An optimal therapeutic treatment may combine blockade of PD-1 receptor/ligand interaction with an agent that directly inhibits tumor growth. There remains a need for an optimal therapy for treating, stabilizing, preventing, and/or delaying development of various cancers.

SUMMARY ~~OF THE INVENTION~~

This ~~invention~~ disclosure relates to methods of treating cancers and for enhancing immune function in an individual having cancer by administering a PD-1 axis binding antagonist and a taxane.

In one aspect, the invention features use of a human PD-1 axis binding antagonist in the manufacture of a medicament for treating or delaying progression of cancer in an individual, wherein the human PD-1 axis binding antagonist is to be administered with a taxane. ~~In one aspect, the invention~~ This disclosure also features a method for treating or delaying progression of cancer in an individual comprising administering to the individual an effective amount of a human PD-1 axis binding antagonist and a taxane. In some embodiments, the PD-1 axis binding antagonist is selected from the group consisting of a PD-1 binding antagonist, a PD-L1 binding antagonist, and a PD-L2 binding antagonist.

In some embodiments of the above aspect, the PD-1 axis binding antagonist is a PD-1 binding antagonist. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to its ligand binding partners. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-L1 and PD-L2. In some embodiments, the PD-1 binding antagonist is an antibody. In some embodiments, the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224.

In other embodiments of the above aspect, the PD-1 axis binding antagonist is a PD-L1 binding antagonist. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1. In some embodiments, the PD-L1 binding antagonist is an antibody. In some embodiments, the antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736. In some embodiments, the antibody comprises a heavy chain comprising an HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising an HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24. In some embodiments, the antibody comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

In some embodiments of the above aspect, the PD-1 axis binding antagonist is a PD-L2 binding antagonist. In some embodiments, the PD-L2 binding antagonist is an antibody. In some embodiments, the PD-L2 binding antagonist is an immunoadhesin.

In any of the preceding embodiments of the above aspect, the cancer may be, without limitation, breast cancer (including triple-negative breast cancer (TNBC)), bladder cancer (including urothelial bladder cancer (UBC), muscle invasive bladder cancer, and BCG-refractory non-muscle invasive bladder cancer), colorectal cancer, rectal cancer, lung cancer (including non-small cell lung cancer that can be squamous or non-squamous), glioblastoma, non-Hodgkins lymphoma (NHL), renal cell cancer (including

renal cell carcinoma), prostate cancer, liver cancer, pancreatic cancer, soft-tissue sarcoma, kaposi's sarcoma, carcinoid carcinoma, head and neck cancer, gastric cancer, esophageal cancer, prostate cancer, endometrial cancer, kidney cancer, ovarian cancer, mesothelioma, and a heme malignancy (including a myelodysplastic syndrome (MDS) and multiple myeloma). In particular embodiments, the cancer may be lung cancer (including non-small cell lung cancer that can be squamous or non-squamous), bladder cancer (including UBC), breast cancer (including TNBC), renal cell carcinoma, melanoma, colorectal cancer, and a heme malignancy (including a myelodysplastic syndrome (MDS) and multiple myeloma). In some embodiments, the lung cancer is non-small cell lung cancer that can be squamous or non-squamous. In some embodiments, the bladder cancer is UBC. In some embodiments, the breast cancer is TNBC. In some embodiments, the heme malignancy is a MDS or multiple myeloma.

In any of the preceding embodiments of the above aspect, the individual has cancer or has been diagnosed with cancer. In some embodiments, the cancer cells in the individual express PD-L1.

In any of the preceding embodiments of the above aspect, the treatment may result in a response in the individual. In some embodiments, the response is a complete response. In some embodiments, the response is a sustained response after cessation of the treatment. In some embodiments, the response is a complete response that is sustained after cessation of the treatment.

In any of the preceding embodiments of the above aspect, the taxane is administered before the PD-1 axis binding antagonist, simultaneous with the PD-1 axis binding antagonist, or after the PD-1 axis binding antagonist. In some embodiments, the taxane is nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel. In some embodiments, the taxane is nab-paclitaxel (ABRAXANE®). In some embodiments, the taxane is paclitaxel.

In another aspect, the invention features use of a PD-1 axis binding antagonist in the manufacture of a medicament for enhancing immune function in an individual having cancer, wherein the PD-1 axis binding antagonist is to be administered with a taxane. ~~the invention~~This disclosure also features a method of enhancing immune function in an individual having cancer, the method comprising administering an effective amount of a PD-1 axis binding antagonist and a taxane. In some embodiments, CD8+ T cells in the individual have enhanced priming, activation, proliferation and/or cytolytic activity relative to prior to the administration of the PD-1 axis binding antagonist and the taxane. In some embodiments, the number of CD8+ T cells is elevated relative to prior to administration of the combination. In some embodiments, the CD8+ T cell is an antigen-specific CD8+ T cell. In some embodiments, Treg function is suppressed relative to prior to the administration of the combination. In some embodiments, T cell exhaustion is decreased relative to prior to the administration of the combination. In some embodiments, the PD-1 axis binding antagonist is selected from the group consisting of a PD-1 binding antagonist, a PD-L1 binding antagonist and a PD-L2 binding antagonist.

In some embodiments of the above aspect, the PD-1 axis binding antagonist is a PD-1 binding antagonist. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to its ligand binding partners. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-L1 and PD-L2. In some embodiments, the PD-1 binding antagonist is an antibody. In some embodiments, the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224.

In other embodiments of the above aspect, the PD-1 axis binding antagonist is a PD-L1 binding antagonist. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1. In some embodiments, the PD-L1 binding antagonist is an antibody. In some embodiments, the antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736. In some embodiments, the antibody comprises a heavy chain comprising an HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising an HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24. In some embodiments, the antibody comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

In other embodiments of the above aspect, the PD-1 axis binding antagonist is a PD-L2 binding antagonist. In some embodiments, the PD-L2 binding antagonist is an antibody. In some embodiments, the PD-L2 binding antagonist is an immunoadhesin.

In any of the preceding embodiments of the above aspect, the cancer may be breast cancer (including triple-negative breast cancer (TNBC)), bladder cancer (including urothelial bladder cancer (UBC), muscle invasive bladder cancer, and BCG-refractory non-muscle invasive bladder cancer), colorectal cancer, rectal cancer, lung cancer (including non-small cell lung cancer that can be squamous or non-squamous), glioblastoma, non-Hodgkins lymphoma (NHL), renal cell cancer (including renal cell carcinoma), prostate cancer, liver cancer, pancreatic cancer, soft-tissue sarcoma, kaposi's sarcoma, carcinoid carcinoma, head and neck cancer, gastric cancer, esophageal cancer, prostate cancer, endometrial cancer, kidney cancer, ovarian cancer, mesothelioma, and a heme malignancy (including a myelodysplastic syndrome and multiple myeloma). In particular embodiments, the cancer may be lung cancer (including non-small cell lung cancer that can be squamous or non-squamous, bladder cancer (including UBC), breast cancer (including TNBC), renal cell carcinoma, melanoma, colorectal cancer, and a heme malignancy (e.g., a myelodysplastic syndrome (MDS) and multiple myeloma). In some embodiments, the lung cancer is non-small cell lung cancer that can be squamous or non-squamous. In some embodiments, the bladder cancer is UBC. In some embodiments, the breast cancer is TNBC. In some embodiments, the heme malignancy is an MDS or multiple myeloma.

In some embodiments, the cancer cells in the individual express PD-L1. In some embodiments, the taxane is nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel. In some embodiments, the taxane is nab-paclitaxel (ABRAXANE®). In some embodiments, the taxane is paclitaxel.

In some embodiments of any one of the above aspects, the PD-1 axis binding antagonist and/or the taxane are administered intravenously, intramuscularly, subcutaneously, topically, orally, transdermally, intraperitoneally, intraorbitally, by implantation, by inhalation, intrathecally, intraventricularly, or intranasally.

In some embodiments of any one of the above aspects, the use or method may further comprise administering an effective amount of a chemotherapeutic agent. In some embodiments, the chemotherapeutic agent is a platinum-based chemotherapeutic agent. In some embodiments, the

In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2. In some embodiments, the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-L1 and PD-L2. In some embodiments, the PD-1 binding antagonist is an antibody. In some embodiments, the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224. In some embodiments, the PD-1 axis binding antagonist is a PD-L1 binding antagonist. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1. In some embodiments, the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1. In some embodiments, the PD-L1 binding antagonist is an antibody. In some embodiments, the antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736. In some embodiments, the antibody comprises a heavy chain comprising an HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising an HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24. In some embodiments, the antibody comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

In any one of the preceding aspects, the taxane may be nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel. In some embodiments, the taxane is nab-paclitaxel (ABRAXANE®). In some embodiments, the taxane is paclitaxel.

It is to be understood that one, some, or all of the properties of the various embodiments described herein may be combined to form other embodiments of the present ~~invention~~disclosure. These and other aspects of the invention will become apparent to one of skill in the art. These and other embodiments of the ~~invention~~ disclosure are further described by the detailed description that follows.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a graph showing that combination therapy of anti-PD-L1 antibody and paclitaxel+carboplatin demonstrates a synergistic anti-tumor effect compared to control antibody or paclitaxel+carboplatin alone in the syngeneic MC38 colorectal tumor model in C57BL/6 mice. The graph shows the cubic spline fits of the tumor volumes of each treatment group as a function of time. A cubic spline fit is a mathematical algorithm that chooses the best smooth curve that fits all the data per treatment group. Mice with established subcutaneous MC38 tumors of approximately 100-200 mm^3 were treated with single-dose carboplatin at 80 mg/kg by intraperitoneal (IP) injection plus paclitaxel at 10 mg/kg injected intravenously (IV), and anti-gp120 antibody or anti-PD-L1 (clone 25A1 mIgG2a.DANA) at 10 mg/kg dosed 3 times a week for 3 weeks. N=10 mice/group.

FIGURES 2A and 2B are graphs showing that dexamethasone (Dex) abrogates the efficacy of anti-PD-L1 antibody (αPD-L1) monotherapy in the syngeneic MC38 colorectal tumor model in C57BL/6 mice. Figure 2A shows the cubic spline fits of the tumor volumes of each treatment group, while Figure 2B shows plots for individual mice (Trellis plots) (black curves show cubic spline fits of the tumor volumes for each treatment group). Each graph in Figure 2B contains a dashed line representing the cubic spline

WHAT IS CLAIMED IS:

1. A method for treating or delaying progression of cancer in an individual comprising administering to the individual an effective amount of a human PD-1 axis binding antagonist and a taxane.

2. The method of claim 1, wherein the PD-1 axis binding antagonist is selected from the group consisting of a PD-1 binding antagonist, a PD-L1 binding antagonist, and a PD-L2 binding antagonist.

3. The method of claim 2, wherein the PD-1 axis binding antagonist is a PD-1 binding antagonist.

4. The method of claim 3, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to its ligand binding partners.

5. The method of claim 4, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1.

6. The method of claim 4, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2.

7. The method of claim 4, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-L1 and PD-L2.

8. The method of any one of claims 4-7, wherein the PD-1 binding antagonist is an antibody.

9. The method of claim 4, wherein the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224.

10. The method of claim 2, wherein the PD-1 axis binding antagonist is a PD-L1 binding antagonist.

11. The method of claim 10, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1.

12. The method of claim 10, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1.

13. The method of claim 10, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1.

14. The method of any one of claims 11-13, wherein the PD-L1 binding antagonist is an antibody.

15. The method of claim 14, wherein the antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736.

16. The method of claim 14, wherein the antibody comprises a heavy chain comprising HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24.

17. The method of claim 14, wherein the antibody comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

18. The method of claim 2, wherein the PD-1 axis binding antagonist is a PD-L2 binding antagonist.

19. The method of claim 18, wherein the PD-L2 binding antagonist is an antibody.

20. The method of claim 18, wherein the PD-L2 binding antagonist is an immunoadhesin.

21. The method of any one of claims 1-20, wherein the cancer is lung cancer, bladder cancer, breast cancer, renal cell carcinoma, melanoma, colorectal cancer, or a heme malignancy.

22. The method of claim 21, wherein the lung cancer is non-small cell lung cancer (NSCLC).

23. The method of any one of claims 1-22, wherein the individual has cancer or has been diagnosed with cancer.

24. The method of claim 23, wherein the cancer cells in the individual express PD-L1.

25. The method of any one of claims 1-24, wherein the treatment results in a response in the individual.

26. The method of claim 25, wherein the response is a complete response.

27. The method of claim 25 or claim 26, wherein the response is a sustained response after cessation of the treatment.

28. The method of any one of claims 1-27, wherein the taxane is administered before the PD-1 axis binding antagonist, simultaneous with the PD-1 axis binding antagonist, or after the PD-1 axis binding antagonist.

29. The method of any one of claims 1-28, wherein the taxane is nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel.

30. The method of claim 29, wherein the taxane is nab-paclitaxel (ABRAXANE®).

31. The method of claim 29, wherein the taxane is paclitaxel.

32. A method of enhancing immune function in an individual having cancer comprising administering an effective amount of a PD-1 axis binding antagonist and a taxane.

33. The method of claim 32, wherein CD8+ T cells in the individual have enhanced priming, activation, proliferation and/or cytolytic activity relative to prior to the administration of the PD-1 axis binding antagonist and the taxane.

34. The method of claim 32, wherein the number of CD8+ T cells is elevated relative to prior to administration of the combination.

35. The method of claim 34, wherein the CD8+ T cell is an antigen-specific CD8+ T cell.

36. The method of claim 32, wherein Treg function is suppressed relative to prior to the administration of the combination.

37. The method of claim 32, wherein T cell exhaustion is decreased relative to prior to the administration of the combination.

38. The method of any one of claims 32-37, wherein the PD-1 axis binding antagonist is selected from the group consisting of a PD-1 binding antagonist, a PD-L1 binding antagonist and a PD-L2 binding antagonist.

39. The method of claim 38, wherein the PD-1 axis binding antagonist is a PD-1 binding antagonist.

40. The method of claim 39, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to its ligand binding partners.

41. The method of claim 40, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1.

42. The method of claim 40, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2.

43. The method of claim 40, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-L1 and PD-L2.

44. The method of any one of claims 40-43, wherein the PD-1 binding antagonist is an antibody.

45. The method of claim 40, wherein the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224.

46. The method of claim 38, wherein the PD-1 axis binding antagonist is a PD-L1 binding antagonist.

47. The method of claim 46, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1.

48. The method of claim 46, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1.

49. The method of claim 46, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1.

50. The method of any one of claims 46-49, wherein the PD-L1 binding antagonist is an antibody.

51. The method of claim 50, wherein antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736.

52. The method of claim 50, wherein the antibody comprises a heavy chain comprising HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24.

53. The method of claim 50, wherein the antibody comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

54. The method of claim 38, wherein the PD-1 axis binding antagonist is a PD-L2 binding antagonist.

55. The method of claim 54, wherein the PD-L2 binding antagonist is an antibody.

56. The method of claim 54, wherein the PD-L2 binding antagonist is an immunoadhesin.

57. The method of any one of claims 32-56, wherein the cancer is lung cancer, bladder cancer, breast cancer, renal cell carcinoma, melanoma, colorectal cancer, or a heme malignancy.

58. The method of claim 57, wherein the lung cancer is non-small cell lung cancer (NSCLC).

59. The method of any one of claims 32-58, wherein the cancer cells in the individual express PD-L1.

60. The method of any one of claims 32-59, wherein the taxane is nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel.

61. The method of claim 60, wherein the taxane is nab-paclitaxel (ABRAXANE®).

62. The method of claim 60, wherein the taxane is paclitaxel.

63. The method of any one of claims 1-62, wherein the PD-1 axis binding antagonist and/or the taxane are administered intravenously, intramuscularly, subcutaneously, topically, orally, transdermally, intraperitoneally, intraorbitally, by implantation, by inhalation, intrathecally, intraventricularly, or intranasally.

64. The method of any one of claims 1-63, further comprising administering an effective amount of a chemotherapeutic agent.

65. The method of claim 64, wherein the chemotherapeutic agent is a platinum-based chemotherapeutic agent.

66. The method of claim 65, wherein the platinum-based chemotherapeutic agent is carboplatin.

67. Use of a human PD-1 axis binding antagonist in the manufacture of a medicament for treating or delaying progression of cancer in an individual, wherein the medicament comprises the human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier, and wherein the treatment comprises administration of the medicament in combination with a composition comprising a taxane and an optional pharmaceutically acceptable carrier.

68. Use of a taxane in the manufacture of a medicament for treating or delaying progression of cancer in an individual, wherein the medicament comprises the taxane and an optional pharmaceutically acceptable carrier, and wherein the treatment comprises administration of the medicament in combination with a composition comprising a human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier.

69. A composition comprising a human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier for use in treating or delaying progression of cancer in an individual,

wherein the treatment comprises administration of said composition in combination with a second composition, wherein the second composition comprises a taxane and an optional pharmaceutically acceptable carrier.

70. A composition comprising a taxane and an optional pharmaceutically acceptable carrier for use in treating or delaying progression of cancer in an individual, wherein the treatment comprises administration of said composition in combination with a second composition, wherein the second composition comprises a human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier.

71. A kit comprising a medicament comprising a PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier, and a package insert comprising instructions for administration of the medicament in combination with a composition comprising a taxane and an optional pharmaceutically acceptable carrier for treating or delaying progression of cancer in an individual.

72. A kit comprising a first medicament comprising a PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier, and a second medicament comprising a taxane and an optional pharmaceutically acceptable carrier.

73. The kit of claim 72, wherein the kit further comprises a package insert comprising instructions for administration of the first medicament and the second medicament for treating or delaying progression of cancer in an individual.

74. A kit comprising a medicament comprising a taxane and an optional pharmaceutically acceptable carrier, and a package insert comprising instructions for administration of the medicament in combination with a composition comprising a PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier for treating or delaying progression of cancer in an individual.

WHAT IS CLAIMED IS:

1. Use of a human PD-1 axis binding antagonist in the manufacture of a medicament for treating or delaying progression of cancer in an individual, wherein the human PD-1 axis binding antagonist is to be administered with a taxane.

2. The use of claim 1, wherein the PD-1 axis binding antagonist is selected from the group consisting of a PD-L1 binding antagonist, a PD-1 binding antagonist, and a PD-L2 binding antagonist.

3. The use of claim 2, wherein the PD-1 axis binding antagonist is a PD-L1 binding antagonist.

4. The use of claim 3, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1.

5. The use of claim 3, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1.

6. The use of claim 3, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1.

7. The use of any one of claims 4-6, wherein the PD-L1 binding antagonist is an antibody.

8. The use of claim 7, wherein the antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736.

9. The use of claim 7, wherein the antibody comprises a heavy chain comprising HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24.

10. The use of claim 7, wherein the antibody comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

11. The use of claim 2, wherein the PD-1 axis binding antagonist is a PD-1 binding antagonist.

12. The use of claim 11 wherein the PD-1 binding antagonist inhibits the binding of PD-1 to its ligand binding partners.

13. The use of claim 12, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1.

14. The use of claim 12, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2.

15. The use of claim 12, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-

L1 and PD-L2.

16. The use of any one of claims 12-15, wherein the PD-1 binding antagonist is an antibody.

17. The use of claim 12, wherein the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224.

18. The use of claim 2, wherein the PD-1 axis binding antagonist is a PD-L2 binding antagonist.

19. The use of claim 18, wherein the PD-L2 binding antagonist is an antibody.

20. The use of claim 18, wherein the PD-L2 binding antagonist is an immunoadhesin.

21. The use of any one of claims 1-20, wherein the cancer is lung cancer, bladder cancer, breast cancer, renal cell carcinoma, melanoma, colorectal cancer, or a heme malignancy.

22. The use of claim 21, wherein the lung cancer is non-small cell lung cancer (NSCLC).

23. The use of any one of claims 1-22, wherein the individual has cancer or has been diagnosed with cancer.

24. The use of claim 23, wherein the cancer cells in the individual express PD-L1.

25. The use of any one of claims 1-24, wherein the treatment results in a response in the individual.

26. The use of claim 25, wherein the response is a complete response.

27. The use of claim 25 or claim 26, wherein the response is a sustained response after cessation of the treatment.

28. The use of any one of claims 1-27, wherein the taxane is to be administered before the PD-1 axis binding antagonist, simultaneous with the PD-1 axis binding antagonist, or after the PD-1 axis binding antagonist.

29. The use of any one of claims 1-28, wherein the taxane is nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel.

30. The use of claim 29, wherein the taxane is nab-paclitaxel (ABRAXANE®).

31. The use of claim 29, wherein the taxane is paclitaxel.

32. Use of a PD-1 axis binding antagonist in the manufacture of a medicament for enhancing immune

function in an individual having cancer, wherein the PD-1 axis binding antagonist is to be administered with a taxane.

33. The use of claim 32, wherein CD8+ T cells in the individual have enhanced priming, activation, proliferation and/or cytolytic activity relative to prior to the administration of the PD-1 axis binding antagonist and the taxane.

34. The use of claim 32, wherein the number of CD8+ T cells is elevated relative to prior to administration of the combination.

35. The use of claim 34, wherein the CD8+ T cell is an antigen-specific CD8+ T cell.

36. The use of claim 32, wherein Treg function is suppressed relative to prior to the administration of the combination.

37. The use of claim 32, wherein T cell exhaustion is decreased relative to prior to the administration of the combination.

38. The use of any one of claims 32-37, wherein the PD-1 axis binding antagonist is selected from the group consisting of a PD-L1 binding antagonist, a PD-1binding antagonist and a PD-L2 binding antagonist.

39. The use of claim 38, wherein the PD-1 axis binding antagonist is a PD-L1 binding antagonist.

40. The use of claim 39, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to PD-1.

41. The used of claim 39, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to B7-1.

42. The use of claim 39, wherein the PD-L1 binding antagonist inhibits the binding of PD-L1 to both PD-1 and B7-1.

43. The use of any one of claims 39-42, wherein the PD-L1 binding antagonist is an antibody.

44. The use of claim 43, wherein antibody is selected from the group consisting of: YW243.55.S70, MPDL3280A, MDX-1105, and MEDI4736.

45. The use of claim 43, wherein the antibody comprises a heavy chain comprising HVR-H1 sequence of SEQ ID NO:19, HVR-H2 sequence of SEQ ID NO:20, and HVR-H3 sequence of SEQ ID NO:21; and a light chain comprising HVR-L1 sequence of SEQ ID NO:22, HVR-L2 sequence of SEQ ID NO:23, and HVR-L3 sequence of SEQ ID NO:24.

46. The use of claim 43, wherein the antibody comprises a heavy chain variable region comprising

the amino acid sequence of SEQ ID NO:26 and a light chain variable region comprising the amino acid sequence of SEQ ID NO:4.

47. The use of claim 38, wherein the PD-1 axis binding antagonist is a PD-1 binding antagonist.

48. The use of claim 47, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to its ligand binding partners.

49. The use of claim 48, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L1.

50. The use of claim 48, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to PD-L2.

51. The use of claim 48, wherein the PD-1 binding antagonist inhibits the binding of PD-1 to both PD-L1 and PD-L2.

52. The use of any one of claims 48-51, wherein the PD-1 binding antagonist is an antibody.

53. The use of claim 48, wherein the PD-1 binding antagonist is selected from the group consisting of MDX-1106 (nivolumab), MK-3475 (lambrolizumab), CT-011 (pidilizumab), and AMP-224.

54. The use of claim 38, wherein the PD-1 axis binding antagonist is a PD-L2 binding antagonist.

55. The use of claim 54, wherein the PD-L2 binding antagonist is an antibody.

56. The use of claim 54, wherein the PD-L2 binding antagonist is an immunoadhesin.

57. The use of any one of claims 32-56, wherein the cancer is lung cancer, bladder cancer, breast cancer, renal cell carcinoma, melanoma, colorectal cancer, or a heme malignancy.

58. The use of claim 57, wherein the lung cancer is non-small cell lung cancer (NSCLC).

59. The use of any one of claims 32-58, wherein the cancer cells in the individual express PD-L1.

60. The use of any one of claims 32-59, wherein the taxane is nab-paclitaxel (ABRAXANE®), paclitaxel, or docetaxel.

61. The use of claim 60, wherein the taxane is nab-paclitaxel (ABRAXANE®).

62. The use of claim 60, wherein the taxane is paclitaxel.

63. The use of any one of claims 1-62, wherein the PD-1 axis binding antagonist and/or the taxane are to be administered intravenously, intramuscularly, subcutaneously, topically, orally, transdermally,

intraperitoneally, intraorbitally, by implantation, by inhalation, intrathecally, intraventricularly, or intranasally.

64. The use of any one of claims 1-63, wherein the medicament is to be administered with a chemotherapeutic agent.

65. The use of claim 64, wherein the chemotherapeutic agent is a platinum-based chemotherapeutic agent.

66. The use of claim 65, wherein the platinum-based chemotherapeutic agent is carboplatin.

67. Use of a human PD-1 axis binding antagonist in the manufacture of a medicament for treating or delaying progression of cancer in an individual, wherein the medicament comprises the human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier, and wherein the treatment comprises administration of the medicament in combination with a composition comprising a taxane and an optional pharmaceutically acceptable carrier.

68. Use of a taxane in the manufacture of a medicament for treating or delaying progression of cancer in an individual, wherein the medicament comprises the taxane and an optional pharmaceutically acceptable carrier, and wherein the treatment comprises administration of the medicament in combination with a composition comprising a human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier.

69. A composition comprising a human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier for use in treating or delaying progression of cancer in an individual, wherein the treatment comprises administration of said composition in combination with a second composition, wherein the second composition comprises a taxane and an optional pharmaceutically acceptable carrier.

70. A composition comprising a taxane and an optional pharmaceutically acceptable carrier for use in treating or delaying progression of cancer in an individual, wherein the treatment comprises administration of said composition in combination with a second composition, wherein the second composition comprises a human PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier.

71. A kit comprising a medicament comprising a PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier, and a package insert comprising instructions for administration of the medicament in combination with a composition comprising a taxane and an optional pharmaceutically acceptable carrier for treating or delaying progression of cancer in an individual.

72. A kit comprising a first medicament comprising a PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier, and a second medicament comprising a taxane and an optional

pharmaceutically acceptable carrier.

73. The kit of claim 72, wherein the kit further comprises a package insert comprising instructions for administration of the first medicament and the second medicament for treating or delaying progression of cancer in an individual.

74. A kit comprising a medicament comprising a taxane and an optional pharmaceutically acceptable carrier, and a package insert comprising instructions for administration of the medicament in combination with a composition comprising a PD-1 axis binding antagonist and an optional pharmaceutically acceptable carrier for treating or delaying progression of cancer in an individual.