, a method of increasing activation of a T cell in a mammal is provided, comprising administering an effective amount of an anti-PD-1 antibody provided herein, or a pharmaceutical composition comprising an anti-PD-1 antibody provided herein and a pharmaceutically acceptable carrier.

[0027] In one aspect, there is provided use of the anti-PD-1 antibody provided herein or the pharmaceutical composition provided herein for the manufacture of a medicament for reducing tumor size in a mammal with cancer. In some examples, a method of reducing tumor size in a mammal with cancer is provided, comprising administering an effective amount of an anti-PD-1 antibody provided herein, or a pharmaceutical composition comprising an anti-PD-1 antibody provided herein and a pharmaceutically acceptable carrier.

[0028] In any of the examples provided herein, the mammal may be a human.

[0029] In some examples, the mammal is administered at least one additional therapeutic agent. In some such examples, the additional therapeutic agent is administered concurrently or sequentially with the anti-PD-1 antibody. In some examples, the additional therapeutic

WHAT IS CLAIMED IS:

1. An antibody that binds to Programmed Death 1 (PD-1), wherein the antibody comprises:
 - i) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 5; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 6; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 7; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 9; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 10; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 11; or
 - ii) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 13; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 14; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 15; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 17; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 18; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 19; or
 - iii) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 21; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 22; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 23; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 25; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 26; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 27; or
 - iv) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 29; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 30; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 31; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 33; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 34; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 35; or
 - v) (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 37; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 38; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 39; (d) LCDR1 comprising the amino acid sequence of SEQ ID NO: 41; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 42; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 43.
2. The antibody of claim 1, which comprises a heavy chain variable region (V_H) and a light chain variable region (V_L), wherein:

- i) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 4 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 8; or
- ii) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 12 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 16; or
- iii) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 20 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 24; or
- iv) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 28 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 32; or
- v) the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 36 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 40.

3. The antibody of claim 1, which comprises a heavy chain variable region (V_H) and a light chain variable region (V_L), wherein:

- i) the V_H comprises the amino acid sequence of SEQ ID NO: 4 and the V_L comprises the amino acid sequence of SEQ ID NO: 8; or
- ii) the V_H comprises the amino acid sequence of SEQ ID NO: 12 and the V_L comprises the amino acid sequence of SEQ ID NO: 16; or
- iii) the V_H comprises the amino acid sequence of SEQ ID NO: 20 and the V_L comprises the amino acid sequence of SEQ ID NO: 24; or
- iv) the V_H comprises the amino acid sequence of SEQ ID NO: 28 and the V_L comprises the amino acid sequence of SEQ ID NO: 32; or
- v) the V_H comprises the amino acid sequence of SEQ ID NO: 36 and the V_L comprises the amino acid sequence of SEQ ID NO: 40.

4. The antibody of claim 1, wherein the antibody comprises: (a) HCDR1 comprising the amino acid sequence of SEQ ID NO: 21; (b) HCDR2 comprising the amino acid sequence of SEQ ID NO: 22; (c) HCDR3 comprising the amino acid sequence of SEQ ID NO: 23; (d)

LCDR1 comprising the amino acid sequence of SEQ ID NO: 25; (e) LCDR2 comprising the amino acid sequence of SEQ ID NO: 26; and (f) LCDR3 comprising the amino acid sequence of SEQ ID NO: 27.

5. The antibody of claim 4, wherein the antibody comprises a heavy chain variable region (V_H) and a light chain variable region (V_L), wherein: the V_H is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 20 and the V_L is at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100% identical to the amino acid sequence of SEQ ID NO: 24.

6. The antibody of claim 4, wherein the antibody comprises a heavy chain variable region (V_H) and a light chain variable region (V_L), wherein: the V_H comprises the amino acid sequence of SEQ ID NO: 20 and the V_L comprises the amino acid sequence of SEQ ID NO: 24.

7. The antibody of any one of the preceding claims, wherein the antibody binds to human PD-1 with an affinity (K_D) of less than 5 nM.

8. The antibody of any one of the preceding claims, wherein the antibody binds to mouse PD-1 with an affinity (K_D) of less than 10 nM.

9. The antibody of claim 7 or claim 8, wherein affinity is determined using biolayer interferometry.

10. The antibody of any one of the preceding claims, wherein the antibody is a monoclonal antibody.

11. The antibody of any one of the preceding claims, wherein the antibody is a human antibody, chimeric antibody, or a humanized antibody.

12. The antibody of any one of the preceding claims, wherein the antibody is an antibody fragment selected from a Fab, Fab', Fv, scFv or (Fab')₂ fragment.

13. The antibody of claims 1-11, wherein the antibody is a full length antibody.

14. The antibody of any one of the preceding claims, wherein the antibody binds human PD-1 comprising the amino acid sequence of SEQ ID NO: 382.

15. The antibody of any one of the preceding claims, wherein the antibody binds mouse PD-1 comprising the amino acid sequence of SEQ ID NO: 383.

16. The antibody of any one of the preceding claims, wherein the antibody binds cynomolgus monkey PD-1 comprising the amino acid sequence of SEQ ID NO: 384.

17. The antibody of any one of the preceding claims, wherein the antibody inhibits binding of PD-1 to PD-L1.

18. The antibody of any one of the preceding claims, wherein the antibody inhibits binding of PD-1 to PD-L2.

19. The antibody of any one of the preceding claims, wherein the antibody inhibits binding of PD-1 to PD-L1 and inhibits the binding of PD-1 to PD-L2.
20. The antibody of any one of the preceding claims, wherein administration of the antibody to a mammal increases the level of at least one cytokine selected from IFN γ and IL-2.
21. The antibody of any one of the preceding claims, wherein administration of the antibody to a mammal enhances an immune response in the mammal.
22. The antibody of any one of the preceding claims, wherein administration of the antibody to a mammal results in activation of T cells in the mammal.
23. The antibody of any one of the preceding claims, wherein administration of the antibody to a mammal reduces tumor size in a mammal with cancer.
24. An isolated nucleic acid encoding the antibody of any one of the preceding claims.
25. A vector comprising the nucleic acid of claim 24.
26. A host cell comprising the vector of claim 25.
27. A host cell that produces the antibody of any one of claims 1 to 23.
28. A method for making an anti-PD-1 antibody, comprising culturing the host cell of claim 26 or claim 27 under conditions suitable for expression of the antibody.
29. The method of claim 28, further comprising recovering the antibody produced by the host cell.
30. A pharmaceutical composition comprising the anti-PD-1 antibody of any one of claims 1 to 23 and a pharmaceutically acceptable carrier.
31. Use of the anti-PD-1 antibody of any one of claims 1 to 23 or the pharmaceutical composition of claim 30 for the manufacture of a medicament for treating cancer in a mammal.
32. The use of claim 31, wherein the cancer is selected from melanoma, non-small cell lung cancer (NSCLC), renal cell carcinoma (RCC), gastric cancer, bladder cancer, diffuse large B-cell lymphoma (DLBCL), Hodgkin's lymphoma, ovarian cancer, head & neck squamous cell cancer (HNSCC), mesothelioma, and triple negative breast cancer (TNBC).
33. The use of claim 31, wherein the cancer is selected from melanoma, gastric cancer, head & neck squamous cell cancer (HNSCC), non-small cell lung cancer (NSCLC), and triple negative breast cancer (TNBC).
34. Use of the anti-PD-1 antibody of any one of claims 1 to 23 or the pharmaceutical composition of claim 30 for the manufacture of a medicament for enhancing an immune response in a mammal for treating cancer.
35. Use of the anti-PD-1 antibody of any one of claims 1 to 23 or the pharmaceutical composition of claim 30 for the manufacture of a medicament for increasing activation of a T cell in a mammal for treating cancer.

36. Use of the anti-PD-1 antibody of any one of claims 1 to 23 or the pharmaceutical composition of claim 30 for the manufacture of a medicament for reducing tumor size in a mammal with cancer.

37. The use of any one of claims 31 to 36, wherein the mammal is a human.

38. The use of any one of claims 31 to 36, wherein the mammal is to be administered at least one additional therapeutic agent.

39. The use of claim 38, wherein the additional therapeutic agent is to be administered concurrently or sequentially with the anti-PD-1 antibody.

40. The use of claim 38 or 39 wherein the additional therapeutic agent is selected from an anti-ICOS antibody and an anti-CTLA4 antibody.

41. The use of claim 40, wherein the additional therapeutic agent is an anti-ICOS antibody.

42. The use of claim 38 or claim 39, wherein the additional therapeutic agent is a cancer vaccine.

43. The use of claim 42, wherein the cancer vaccine is selected from a DNA vaccine, an engineered virus vaccine, an engineered tumor cell vaccine, and a cancer vaccine developed using neoantigens.

44. Use of an antibody of any one of claims 1 to 23 or the pharmaceutical composition of claim 30 and at least one additional therapeutic agent for the manufacture of a medicament for combination therapy for treating cancer.

45. The use of claim 44, wherein the additional therapeutic agent is selected from an anti-ICOS antibody and an anti-CTLA4 antibody.

46. The use of claim 45, wherein the additional therapeutic agent is an anti-ICOS antibody.

47. The use of claim 44, wherein the additional therapeutic agent is a cancer vaccine.

48. The use of claim 47, wherein the cancer vaccine is selected from a DNA vaccine, an engineered virus vaccine, an engineered tumor cell vaccine, and a cancer vaccine developed using neoantigens.

49. The use of any one of claims 44 to 48, wherein the cancer is selected from melanoma, non-small cell lung cancer (NSCLC), renal cell carcinoma (RCC), gastric cancer, bladder cancer, diffuse large B-cell lymphoma (DLBCL), Hodgkin's lymphoma, ovarian cancer, head & neck squamous cell cancer (HNSCC), mesothelioma, and triple negative breast cancer (TNBC).

50. The use of claim 49, wherein the cancer is selected from melanoma, gastric cancer, head & neck squamous cell cancer (HNSCC), non-small cell lung cancer (NSCLC), and triple negative breast cancer (TNBC).

51. The use of any one of claims 31 to 50, wherein a sample of the cancer has been determined to express PD-1.

52. The use of claim 51, wherein the sample shows 1+, 2+, or 3+ staining of PD-1 by immunohistochemistry (IHC).

53. The use of any one of claims 31 to 52, wherein a sample of the cancer has been determined to have an elevated level of PD-L1.

54. The use of claim 53, wherein PD-L1 levels are determined using IHC.