

CLAIMS

1. An antibody or an antigen-binding fragment thereof, which is capable of binding to human T cell immunoglobulin and ITIM domain (TIGIT), comprising:
 - (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 13 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.
2. The antibody or the antigen-binding fragment of Claim 1, wherein the antibody is a humanized antibody molecule.
3. The antibody or the antigen-binding fragment of Claim 1, comprising:
 - (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 14, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 16; or
 - (c) a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO 19, and a light chain variable domain comprising the amino acid sequence of SEQ ID NO 21.
4. The antibody or the antigen-binding fragment of any one of Claims 1-3, wherein the antibody comprises one or more of:
 - (a) a heavy chain with a T to A mutation at position 24 of SEQ ID NO 14;
 - (b) a heavy chain with a I to V mutation at position 37 of SEQ ID NO 14;
 - (c) a light chain with a V to I mutation at position 58 of SEQ ID NO 16.
5. The antibody or the antigen-binding fragment of Claim 1, wherein the antigen-binding fragment is a Fab, F(ab')₂, Fv, or a single chain Fv (ScFv).

6. The antibody or the antigen-binding fragment of Claim 1, comprising 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. A pharmaceutical composition, comprising the antibody or the antigen-binding fragment of any one of Claims 1-6, and a pharmaceutically acceptable excipient.
8. The composition of claim 7, further comprising second therapeutic agent.
9. Use of the anti-TIGIT antibody molecules of any one of Claim 1-6 in manufacturing a medicament for treating a cancer, or a tumor.
10. Use of the anti-TIGIT antibody molecules of any one of Claim 1-6 in manufacturing a medicament for treating an infectious disease.
11. The use of claim 9, wherein the antibody or the antigen-binding fragment is to be administrated to a subject 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.
12. The use of claim 10, wherein the infectious disease is a viral disease.