yet a further aspect, the present disclosure refers to a method of producing an antibody comprising culturing the host cell as disclosed herein under conditions that promotes the production of the antibody. In a further aspect, disclosed herein is a pharmaceutical composition comprising the antibody as disclosed herein and a pharmaceutically-acceptable excipient. In still another aspect, the present disclosure refers to the antibody or the composition as disclosed herein for use as a medicament. In another aspect, the present disclosure refers to the use of the antibody as disclosed herein or the composition as disclosed herein in the manufacture of a medicament for treating or alleviating one or more symptoms of a disease, wherein the disease is a cancer or graft-versus-host disease. In a further aspect, the present disclosure refers to the antibody or the composition as disclosed herein for use in treating or alleviating one or more symptoms of a cancer by stimulating an immune response in a subject. In another aspect, the present disclosure refers to the use of the anti-C10orf54 antibody as disclosed herein or an antibody-drug conjugate as disclosed herein, in the manufacture of a medicament for treating cancer. In another aspect, the present disclosure refers to the use of the anti-C10orf54 antibody as disclosed herein or an antibody-drug conjugate as disclosed herein, in the manufacture of a medicament for killing a tumor cell.

In a first example, provided herein are antibodies that bind to C10orf54, including a C10orf54 polypeptide, a C10orf54 polypeptide fragment or a C10orf54 epitope, collectively referred to herein as anti-C10orf54 antibodies. Also provided herein are anti-C10orf54 antibodies that are conjugated to drugs as antibody-drug conjugates (ADCs), including ADCs of the formula A-L-CTX, wherein A is an antibody, L is a linker, and CTX is cytotoxin. In some examples the anti-C10orf54 antibodies are humanized antibodies that bind to a C10orf54 polypeptide, a C10orf54 polypeptide fragment or a C10orf54 epitope. In certain examples, the anti-C10orf54 antibody comprises a VH domain, VL domain, VH CDR1, VH CDR2, VH CDR3, VL CDR1, VL CDR2, and/or VL CDR3 of monoclonal antibody 175A, 76E1 or 141A described herein, or a humanized variant thereof. In certain examples, the anti-C10orf54 antibody can further comprise a VH FR1, VH FR2, VH FR3, VH FR4, VL FR1, VL FR2, VL FR3, and/or VL FR4 of a human germline immunoglobulin amino acid sequence or a variant thereof.

WHAT IS CLAIMED:

1 An isolated antibody that binds to C10orf54, said antibody being selected from:

a. an antibody comprising:

i. a heavy chain variable (VH) region comprising three CDRs having the amino acid sequences SEQ ID NO. 36, SEQ ID NO. 37, and SEQ ID NO. 38, and

ii. a light chain variable (VL) region comprising three CDRs having the amino acid sequences SEQ ID NO. 45, SEQ ID NO. 46, and SEQ ID NO. 47;

b. an antibody comprising:

i. a heavy chain variable (VH) region comprising three CDRs having the amino acid sequences SEQ ID NO. 30, SEQ ID NO. 31, and SEQ ID NO. 32, and

ii. a light chain variable (VL) region comprising three CDRs having the amino acid sequences SEQ ID NO. 45, SEQ ID NO. 40, and SEQ ID NO. 41; and

c. an antibody comprising:

i. a heavy chain variable (VH) region comprising three CDRs having the amino acid sequences SEQ ID NO. 33, SEQ ID NO. 34, and SEQ ID NO. 35, and

ii. a light chain variable (VL) region comprising three CDRs having the amino acid sequences SEQ ID NO. 42, SEQ ID NO. 43, and SEQ ID NO. 44.

2 The antibody of claim 1, wherein the antibody is a humanised antibody, a monoclonal antibody, a recombinant antibody, a fusion protein, an antigen binding fragment, a Fab Fragment, F(ab')2 fragment, single chain Fv (sFv), diabody, triabody, or minibody.

3 The antibody of any one of claims 1 or 2 which is a monoclonal antibody.

4 The antibody of any one of claims 1 to 3, wherein the antibody is selected from:

a. an antibody comprising:

i. a VH region having the amino acid sequence SEQ ID NO. 3, and
ii. a VL region having the amino acid sequence SEQ ID NO. 6;

b. an antibody comprising:

i. a VH region having the amino acid sequence SEQ ID NO. 1, and
ii. a VL region having the amino acid sequence SEQ ID NO. 4; and

c. an antibody comprising:

i. a VH region having the amino acid sequence SEQ ID NO. 2, and
ii. a VL region having the amino acid sequence SEQ ID NO. 5.

5 The antibody of any one of claims 1 to 3, wherein the antibody is humanised.

6 The antibody of claim 5, wherein the antibody is selected from:

a. an antibody comprising:

i. a VH region having an amino acid sequence selected from the group consisting of SEQ ID NOs. 20, 21, 22, and 23, and
ii. a VL region having an amino acid sequence selected from the group consisting of SEQ ID NOs. 28 and 29;

b. an antibody comprising:

i. a VH region having an amino acid sequence selected from the group consisting of SEQ ID NOs. NO. 12, 13, 14, 15, and
ii. a VL region having an amino acid sequence selected from the group consisting of SEQ ID NOs. 24 and 25; and

c. an antibody comprising:

i. a VH region having an amino acid sequence selected from the group consisting of SEQ ID NOs. 16, 17, 18, 19, and
ii. a VL region having an amino acid sequence selected from the group consisting of SEQ ID NOs.26 and 27.

7 An antibody of any one of claims 1 to 6, wherein the antibody is conjugated or recombinantly fused to a diagnostic agent, detectable agent or therapeutic agent.

8 An isolated nucleic acid molecule encoding an antibody according to any one of claims 1 to 6, said nucleic acid molecule comprising or consisting of a nucleic acid sequence that encodes the VH region and/or VL region of said antibody.

9 A vector comprising the nucleic acid molecule of claim 8.

10 A host cell comprising the vector of claim 9.

11 A method of producing an antibody comprising culturing the host cell of claim 10 under conditions that promotes the production of the antibody.

12 A pharmaceutical composition comprising the antibody of any one claims 1 to 6 and a pharmaceutically-acceptable excipient.

13 The antibody of any one of claims 1 to 6 or the composition of claim 12 for use as a medicament.

14 Use of the antibody of any one of claims 1 to 6 or the composition of claim 12 in the manufacture of a medicament for treating or alleviating one or more symptoms of a disease, wherein the disease is a cancer or graft-versus-host disease.

15 The use of claim 14, wherein the cancer is a leukemia, a bladder cancer or a fibrosarcoma.

16 The antibody of any one of claims 1 to 6 or the composition of claim 12 for use in treating or alleviating one or more symptoms of a cancer by stimulating an immune response in a subject.

17 Use of the anti-C10orf54 antibody of any one of claims 1 to 6 or the antibody-drug conjugate of claim 7, in the manufacture of a medicament for treating cancer.

18 Use of the anti-C10orf54 antibody of any one of claims 1 to 6 or the antibody-drug conjugate of claim 7, in the manufacture of a medicament for killing a tumor cell.