

CLAIMS

What is claimed is:

1. An antibody or fragment thereof having binding specificity to a human solute carrier 34 A2 (SLC34A2) protein, wherein the antibody or fragment thereof comprises a heavy chain variable region comprising heavy chain complementarity determining regions CDRH1, CDRH2, and CDRH3 and a light chain variable region light chain comprising complementarity determining regions CDRL1, CDRL2, and CDRL3, and wherein:
 - (a) the CDRH1 comprises the amino acid sequence of SEQ ID NO: 51,
the CDRH2 comprises the amino acid sequence of SEQ ID NO: 52 or 57,
the CDRH3 comprises the amino acid sequence of SEQ ID NO: 53,
the CDRL1 comprises the amino acid sequence of SEQ ID NO: 54,
the CDRL2 comprises the amino acid sequence of SEQ ID NO: 55, and
the CDRL3 comprises the amino acid sequence of SEQ ID NO: 56,
 - (b) the CDRH1 comprises the amino acid sequence of SEQ ID NO: 66,
the CDRH2 comprises the amino acid sequence of SEQ ID NO: 67 or 72,
the CDRH3 comprises the amino acid sequence of SEQ ID NO: 68,
the CDRL1 comprises the amino acid sequence of SEQ ID NO: 69,
the CDRL2 comprises the amino acid sequence of SEQ ID NO: 70, and
the CDRL3 comprises the amino acid sequence of SEQ ID NO: 71,
 - (c) the CDRH1 comprises the amino acid sequence of SEQ ID NO: 81,
the CDRH2 comprises the amino acid sequence of SEQ ID NO: 82 or 87,
the CDRH3 comprises the amino acid sequence of SEQ ID NO: 83,
the CDRL1 comprises the amino acid sequence of SEQ ID NO: 84,
the CDRL2 comprises the amino acid sequence of SEQ ID NO: 85, and
the CDRL3 comprises the amino acid sequence of SEQ ID NO: 86, or
 - (d) the CDRH1 comprises the amino acid sequence of SEQ ID NO: 96,
the CDRH2 comprises the amino acid sequence of SEQ ID NO: 97 or 102,
the CDRH3 comprises the amino acid sequence of SEQ ID NO: 98 or 103,

the CDRL1 comprises the amino acid sequence of SEQ ID NO: 99,
the CDRL2 comprises the amino acid sequence of SEQ ID NO: 100, and
the CDRL3 comprises the amino acid sequence of SEQ ID NO: 101.

2. The antibody or fragment thereof of claim 1, wherein the CDRH1 comprises the amino acid sequence of SEQ ID NO: 51, the CDRH2 comprises the amino acid sequence of SEQ ID NO: 52, the CDRH3 comprises the amino acid sequence of SEQ ID NO: 53, the CDRL1 comprises the amino acid sequence of SEQ ID NO: 54, the CDRL2 comprises the amino acid sequence of SEQ ID NO: 55, and the CDRL3 comprises the amino acid sequence of SEQ ID NO: 56.

3. The antibody or fragment thereof of claim 2, wherein the heavy chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 1 and 58-61, and the light chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 2 and 62-65.

4. The antibody or fragment thereof of claim 2, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 59, and the light chain variable region comprises the amino acid sequence of SEQ ID NO: 62.

5. The antibody or fragment thereof of claim 1, wherein the CDRH1 comprises the amino acid sequence of SEQ ID NO: 66, the CDRH2 comprises the amino acid sequence of SEQ ID NO: 67 or 72, the CDRH3 comprises the amino acid sequence of SEQ ID NO: 68, the CDRL1 comprises the amino acid sequence of SEQ ID NO: 69, the CDRL2 comprises the amino acid sequence of SEQ ID NO: 70, and the CDRL3 comprises the amino acid sequence of SEQ ID NO: 71.

6. The antibody or fragment thereof of claim 5, wherein the CDRH2 comprises the amino acid sequence of SEQ ID NO: 67.
7. The antibody or fragment thereof of claim 5, wherein the heavy chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 3 and 73-76, and the light chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 4 and 77-80.
8. The antibody or fragment thereof of claim 5, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:76, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:79.
9. The antibody or fragment thereof of claim 1, wherein the CDRH1 comprises the amino acid sequence of SEQ ID NO: 81, the CDRH2 comprises the amino acid sequence of SEQ ID NO: 82 or 87, the CDRH3 comprises the amino acid sequence of SEQ ID NO: 83, the CDRL1 comprises the amino acid sequence of SEQ ID NO: 84, the CDRL2 comprises the amino acid sequence of SEQ ID NO: 85, and the CDRL3 comprises the amino acid sequence of SEQ ID NO: 86.
10. The antibody or fragment thereof of claim 9, wherein the CDRH2 comprises the amino acid sequence of SEQ ID NO: 82.
11. The antibody or fragment thereof of claim 9, wherein the heavy chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 5 and 88-91, and the light chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 6 and 92-95.

12. The antibody or fragment thereof of claim 9, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:90, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:92.

13. The antibody or fragment thereof of claim 1, wherein the CDRH1 comprises the amino acid sequence of SEQ ID NO: 96, the CDRH2 comprises the amino acid sequence of SEQ ID NO: 97 or 102, the CDRH3 comprises the amino acid sequence of SEQ ID NO: 98 or 103, the CDRL1 comprises the amino acid sequence of SEQ ID NO: 99, the CDRL2 comprises the amino acid sequence of SEQ ID NO: 100, and the CDRL3 comprises the amino acid sequence of SEQ ID NO: 101.

14. The antibody or fragment thereof of claim 13, wherein the CDRH2 comprises the amino acid sequence of SEQ ID NO: 97, and the CDRH3 comprises the amino acid sequence of SEQ ID NO: 98.

15. The antibody or fragment thereof of claim 13, wherein the heavy chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 7 and 104-107, and the light chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 8 and 108-111.

16. The antibody or fragment thereof of claim 13, wherein the heavy chain variable region comprises the amino acid sequence of SEQ ID NO:105, and the light chain variable region comprises the amino acid sequence of SEQ ID NO:110.

17. A composition comprising the antibody or fragment thereof of any one of claims 1-16 and a pharmaceutically acceptable carrier.

18. An isolated polynucleotide encoding the antibody or fragment thereof of any one of claims 1-16.

19. Use of the antibody or fragment thereof of any one of claims 1-16 in the manufacture of a medicament for treating cancer.

20. The use of claim 19, wherein the cancer is selected from the group consisting of bladder cancer, liver cancer, colon cancer, rectal cancer, endometrial cancer, leukemia, lymphoma, pancreatic cancer, small cell lung cancer, non-small cell lung cancer, breast cancer, urethral cancer, head and neck cancer, gastrointestinal cancer, stomach cancer, oesophageal cancer, ovarian cancer, renal cancer, melanoma, prostate cancer and thyroid cancer.