CLAIMS:

1. An isolated antibody or antibody fragment thereof comprising an antigen binding region that binds to a V-domain Ig Suppressor of T-cell Activation (VISTA), wherein binding of the antibody or antibody fragment to VISTA modulates or enhances an immune response, and wherein the antibody comprises:

a) an antibody VH domain comprising:

i) a VH CDR1 having the amino acid sequence of SEQ ID NO:19;

ii) a VH CDR2 having the amino acid sequence of SEQ ID NO:20; and

iii) a VH CDR3 having the amino acid sequence of SEQ ID NO:21;

and

b) an antibody VL domain comprising:

i) a VL CDR1 having the amino acid sequence of SEQ ID NO:22;

ii) a VL CDR2 having the amino acid sequence of SEQ ID NO:23; and

iii) a VL CDR3 having the amino acid sequence of SEQ ID NO:24;

or

c) an antibody VH domain comprising:

i) a VH CDR1 having the amino acid sequence of SEQ ID NO:25;

ii) a VH CDR2 having the amino acid sequence of SEQ ID NO:26; and

iii) a VH CDR3 having the amino acid sequence of SEQ ID NO:27;

and

d) an antibody VL domain comprising:

i) a VL CDR1 having the amino acid sequence of SEQ ID NO:28;

ii) a VL CDR2 having the amino acid sequence of SEQ ID NO:29; and

iii) a VL CDR3 having the amino acid sequence of SEQ ID NO:30.

2. The antibody or antibody fragment of Claim 1, wherein the antibody fragment is a Fab, $F(ab')_2$, or scFv antibody fragment.

3. The antibody or antibody fragment of Claim 1 which comprises an antibody constant region.

4. The antibody or antibody fragment of Claim 1, wherein VISTA is expressed on a hematopoietic cell.

5. The antibody or antibody fragment of Claim 4, wherein the hematopoietic cell is a myeloid lineage cell and/or a lymphocyte.

6. The antibody or antibody fragment of Claim 4, wherein the hematopoietic cell is a monocyte or a neutrophil.

7. The antibody or antibody fragment of Claim 4, wherein the hematopoietic cell is a T-cell.

8. The antibody or antibody fragment of Claim 4, wherein the hematopoietic cell is a natural killer (NK) cell or a natural killer T (NKT) cell.

9. The antibody or antibody fragment of Claim 1, wherein VISTA is expressed on a tumor cell.

10. The antibody or antibody fragment of Claim 1 wherein VISTA is expressed in a tumor microenvironment (TME).

11. The antibody or antibody fragment of any one of Claims 1-10, further comprising at least one heavy chain and at least one light chain.

12. An antibody or antibody fragment according to Claim 11, wherein at least one heavy chain comprises the heavy chain variable region sequence as shown in SEQ ID NO:37 or 40.

13. An antibody or antibody fragment according to Claim 11, wherein at least one light chain comprises the light chain variable region sequence as shown in SEQ ID NO:43 or 44.

14. An antibody or antibody fragment according to Claim 11, wherein at least one heavy chain comprises the heavy chain variable region sequence as shown in SEQ ID NO:37 or 40, and wherein at least one light chain comprises the light chain variable region sequence as shown in SEQ ID NO:43 or 44.

15. The antibody or antibody fragment of any one of Claims 1-14, wherein the antibody is a monoclonal antibody.

16. The antibody or antibody fragment of any one of Claims 1-14, wherein the antibody is a humanized antibody.

17. The antibody or antibody fragment of any one of Claims 1-14, wherein the antibody comprises a human constant region.

18. An antibody or antibody fragment according to any one of Claims 1-14, wherein the antibody molecule is specific for an epitope within the amino acid sequence SEQ ID NO:46.

19. The antibody or antibody fragment of any one of Claims 1-14, wherein the modulation of the immune response comprises an increase in CD45+ leukocytes, CD4+ T-cells, or CD8+ T-cells, or a combination thereof, or a decrease in VISTA-expressing immune cells.

20. The antibody or antibody fragment of any one of Claims 1-14, wherein the modulation of the immune response comprises enhanced production of cytokines, enhanced T-cell response, and/or modulates Foxp3 expression.

21. A composition comprising the antibody or antibody fragment of any one of Claims 1-20 and a pharmaceutically acceptable carrier, diluent, or excipient.

22. Use of the antibody or antibody fragment of any one of Claims 1-20 in the manufacture of a medicament for the treatment of cancer in an individual.

23. Use of the composition of Claim 21 in the manufacture of a medicament for the treatment or prevention of cancer in an individual.

24. The use of Claim 22 or 23, wherein the individual is a mammal.

25. The use of Claim 22 or 23, wherein the individual is a human.

26. The use of Claim 22 or 23 or 24 or 25, wherein the cancer is a solid tumor.

27. The use of Claim 26, wherein the solid tumor is surrounded by a tumor stroma comprising myeloid cells, T-cells, or a combination of myeloid cells and T-cells.

28. The use of Claim 26 or 27, wherein the solid tumor is infiltrated with myeloid cells, T-cells or a combination of myeloid cells and T-cells.

29. The use of Claim 25, further comprising that a vaccine is to be administered.

30. Use of an antibody or antibody fragment of Claims 1-20 in the manufacture of a medicament for the suppression of tumor growth in an individual.

31. The use of any one of Claims 22-30, wherein the composition, antibody or fragment is to be administered parenterally or nonparenterally.

32. The use of Claim 31 wherein the administration is taken intravenously, subcutaneously or orally.

33. The use of any one of Claims 22-30, wherein the dosage of the composition, antibody or fragment to be administered is 0.1-15 mg/kg per administration.

34. The use of any one of Claims 22-30, wherein the composition, antibody or fragment is to be administered weekly, once every two weeks, once every three weeks, once every month, once every 2 months, or once every 3 months.

35. An antibody or fragment thereof of Claim 11, wherein the variable light chain VL domain comprises a human framework region.

36. An antibody or fragment thereof of Claim 1, which comprises a whole antibody.

37. An isolated nucleic acid which comprises a nucleotide sequence encoding the antibody of Claim 1.

38. An expression vector comprising the nucleic acid of Claim 37 operably linked to a promoter.

39. A non-human host cell transformed with the expression vector of Claim 38.

40. A method of producing antibody or fragment thereof of Claim 1, the method comprising culturing host cells according to Claim 39 under conditions for production of said antibody or fragment.

41. The method according to Claim 40 further comprising isolating said antibody.

42. An article of manufacture comprising the composition of Claim 21 and a container, and further comprising a package insert or label indicating that the composition can be used to treat cancer.

43. An antibody or antibody fragment thereof, wherein the antibody is selected from the group consisting of: antibody VSTB 112 comprising a heavy chain comprising SEQ ID NO:55 and a light chain comprising SEQ ID NO:56, and antibody VSTB95 comprising a heavy chain comprising SEQ ID NO:53 and a light chain comprising SEQ ID NO:54.

44. The use of Claims 22 or 23, wherein the cancer is a lung cancer.

45. The use of Claim 44, wherein the lung cancer is a non-small cell lung carcinoma (NSCLC).

46. The isolated antibody or antibody fragment thereof of Claim 1 comprising an antigen binding region that binds to a V-domain Ig Suppressor of T-cell Activation (VISTA), wherein the antibody comprises an antibody VH domain comprising a VH CDR1 having the amino acid sequence of SEQ ID NO:25, a VH CDR2 having the amino acid sequence of SEQ ID NO:26 and a VH CDR3 having the amino acid sequence of SEQ ID NO:27, and which further comprises an antibody VL domain comprising a VL CDR1 having the amino acid sequence of SEQ ID NO:28, a VL CDR2 having the amino acid sequence of SEQ ID NO:29 and a VL CDR3 having the amino acid sequence of SEQ ID NO:30.

47. The antibody or antibody fragment of Claim 46, comprising one or more humanized or human framework regions.

48. The antibody or antibody fragment of Claim 47, wherein the antibody VH domain comprises SEQ ID NO:37.

49. The antibody of Claim 47 or 48, wherein the antibody VL domain comprises SEQ ID NO:44.

50. The antibody or antibody fragment of any one of Claims 46-49, wherein the antibody comprises a heavy chain constant region.

51. The antibody or antibody fragment of Claim 50, wherein the heavy chain constant region is a human heavy chain constant region.

52. The antibody or antibody fragment of Claim 50 or 52, wherein the heavy chain constant region is an IgG1 heavy chain constant region.

53. The antibody or antibody fragment of Claim 52, wherein the IgG1 heavy chain constant region comprises the amino acid sequence of the IgG1 heavy chain constant region present in SEQ ID NO:61.

54. The antibody or antibody fragment of Claim 52, wherein the IgG1 heavy chain constant region has been modified to enhance protease resistance of the antibody.

55. The antibody or antibody fragment of Claim 54, wherein the IgG1 heavy chain constant region that has been modified to enhance protease resistance of the antibody comprises the amino acid sequence of the IgG1 heavy chain constant region present in SEQ ID NO:60.

56. The antibody or antibody fragment of any one of Claims 50-55, wherein the antibody comprises a light chain constant region.

57. The antibody or antibody fragment of Claim 56, wherein the light chain constant region is a human light chain constant region.

58. The antibody or antibody fragment of Claim 57, wherein the human light chain constant region comprises the amino acid sequence of the light chain constant region present in SEQ ID NO:56.

59. The antibody or antibody fragment of any one of Claims 46-58, wherein the antibody comprises a heavy chain comprising SEQ ID NO:60 and a light chain comprising SEQ ID NO:56.

60. The antibody or antibody fragment of any one of Claims 46-58, wherein the antibody comprises a heavy chain comprising SEQ ID NO:61 and a light chain comprising SEQ ID NO:56.

61. The antibody or antibody fragment of any one of Claims 46-60, wherein the antibody or antibody fragment is expressed in a non-human cell that is deficient in fucosylation enzymes.

62. The antibody or antibody fragment of Claim 61, wherein the cell is a Chinese hamster ovary (CHO) cell.

63. A composition comprising the antibody or antibody fragment of any one of Claims 46-62 and a pharmaceutically acceptable carrier, diluent, or excipient.

64. Use of the antibody or antibody fragment of any one of Claims 45-61, or the composition of Claim 63 in the manufacture of a medicament for the treatment of cancer in an individual.

65. The use of Claim 64, wherein the cancer is a lung cancer.

66. The use of Claim 64 or 65, further wherein a second cancer treatment is to be administered.

67. The use of Claim 66, wherein the second cancer treatment is surgery, chemotherapy, radiation therapy, biologic therapy, targeted therapy, or immunomodulatory therapy, or a combination thereof.

68. Use of the antibody or antibody fragment of any one of Claims 46-62, or the composition of Claim 63 in the manufacture of a medicament for the treatment of a non-small cell lung carcinoma (NSCLC) in an individual.

69. The antibody or antibody fragment of Claim 18, wherein the epitope is a conformational epitope.

70. The antibody or antibody fragment of Claim 68, wherein the conformational epitope is defined by SEQ ID NO:75 or SEQ ID NO:65 of human VISTA (SEQ ID NO:46).

71. The antibody or antibody fragment of Claim 69, wherein the conformational epitope comprises amino acid residues in the FG loop of human VISTA (SEQ ID NO:46).

72. Use of the antibody or antibody fragment of any one of Claims 46-62 in the manufacture of a medicament for the enhancement of an immune response in an individual.

73. The use of Claim 72, wherein the immune response is an antitumor immune response.

74. Use of the antibody or antibody fragment of any one of Claims 46-62 in the manufacture of a medicament for eliciting a biological response in an individual, wherein the biological response is selected from the group consisting of:

a) activation of monocytes;

b) induction of T-cell proliferation and cytokine secretion;

c) increased survival of monocytes;

d) induction of antibody-dependent cell-mediated cytotoxicity (ADCC) in cells-expressing VISTA; and

e) induction of antibody-dependent cellular phagocytosis (ADCP) in cells-expressing VISTA.

75. The use of Claim 63, wherein the cancer is a bladder cancer.