Citation or discussion of a reference herein shall not be construed as an admission that such is prior art to the present disclosure.

SUMMARY

In one aspect, the present invention refers to an isolated monoclonal antibody, or antigen-binding fragment thereof, wherein said antibody is the antibody 26A, comprising: a heavy chain comprising the following three CDRs, respectively CDR-H1 having the sequence SEQ ID NO. 1296, CDR-H2 having a sequence selected from SEQ ID NO. 1358, SEQ ID NO. 1556, SEQ ID NO. 1557, SEQ ID NO. 1558, and SEQ ID NO. 1559, and CDR-H3 having the sequence SEQ ID NO. 1393; and a light chain comprising the following three CDRs, respectively CDR-L1 having the sequence SEQ ID NO. 1435, CDR-L2 having a sequence selected from SEQ ID NO. 1476, SEQ ID NO. 1630, SEQ ID NO. 1631, SEQ ID NO. 1632, and SEQ ID NO. 1633, and CDR-L3 having the sequence SEQ ID NO.1499.. In another aspect, the present invention refers to an antibody-drug conjugate comprising the antibody as disclosed herein conjugated to a cytotoxic agent. In yet another aspect, the present invention refers to a polynucleotide comprising a nucleotide sequence encoding the antibody as disclosed herein. In a further aspect, the present invention refers to an expression vector comprising the polynucleotide as disclosed herein. In another aspect, the present invention refers to a host cell comprising the expression vector as disclosed herein. In yet another aspect, the present invention refers to a method of producing the antibody or antigen-binding fragment thereof, as disclosed herein, said method comprising a step of culturing the host cell as disclosed herein under conditions that promotes the production of the antibody. In a further aspect, the present invention refers to a pharmaceutical composition comprising the antibody as disclosed herein or the antibody-drug conjugate as disclosed herein, and a pharmaceutically acceptable diluent, carrier or excipient. In another aspect, the present invention refers to use of the pharmaceutical composition as disclosed herein in the manufacture of a medicament for treating, preventing or alleviating one or more symptoms of a cancer. In yet another aspect, the present invention refers to use of the pharmaceutical composition as disclosed herein in the manufacture of a medicament for inhibiting the growth of a tumor with inflammation in a subject. In a further aspect, the present invention refers to use of an antibody as disclosed herein or an antibody-drug conjugate of as disclosed herein in the manufacture of a medicament for treating cancer. In another aspect, the present invention refers to a method for detecting C10orf54 in a sample comprising contacting the sample with the antibody as

WHAT IS CLAIMED:

1. An isolated monoclonal antibody, or antigen-binding fragment thereof, wherein said antibody is the antibody 26A, comprising:

   - a heavy chain comprising the following three CDRs, respectively CDR-H1 having the sequence SEQ ID NO. 1296, CDR-H2 having a sequence selected from SEQ ID NO. 1358, SEQ ID NO. 1556, SEQ ID NO. 1557, SEQ ID NO. 1558, and SEQ ID NO. 1559, and CDR-H3 having the sequence SEQ ID NO. 1393; and

   - a light chain comprising the following three CDRs, respectively CDR-L1 having the sequence SEQ ID NO. 1435, CDR-L2 having a sequence selected from SEQ ID NO. 1476, SEQ ID NO. 1630, SEQ ID NO. 1631, SEQ ID NO. 1632, and SEQ ID NO. 1633, and CDR-L3 having the sequence SEQ ID NO.1499.

2. The antibody of claim 1, or antigen-binding fragment thereof, wherein said antibody is humanized.

3. An antibody according to claim 2, or antigen-binding fragment thereof, said antibody comprising a heavy chain variable domain of sequence selected between amino acid sequences SEQ ID NO. 1529, SEQ ID NO. 1530, and SEQ ID NO. 1531, and a light chain variable domain of sequence selected between amino acid sequences SEQ ID NO. 1532, SEQ ID NO. 1533, and SEQ ID NO. 1534.

4. The antibody of any one of claims 1 to 3, wherein the antibody is a Fab Fragment, $F(ab')_2$ fragment, single chain Fv (sFv), diabody, triabody, or minibody.

5. An antibody-drug conjugate comprising the antibody of any one of claims 1 to 4 conjugated to a cytotoxic agent.

6. A polynucleotide comprising a nucleotide sequence encoding the antibody of any one of claims 1 to 4.

7. An expression vector comprising the polynucleotide of claim 6.

8. A host cell comprising the expression vector of claim 7.

9. A method of producing the antibody or antigen-binding fragment thereof, of any one of claims 1 to 4, said method comprising a step of culturing the host cell of claim 8 under conditions that promotes the production of the antibody.

10. A pharmaceutical composition comprising the antibody of any one of claims 1 to 4 or the antibody-drug conjugate of claim 5, and a pharmaceutically acceptable diluent, carrier or excipient.

11. Use of the pharmaceutical composition of claim 10 in the manufacture of a medicament for treating, preventing or alleviating one or more symptoms of a cancer.

12. The use of claim 11, wherein the cancer is a leukemia, preferably acute myeloid leukemia (AML), a bladder cancer, a skin cancer, a colon cancer, a breast cancer, a liver cancer, a kidney cancer, a lung cancer, a stomach cancer, a pancreas cancer, an esophagus cancer or a fibrosarcoma.

13. Use of the pharmaceutical composition of claim 10 in the manufacture of a medicament for inhibiting the growth of a tumor with inflammation in a subject.

14. The use of any one of claims 11 to 13, said use comprising inhibiting the growth of a cell having cell surface expression of C10orf54.

15. The use of claim 14, wherein the cell is a regulatory T cell.

16. The use of any one of claims 14 or 15, wherein the cell is a cancerous or pre-cancerous cell.

17. The use of any one of claims 11 to 13, said use comprising modulating an immune response.

18. The use of claim 17, wherein the modulating comprises:

(a) increasing T cell activation;

(b) increasing T cell proliferation; or

(c) increasing cytokine production.

19. Use of an antibody of any one of claims 1 to 4 or an antibody-drug conjugate of claim 5 in the manufacture of a medicament for treating cancer.

20. The use of claim 19, said use comprising killing a tumor cell.

21. A method for detecting C10orf54 in a sample comprising contacting the sample with the antibody of any one claims 1 to 4.

22. A kit comprising the antibody of any one of claims 1 to 4.

23. The kit of claim 22, wherein said antibody is conjugated to a detectable substrate.