

5 tumor models demonstrated blockade of multiple IMRs, including PD-1, TIM-3, LAG-3 and CTLA-4 more effectively induced anti-tumor responses than antagonizing PD-1 alone. These results underscore the importance of further investigating IMR pathways.

TIGIT (T cell immunoreceptor with Ig and ITIM domains) is an immunomodulatory receptor expressed primarily on activated T cells and NK cells. TIGIT is also known as VSIG9;
10 VSTM3; and WUCAM. Its structure shows one extracellular immunoglobulin domain, a type 1 transmembrane region and two ITIM motifs. TIGIT forms part of a co-stimulatory network that consists of positive (CD226) and negative (TIGIT) immunomodulatory receptors on T cells, and ligands expressed on APCs (CD155 and CD112).

An important feature in the structure of TIGIT is the presence of an immunoreceptor
15 tyrosine-based inhibition motif (ITIM) in its cytoplasmic tail domain. As with PD-1 and CTLA-4, the ITIM domain in the cytoplasmic region of TIGIT is predicted to recruit tyrosine phosphatases, such as SHP-1 and SHP-2, and subsequent de-phosphorylation of tyrosine residues within the immunoreceptor tyrosine-base activation motifs (ITAM) on T cell receptor (TCR) subunits. Hence, ligation of TIGIT by receptor-ligands CD155 and CD112 expressed by tumor
20 cells or TAMS may contribute to the suppression of TCR-signaling and T cell activation, which is essential for mounting effective anti-tumor immunity. Thus, an antagonist antibody specific for TIGIT could inhibit the CD155 and CD112 induced suppression of T cell responses and enhance anti-tumor immunity. It is an object of the present invention to obtain an anti-TIGIT antibody that can be used for the treatment of cancer, either alone or in combination with other
25 reagents.

SUMMARY

The disclosure provides anti-TIGIT antibodies and antigen binding fragments thereof comprising the structural and functional features specified below.

- 5 In one aspect, the present disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT, wherein the antibody or antigen binding fragment is selected from the group consisting of:
- 10 a. an antibody or antigen binding fragment comprising: a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:1, a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:2, a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:3, 79, 80, 81, 82, 83 or 140, a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:4, a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 41, and a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:6, 15 74, 75, 76, 77, 78 or 142;
 - 20 b. an antibody or antigen binding fragment comprising: a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:57, a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:58, a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:59, a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:60, a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:61, and a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:62; and
 - 25 c. an antibody or antigen binding fragment comprising: a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:88, a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147, a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:90, 30 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166 or 167, a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:91, a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148, and a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:93.

5 In one embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT, comprising: a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83, 59, 90, 140, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166 or 167. In one embodiment, the antibody or antigen binding fragment thereof optionally has at least one of the following characteristics: (i)
10 binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined

5 by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET);
(ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to
human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific
T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation
induced by TIGIT ligation with cognate ligands CD155 and CD112.

10 In another embodiment, the disclosure provides an antibody or antigen binding fragment
thereof that binds to human TIGIT, comprising: a light chain variable region CDR3 comprising
the amino acid sequence of SEQ ID NO: 6, 62, 74, 75, 76, 77, 78 or 93. In one embodiment, the
antibody optionally has at least one of the following characteristics: (i) binds to human TIGIT
with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon
15 resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts
with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and
human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production
of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT
ligation with cognate ligands CD155 and CD112.

20 In another embodiment, the disclosure provides an antibody or antigen binding fragment
thereof that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1
comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2
comprising the amino acid sequence of SEQ ID NO: 2; and (iii) a heavy chain variable region
CDR3 comprising the amino acid sequence of SEQ ID NO: 140. In one embodiment, the
25 antibody or antigen binding fragment comprises: (i) a heavy chain variable region CDR1
comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2
comprising the amino acid sequence of SEQ ID NO: 2; and (iii) a heavy chain variable region
CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82 or 83. In one
embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain
30 variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain
variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; and (iii) a heavy
chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3. In one
embodiment, the antibody or antigen binding fragment thereof optionally has at least one of the
following characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about
35 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar

technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; and (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59. In one embodiment, the antibody or antigen binding fragment thereof optionally has at least one of the following characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 147; and (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 153. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134 or 135; and (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166 or 167. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; and (iii) a heavy chain variable region CDR3 comprising the amino acid

5 a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT
10 ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (ii) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 141; and (iii) a light chain variable region CDR3
15 comprising the amino acid sequence of SEQ ID NO: 142. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (ii) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72 or; and (iii) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76,
20 77 or 78. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (ii) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (iii) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In one embodiment, the antibody or antigen binding fragment thereof optionally has at least one
25 of the following characteristics: (i) binds to human TIGIT with a KD value of about $1 \times 1 \times 10^{-9}$ M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks
30 induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (ii) a light chain variable region CDR2 comprising the
35 amino acid sequence of SEQ ID NO: 61; and (iii) a light chain variable region CDR3 comprising

5 the amino acid sequence of SEQ ID NO: 62. In one embodiment, the antibody or antigen binding fragment thereof optionally has at least one of the following characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human
10 CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a light chain variable region CDR1 comprising the
15 amino acid sequence of SEQ ID NO: 91; (ii) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 148; and (iii) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (ii) a light chain variable region CDR2 comprising
20 the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121 or 122; and (iii) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (ii) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and
25 (iii) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the antibody or antigen binding fragment thereof optionally has at least one of the following characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii)
30 blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment
35 that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the

5 of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82 or 83; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72 or 73; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76, 77 or 78; wherein the antibody or antigen binding fragment thereof comprises a heavy chain variable region comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to a heavy chain variable region selected from the group consisting of SEQ ID NOs: 9-24 or 37-47 and a light chain variable region comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to a heavy chain variable region selected from the group consisting of SEQ ID NOs: 25-30 or 48-52. In this aforementioned embodiment, the sequence variations occur in the framework regions. In one embodiment, the antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In one embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino acid substitutions in the heavy chain CDRs (SEQ ID NOs: 1-3) or in the light chain CDRs (SEQ ID NOs: 3-6). In one embodiment, the antibody comprises one amino acid substitution in the heavy chain CDR of SEQ ID NO: 3, wherein the substitution is made at position 13W, and wherein residue 13W is

5 substituted to: F, Y, I, V or L. In one embodiment, the antibody comprises two amino acid substitutions in the light chain CDR of SEQ ID NO: 5, wherein the substitutions are made at position 3-4, and wherein residues 3N and 4S are substituted to: SN, SS, ST, TT, SY, NQ, GS, SQ and DS. In one embodiment, the antibody comprises one amino acid substitution in the light chain CDR of SEQ ID NO: 6, wherein the substitution is made at position 7, and wherein residue
10 7W is substituted to: F, Y, I, V or L. The VH sequences of SEQ ID NOs: 9-24 and 37-47 have the CDRs of SEQ ID NOs:1-3; and VL sequences of SEQ ID NOs:25-30 and 48-52 have the CDRs of SEQ ID NOs: 4-6. In some embodiments, the CDR substitutions described above can be made in the corresponding CDRs of the VH sequences of SEQ ID NOs: 9-24 and 37-37, and in the CDRs of the VL sequences of SEQ ID NOs: 25-30 and 48-52. In one embodiment, the
15 antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure provides an antibody or antigen binding fragment that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the
20 amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3
25 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the antibody or antigen binding fragment thereof is humanized. In one embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino acid substitutions in the heavy chain CDRs (SEQ ID NOs: 57-59) or in the light chain CDRs (SEQ ID NOs: 60-62), and retains one or more of its functional characteristics. In one embodiment, the antibody or antigen binding fragment
30 thereof optionally has at least one of the following functional characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET), (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell

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5 production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2
10 comprising the amino acid sequence of SEQ ID NO: 147; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 153; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one
15 embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90, 154, 155, 156,
20 157, 158, 159, 160, 161, 162, 163, 164, 165, 166 or 167; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121 or 122; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the antibody or antigen binding fragment
25 thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino
30 acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino
35 acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino

5 optionally has at least one of the following characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET), (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and
10 IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112.

In another embodiment, the disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising the CDR1, CDR2 and CDR3 of any of SEQ ID NOs: 124-129 and/or a light chain
15 variable region comprising the CDR1, CDR2 and CDR3 of any of SEQ ID NOs:130-133. In one embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region selected from the group consisting of: SEQ ID NOs: 124-129 and/or a light chain variable region selected from the group consisting of: SEQ ID NOs: 130-133. In one embodiment, the D residue at position 56 of
20 any one of SEQ ID NOs: 124-129 can be substituted with R, L, K, F, S, Y or V. In another embodiment, the G residue at position 57 of any one of SEQ ID NOs: 124-129 can be substituted with R, N, Q, E, L K, S, Y or V. In one embodiment, the W residue at position 104 of any one of SEQ ID NOs: 124-129 can be substituted with: A, D, E, F, G, I, K, N, Q, R, S, T, V or Y. In another embodiment, the N residue at position 50 of any one of SEQ ID NOs: 130-133 can be
25 substituted with A, Y, W, S, T, I or V. In another embodiment, the A residue at position 51 of any of SEQ ID NOs: 130-133 is substituted with N, I, L, T or V. In one embodiment, the disclosure provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:128 or a light chain variable region comprising SEQ ID NO:132. In another embodiment, the disclosure provides an
30 isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:128 or a light chain variable region comprising SEQ ID NO:133. In another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:127 or a light chain variable region comprising
35 SEQ ID NO:130. In one embodiment, the disclosure provides an isolated antibody or antigen

5 binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:128 and a light chain variable region comprising SEQ ID NO:132. In another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:128 and a light chain variable region comprising SEQ ID NO:133. In
10 another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:126 and a light chain variable region comprising SEQ ID NO:131. In SEQ ID NO:127 and a light chain variable region comprising SEQ ID NO:130. In another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment
15 thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO: 128 and a light chain variable region comprising SEQ ID NO: 131. In another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO: 125 and a light chain variable region comprising SEQ ID NO: 133. In another
20 embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO: 126 and a light chain variable region comprising SEQ ID NO: 130. In another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ
25 ID NO: 125 and a light chain variable region comprising SEQ ID NO: 132. In another embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO: 127 and a light chain variable region comprising SEQ ID NO: 130. In some embodiments, the antibody or antigen binding fragment thereof binds to human TIGIT with a
30 KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: (i) a heavy chain variable region comprising the CDR1, CDR2 and CDR3 of any one of SEQ ID NOs: 124-129, wherein the
35 heavy chain variable region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to any of one SEQ ID NOs: 124-129 and/or (ii) a light chain variable region comprising the CDR1,

5 CDR2 and CDR3 of any one of SEQ ID NOs: 130-133, wherein the light chain variable region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 130-133. In another embodiment, the disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: (i) a heavy chain variable region comprising the CDR1, CDR2 and CDR3 of SEQ ID NOs: 128, wherein the heavy chain variable
10 region comprises 90%, 95%, 96%, 97%, 98% or 99% identity to SEQ ID NOs: 128 and/or (ii) a light chain variable region comprising the CDR1, CDR2 and CDR3 of SEQ ID NOs: 132, wherein the light chain variable region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to SEQ ID NOs: 132. In another embodiment, the disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: (i) a heavy chain
15 variable region comprising the CDR1, CDR2 and CDR3 of SEQ ID NOs: 128, wherein the heavy chain variable region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to SEQ ID NOs: 128 and/or (ii) a light chain variable region comprising the CDR1, CDR2 and CDR3 of SEQ ID NOs: 133, wherein the light chain variable region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to SEQ ID NOs: 133. In another embodiment, the
20 disclosure also provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising: (i) a heavy chain variable region comprising the CDR1, CDR2 and CDR3 of SEQ ID NOs: 127, wherein the heavy chain variable region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to SEQ ID NOs: 127 and/or (ii) a light chain variable region comprising the CDR1, CDR2 and CDR3 of SEQ ID NOs: 130, wherein the light chain variable
25 region comprises at least 90%, 95%, 96%, 97%, 98% or 99% identity to SEQ ID NOs: 130. In these embodiments, the allowed sequence variations occur in the framework regions of the variable chains. In some embodiments, the antibody or antigen binding fragment thereof binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

- 5 In another aspect, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising a light chain immunoglobulin, a heavy chain immunoglobulin or both a light chain and a heavy chain immunoglobulin selected from the group consisting of:
- a. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:7 and/or a variable light chain
10 comprising the amino acid sequence of SEQ ID NO:8;
 - b. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:63 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:64;
 - c. an antibody or antigen binding fragment thereof comprising a variable heavy chain
15 comprising the amino acid sequence of SEQ ID NO: 94 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:95;
 - d. an antibody or antigen binding fragment thereof comprising a variable heavy chain selected from the group consisting of SEQ ID NOs: 9-24, 37-47 and 63 and/or a variable light chain selected from the group consisting of any one of SEQ ID NOs:
20 25-30, 48-52 and 64;
 - e. an antibody or antigen binding fragment thereof comprising a variable heavy chain selected from the group consisting of SEQ ID NOs: 124-129 and/or a variable light chain selected from the group consisting of any one of SEQ ID NOs: 130-133;
 - f. an antibody or antigen binding fragment thereof comprising a variable heavy chain
25 comprising the amino acid sequence of SEQ ID NO:128 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:132;
 - g. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:127 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:130;
 - 30 h. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:128 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:133;

- 5 i. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:126 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:131;
- j. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:128 and/or a variable light chain
10 comprising the amino acid sequence of SEQ ID NO:131;
- k. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:125 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:133;
- 15 l. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:126 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:130;
- m. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:125 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:132;
- 20 n. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:143 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:145;
- o. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:149 and/or a variable light chain
25 comprising the amino acid sequence of SEQ ID NO:151;
- p. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:144 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:146.
- 30 q. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising the amino acid sequence of SEQ ID NO:150 and/or a variable light chain comprising the amino acid sequence of SEQ ID NO:152;
- r. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity any one of SEQ ID
35 NOs: 7, 9-24, 37-47 and 63 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 8, 25-30, 48-52 and 64;

- 5 s. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity any one of SEQ ID NOs: 7, 9-24, 37-47 and 63 and/or a variable light chain comprising at least 90%, 95%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 8, 25-30, 48-52 and 64, wherein any sequence variations occur in the framework regions of the
- 10 antibody;
- t. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity any one of SEQ ID NOs: 124-129 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 130-133; and
- 15 u. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity any one of SEQ ID NOs: 124-129 and/or a variable light chain comprising at least 90%, 95%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 130-133, wherein any sequence variations occur in the framework regions of the antibody;
- 20 v. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity SEQ ID NO:128 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 132;
- 25 w. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity SEQ ID NO:128 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 132, wherein any sequence variations occur in the framework regions of the antibody;
- 30 x. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity SEQ ID NO:127 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 130;

- 5 y. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity SEQ ID NO:127 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 130, wherein any sequence variations occur in the framework regions of the antibody;
- 10 z. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity SEQ ID NO:128 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 133;
- 15 aa. an antibody or antigen binding fragment thereof comprising a variable heavy chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity SEQ ID NO:128 and/or a variable light chain comprising at least 90%, 95%, 96%, 97%, 98% or 99% identity to any one of SEQ ID NOs: 133, wherein any sequence variations occur in the framework regions of the antibody.

- In another aspect, the disclosure provides an antibody or antigen binding fragment thereof that
- 20 binds to the same epitope of human TIGIT as an antibody selected from the group consisting of:
- a. an antibody comprising the variable heavy chain of SEQ ID NO:7 and the variable light chain of SEQ ID NO:8,
 - b. an antibody comprising the variable heavy chain of SEQ ID NO:63 and the variable light chain of SEQ ID NO:64, and
 - 25 c. an antibody comprising the variable heavy chain of SEQ ID NO:94 and the variable light chain of SEQ ID NO:95;
- wherein the antibody or fragment thereof has at least one of the following characteristics:
- i. binds to human TIGIT with with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique
 - 30 (e.g. KinExa or OCTET);
 - ii. cross-reacts with cynomolgous and rhesus TIGIT;
 - iii. blocks binding of human TIGIT to human CD155 and human CD112;
 - iv. increases T cell activation;

- 5 v. stimulates antigen-specific T-cell production of IL-2 and IFN γ ;
- vi. blocks induction of T cell suppression of activation induced by TIGIT ligation with
 cognate ligands CD155 and CD112.

 In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof, comprising: a variable heavy chain comprising the amino acid sequence of SEQ ID NO:
10 7 and/or a variable light chain selected comprising the amino acid sequence of SEQ ID NO: 8, wherein the antibody or antigen binding fragment thereof binds to human TIGIT. In one embodiment, the antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1

5 $\times 10^{-12}$ M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof, comprising: a variable heavy chain comprising the amino acid sequence of SEQ ID NO: 143 and/or a variable light chain selected comprising the amino acid sequence of SEQ ID NO: 145, wherein the antibody or antigen binding fragment thereof binds to human TIGIT. In one
10 embodiment, the antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure provides an antibody or antigen binding fragment
15 thereof, comprising: a variable heavy chain comprising the amino acid sequence of SEQ ID NO: 144 and/or a variable light chain selected comprising the amino acid sequence of SEQ ID NO: 146, wherein the antibody or antigen binding fragment thereof binds to human TIGIT. In one embodiment, the antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique
20 (e.g. KinExa or OCTET).

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof, comprising: a variable heavy chain comprising the amino acid sequence of SEQ ID NO: 63 and/or a variable light chain selected comprising the amino acid sequence of SEQ ID NO: 64, wherein the antibody or antigen binding fragment thereof binds to human TIGIT. In one
25 embodiment, the antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof, comprising: a variable heavy chain comprising the amino acid sequence of SEQ ID NO: 94 and/or a variable light chain selected comprising the amino acid sequence of SEQ ID NO: 95,
30 wherein the antibody or antigen binding fragment thereof binds to human TIGIT. In one embodiment, the antibody binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

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5 In one embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:149 and/or a light chain variable region comprising SEQ ID NO:151. In one embodiment, the antibody binds to human TIGIT with a K_D value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar
10 technique (e.g. KinExa or OCTET).

In one embodiment, the disclosure also provides an isolated antibody or antigen binding fragment thereof that binds to human TIGIT comprising: a heavy chain variable region comprising SEQ ID NO:150 and/or a light chain variable region comprising SEQ ID NO:152. In one embodiment, the antibody binds to human TIGIT with a K_D value of about 1×10^{-9} M to
15 about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to the same epitope of human TIGIT as an antibody comprising the variable heavy chain of SEQ ID NO: 7 and the variable light chain of SEQ ID NO: 8, wherein the
20 antibody or antigen binding fragment thereof has at least one of the following characteristics: (i) binds to human TIGIT with a K_D value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET), (ii) blocks binding of human TIGIT to human CD155 and human CD112; (iii) increases T cell activation; (iv) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (v) blocks
25 induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112. In one embodiment, the antibody comprises at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% sequence identity with the variable heavy chain and/or the variable light chain of any one of SEQ ID NOs: 7-30 or 37-52. In another embodiment, the antibody or
antigen binding fragment thereof comprises 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,
30 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 or 30 amino acid substitutions in the variable heavy light chain of any one of SEQ ID NOs: 7, 9-24 and 37-47 and/or the variable light chains of any one of SEQ ID NOs: 8, 25-30 and 48-52.

In one embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to an epitope of human TIGIT that comprises at least one of the following
35 regions: residues 54-57 of SEQ ID NO: 31, residues 68-70 of SEQ ID NO:31 and residues 76-81

5 of SEQ ID NO: 31. In one embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to an epitope of human TIGIT comprising residues: 54-57, 68-70 and 76-81 of SEQ ID NO:31.

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to the same epitope of human TIGIT as an antibody comprising the variable
10 heavy chain of SEQ ID NO: 63 and the variable light chain of SEQ ID NO: 64, wherein the antibody or antigen binding fragment thereof has at least one of the following characteristics: (i) binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to
15 human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112. In one embodiment, the antibody or antigen binding fragment thereof comprises at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% sequence identity with the variable heavy chain of SEQ ID NO:63 and/or the
20 variable light chain of SEQ ID NO: 64. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 or 30 amino acid substitutions in the variable heavy light chain of SEQ ID NO:63 and/or the variable light chain of SEQ ID NO: 64. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino acid substitutions in the
25 heavy chain CDRs (SEQ ID NOs: 57-59) or in the light chain CDRs (SEQ ID NOs: 60-62).

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to the same epitope of human TIGIT as an antibody comprising the variable heavy chain of SEQ ID NO: 94 and the variable light chain of SEQ ID NO:95, wherein the antibody or antigen binding fragment thereof has at least one of the following characteristics: (i)
30 binds to human TIGIT with a KD value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation
35 induced by TIGIT ligation with cognate ligands CD155 and CD112. In one embodiment, the

5 antibody or antigen binding fragment thereof comprises at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% sequence with the variable heavy chain of any one of SEQ ID NOs:94 or 124-129, and/or the variable light chain of any one of SEQ ID NO: 95 or 130-133. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 or 30 amino acid
10 substitutions in the variable heavy light chain of any one of SEQ ID NOs:94 or 124-129, and/or the variable light chain of any one of SEQ ID NO: 95 or 130-133. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino acid substitutions in the heavy chain CDRs (SEQ ID NOs: 88-90) and/or in the light chain CDRs (SEQ ID NOs: 91-93). In another embodiment, the antibody or antigen binding fragment thereof comprises heavy chain
15 CDRs of SEQ ID NOs: 88, 134 and 90 and/or the light chain CDRs of SEQ ID NOs: 91, 92 and 93.

In one embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to an epitope of human TIGIT that comprises at least one of the following regions: residues 53-57, residues 60-65, residues 68-70, residues 72-81, residues 94-95, and
20 residues 109-119 of SEQ ID NO:31. In one embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to an epitope of human TIGIT comprising residues: 53-57, 60-65, 68-70, 72-81, 94-95, and 109-119 of SEQ ID NO:31.

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that cross-blocks the binding of (or competes with) an antibody comprising the variable
25 heavy chain of SEQ ID NO: 7 and the variable light chain of SEQ ID NO: 8 to human TIGIT, wherein the antibody or antigen binding fragment thereof has at least one of the following characteristics: (i) binds to human TIGIT with a K_D value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of
30 human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ ; (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112. In one embodiment, the antibody or antigen binding fragment thereof comprises at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% sequence identity with the variable heavy chain or variable
35 light chains of SEQ ID NOs: 7-30 or 37-52. In another embodiment, the antibody or antigen

5 binding fragment thereof comprises 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 or 30 amino acid substitutions in the variable heavy light chains of SEQ ID NOs: 7, 9-24 and 37-47 or the variable light chains of SEQ ID NOs: 8, 25-30 and 48-52. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino acid substitutions in the heavy chain CDRs (SEQ ID NOs: 1-3) or in the light
10 chain CDRs (SEQ ID NOs: 3-6).

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that cross-blocks the binding of (or competes with) an antibody comprising the variable heavy chain of SEQ ID NO: 63 and the variable light chain of SEQ ID NO: 64 to human TIGIT, wherein the antibody or antigen binding fragment thereof has at least one of the following
15 functional characteristics: (i) binds to human TIGIT with a K_D value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET); (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ (vi) blocks
20 induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112. In one embodiment, the antibody comprises at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% sequence identity with the variable heavy chain of SEQ ID NO: 63 or the variable light chains of SEQ ID NO: 64. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21,
25 22, 23, 24, 25, 26, 27, 28, 29 or 30 amino acid substitutions in the variable heavy light chain of SEQ ID NO: 63 or the variable light chain of SEQ ID NO: 64. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino acid substitutions in the heavy chain CDRs (SEQ ID NOs: 57-59) or in the light chain CDRs (SEQ ID NOs: 60-62).

In another embodiment, the disclosure provides an antibody or antigen binding fragment
30 thereof that cross-blocks the binding of (or competes with) an antibody comprising the variable heavy chain of SEQ ID NO: 94 and the variable light chain of SEQ ID NO: 95 to human TIGIT, wherein the antibody or antigen binding fragment thereof has at least one of the following characteristics: (i) binds to human TIGIT with a K_D value of about 1×10^{-9} M to about 1×10^{-12} M as determined by surface plasmon resonance (e.g., BIACORE) or a similar technique (e.g. KinExa or OCTET).; (ii) cross-reacts with cynomolgous and rhesus TIGIT; (iii) blocks binding
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5 of human TIGIT to human CD155 and human CD112; (iv) increases T cell activation; (v) stimulates antigen-specific T-cell production of IL-2 and IFN γ (vi) blocks induction of T cell suppression of activation induced by TIGIT ligation with cognate ligands CD155 and CD112. In one embodiment, the antibody comprises at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% sequence identity with the variable heavy chain of SEQ ID NO: 94 or the variable light chains of
10 SEQ ID NO: 95. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 or 30 amino acid substitutions in the variable heavy light chain of any one of SEQ ID NOs: 94 or 124-129, or the variable light chain of any one of SEQ ID NOs: 95 or 130-133. In another embodiment, the antibody or antigen binding fragment thereof comprises 1, 2 or 3 amino
15 acid substitutions in the heavy chain CDRs (SEQ ID NOs: 88-90) or in the light chain CDRs (SEQ ID NOs: 91-93). In one embodiment, the antibody or antigen binding fragment thereof comprises: a heavy chain variable region comprising SEQ ID NO:128 and a light chain variable region comprising SEQ ID NO:132. In another embodiment, antibody or antigen binding fragment thereof comprises: a heavy chain variable region comprising SEQ ID NO:127 and a
20 light chain variable region comprising SEQ ID NO:130. In another embodiment, antibody or antigen binding fragment thereof comprises: a heavy chain variable region comprising SEQ ID NO:128 and a light chain variable region comprising SEQ ID NO:133.

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising a variable heavy chain selected from the group
25 consisting of any one of SEQ ID NOs: 9-24 and 37-47, and/or a variable light chain selected from the group consisting of any one of SEQ ID NOs: 25-30 and 48-52. In one embodiment, the antibody comprises an amino acid substitution in FR4 of the heavy chain, wherein the substitution is made at position 122 of SEQ ID NOs: 9-24 and 37-47, wherein the residue is substituted from M to: V, L, A, R, N, P, Q, E, G, I, H, K, F, S, T, W or Y. In one embodiment,
30 the antibody comprises two amino acid substitutions in FR4 of the heavy chain, wherein the substitutions are made at positions 122 and 123 of SEQ ID NOs: 9-24 and 37-47, wherein the residues are substituted from M and V to T and L, respectively.

In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising a variable heavy chain selected from the group
35 consisting of any one of SEQ ID NOs: 9-24 and 37-47, and/or a variable light chain selected

5 from the group consisting of any one of SEQ ID NOs: 25-30 and 48-52. In one embodiment, the antibody comprises an amino acid substitution in FR4 of the heavy chain, wherein the substitution is made at position 122 of SEQ ID NOs: 9-24 and 37-47, wherein the residue is substituted from M to: V, L, A, R, N, P, Q, E, G, I, H, K, F, S, T, W or Y. In one embodiment, the antibody comprises two amino acid substitutions in FR4 of the heavy chain, wherein the
10 substitutions are made at positions 122 and 123 of SEQ ID NOs: 9-24 and 37-47, wherein the residues are substituted from M and V to T and L, respectively.

In one embodiment, the disclosure relates to an isolated antibody or antigen binding fragment that binds to human TIGIT comprising: a heavy chain comprising the amino acid sequence of SEQ ID NO: 7 or variant thereof comprising up to 30 amino acid substitutions,
15 and/or a light chain comprising the amino acid sequence of SEQ ID NO: 8 comprising up to 12 amino acid substitutions. In one embodiment, the heavy chain comprises the amino acid sequence of SEQ ID NO: 7 comprising amino acid substitutions at one or more positions selected from the group consisting of: 6, 9, 12, 15, 16, 17, 23, 25, 37, 39, 40, 43, 44, 45, 48, 67, 68, 70, 71, 79, 81, 83, 87, 88, 92, 94, 119, 122 and 123. In one embodiment, the heavy chain
20 comprises the amino acid sequence of SEQ ID NO: 7 comprising amino acid substitutions at one or more positions selected from the group consisting of: 6, 9, 12, 15, 16, 17, 23, 25, 37, 39, 40, 43, 44, 45, 48, 67, 68, 70, 71, 79, 81, 83, 87, 88, 92, 94, 110, 119, 122 and 123, wherein: the amino acid at position 6 can be E or Q, the amino acid at position 9 can be P or A, the amino acid at position 12 can be V or L, the amino acid at position 15 can be S or P, the amino acid at
25 position 16 can be Q or E or G, the amino acid at position 17 can be S or T, the amino acid at position 23 can be S or T, the amino acid at position 25 can be T or S, the amino acid at position 37 can be I or V, the amino acid at position 39 can be K or Q, the amino acid at position 40 can be F or P, the amino acid at position 43 can be N or K, the amino acid at position 44 can be K or G, the amino acid at position 45 can be M or L, the amino acid at position 48 can be M or I, the
30 amino acid at position 67 can be I or V, the amino acid at position 68 can be S or T, the amino acid at position 70 can be T or S, the amino acid at position 71 can be R or V, the amino acid at position 79 can be F or S, the amino acid at position 81 can be Q or K, the amino acid at position 83 can be H or S, the amino acid at position 87 can be T or A, the amino acid at position 88 can be D or A, the amino acid at position 92 can be T or V, the amino acid at position 94 can be S or
35 Y, the amino acid at position 110 can be W, F, Y, I, V or L, the amino acid at position 119 can

5 be P or Q, the amino acid at position 122 can be M, V, L, A, R, N, P, Q, E, G, I, H, K, F, S, T, W or Y, and the amino acid at position 123 can be V, T or L. In one embodiment, the light chain comprises the amino acid sequence of SEQ ID NO: 8 comprising amino acid substitutions at one or more positions selected from the group consisting of: 10, 21, 22, 40, 42, 46, 52, 53, 58, 77, 83, 87, 95 and 106. In one embodiment, the light chain comprises the amino acid sequence of
10 SEQ ID NO: 8 comprising amino acid substitutions at one or more positions selected from the group consisting of: 10, 21, 22, 40, 42, 46, 52, 53, 58, 77, 83, 87, 95 and 106 wherein: the amino acid at position 10 can be L or S, the amino acid at position 21 can be L or I, the amino acid at position 22 can be N or T, the amino acid at position 40 can be L or P, the amino acid at position 42 can be E or K, the amino acid at position 46 can be F or L, the amino acid at position 52 can
15 be N, S, T, G or D, the amino acid at position 53 can be S, N, T, Y or Q, the amino acid at position 58 can be I or V, the amino acid at position 77 can be G or S, the amino acid at position 83 can be V or F, the amino acid at position 87 can be F or Y, the amino acid at position 95 can be W, F, Y, I, V or L, and the amino acid at position 105 can be L or I.

In another embodiment, the disclosure relates to an antibody or antigen binding fragment
20 that binds to human TIGIT comprising: a heavy chain comprising the amino acid sequence of SEQ ID NO: 9 and/or a light chain comprising the amino acid sequence of SEQ ID NO: 25, wherein each of the variable chains can comprise 1, 2, 3, 4, 5, 6, 7 or 8 amino acid substitutions. In one embodiment, the antibody can comprise mutations at positions 27, 48, 67, 71, 83, 110, 122 and 123 of SEQ ID NO: 9. For example, with respect to SEQ ID NO: 9: the amino acid at
25 position 27 can be G or S; the amino acid at position 48 can be I or M; the amino acid at position 67 can be V or I; the amino acid at position 71 can be V or R; the amino acid at position 83 can be S or H; the amino acid at position 110 can be W, F, Y, I, V or L; the amino acid at position 122 can be M, V, L, A, R, N, P, Q, E, G, I, H, K, F, S, T, W or Y; and the amino acid at position 123 can be V, T or L. In another embodiment, the antibody can comprise mutations at positions
30 46, 52, 53, 58 and 95 of SEQ ID NO: 25. For example, with respect to SEQ ID NO: 25, the amino acid at position 46 can be L or F; the amino acid at position 52 can be N, S, T, G or D, the amino acid at position 53 can be S, N, T, Y or Q; the amino acid at position 58 can be I or V; the amino acid at position 58 can be V or I; and the amino acid at position 95 can be W, F, Y, I, V or L.

35

5 In one embodiment, the disclosure relates to an antibody or antigen binding fragment that binds to human TIGIT comprising: a heavy chain comprising the amino acid sequence of SEQ ID NO: 94 or variant thereof comprising up to 30 amino acid substitutions, and a light chain comprising the amino acid sequence of SEQ ID NO: 95 or a variant thereof comprising up to 18 amino acid substitutions. In one embodiment, the heavy chain comprises a variant of the amino acid sequence of SEQ ID NO: 94 comprising amino acid substitutions at one or more positions
10 selected from the group consisting of: 5, 9, 11, 12, 16, 20, 38, 40, 44, 56, 57, 61, 62, 65, 67, 68, 72, 74, 76, 79, 85, 87, 89, 91, 92, 104 and 111. In one embodiment, the heavy chain comprises a variant of the amino acid sequence of SEQ ID NO: 94 comprising amino acid substitutions at one or more positions selected from the group consisting of: 5, 9, 11, 12, 16, 20, 38, 40, 44, 56,
15 57, 61, 62, 65, 67, 68, 72, 74, 76, 79, 85, 87, 89, 91, 92, 104 and 111, wherein: the amino acid at position 5 can be Q or V, the amino acid at position 9 can be P or A, the amino acid at position 11 can be V or L, the amino acid at position 12 can be V or K, the amino acid at position 16 can be S or A, the amino acid at position 20 can be M or V, the amino acid at position 38 can be K or R, the amino acid at position 40 can be K or A, the amino acid at position 44 can be G or R, the
20 amino acid at position 56 can be D, R, L, K, F, S, Y or V, the amino acid at position 57 can be G, R, N, Q, E, L, K, S, Y or V, the amino acid at position 61 can be N, A or S, the amino acid at position 62 can be E or Q, the amino acid at position 65 can be K or Q, the amino acid at position 67 can be R or K, the amino acid at position 68 can be A or V, the amino acid at position 72 can be S or R, the amino acid at position 74 can be K or T, the amino acid at position 76 can be S, I, A or T, the amino acid at position 79 can be A or V, the amino acid at position 85 can be R or S, the amino acid at position 87 can be T or R, the amino acid at position 89 can be D or E, the amino acid at position 91 can be S or T, the amino acid at position 92 can be A or V, the amino acid at position 104 can be W, A, D, E, F, G, I, K, N, Q, R, S, T, V or Y, and the amino acid at position 111 can be A or Q. In one embodiment, the light chain comprises a variant of the amino acid sequence of SEQ ID NO: 95 comprising amino acid substitutions at one or more positions
30 selected from the group consisting of: 9, 17, 18, 40, 43, 45, 48, 50, 51, 70, 72, 74, 76, 83, 84, 100, 103 and 106. In one embodiment, the light chain comprises a variant of the amino acid sequence of SEQ ID NO: 95 comprising amino acid substitutions at one or more positions selected from the group consisting of: 9, 17, 18, 40, 43, 45, 48, 50, 51, 70, 72, 74, 76, 83, 84,
35 100, 103 and 106, wherein the amino acid at position 9 can be A or S, the amino acid at position

5 17 can be E or D, the amino acid at position 18 can be T or R, the amino acid at position 40 can be Q or P, the amino acid at position 43 can be S, A or V, the amino acid at position 45 can be Q or K, the amino acid at position 48 can be V or I, the amino acid at position 50 can be N, A, Y, W, S, T, I or V, the amino acid at position 51 can be A, N, I, L, T or V, the amino acid at position 70 can be Q or D, the amino acid at position 72 can be S or T, the amino acid at position 10 74 can be K or T, the amino acid at position 76 can be N or S, the amino acid at position 83 can be F or V, the amino acid at position 84 can be G or A, the amino acid at position 100 can be A or Q, the amino acid at position 103 can be T or R and the amino acid at position at position 106 can be L or I.

In one embodiment, the disclosure relates to an antibody or antigen binding fragment that 15 binds to human TIGIT comprising: a heavy chain comprising the amino acid sequence of SEQ ID NO: 124 or variant thereof comprising up to 10 amino acid substitutions, and/or a light chain comprising the amino acid sequence of SEQ ID NO: 130 or a variant thereof comprising up to 5 amino acid substitutions. In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising a variable heavy chain of SEQ 20 ID NO: 124 or a variant thereof, wherein the variant comprises substitutions at one or more positions selected from the group consisting of: 16, 44, 56, 57, 61, 72, 74, 76, 79, 85, 89, 92 and 104. In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising a variable heavy chain of SEQ ID NO: 124 or a variant thereof, wherein the variant comprises substitutions at one or more positions selected 25 from the group consisting of: 16, 44, 56, 57, 61, 72, 74, 76, 79, 85, 89, 92 and 104, wherein the amino acid at position 16 can be A or S, the amino acid at position 44 can be R or G, the amino acid at position 56 can be D, R, L, K, F, S, Y or V, the amino acid at position 57 can be G, R, N, Q, E, L K, S, Y or V, the amino acid at position 61 can be S or A, the amino acid at position 72 can be R or S, the amino acid at position 74 can be T or K, the amino acid at position 76 can be 30 A or T or I, the amino acid at position 79 can be A or V, the amino acid at position 85 can be S or R, the amino acid at position 89 can be E or D, the amino acid at position 92 can be A or V and the amino acid at position 104 can be W, A, D, E, F, G, I, K, N, Q, R, S, T, V or Y. In another embodiment, the disclosure provides an antibody or antigen binding fragment thereof that binds to human TIGIT comprising a variable light chain of SEQ ID NO: 130 or a variant 35 thereof comprising substitutions at one or more positions selected from the group consisting of: 43, 50,

5 51, 70 and 83. In another embodiment, the disclosure provides an antibody or antigen binding
fragment thereof that binds to human TIGIT comprising a variable light chain of SEQ ID NO:
130 or a variant thereof comprising substitutions at one or more positions selected from the
group consisting of: 43, 50, 51, 70 and 83, wherein the amino acid at position 43 can be S, A or
V, the amino acid at position 50 can be N, A, Y, W, S, T, I or V, the amino acid at position 51
10 can be A, N, I, L, T or V, the amino acid at position 70 can be Q or D, and the amino acid at
position 83 can be F or V.

In any of the above embodiments, the antibody or antigen binding fragment thereof is
isolated.

15 In any of the above embodiments, the antibody or antigen binding fragment thereof is a
recombinant antibody.

In any of the above embodiments, the antibody or antigen binding fragment thereof is a
full-length antibody.

In any of the above embodiments, the antibody or antigen binding fragment thereof is a
humanized antibody.

20 In any of the above embodiments, the antibody or antigen binding fragment thereof is a
humanized antibody comprising two heavy chains and two light chains. In one embodiment, the
heavy chains are of the IgG1 isotype and the light chains are kappa light chains.

In any of the above mentioned embodiments, the antibody or antigen binding fragment
thereof of the disclosure can comprise a variable heavy region consisting of: (a) any of the
25 variable heavy chains described above and (b) a leader peptide (for example, the leader peptide
of SEQ ID NO: 53). In any of the above mentioned embodiments, the antibody or antigen
binding fragment thereof of the disclosure can comprise a light heavy region consisting of: (a)
any of the light heavy chains described above and (b) a leader peptide (for example, the leader
peptide of SEQ ID NO: 54).

30 In any of the above mentioned embodiments, the antibody or antigen binding fragment
thereof of the disclosure is an antibody comprising any of the variable heavy chains described
above and any human heavy chain constant domain. In one embodiment, the antibody or antigen
binding fragment thereof of the disclosure is of the IgG isotype, and comprises a human IgG1,
IgG2, IgG3 or IgG4 human heavy chain constant domain. In one embodiment, the antibody or
35 antigen binding fragment thereof of the disclosure comprises a human heavy chain IgG1 constant

5 domain (SEQ ID NO: 86) or a variant thereof, wherein the variant comprises up to 20 modified amino acid substitutions. In one embodiment, the antibody or antigen binding fragment thereof of the disclosure is an antibody comprising a human heavy chain IgG1 constant domain comprising the amino acid sequence of SEQ ID NO: 86. In one embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human heavy chain IgG1 constant domain wherein the IgG1 constant domain is afucosylated. In one embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human heavy chain IgG4 constant domain or a variant thereof, wherein the variant comprises up to 20 modified amino acid substitutions. In another embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human heavy chain IgG4 constant domain, wherein the amino acid at position 228 (using EU numbering scheme) has been substituted from Ser to Pro. In one embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human heavy chain IgG4 constant domain comprising the amino acid sequence of SEQ ID NO: 55.

In any of the above mentioned embodiments, the antibody or antigen binding fragment thereof of the disclosure can comprise any of the variable light chains described above and human light chain constant domain. In one embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human kappa light chain constant domain or a variant thereof, wherein the variant comprises up to 20 modified amino acid substitutions. In another embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human lambda light chain constant domain or a variant thereof, wherein the variant comprises up to 20 modified amino acid substitutions. In one embodiment, the antibody or antigen binding fragment thereof of the disclosure comprises a human kappa light chain constant domain comprising the amino acid sequence of SEQ ID NO: 56.

In one embodiment, the anti-TIGIT antibody of the disclosure comprises a full tetrameric structure having two light chains and two heavy chains, wherein each light chain comprises: a variable region comprising SEQ ID NO:132 and a human kappa light chain (SEQ ID NO:56); and each heavy chain comprises: a variable region comprising SEQ ID NO:128, a human IgG1 constant region (SEQ ID NO:86).

In one embodiment, the anti-TIGIT antibody of the disclosure comprises a full tetrameric structure having two light chains and two heavy chains, wherein each light chain comprises: a

5 variable region comprising SEQ ID NO:130 and a human kappa light chain (SEQ ID NO:56);
and each heavy chain comprises: a variable region comprising SEQ ID NO:127, a human IgG1
constant region (SEQ ID NO:86).

In one embodiment, the anti-TIGIT antibody of the disclosure comprises a full tetrameric
structure having two light chains and two heavy chains, wherein each light chain comprises: a
10 variable region comprising SEQ ID NO:133 and a human kappa light chain (SEQ ID NO:56);
and each heavy chain comprises: a variable region comprising SEQ ID NO:128, a human IgG1
constant region (SEQ ID NO:86).

In any of the above mentioned embodiments, the anti-TIGIT antibody or antigen binding
fragment thereof of the disclosure can be conjugated to at least one therapeutic agent. In one
15 embodiment, the wherein the therapeutic agent comprises a second antibody or fragment thereof,
an immunomodulator, a hormone, a cytotoxic agent, an enzyme, a radionuclide, a second
antibody conjugated to at least one immunomodulator, enzyme, radioactive label, hormone,
antisense oligonucleotide, or cytotoxic agent, or a combination thereof.

The disclosure also provides isolated polypeptides comprising the amino acid sequence
20 of any one of SEQ ID NOs: 1-30, 37-52, 57-83 or 88-151, or a fragment of any said sequences.
In another aspect, the disclosure provides an isolated polypeptide comprising the amino acid
sequence of any one of SEQ ID NOs: 7-30, 37-52, 63-64, 94-95 or 124-133, 136-139, 143-146,
149-151.

The disclosure also provides isolated nucleic acids encoding anyone of the anti-TIGIT
25 antibodies or antigen binding fragments of the disclosure. In another aspect, the disclosure
provides an isolated nucleic acid encoding: any one of the antibodies or antigen binding
fragments of claims 1-12, or any one of the polypeptides of claim 13. In one embodiment, the
disclosure provides isolated nucleic acids encoding anyone of the polypeptides of SEQ ID NOs:
1-30, 37-52, 57-64 or 88-133, wherein said polypeptides can optionally comprise a leader
30 sequence. The disclosure also provides expression vectors comprising a nucleic acid encoding
anyone of the polypeptides of SEQ ID NOs: 1-30, 37-52, 57-83 or 88-167 (wherein said
polypeptides can optionally comprise a leader sequence). In another aspect, the disclosure
provides an expression vector comprising the isolated nucleic acid as disclosed herein. These
isolated nucleic acids and the expression vectors comprising them may be used to express the
35 antibodies of the disclosure or antigen binding fragments thereof in recombinant host cells.
Thus, the disclosure also provides host cells comprising isolated nucleic acids encoding anyone
of the polypeptides of SEQ ID NOs: 1-30,

5 37-52, 57-83 or 88-151 (wherein said polypeptides can optionally comprise a leader sequence).
In another aspect, the disclosure provides a host cell comprising the antibody, binding fragment, polypeptide, polynucleotide or expression vector as disclosed herein. In one embodiment, the host cell is Chinese hamster ovary cell. In one embodiment, the host cell is a yeast cell, for example a *Pichia* cell or a *Pichia pastoris* host cell.

10 In another aspect, the disclosure also provides pharmaceutical compositions comprising an antibody or antigen binding fragment of the disclosure and a pharmaceutically acceptable carrier or diluent.

5 In one embodiment, the composition comprises a further therapeutic agent. In one embodiment, the further therapeutic agent is selected from the group consisting of: an anti-PD1 antibody or an antigen binding fragment thereof; an anti-LAG3 antibody or an antigen binding fragment thereof; an anti-VISTA antibody or an antigen binding fragment thereof; an anti-BTLA antibody or an antigen binding fragment thereof; an anti-TIM3 antibody or an antigen binding fragment thereof; an anti-CTLA4 antibody or an antigen binding fragment thereof; an anti-HVEM antibody or an antigen binding fragment thereof; an anti-CD27 antibody or an antigen binding fragment thereof; an anti-CD137 antibody or an antigen binding fragment thereof; an anti-OX40 antibody or an antigen binding fragment thereof; an anti-CD28 antibody or an antigen binding fragment thereof; an anti-PDL1 antibody or an antigen binding fragment thereof; an anti-PDL2 antibody or an antigen binding fragment thereof; an anti-GITR antibody or an antigen binding fragment thereof; an anti-ICOS antibody or an antigen binding fragment thereof; an anti-SIRPα antibody or an antigen binding fragment thereof; an anti-ILT2 antibody or antigen binding fragment thereof; an anti-ILT3 antibody or antigen binding fragment thereof; an anti-ILT4 antibody or antigen binding fragment thereof; and an anti-ILT5 antibody or an antigen binding fragment thereof; an anti 4-1BB antibody or an antigen binding fragment thereof. In one embodiment, the anti-PD1 antibody or an antigen binding fragment thereof; is selected from the group consisting of: pembrolizumab or an antigen binding fragment thereof and nivolumab or an antigen binding fragment thereof. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising

5 the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of

10 the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid

15 sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region

20 CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable

25 region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a

30 light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90;

35 (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a

5 light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and
(vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

In one embodiment, the disclosure provides a composition comprising: (i) an anti-TIGIT antibody or antigen binding fragment of the disclosure ; and (ii) an anti-PD1 antibody comprising the heavy chain sequence of SEQ ID NO: 33 and the light chain variable sequence of
10 SEQ ID NO: 34. In another embodiment, the disclosure provides a composition comprising: (a) an anti-TIGIT antibody or antigen binding fragment of the disclosure ; and (b) an anti-PD1 antibody comprising the heavy chain sequence of SEQ ID NO: 35 and the light chain variable sequence of SEQ ID NO: 36. In one embodiment, the anti-PD1 antibody is administered prior to the administration of an anti-TIGIT antibody. In one embodiment, the anti-PD1 antibody is
15 administered 4-10 days prior to the administration of the anti-TIGIT antibody. In one embodiment, pretreatment treatment with anti-PD1 antibody may modulate immune cells resulting in enhanced Fc-mediated function of the anti-TIGIT antibodies. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy
20 chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region
25 CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy
30 chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT
35 antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable

5 region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain
10 variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:
15 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ
20 ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino
25 acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising
30 the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

The disclosure also comprises a combination comprising an anti-TIGIT antibody or antigen binding fragment of the disclosure, in combination with one, two or more therapeutic
35 agents; wherein the second therapeutic agent is selected from the group consisting of: an anti-

5 PD1 antibody or an antigen binding fragment thereof; an anti-LAG3 antibody or an antigen binding fragment thereof; an anti-VISTA antibody or an antigen binding fragment thereof; an anti-BTLA antibody or an antigen binding fragment thereof; an anti-TIM3 antibody or an antigen binding fragment thereof; an anti-CTLA4 antibody or an antigen binding fragment thereof; an anti-HVEM antibody or an antigen binding fragment thereof; an anti-CD27 antibody
10 or an antigen binding fragment thereof; an anti-CD137 antibody or an antigen binding fragment thereof; an anti-OX40 antibody or an antigen binding fragment thereof; an anti-CD28 antibody or an antigen binding fragment thereof; an anti-PDL1 antibody or an antigen binding fragment thereof; an anti-PDL2 antibody or an antigen binding fragment thereof; an anti-GITR antibody or an antigen binding fragment thereof; an anti-ICOS antibody or an antigen binding fragment
15 thereof; an anti-SIRP α antibody or an antigen binding fragment thereof; an anti-ILT2 antibody or antigen binding fragment thereof; an anti-ILT3 antibody or antigen binding fragment thereof; an anti-ILT4 antibody or antigen binding fragment thereof; an anti-ILT5 antibody or an antigen binding fragment thereof; and an anti 4-1BB antibody or an antigen binding fragment thereof. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure
20 comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the
25 amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ
30 ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain
35 variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one

embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises:

- (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1;
- (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2;
- (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3;
- (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4;
- (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5;
- and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6.

In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62.

In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

The disclosure also provides a vessel or injection device comprising anyone of the anti-TIGIT antibodies or antigen binding fragments of the disclosure . In one embodiment, the anti-

5 TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID

10 NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy

15 chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113,

20 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable

25 region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises:

30 (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:

35 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID

5 NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid
10 sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the
15 amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

20 The disclosure also provides a method of producing an anti-TIGIT antibody or antigen binding fragment of the disclosure comprising: culturing a host cell comprising a polynucleotide encoding a heavy chain and/or light chain of an antibody of the disclosure (or an antigen binding fragment thereof) under conditions favorable to expression of the polynucleotide; and optionally, recovering the antibody or antigen binding fragment from the host cell and/or culture medium. In
25 another aspect, the disclosure provides a method of producing an antibody or antigen binding fragment comprising: culturing a host cell comprising a polynucleotide encoding the heavy chain and/or the light chain of any one of the antibodies or antigen binding fragments of claims 1-12 under conditions favorable to expression of the polynucleotide; and optionally, recovering the antibody or antigen binding fragment from the host cell and/or culture medium. In one
30 embodiment, the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain are in a single vector. In another embodiment, the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain are in different vectors. In one embodiment, the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain encode an antibody or antigen binding fragment comprising: (i) a heavy chain
35 variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid

- 5 sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:5, 65, 66, 67, 68,69, 70, 71, 72, 73 or 141; and (vi) a light

5 (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In another embodiment, the polynucleotide encoding the heavy chain and the
10 polynucleotide encoding the light chain encode an antibody or antigen binding fragment comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of
15 SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In another embodiment, the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain encode an antibody or antigen binding fragment comprising: a heavy chain variable region comprising SEQ ID NO:128 and a light
20 chain variable region comprising SEQ ID NO:132. In another embodiment, the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain encode an antibody or antigen binding fragment comprising: a heavy chain variable region comprising SEQ ID NO:127 and a light chain variable region comprising SEQ ID NO:130. In another embodiment, the polynucleotide encoding the heavy chain and the polynucleotide encoding the light chain encode
25 an antibody or antigen binding fragment comprising: a heavy chain variable region comprising SEQ ID NO:128 and a light chain variable region comprising SEQ ID NO:133.

The disclosure also provides a method of treating cancer in a subject in need thereof, comprising administering to the subject an effective amount of an anti-TIGIT antibody or antigen binding fragment of the disclosure, optionally in association with a further therapeutic
30 agent or therapeutic procedure. In one embodiment, the subject been treated is a human subject. In one embodiment, the further therapeutic agent is selected from the group consisting of: an anti-PD1 antibody or an antigen binding fragment thereof; an anti-LAG3 antibody or an antigen binding fragment thereof; an anti-VISTA antibody or an antigen binding fragment thereof; an anti-BTLA antibody or an antigen binding fragment thereof; an anti-TIM3 antibody or an
35 antigen binding fragment thereof; an anti-CTLA4 antibody or an antigen binding fragment

5 thereof; an anti-HVEM antibody or an antigen binding fragment thereof; an anti-CD27 antibody or an antigen binding fragment thereof; an anti-CD137 antibody or an antigen binding fragment thereof; an anti-OX40 antibody or an antigen binding fragment thereof; an anti-CD28 antibody or an antigen binding fragment thereof; an anti-PDL1 antibody or an antigen binding fragment thereof; an anti-PDL2 antibody or an antigen binding fragment thereof; an anti-GITR antibody or
10 an antigen binding fragment thereof; an anti-ICOS antibody or an antigen binding fragment thereof; an anti-SIRP α antibody or an antigen binding fragment thereof; an anti-ILT2 antibody or antigen binding fragment thereof; an anti-ILT3 antibody or antigen binding fragment thereof; an anti-ILT4 antibody or antigen binding fragment thereof; an anti-ILT5 antibody or an antigen binding fragment thereof; and an anti-4-1BB antibody or an antigen binding fragment thereof. In
15 one embodiment, the anti-PD1 antibody or an antigen binding fragment thereof is selected from the group consisting of: pembrolizumab or an antigen binding fragment thereof and nivolumab or an antigen binding fragment thereof. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2
20 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino
25 acid sequence of SEQ ID NO:6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3
30 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding
35 fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid

5 sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid
sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid
sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid
sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid
sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino
10 acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen
binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1
comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2
comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region
CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region
15 CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region
CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable
region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the
anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable
region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable
20 region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy
chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light
chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light
chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a
light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one
25 embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy
chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy
chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a
heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv)
a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a
30 light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and
(vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

The disclosure also provides a method of treating cancer in a subject in need thereof,
comprising administering to the subject an effective amount of an anti-TIGIT antibody or
antigen binding fragment of the disclosure, and further administering an anti-PD1 antibody or an
35 antigen binding fragment thereof. In one embodiment, the anti-PD1 antibody or an antigen

5 binding fragment thereof is selected from the group consisting of: pembrolizumab or an antigen binding fragment thereof and nivolumab or an antigen binding fragment thereof. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises:

(i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1;

(ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2;

10 (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:6, 74, 75, 76, 77, 78

15 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID

20 NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises:

25 (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5;

30 and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino

35 acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino

5 acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

The disclosure also provides a method of treating an infection or infectious disease in a subject, comprising administering to the subject an effective amount of an antibody or antigen binding fragment of the disclosure, optionally in association with a further therapeutic agent or therapeutic procedure. In one embodiment, the subject been treated is a human subject. In one embodiment, the further therapeutic agent is selected from the group consisting of: an anti-PD1 antibody or an antigen binding fragment thereof; an anti-LAG3 antibody or an antigen binding fragment thereof; an anti-VISTA antibody or an antigen binding fragment thereof; an anti-BTLA antibody or an antigen binding fragment thereof; an anti-TIM3 antibody or an antigen binding fragment thereof; an anti-CTLA4 antibody or an antigen binding fragment thereof; an anti-HVEM antibody or an antigen binding fragment thereof; an anti-CD27 antibody or an antigen binding fragment thereof; an anti-CD137 antibody or an antigen binding fragment thereof; an anti-OX40 antibody or an antigen binding fragment thereof; an anti-CD28 antibody or an antigen binding fragment thereof; an anti-PDL1 antibody or an antigen binding fragment thereof; an anti-PDL2 antibody or an antigen binding fragment thereof; an anti-GITR antibody or

5 an antigen binding fragment thereof; an anti-ICOS antibody or an antigen binding fragment thereof; an anti-SIRP α antibody or an antigen binding fragment thereof; an anti-ILT2 antibody or antigen binding fragment thereof; an anti-ILT3 antibody or antigen binding fragment thereof; an anti-ILT4 antibody or antigen binding fragment thereof; an anti-ILT5 antibody or an antigen binding fragment thereof; and an anti-4-1BB antibody or an antigen binding fragment thereof. In one embodiment, the anti-PD1 antibody or an antigen binding fragment thereof; is selected from the group consisting of: pembrolizumab or an antigen binding fragment thereof and nivolumab or an antigen binding fragment thereof. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino

5 acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

The disclosure also provides a vaccine comprising an antibody or antigen binding fragment of the disclosure. In another aspect, the disclosure provides a vaccine comprising the antibody or antigen binding fragment as disclosed herein and an antigen. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 1401; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence

5 of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising
10 the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of
15 the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid
20 sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region
25 CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable
30 region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a
35 light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one

5 embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a
10 light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the vaccine further comprises an antigen.

In another aspect, the disclosure provides a method for detecting the presence of a TIGIT peptide or a fragment thereof in a sample comprising contacting the sample with an antibody or
15 antigen binding fragment thereof of the disclosure and detecting the presence of a complex between the antibody or fragment and the peptide; wherein detection of the complex indicates the presence of the TIGIT peptide. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2
20 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino
25 acid sequence of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising
30 the amino acid sequence of SEQ ID NO: 153; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the antibody or antigen binding fragment of
35 the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a

5 heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6.

10 In another embodiment, the antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof

25 comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid

30 sequence of SEQ ID NO: 93.

5 The disclosure also provides a method of increasing the activity of an immune cell,
comprising contacting the immune cell with any one of the antibodies or antigen binding
fragments of the disclosure . In another aspect, the disclosure provides an *in vitro* method of
increasing the activity of an immune cell, comprising contacting the immune cell with any one of
the antibodies or antigen binding fragments as disclosed herein. In one embodiment, the
10 disclosure provides a method of increasing the activity of an immune cell, comprising
administering to a subject in need thereof an effective

5 amount of an antibody or antigen binding fragments of the disclosure . In one embodiment, the method is used for: the treatment of cancer, the treatment of an infection or infectious disease, or as a vaccine adjuvant. In one embodiment, the increase in activity of an immune cell can be detected by measuring the proliferation of the immune cell. For example, an increase in activity of a T cell can be detected by measuring the proliferation of the T cell. In one embodiment, the increase in activity of an immune cell can be detected by measuring T cell activation *ex vivo* in a sample derived from the subject. In one embodiment, the increase in T cell activity is determined by: (i) measuring mixed lymphocyte reactions or direct anti-CD3 mAb stimulation of T cell receptor (TCR) signaling to induce production of a cytokine selected from the group consisting of: IL-2, TNF α , IL-17, IFN γ , IL-1 β , GM-CSF, RANTES, IL-6, IL-8, IL-5 and IL-13; (ii) measuring SEB induced production of one or more cytokines selected from the group consisting of: IL-2, TNF α , IL-17, IFN γ , GM-CSF, RANTES, IL-6, IL-8, IL-5 and IL-13; or (iii) measuring TT induced production of a cytokine selected from the group consisting of: IL-2, TNF α , IL-17, IFN γ , GM-CSF, RANTES, IL-6, IL-8, IL-5 and IL-13. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, 79, 80, 81, 82, 83 or 140; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, 65, 66, 67, 68, 69, 70, 71, 72, 73 or 141; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6, 74, 75, 76, 77, 78 or 142. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135 or 147; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122 or 148; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT

5 antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable
10 region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In another embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 57; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 58;
15 (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 59; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 60; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 61; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 62. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof
20 comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid
25 sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising
30 the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

The disclosure also comprises a method of treating cancer or infectious disease in a
35 subject, comprising administering to the subject an effective amount of an antagonist anti-TIGIT

antibody and an antagonist anti-PD1 antibody, wherein the anti-TIGIT antibody has increased effector function when compared to a parental antibody. As used herein, a “parental anti-antibody” refers to antibody having a wild-type Fc region and/or wild type glycosylation (i.e., glycosylation pattern resulting from expression of the polypeptide in a non-engineered mammalian host cell). The effector function of a parental antibody can be increased by mutating its Fc region or by altering its glycosylation (as discussed in further detail below). In one embodiment, the anti-PD1 antibody is administered prior to the administration of a parental antibody. In one embodiment, the anti-PD1 antibody is administered 4-10 days prior to the administration of the anti-TIGIT antibody. In one embodiment, pretreatment treatment with anti-PD1 antibody may modulate immune cells resulting in enhanced Fc-mediated function of the anti-TIGIT antibodies. In one embodiment, the anti-TIGIT antibody comprises a human IgG1 constant domain. In one embodiment, treatment with the anti-TIGIT and anti-PD1 antibodies does not result in depletion of Tregs. In one embodiment, the anti-PD1 antibody or an antigen binding fragment thereof; is selected from the group consisting of: pembrolizumab and nivolumab. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3 (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90 (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable

5 region CDR2 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

10 The disclosure also comprises a method of treating cancer or infectious disease in a subject, comprising administering to the subject an effective amount of an antagonist anti-TIGIT antibody and an antagonist anti-PD1 antibody, wherein the anti-TIGIT antibody is afucosylated. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ
15 ID NO: 1; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3 (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of
20 SEQ ID NO: 6. In one embodiment, the anti-TIGIT antibody or antigen binding fragment of the disclosure comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 89, 134 or 135; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90 (iv) a light chain variable region CDR1 comprising
25 the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93. In one embodiment, the anti-TIGIT antibody or antigen binding fragment thereof comprises: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 88; (ii) a heavy chain variable region CDR2
30 comprising the amino acid sequence of SEQ ID NO: 134; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 90; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 91; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 92; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 93.

5 The disclosure also provides a method of increasing the anti-tumor activity of an anti-TIGIT antibody comprising: obtaining a parental anti-TIGIT antibody and increasing the effector function of the parental anti-TIGIT antibody; wherein the activity of the resulting anti-TIGIT antibody is increased as compared to the parental anti-TIGIT antibody. As used herein, a “parental anti-antibody” refers to antibody having a wild-type Fc region and/or wild type glycosylation (i.e., glycosylation pattern resulting from expression of the polypeptide in a non-engineered mammalian host cell). The effector function of a parental antibody can be increased by mutating its Fc region or by altering its glycosylation, for example by making the antibody afucosylated (as discussed in further detail below). In one embodiment, the effector function of a parental anti-TIGIT antibody is increased by making mutations in the Fc region of the parental anti-TIGIT antibody. In another embodiment, the effector function of a parental anti-TIGIT antibody is increased by removing the fucose residues from the antibody, or expressing the antibody in a host cell that has been genetically engineered to remove the activity of the enzyme that adds fucose to glycoproteins.

 In another aspect, the disclosure provides an antibody or antigen binding fragment as disclosed herein, for use as a vaccine adjuvant.

 In another aspect, the disclosure provides an antibody or antigen binding fragment as disclosed herein, for use in the preparation of a medicament to:

- a. increase immune cell activation;
- b. treat cancer; or
- c. treat an infection or infectious disease.

 In another aspect, the disclosure provides use of the antibody or antigen binding fragment as disclosed herein in the manufacture of a medicament for the treatment of cancer; for increasing immune cell activation; or for the treatment of an infection or infectious disease.

 In another aspect, the disclosure provides use of an antagonist anti-TIGIT antibody and an antagonist anti-PD1 antibody, wherein the anti-TIGIT antibody has increased effector function when compared to a parental antibody, in the manufacture of a medicament for the treatment of cancer or an infectious disease.

 In another aspect, the disclosure provides use of an antagonist anti-TIGIT antibody and an antagonist anti-PD1 antibody, wherein the anti-TIGIT antibody is afucosylated, in the manufacture of a medicament for the treatment of cancer or an infectious disease.

5 In another aspect, the disclosure provides a method of increasing the anti-tumor activity of an anti-TIGIT antibody comprising:

- a. obtaining a parental anti-TIGIT antibody, and
 - b. increasing the effector function of the parental anti-TIGIT antibody;
- wherein the effector activity of the resulting anti-TIGIT antibody is increased as

10 compared to the parental anti-TIGIT antibody.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows binding of antibody 14A6 to human and rhesus TIGIT (expressed in CHO-K1 cells).

15 **Figure 2** shows binding of antibody 28H5 to human and rhesus TIGIT (expressed in CHO-K1 cells).

Figure 3 shows that antibodies 14A6 and 28H5 block hCD155 interaction with hTIGIT as determined by a cell-based ELISA blocking assay.

Figure 4 shows binding of antibody 31C6 to human and rhesus TIGIT (expressed in CHO-K1 cells), and also shows that antibody 31C6 blocks hCD155 interaction with hTIGIT.

Figure 5 shows the activity of antibodies 14A6 and 28H5 in an *in vitro* T cell assay.

Figure 6 shows the activity of antibodies 14A6 and 31C6 *in vitro* T cell assay.

Figure 7 shows expression of TIGIT, CD226, CD155 and CD96 in primary human T cell lines. At day 3, clone BC4-49 shows highest up-regulation of TIGIT (negative) and down-regulation of CD226 (positive)

- 5 m. an anti-PDL2 antibody or an antigen binding fragment thereof;
 n. an anti-GITR antibody or an antigen binding fragment thereof;
 o. an anti-ICOS antibody or an antigen binding fragment thereof;
 p. an anti-SIRP α antibody or an antigen binding fragment thereof;
 q. an anti-ILT2 antibody or an antigen binding fragment thereof;
10 r. an anti-ILT3 antibody or an antigen binding fragment thereof;
 s. an anti-ILT4 antibody or an antigen binding fragment thereof; and
 t. an anti-ILT5 antibody or an antigen binding fragment thereof .
20. The composition of claim 19, wherein the anti-PD1 antibody or an antigen binding fragment thereof is selected from the group consisting of: pembrolizumab or an antigen binding
15 fragment thereof and nivolumab or an antigen binding fragment thereof.
21. A method of producing an antibody or antigen binding fragment comprising:
- a. culturing a host cell comprising a polynucleotide encoding the heavy chain and/or the light chain of any one of the antibodies or antigen binding fragments of claims 1-12 under conditions favorable to expression of the polynucleotide; and
20 b. optionally, recovering the antibody or antigen binding fragment from the host cell and/or culture medium.
22. A vaccine comprising the antibody or antigen binding fragment of any one of claims 1-12 and an antigen.
23. A method for detecting the presence of a TIGIT peptide or a fragment thereof in a sample
25 comprising contacting the sample with an antibody or fragment of any of claims 1-12 and detecting the presence of a complex between the antibody or fragment and the peptide; wherein detection of the complex indicates the presence of the TIGIT peptide.

- 5 24. An *in vitro* method of increasing the activity of an immune cell, comprising contacting the immune cell with any one of the antibodies or antigen binding fragments of claims 1-12.
- An antibody or antigen binding fragment according to any one of claims 1-12, for use
- as a vaccine adjuvant.
- 10 25. An antibody or antigen binding fragment according to any one of claims 1-12, for use in the preparation of a medicament to:
- a. increase immune cell activation;
- b. treat cancer; or
- c. treat an infection or infectious disease.
- 15 26. Use of the antibody or antigen binding fragment of claims 1-12 in the manufacture of a medicament for the treatment of cancer; for increasing immune cell activation; or for the treatment of an infection or infectious disease.
27. Use of an antagonist anti-TIGIT antibody and an antagonist anti-PD1 antibody, wherein the anti-TIGIT antibody has increased effector function when compared to a parental antibody,
- 20 in the manufacture of a medicament for the treatment of cancer or an infectious disease.
28. Use of an antagonist anti-TIGIT antibody and an antagonist anti-PD1 antibody, wherein the anti-TIGIT antibody is afucosylated, in the manufacture of a medicament for the treatment of cancer or an infectious disease.
29. The use of claim 27 or claim 28, wherein the anti-TIGIT antibody is as described in any one
- 25 of claims 1-12.

- 5 30. A method of increasing the anti-tumor activity of an anti-TIGIT antibody comprising:
- a. obtaining a parental anti-TIGIT antibody, and
 - b. increasing the effector function of the parental anti-TIGIT antibody;
- wherein the effector activity of the resulting anti-TIGIT antibody is increased as compared to the parental anti-TIGIT antibody.