

amino acid sequence set forth in SEQ ID NO: 18, 48, 56, 64, 72, 80, 88, 96, or 104; and an HC-CDR3 having the amino acid sequence set forth in SEQ ID NO: 23, 49, 57, 65, 73, 81, 89, 97, or 105; and, variants thereof wherein one or more of the HC-CDRs has one, two, or three amino acid substitutions, additions, deletions, or combinations thereof; and (b) a light chain (LC) having variable domain (V_L) comprising a variable domain complementarity determining region (LC-CDR) 1 having the amino acid sequence set forth in SEQ ID NO: 27, 50, 58, 66, 74, 82, 90, 98, or 106; an LC-CDR2 having the amino acid sequence set forth in SEQ ID NO: 43, 51, 59, 67, 75, 83, 91, 99, or 107; and an LC-CDR3 having the amino acid sequence set forth in SEQ ID NO: 44, 60, 68, 76, 84, 92, 100, or 108; and, variants thereof wherein one or more of the LC-CDRs has one, two, or three amino acid substitutions, additions, deletions, or combinations thereof. In particular examples the amino acid sequence differences are conservative changes/substitutions.

The present disclosure provides the antibody or antigen binding fragment, HC-CDR1 has the amino acid sequence set forth in SEQ ID NO:17; HC-CDR2 has the amino acid sequence set forth in SEQ ID NO: 19, 20, or 21; HC-CDR3 has the amino acid sequence set forth in SEQ ID NO: 23; and LC-CDR1 has the amino acid sequence set forth in SEQ ID NO: 34, 35, 36, 37, 38, 39, 40, 41, or 42; LC-CDR2 has the amino acid sequence set forth in SEQ ID NO: 43; and, LC-CDR3 has the amino acid sequence set forth in SEQ ID NO:44; and, variants thereof wherein one or more of the HC-CDRs and LC-CDRs has one, two, or three amino acid substitutions, additions, deletions, or combinations thereof. The present disclosure, in one aspect, provides an antibody or antigen binding fragment that binds to human immunoglobulin-like transcript 3 (ILT3), comprising: (a) a heavy chain complementarity determining region 1 (HC-CDR1) having the amino acid sequence set forth in SEQ ID NO: 17; an HC-CDR2 has the amino acid sequence set forth in SEQ ID NO:20; and an HC-CDR3 has the amino acid sequence set forth in SEQ ID NO: 23; and (b) a light chain complementarity

determining region 1 (LC-CDR1) having the amino acid sequence set forth in SEQ ID NO: 41; an LC-CDR2 has the amino acid sequence set forth in SEQ ID NO:43; and an LC-CDR3 has the amino acid sequence set forth in SEQ ID NO: 44. In particular examples the amino acid
5 sequence differences are conservative changes/substitutions.

In a further example of the antibody or antigen binding fragment, HC-CDR1 has the amino acid sequence set forth in SEQ ID NO: 17; HC-CDR2 has the amino acid sequence set forth in SEQ ID NO: 20; and HC-CDR3 has the amino acid sequence set forth in SEQ ID NO: 23; and LC-CDR1 having the amino acid sequence set forth in SEQ ID NO: 41; LC-CDR2
10 having the amino acid sequence set forth in SEQ ID NO: 43; and, LC-CDR3 having the amino acid sequence set forth in SEQ ID NO: 44; and, variants thereof wherein one or more of the HC-CDRs and LC-CDRs has one, two, or three amino acid substitutions, additions, deletions, or combinations thereof. In particular examples the amino acid sequence differences are conservative changes/substitutions.

15 In a further example of the antibody or antigen binding fragment, the antibody or antigen binding fragment comprises (a) a V_H having a framework selected from the group consisting of human V_H1 , V_H2 , V_H3 , V_H4 , V_H5 , and V_H6 family and variants thereof having

WHAT IS CLAIMED:

1. An antibody or antigen binding fragment that binds to human immunoglobulin-like transcript 3 (ILT3), comprising:

5 (a) a heavy chain complementarity determining region 1 (HC-CDR1) having the amino acid sequence set forth in SEQ ID NO: 17; an HC-CDR2 has the amino acid sequence set forth in SEQ ID NO:20; and an HC-CDR3 has the amino acid sequence set forth in SEQ ID NO: 23; and

10 (b) a light chain complementarity determining region 1 (LC-CDR1) having the amino acid sequence set forth in SEQ ID NO: 41; an LC-CDR2 has the amino acid sequence set forth in SEQ ID NO:43; and an LC-CDR3 has the amino acid sequence set forth in SEQ ID NO: 44.

2. The antibody or antigen binding fragment of claim 1, wherein the V_H comprises a framework selected from the group consisting of human V_H1 , V_H2 , V_H3 , V_H4 , V_H5 , and V_H6 , and variants thereof having 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 amino acid substitutions, additions, deletions, or combinations thereof; and, the V_L comprises a framework selected from the group consisting of human V_K1 , V_K2 , V_K3 , V_K4 , V_K5 , V_K6 , $V_\lambda1$, $V_\lambda2$, $V_\lambda3$, $V_\lambda4$, $V_\lambda5$, $V_\lambda6$, $V_\lambda7$, $V_\lambda8$, $V_\lambda9$, and $V_\lambda10$, and variants thereof having 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 amino acid substitutions, additions, deletions, or combinations thereof.

3. The antibody or antigen binding fragment of claim 1, wherein the antibody comprises an HC having a human IgG1, IgG2, IgG3, or IgG4 HC constant domain or variant thereof having 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 amino acid substitutions, additions, deletions, or combinations thereof compared to the amino acid sequence of the native IgG1, IgG2, IgG3, or IgG4 isotype constant domain.

4. The antibody or antigen binding fragment of claim 2 or 3, wherein the antibody comprises an LC having a human kappa or lambda LC constant domain or variant thereof comprising 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 amino acid substitutions, additions, deletions, or combinations thereof compared to the amino acid sequence of the native human kappa or lambda light chain constant domain.

5. The antibody or antigen binding fragment of claim 1, wherein the antibody comprises:

(i) a V_H having a framework selected from human V_H1 , V_H2 , V_H3 , V_H4 , V_H5 , and V_H6 and a human IgG1 or IgG4 HC constant domain or variant thereof comprising 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 amino acid substitutions, additions, deletions, or combinations thereof compared to the amino acid sequence of the native IgG1 or IgG4 isotype HC constant domain; and,

(ii) a V_L having a framework selected from human V_K1 , V_K2 , V_K3 , V_K4 , V_K5 , V_K6 , $V_\lambda1$, $V_\lambda2$, $V_\lambda3$, $V_\lambda4$, $V_\lambda5$, $V_\lambda6$, $V_\lambda7$, $V_\lambda8$, $V_\lambda9$, and $V_\lambda10$ and a human kappa or lambda LC constant domain or variant thereof comprising 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 amino acid substitutions, additions, deletions, or combinations thereof compared to the amino acid sequence of the native human kappa or lambda LC constant domain.

6. The antibody or antigen binding fragment of claim 1, wherein the antibody or antigen binding fragment comprises a V_H having the amino acid sequence set forth in SEQ ID NO: 117, 118, 124, or 125 and a V_L having the amino acid sequence set forth in SEQ ID NO: 136, or 140.

7. The antibody or antigen binding fragment of claim 6, wherein the antibody or antigen binding fragment comprises a V_H having the amino acid sequence set forth in SEQ ID NO: 118 and a V_L having the amino acid sequence set forth in SEQ ID NO: 140.

8. The antibody or antigen binding fragment of claim 6, wherein the antibody comprises a heavy chain (HC) comprising the amino acid sequence set forth in SEQ ID NO: 143 and a light chain (LC) comprising the amino acid sequence set forth in SEQ ID NO: 165, and variants thereof wherein the HC lacks a C-terminal Lysine residue or a C-terminal glycine-lysine.

9. A composition comprising:
an antibody or antigen binding fragment of any one of claims 1-8 and a pharmaceutically acceptable carrier.

10. An antibody or antigen binding fragment of any one of claims 1-8 for use in the treatment of a cancer in a subject.

11. The antibody or antigen binding fragment of claim 10 in combination with one or more inhibitors or antagonists of PD-1, PD-L1 and/or PD-L2 for use in combination therapy of cancer.

12. The antibody or antigen binding fragment for use of claim 11, wherein the one or more inhibitors or antagonists of PD-1, PD-L1 and/or PD-L2 is an anti-PD-1 antibody selected from the group consisting of pembrolizumab, nivolumab, cemiplimab, and pidilizumab.

13. The antibody or antigen binding fragment for use of claim 11, wherein the one or more inhibitors or antagonists of PD-1, PD-L1 and/or PD-L2 is a PD-L1 inhibitor selected from the group consisting of durvalumab, atezolizumab, avelumab, YW243.55.S70, MPDL3280A, MEDI-4736, MSB-0010718C, and MDX-1105.

14. The antibody or antigen binding fragment for use of claim 10 or 11, wherein the cancer is pancreatic cancer, melanomas, breast cancer, lung cancer, head and neck cancer, bronchus cancer, colorectal cancer, prostate cancer, pancreatic cancer, stomach cancer, ovarian cancer, urinary bladder cancer, brain or central nervous system cancer, peripheral nervous system cancer, esophageal cancer, cervical cancer, uterine or endometrial cancer, cancer of the oral cavity or pharynx, liver cancer, kidney cancer, testicular cancer, biliary tract cancer, small bowel or appendix cancer, salivary gland cancer, thyroid gland cancer, adrenal gland cancer, osteosarcoma, chondrosarcoma, or cancer of hematological tissues.

15. Use of an antibody or antigen binding fragment of any one of claims 1-8 in the manufacture of a medicament for treatment of a cancer.

16. The use of an antibody or antigen binding fragment of any one of claims 1-8 in the manufacture of a medicament for treatment of a cancer, wherein the cancer is pancreatic cancer, melanomas, breast cancer, lung cancer, head and neck cancer, bronchus cancer, colorectal cancer, prostate cancer, pancreatic cancer, stomach cancer, ovarian cancer,

urinary bladder cancer, brain or central nervous system cancer, peripheral nervous system cancer, esophageal cancer, cervical cancer, uterine or endometrial cancer, cancer of the oral cavity or pharynx, liver cancer, kidney cancer, testicular cancer, biliary tract cancer, small bowel or appendix cancer, salivary gland cancer, thyroid gland cancer, adrenal gland cancer,
5 osteosarcoma, chondrosarcoma, or cancer of hematological tissues.

17. A nucleic acid molecule encoding an anti-ILT3 antibody or antigen binding fragment of any one of claims 1-8.

10 18. A vector comprising the nucleic acid molecule of claim 17.

19. A host cell comprising the vector of claim 18.

15 20. A method for producing an antibody or antigen binding fragment of any one of claims 1-8 comprising:

(a) providing a host cell comprising the vector of claim 18;

(b) culturing the host cell in culture medium under conditions to enable expression of the antibody or antigen binding fragment encoded by the vector; and,

20 (c) obtaining the antibody or antigen binding fragment from the culture medium to provide the antibody or antigen binding fragment.