

CLAIMS

1. An antibody or an antigen-binding fragment thereof, which is capable of binding to human ~~Tigit~~ T cell immunoglobulin and ITIM domain (TIGIT), 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 13; 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 or 8.~~

~~**2.** The antibody or the antigen-binding fragment of Claim 1, 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.~~

~~**3.** The antibody or the antigen-binding fragment of Claim 1, wherein the antibody is a humanized antibody molecule.~~

~~**4.** The antibody or the antigen-binding fragment of Claim 1, comprising 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, 14, or 19.~~

~~**5.** The antibody or the antigen-binding fragment of Claim 1, comprising 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, 16 or 21.~~

~~**6.** The antibody or the antigen-binding fragment of Claim 1, comprising:~~

~~(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 16;~~

~~(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 21;~~

~~(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 14, 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;~~

~~(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 14, 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 16;~~

~~(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 14, 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 21;~~

~~(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 19, 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;~~

~~(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 19, 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 16; or~~

~~(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 19, 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 21.~~

~~7. The antibody or the antigen-binding fragment of Claim 1, comprising:~~

~~(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 14, 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 16; or~~

~~(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 19, 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 21.~~

83. 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.

94. The antibody or the antigen-binding fragment of any one of Claims 1-83, 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.

~~105.~~ 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).

~~116.~~ 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.

~~127.~~ A pharmaceutical composition, comprising the antibody or the antigen-binding fragment of any one of Claims 1-~~116~~, and a pharmaceutically acceptable excipient.

~~138.~~ The composition of claim ~~127~~, further comprising second therapeutic agent.

~~14.~~ Use of the antibody or antigen-binding fragment of any one of claims 1-11 in the manufacturing of a medicament for stimulating an immune response in a subject.

~~159.~~ Use of the anti-TIGIT~~igit~~ antibody molecules of any one of Claim 1-~~116~~ in manufacturing a medicament for treating a cancer, or a tumor ~~or an infectious disease~~.

10. Use of the anti-TIGIT antibody molecules of any one of Claim 1-6 in manufacturing a medicament for treating an infectious disease.

~~1611.~~ The use of claim ~~14-9~~~~or 15~~, 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.

~~1712.~~ The use of claim ~~15-10~~~~or 16~~, wherein the ~~infection~~ infectious disease is a viral disease.