

CLAIMS

1. An antibody capable of binding to human Tim-3, comprising:
 - (a) a heavy chain variable region (VH) comprising one, two or three CDR amino acid sequences selected from SEQ ID NOs 3, 4, 5, or 26 or variants thereof comprising one or more conservative substitutions; and / or
 - (b) a light chain variable region (VL) comprising one, two or three CDR amino acid sequences selected from SEQ ID NOs 6, 7, 8, or 27 or variants thereof comprising one or more conservative substitutions.
2. The antibody of Claim 1, wherein the antibody comprises:
 - (a) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3 or variants thereof comprising one or more conservative substitutions, a VH-CDR2 amino acid sequence of SEQ ID NO 4 or variants thereof comprising one or more conservative substitutions and a VH-CDR3 amino acid sequence of SEQ ID NO 5 or variants thereof comprising one or more conservative substitutions; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6 or variants thereof comprising one or more conservative substitutions, a VL-CDR2 amino acid sequence of SEQ ID NO 7 or variants thereof comprising one or more conservative substitutions and a VL-CDR3 amino acid sequence of SEQ ID NO 8 or variants thereof comprising one or more conservative substitutions;
 - (b) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3 or variants thereof comprising one or more conservative substitutions, a VH-CDR2 amino acid sequence of SEQ ID NO 26 or variants thereof comprising one or more conservative substitutions and a VH-CDR3 amino acid sequence of SEQ ID NO 5 or variants thereof comprising one or more conservative substitutions; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6 or variants thereof comprising one or more conservative substitutions, a VL-CDR2 amino acid sequence of SEQ ID NO 7 or variants thereof comprising one or more conservative substitutions and a VL-CDR3 amino acid sequence of SEQ ID NO 8 or variants thereof comprising one or more conservative substitutions;
 - (c) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3 or variants thereof comprising one or more conservative substitutions, a VH-CDR2 amino acid

sequence of SEQ ID NO 4 or variants thereof comprising one or more conservative substitutions and a VH-CDR3 amino acid sequence of SEQ ID NO 5 or variants thereof comprising one or more conservative substitutions; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6 or variants thereof comprising one or more conservative substitutions, a VL-CDR2 amino acid sequence of SEQ ID NO 7 or variants thereof comprising one or more conservative substitutions and a VL-CDR3 amino acid sequence of SEQ ID NO 27 or variants thereof comprising one or more conservative substitutions; or

(d) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3 or variants thereof comprising one or more conservative substitutions, a VH-CDR2 amino acid sequence of SEQ ID NO 26 or variants thereof comprising one or more conservative substitutions and a VH-CDR3 amino acid sequence of SEQ ID NO 5 or variants thereof comprising one or more conservative substitutions; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6 or variants thereof comprising one or more conservative substitutions, a VL-CDR2 amino acid sequence of SEQ ID NO 7 or variants thereof comprising one or more conservative substitutions and a VL-CDR3 amino acid sequence of SEQ ID NO 27 or variants thereof comprising one or more conservative substitutions.

3. The antibody of Claim 1, wherein the antibody comprises:

(a) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 4 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 8; or

(b) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 26 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 27.

4. The antibody of Claim 1, wherein the antibody is a humanized antibody molecule.

5. The antibody of Claim 1, wherein the antibody comprises a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NOs 9, 17, 28 or 40.
6. The antibody of Claim 1, wherein the antibody comprises a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NOs 9, 17 or 28.
7. The antibody of Claim 1, wherein the antibody comprises a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11, 19, 30 or 36.
8. The antibody of Claim 1, wherein the antibody comprises:
 - (a) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;
 - (b) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;
 - (c) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30;
 - (d) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36;
 - (e) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;

(f) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;

(g) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30;

(h) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36;

(i) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;

(j) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;

(k) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30;

(l) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36;

(m) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having at

least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;

(n) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;

(o) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30; or

(p) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36.

9. The antibody of Claim 1, wherein the antibody comprises:

(a) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;

(b) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;

(c) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30;

(d) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having at

least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36;

(e) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;

(f) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;

(g) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30;

(h) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36;

(i) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 11;

(j) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 19;

(k) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 30; or

(l) a heavy chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 36.

10. The antibody of Claim 1, wherein the antibody comprises:

- (a) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 11;
- (b) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 19;
- (c) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 30;
- (d) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 36;
- (e) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 36.

11. The antibody of Claim 1, wherein the antibody comprises:

- (a) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 11;
- (b) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 19;
- (c) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 30; or
- (d) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 36.

12. The antibody of Claim 1, wherein the antibody comprises a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 13, 22 or 32.

13. The antibody of Claim 1, wherein the antibody comprises a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 15, 24, 34 or 38.

14. The antibody of Claim 1, wherein the antibody comprises:

- (a) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 13, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 15;
- (b) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 13, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 24;
- (c) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 13, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 34;
- (d) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 13, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 38;
- (e) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 22, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 15;
- (f) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 22, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 24;
- (g) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 22, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 34;
- (h) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 22, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 38;
- (i) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 32, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 15;

(j) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 32, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 24;

(k) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 32, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 34; or

(l) a heavy chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 32, and a light chain having at least 95%, 96%, 97%, 98%, 99% or 100% sequence identity with the amino acid sequence of SEQ ID NO 38.

15. The antibody of Claim 1, wherein the antibody comprises:

(a) a heavy chain comprising the amino acid sequence of SEQ ID NO 13, and a light chain comprising the amino acid sequence of SEQ ID NO 15;

(b) a heavy chain comprising the amino acid sequence of SEQ ID NO 22, and a light chain comprising the amino acid sequence of SEQ ID NO 24;

(c) a heavy chain comprising the amino acid sequence of SEQ ID NO 32, and a light chain comprising the amino acid sequence of SEQ ID NO 34; or

(d) a heavy chain comprising the amino acid sequence of SEQ ID NO 32, and a light chain comprising the amino acid sequence of SEQ ID NO 38.

16. The antibody of any one of Claims 1-15, wherein the antibody comprises one or more of:

(a) a light chain with an Aspartic acid to Glutamic acid mutation at position 1 of SEQ ID NO 24;

(b) a light chain with a Leucine to Methionine mutation at position 4 of SEQ ID NO 24;

(c) a light chain with a Valine to Isoleucine mutation at position 62 of SEQ ID NO 24;

(d) a light chain with a Aspartic acid to Glutamic acid mutation at position 74 of SEQ ID NO 24;

(e) a light chain with a Methionine to Leucine mutation at position 96 of SEQ ID NO 24;

(f) a heavy chain with a Phenylalanine to Tyrosine mutation at position 59 of SEQ ID NO 22;

(h) (g) a heavy chain with a Proline to Valine mutation at position 60 of SEQ ID NO 22; a heavy chain with a Serine to Threonine mutation at position 77 of SEQ ID NO 22; or

(i) a heavy chain with a Cysteine to Leucine mutation at position 78 of SEQ ID NO 22.

17. The antibody of Claim 1, wherein the antibody is a Fab, F(ab')₂, Fv, or a single chain Fv (ScFv).

18. The antibody of Claim 1, wherein the antibody comprises a heavy chain constant region of the subclass of IgG1, IgG2, IgG3, or IgG4 or a variant thereof, and a light chain constant region of the type of kappa or lambda or a variant thereof.
19. The antibody of Claim 18, wherein the antibody comprises a variant heavy chain constant region of the subclass of IgG1, IgG2, IgG3, or IgG4, wherein the variant heavy chain constant region provides a reduced or eliminated effector function.
20. The antibody of Claim 19, wherein the effector function is antibody-dependent cell-mediated cytotoxicity (ADCC) or complement-dependent cytotoxicity (CDC).
21. The antibody of Claim 18, wherein the antibody comprises a heavy chain constant region of human IgG1 or a variant thereof.
22. The antibody of Claim 21, wherein the variant heavy chain constant region of human IgG1 comprises one or more mutations selected from a group consisting of E₂₃₃P, L₂₃₄A, L₂₃₅A, L₂₃₆Δ and P₃₂₉A.
23. The antibody of Claim 22, wherein the variant human IgG1 heavy chain constant region comprising the amino sequence of SEQ ID NO 21, and a human kappa light chain constant region.
24. A pharmaceutical composition, comprising the antibody of any one of Claims 1-23, and a pharmaceutically acceptable excipient.
25. A method of stimulating an immune response in a subject, comprising administering to a subject in need thereof an antibody of Claim 1 in an amount effective to stimulate the immune response.
26. A method for treating a cancer or a tumor, comprising administering to a subject in need thereof the antibody of Claim 1 in an amount effective to treat the cancer or tumor.
27. The method of Claim 26, wherein the cancer is selected from a lung cancer, a liver cancer, a stomach cancer, a cervical cancer, a melanoma, a renal cancer, a breast cancer, a colorectal cancer, a leukemia, a lymphoma, an ovarian cancer, a head and neck cancer or a metastatic lesion of the cancer.
28. The method of Claim 26, wherein the antibody is administered in combination with a second therapeutic agent or procedure, wherein the second therapeutic agent or procedure is selected from a chemotherapy, a targeted therapy, an oncolytic drug, a cytotoxic agent, an immune-based therapy, a cytokine, a surgical procedure, a radiation procedure, an activator of a costimulatory molecule, an inhibitor of an inhibitory molecule, a vaccine, or a cellular immunotherapy.

- 29.** The method of claim 26, wherein the antibody is administered in combination with an inhibitor of an immune checkpoint molecule selected from PD-1, PD-L1, PD-L2, CTLA-4, LAG-3, CEACAM-1, CEACAM-5, VISTA, BTLA, TIGIT, LAIR1, CD160, 2B4 or TGFR.
- 30.** The method of claim 26, wherein the antibody is administered in combination with an anti-PD-1 mAb 317-4B6, or 317-4B6/IgG4mt10.
- 31.** A method of treating an infectious disease, comprising administering to a subject in need thereof an antibody of Claim 1 in an amount effective to treat the infectious disease.
- 32.** The method of Claim 31, wherein the infectious disease is a chronic viral infection, selected from HIV infection and HCV infection.
- 33.** Use of the anti-Tim-3 antibody molecules of any one of Claim 1-23 in manufacturing medicine for treating a cancer, a tumor or an infectious disease.

CLAIMS

1. Use of a humanized antibody capable of binding to human Tim-3 in the preparation of a medicament for (1) stimulating an immune response, or (2) treating a cancer or a tumor, or (3) treating an infectious disease, wherein the antibody comprises:
 - (1) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 26 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 27;
 - (2) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 4 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 8;
 - (3) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 26 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 8; or
 - (4) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 4 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 27.
2. The use of claim 1, wherein the antibody comprises:
 - (1) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 26 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 27.

3. The use of Claim 1, wherein the antibody comprises:

- (1) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36;
- (2) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (3) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (4) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30;
- (5) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36;
- (6) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (7) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (8) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30;
- (9) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36;
- (10) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (11) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (12) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30;
- (13) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (14) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (15) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30; or
- (16) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36.

4. The use of Claim 1, wherein the antibody comprises:

- (1) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36.

5. The use of any one of Claims 1 to 4, wherein the antibody is a Fab, F(ab')₂, Fv, or a single chain Fv (scFv).
6. The use of any one of Claims 1 to 4, wherein the antibody comprises a heavy chain constant region of the subclass of IgG1, IgG2, IgG3, or IgG4 or a variant thereof, and a light chain constant region of the type of kappa or lambda or a variant thereof.
7. The use of Claim 6, wherein the antibody comprises a variant heavy chain constant region of the subclass of IgG1, IgG2, IgG3, or IgG4, wherein the variant heavy chain constant region provides a reduced or eliminated effector function.
8. The use of Claim 8, wherein the effector function is antibody-dependent cell-mediated cytotoxicity (ADCC) or complement-dependent cytotoxicity (CDC).
9. The use of Claim 6, wherein the antibody comprises a heavy chain constant region of human IgG1 or a variant thereof.
10. The use of Claim 9, wherein the variant heavy chain constant region of human IgG1 comprises one or more mutations selected from a group consisting of E₂₃₃P, L₂₃₄A, L₂₃₅A, L₂₃₆Δ and P₃₂₉A.
11. The use of Claim 10, wherein the variant human IgG1 heavy chain constant region comprising the amino sequence of SEQ ID NO 21, and a human kappa light chain constant region.
12. The use of any one of Claims 1 to 11, wherein the cancer is selected from a lung cancer, a liver cancer, a stomach cancer, a cervical cancer, a melanoma, a renal cancer, a breast cancer, a colorectal cancer, a leukemia, a lymphoma, an ovarian cancer, a head and neck cancer or a metastatic lesion of the cancer.
13. The use of any one of Claims 1 to 11, wherein the infectious disease is selected from HIV infection and HCV infection.
14. An antibody capable of binding to human Tim-3, comprising:
 - (1) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 26 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino

acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 27;

- (2) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 4 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 8;
- (3) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 26 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 8; or
- (4) a heavy chain variable region (VH) comprising a VH-CDR1 amino acid sequence of SEQ ID NO 3, a VH-CDR2 amino acid sequence of SEQ ID NO 4 and a VH-CDR3 amino acid sequence of SEQ ID NO 5; and a light chain variable region (VL) comprising a VL-CDR1 amino acid sequence of SEQ ID NO 6, a VL-CDR2 amino acid sequence of SEQ ID NO 7 and a VL-CDR3 amino acid sequence of SEQ ID NO 27.

15. The antibody of Claim 14, comprising:

- (1) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36;
- (2) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (3) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (4) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30;
- (5) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 9, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36;
- (6) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (7) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;

- (8) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30;
- (9) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 17, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36;
- (10) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (11) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (12) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 28, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30;
- (13) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 11;
- (14) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 19;
- (15) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 30; or
- (16) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 40, and a light chain variable domain having the amino acid sequence of SEQ ID NO 36.
- 16.** The antibody of Claim 15 or 16, wherein the antibody is a Fab, F(ab')₂, Fv, or a single chain Fv (scFv).
- 17.** The antibody of Claim 15 or 16, wherein the antibody comprises a heavy chain constant region of the subclass of IgG1, IgG2, IgG3, or IgG4 or a variant thereof, and a light chain constant region of the type of kappa or lambda or a variant thereof.
- 18.** The antibody of Claim 17, wherein the antibody comprises a variant heavy chain constant region of the subclass of IgG1, IgG2, IgG3, or IgG4, wherein the variant heavy chain constant region provides a reduced or eliminated effector function.
- 19.** The antibody of Claim 18, wherein the effector function is antibody-dependent cell-mediated cytotoxicity (ADCC) or complement-dependent cytotoxicity (CDC).
- 20.** The antibody of Claim 17, wherein the antibody comprises a heavy chain constant region of human IgG1 or a variant thereof.
- 21.** The antibody of Claim 20, wherein the variant heavy chain constant region of human IgG1 comprises one or more mutations selected from a group consisting of E₂₃₃P, L₂₃₄A, L₂₃₅A, L₂₃₆Δ and P₃₂₉A.

22. The antibody of Claim 21, wherein the variant human IgG1 heavy chain constant region comprising the amino sequence of SEQ ID NO 21, and a human kappa light chain constant region.