

CLAIMS

What is claimed is:

1. An antibody that specifically binds to human LILRB2, wherein the antibody comprises the following complementarity determining regions (CDRs):
 - (a) a CDR-H1 comprising the amino acid sequence of JY(J)₂G(J)₂ (SEQ ID NO: 171);
 - (b) a CDR-H2 comprising the amino acid sequence of (J)₂W(J)₁₁KJ (SEQ ID NO: 172);
 - (c) a CDR-H3 comprising the amino acid sequence of (J)₂I(J)₃TDYV(J)₃ (SEQ ID NO: 173);
 - (d) a CDR-L1 comprising the amino acid sequence of (J)₈DLJ (SEQ ID NO: 174);
 - (e) a CDR-L2 comprising the amino acid sequence of (J)₇ (SEQ ID NO: 175); and
 - (f) a CDR-L3 comprising the amino acid sequence of (J)₃YJYPLJ (SEQ ID NO: 176),
 wherein each J is independently a naturally occurring amino acid.
2. The antibody of claim 1, wherein the CDR-H2 comprises the amino acid sequence of SJW(J)₁₁KJ (SEQ ID NO: 177) and/or the CDR-L3 comprises the amino acid sequence of (J)₃YDYPLJ (SEQ ID NO: 178).
3. The antibody of claim 1 or 2, wherein the CDR-H1 comprises the amino acid sequence of:
 - (i) TYAMGVS (SEQ ID NO: 15);
 - (ii) JYAMGVS (SEQ ID NO: 179);
 - (iii) TYJMGVS (SEQ ID NO: 180);
 - (iv) TYAJGVS (SEQ ID NO: 181);
 - (v) TYAMGJS (SEQ ID NO: 182);
 - (vi) TYAMGVJ (SEQ ID NO: 183); or
 - (vii) a variant of any one of (ii) to (vi) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 171.
4. The antibody of any one of claims 1-3, wherein the CDR-H2 comprises the amino acid sequence of:
 - (i) SIWWNGNKYNNPSLKS (SEQ ID NO: 16);
 - (ii) SJWWNGNKYNNPSLKS (SEQ ID NO: 184);
 - (iii) SIWJNGNKYNNPSLKS (SEQ ID NO: 185);
 - (iv) SIWWJGNKYNNPSLKS (SEQ ID NO: 186);
 - (v) SIWWNJKNKYNNPSLKS (SEQ ID NO: 187);
 - (vi) SIWWNGJKYNNPSLKS (SEQ ID NO: 188);
 - (vii) SIWWNGNJYNNPSLKS (SEQ ID NO: 189);
 - (viii) SIWWNGNKJNNPSLKS (SEQ ID NO: 190);
 - (ix) SIWWNGNKYJNPSLKS (SEQ ID NO: 191);
 - (x) SIWWNGNKYNJPSLKS (SEQ ID NO: 192);
 - (xi) SIWWNGNKYNNJSLKS (SEQ ID NO: 193);
 - (xii) SIWWNGNKYNNPJLKS (SEQ ID NO: 194);
 - (xiii) SIWWNGNKYNNPSJKS (SEQ ID NO: 195);

- (xiv) SIWWNGNKYNNPSLKJ (SEQ ID NO: 196); or
- (xv) a variant of any one of (ii) to (xiv) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 172.

5. The antibody of any one of claims 1-4, wherein the CDR-H3 comprises the amino acid sequence of:

- (i) SRIIRFTDYVMDA (SEQ ID NO: 17);
- (ii) JRIIRFTDYVMDA (SEQ ID NO: 197);
- (iii) SJIRFTDYVMDA (SEQ ID NO: 198);
- (iv) SRIJRFTDYVMDA (SEQ ID NO: 199);
- (v) SRIJFTDYVMDA (SEQ ID NO: 200);
- (vi) SRIIRJTDYVMDA (SEQ ID NO: 201);
- (vii) SRIIRFTDYVJDA (SEQ ID NO: 202);
- (viii) SRIIRFTDYVMJA (SEQ ID NO: 203);
- (ix) SRIIRFTDYVMDJ (SEQ ID NO: 204); or
- (x) a variant of any one of (ii) to (ix) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 173.

6. The antibody of any one of claims 1-5, wherein the CDR-L1 comprises the amino acid sequence of:

- (i) RASEDIYNDLA (SEQ ID NO: 18);
- (ii) JASEDIYNDLA (SEQ ID NO: 205);
- (iii) RJSEDIYNDLA (SEQ ID NO: 206);
- (iv) RAJEDIYNDLA (SEQ ID NO: 207);
- (v) RASJDIYNDLA (SEQ ID NO: 208);
- (vi) RASEJIYNDLA (SEQ ID NO: 209);
- (vii) RASEDJYNDLA (SEQ ID NO: 210);
- (viii) RASEDIJNDLA (SEQ ID NO: 211);
- (ix) RASEDIYJDLA (SEQ ID NO: 212);
- (x) RASEDIYNDLJ (SEQ ID NO: 213); or
- (xi) a variant of any one of (ii) to (x) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 174.

7. The antibody of any one of claims 1-6, wherein the CDR-L2 comprises the amino acid sequence of:

- (i) NANSLHT (SEQ ID NO: 19);
- (ii) JANSLHT (SEQ ID NO: 214);
- (iii) NJNSLHT (SEQ ID NO: 215);
- (iv) NAJSLHT (SEQ ID NO: 216);
- (v) NANJLHT (SEQ ID NO: 217);
- (vi) NANSJHT (SEQ ID NO: 218);
- (vii) NANSLJT (SEQ ID NO: 219);

- (viii) NANSLHJ (SEQ ID NO: 220); or
- (ix) a variant of any one of (ii) to (viii) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 175.

8. The antibody of any one of claims 1-7, wherein the CDR-L3 comprises the amino acid sequence of:

- (i) QQYYDYPLT (SEQ ID NO: 20);
- (ii) JQYYDYPLT (SEQ ID NO: 221);
- (iii) QJYYDYPLT (SEQ ID NO: 222);
- (iv) QQJYDYPLT (SEQ ID NO: 223);
- (v) QQYYDYPLJ (SEQ ID NO: 224); or
- (vi) a variant of any one of (ii) to (v) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 176.

9. The antibody of claim 1, wherein the CDR-H2 comprises the amino acid sequence of JIWWNGNKYNNPSLKS (SEQ ID NO: 225), or a variant thereof comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 172, and/or the CDR-L3 comprises the amino acid sequence of QQYYJYPLT (SEQ ID NO: 226), or a variant thereof comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 176.

10. The antibody of any one of claims 3-9, wherein one or more of the CDRs comprises said additional J amino acid.

11. The antibody of any one of claims 1-10, wherein the CDR-H3 comprises the amino acid sequence of (J)₂IJXJTDYV(J)₃ (SEQ ID NO: 227), wherein X is not arginine.

12. The antibody of claim 11, wherein X is selected from the group consisting of aspartate, glutamate, and alanine.

13. The antibody of claim 11 or 12, wherein the CDR-H3 comprises the sequence of:

- (i) JRIIXFTDYVMDA (SEQ ID NO: 228);
- (ii) SJIIIXFTDYVMDA (SEQ ID NO: 229);
- (iii) SRIIXFTDYVMDA (SEQ ID NO: 230);
- (iv) SRIIXFTDYVMDA (SEQ ID NO: 231);
- (v) SRIIXJTDYVMDA (SEQ ID NO: 232);
- (vi) SRIIXFTDYVJDA (SEQ ID NO: 233);
- (vii) SRIIXFTDYVMJA (SEQ ID NO: 234);
- (viii) SRIIXFTDYVMDJ (SEQ ID NO: 235); or
- (ix) a variant of any one of (ii) to (iii) or (v) to (viii) comprising an additional J amino acid in place of a recited amino acid that is represented by a J in SEQ ID NO: 173.

14. The antibody of any one of claims 1-13, wherein the antibody comprises a variable heavy chain (V_H) region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 3, 13, 23, 33, 43, 53, 63, 73, 83, 93, 103, or 113, and/or a variable light chain (V_L) region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 4, 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, or 114.

15. The antibody of any one of claim 1-8, wherein the antibody comprises a variable heavy chain (V_H) region comprising the amino acid sequence of SEQ ID NO: 3, 13, 23, 33, 43, 53, 63, 73, 83, 93, 103, or 113, and/or a variable light chain (V_L) region comprising the amino acid sequence of SEQ ID NO: 4, 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, or 114.

16. The antibody of any one of claims 1-15, wherein the antibody comprises a heavy chain comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 1, 11, 21, 31, 41, 51, 61, 71, 81, 91, 101, or 111, and/or a light chain comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 2, 22, 32, 42, 52, 62, 72, 82, 92, 102, or 112.

17. An antibody that specifically binds to human LILRB2, wherein the antibody comprises the following six complementarity determining regions (CDRs):

- (a) a CDR-H1 comprising the amino acid sequence of SEQ ID NO: 15;
- (b) a CDR-H2 comprising the amino acid sequence of SEQ ID NO: 16;
- (c) a CDR-H3 comprising the amino acid sequence of SEQ ID NO: 17;
- (d) a CDR-L1 comprising the amino acid sequence of SEQ ID NO: 18;
- (e) a CDR-L2 comprising the amino acid sequence of SEQ ID NO: 19; and
- (f) a CDR-L3 comprising the amino acid sequence of SEQ ID NO: 20.

18. The antibody of claim 17, wherein the antibody comprises a variable heavy chain (V_H) region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 13 and a variable light chain (V_L) region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 14, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 15-17, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 18-20.

19. The antibody of claim 17 or 18, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 13 and a V_L region comprising the amino acid sequence of SEQ ID NO: 14.

20. The antibody of any one of claims 17-19, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 11 and a light chain comprising the amino acid sequence of SEQ ID NO: 12.

21. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 53 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 54, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 15-17, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 18-20.

22. The antibody of claim 17 or 21, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 53 and a variable light chain V_L region comprising the amino acid sequence of SEQ ID NO: 54.

23. The antibody of any one of claims 17, 21, and 22, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 51 and a light chain comprising the amino acid sequence of SEQ ID NO: 52.

24. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 63 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 64, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 15-17, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 18-20.

25. The antibody of claim 17 or 24, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 63 and a V_L region comprising the amino acid sequence of SEQ ID NO: 64.

26. The antibody of any one of claims 17, 24, and 25, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 61 and a light chain comprising the amino acid sequence of SEQ ID NO: 62.

27. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 73 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 74, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 15-17, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 18-20.

28. The antibody of claim 17 or 27, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 73 and a V_L region comprising the amino acid sequence of SEQ ID NO: 74.

29. The antibody of any one of claims 17, 27, and 28, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 71 and a light chain comprising the amino acid sequence of SEQ ID NO: 72.

30. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 83 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 84, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 15-17, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 18-20.

31. The antibody of claim 17 or 30, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 83 and a V_L region comprising the amino acid sequence of SEQ ID NO: 84.

32. The antibody of any one of claims 17, 30, and 31, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 81 and a light chain comprising the amino acid sequence of SEQ ID NO: 82.

33. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 93 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 94, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 95-97, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 98-100.

34. The antibody of claim 17 or 33, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 93 and a V_L region comprising the amino acid sequence of SEQ ID NO: 94.

35. The antibody of any one of claims 17, 33, and 34, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 91 and a light chain comprising the amino acid sequence of SEQ ID NO: 92.

36. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 103 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 104, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 105-107, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 108-110.

37. The antibody of claim 17 or 36, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 103 and a V_L region comprising the amino acid sequence of SEQ ID NO: 104.

38. The antibody of any one of claims 17, 36, and 37, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 101 and a light chain comprising the amino acid sequence of SEQ ID NO: 102.

39. The antibody of claim 17, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 113 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 114, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 115-117, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 118-120.

40. The antibody of claim 17 or 39, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 113 and a V_L region comprising the amino acid sequence of SEQ ID NO: 114.

41. The antibody of any one of claims 17, 39, and 40, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 111 and a light chain comprising the amino acid sequence of SEQ ID NO: 112.

42. An antibody that specifically binds to human LILRB2, wherein the antibody comprises the following six CDRs:

- (a) a CDR-H1 comprising the amino acid sequence of SEQ ID NO: 5;
- (b) a CDR-H2 comprising the amino acid sequence of SEQ ID NO: 6;
- (c) a CDR-H3 comprising the amino acid sequence of SEQ ID NO: 7;
- (d) a CDR-L1 comprising the amino acid sequence of SEQ ID NO: 8;
- (e) a CDR-L2 comprising the amino acid sequence of SEQ ID NO: 9; and
- (f) a CDR-L3 comprising the amino acid sequence of SEQ ID NO: 10.

43. The antibody of claim 42, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 3 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 4, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 5-7, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 8-10.

44. The antibody of claim 42 or 43, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 3 and a V_L region comprising the amino acid sequence of SEQ ID NO: 4.

45. The antibody of any one of claims 42-44, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 1 and a light chain comprising the amino acid sequence of SEQ ID NO: 2.

46. An antibody that specifically binds to human LILRB2, wherein the antibody comprises the following six CDRs:

- (a) a CDR-H1 comprising the amino acid sequence of SEQ ID NO: 25;
- (b) a CDR-H2 comprising the amino acid sequence of SEQ ID NO: 26;
- (c) a CDR-H3 comprising the amino acid sequence of SEQ ID NO: 27;
- (d) a CDR-L1 comprising the amino acid sequence of SEQ ID NO: 28;
- (e) a CDR-L2 comprising the amino acid sequence of SEQ ID NO: 29; and
- (f) a CDR-L3 comprising the amino acid sequence of SEQ ID NO: 30.

47. The antibody of claim 46, wherein the antibody comprises a V_H region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 23 and a V_L region comprising an amino acid sequence that is at least 90% identical to the amino acid sequence of SEQ ID NO: 24, wherein the V_H region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 25-27, and the V_L region comprises three CDRs comprising the amino acid sequences of SEQ ID NOs: 28-30.

48. The antibody of claim 46 or 47, wherein the antibody comprises a V_H region comprising the amino acid sequence of SEQ ID NO: 23 and a V_L region comprising the amino acid sequence of SEQ ID NO: 24.

49. The antibody of any one of claims 46-48, wherein the antibody comprises a heavy chain comprising the amino acid sequence of SEQ ID NO: 21 and a light chain comprising the amino acid sequence of SEQ ID NO: 22.

50. The antibody of any one of claims 1-49, wherein the heavy chain additionally comprises a C-terminal lysine.

51. An antibody that cross-competes for binding to human LILRB2 with an antibody of any one of claims 1-50.

52. An antibody that specifically binds to human LILRB2 and blocks the binding of HLA-G and/or HLA-A2 to human LILRB2.

53. The antibody of claim 52, wherein the blocking is determined in a HLA-G tetramer blocking assay using human monocyte-derived macrophages, human myeloid cells, and/or a cell line expressing LILRB2.

54. The antibody of claim 53, wherein the assay comprises the use of HLA-G conjugated beads.
55. The antibody of claim 53 or 54, wherein the antibody blocks HLA-G tetramer with an EC_{50} of less than 20 nM, less than 2 nM, or less than 0.2 nM.
56. The antibody of any one of claims 52-55, wherein the blocking is determined in a HLA-A2 tetramer blocking assay using human monocyte-derived macrophages.
57. The antibody of claim 56, wherein the antibody blocks HLA-A2 tetramer with an EC_{50} of less than 20 nM, less than 2 nM, or less than 0.2 nM.
58. The antibody of any one of claims 52-57, which is the antibody of any one of claims 1-51.
59. An antibody that specifically binds to human LILRB2, wherein said antibody is capable of converting an M2-like macrophage to an M1-like macrophage.
60. The antibody of claim 59, wherein the conversion of an M2-like macrophage to an M1-like macrophage is indicated by an increased expression of one or more genes selected from the group consisting of CXCL9, CXCL11, IRF1, TAP1, IL6R, and IL15.
61. The antibody of claim 59 or 60, wherein the conversion of an M2-like macrophage to an M1-like macrophage is indicated by a decreased expression of one or more genes selected from the group consisting of IL-10, CCL2, TGFBR2, CXCL13, IL21R, CD36, CR1, C1QB, and TGFBI .
62. The antibody of any one of claims 59-61, wherein the conversion of an M2-like macrophage to an M1-like macrophage is detected using a tumor histoculture assay.
63. The antibody of any one of claims 59-62, wherein the conversion of an M2-like macrophage to an M1-like macrophage is detected using a primary human macrophage assay using human monocyte-derived macrophages.
64. The antibody of claim 63, wherein the conversion of an M2-like macrophage to an M1-like macrophage is indicated by an increased expression of one, two, or all three cytokines selected from the group consisting of TNF α , IL-1 β , and IL-6, and/or the conversion of an M2-like macrophage to an M1-like macrophage is indicated by decreased expression of one or both cytokines selected from the group consisting of IL-10 and CCL-2.
65. The antibody of any one of claims 58-64, which is the antibody of any one of claims 1-51.
66. The antibody of any one of claims 58-64, which is the antibody of any one of claims 52-57.

67. The antibody of any one of claims 1-66, wherein the antibody binds to LILRB2 with a dissociation constant (K_D) of less than 3.0 nM.
68. The antibody of claim 67, wherein the antibody binds to LILRB2 with a K_D of less than 1.5 nM.
69. The antibody of claim 68, wherein the antibody binds to LILRB2 with a K_D of less than 1.0 nM.
70. The antibody of claim 69, wherein the antibody binds to LILRB2 with a dissociation constant (K_D) less than 750 pM.
71. The antibody of any one of claims 1-66, wherein the antibody is a monoclonal antibody.
72. The antibody of any one of claims 1-71, wherein the antibody is a chimeric antibody, a humanized antibody, a CDR-grafted antibody, or a human antibody.
73. The antibody of any one of claims 1-72, wherein the antibody comprises an Fc region selected from the group consisting of a native Fc region, a variant Fc region, and a functional Fc region.
74. The antibody of any one of claims 1-73, wherein the antibody is a conjugate antibody or is detectably labeled.
75. The antibody of any one of claims 1-74, wherein the antibody is an IgG1 antibody, an IgG2 antibody, an IgG3 antibody, or an IgG4 antibody.
76. The antibody of claim 75, which is an IgG4 antibody.
77. A nucleic acid molecule encoding a polypeptide of the antibody of any one of claims 1-76.
78. A host cell or vector comprising the nucleic acid molecule of claim 77.
79. A pharmaceutical composition comprising the antibody of any one of claims 1-76 or the nucleic acid molecule of claim 77.
80. A method of treating a disease in a subject in need thereof, the method comprising administering to the subject a therapeutically effective amount of the antibody of any one of claims 1-76.
81. The method of claim 80, wherein the disease is a cancer.

82. A method of enhancing an anti-tumor immune response in a subject in need thereof, the method comprising administering to the subject a therapeutically effective amount of the antibody of any one of claims 1-76.

83. The method of any one of claims 80-82, further comprising administering the antibody in combination with a second therapeutic agent.

84. The method of claim 83, wherein the second therapeutic agent is an immunotherapy or a cancer vaccine.

85. The method of claim 84, wherein the second therapeutic agent is an immunotherapy comprising a PD-1 therapy and/or an ICOS therapy.

86. A kit comprising the pharmaceutical composition of claim 79 and instructions for use.

87. An oligonucleotide comprising a nucleic acid fragment, wherein nucleic acid fragment comprises at least 16 consecutive nucleic acid residues of the oligonucleotide sequence of CGTCACCCTCAGTTGTCAG (SEQ ID NO: 143) or TCCGTGTAATCCAAGATGCTG (SEQ ID NO: 158).

88. The oligonucleotide of claim 87, wherein the nucleic acid fragment comprises at least 16 consecutive nucleic acid residues of the oligonucleotide sequence of AGTCCCGTCACCCTCAGTTGTCAGGGGAG (SEQ ID NO: 169) or TCGTATCCGTGTAATCCAAGATGCTGATTTT (SEQ ID NO: 170).

89. A qPCR primer set comprising a forward primer and a reverse primer, wherein the forward primer comprises a nucleic acid fragment comprising at least 16 consecutive nucleic acid residues of the oligonucleotide sequence of SEQ ID NO: 143 or 169, and the reverse primer comprises a nucleic acid fragment comprising at least 16 consecutive nucleic acid residues of the oligonucleotide sequence of SEQ ID NO: 158 or 170, wherein the qPCR primer set is optionally comprised within a kit that further comprises a probe comprising at least 16 consecutive residues of SEQ ID NO: 167.

90. A method of quantifying a level of LILRB2 expression in a biological sample, the method comprising:

- (a) obtaining cDNA derived from a biological sample;
- (b) performing qPCR on the cDNA using an oligonucleotide of claim 87 or 88, or a qPCR primer set or kit of claim 89, to produce an amplification product, wherein the qPCR is specific for LILRB2; and
- (c) quantifying the amplification product to determine the level of LILRB2 expression.

91. Use of an antibody of any one of claims 1-76 for treating or preventing a disease in a subject in need thereof by administration of a therapeutically effective amount the antibody to the subject.

92. The use of claim 91, wherein the disease is a cancer.

93. Use of a therapeutically effective amount of an antibody of any one of claims 1-76 for enhancing an anti-tumor immune response in a subject in need thereof by administering an effective amount of the antibody to the subject.

94. The use of any one of claims 91-93, further comprising administering the antibody in combination with a second therapeutic agent.

95. The use of claim 94, wherein the second therapeutic agent is an immunotherapy or a cancer vaccine.

96. The use of claim 95, wherein the second therapeutic agent is an immunotherapy comprising a PD-1 therapy and/or an ICOS therapy.