

Claims

1. An antibody binding to mesothelin comprising a heavy chain variable region comprising: a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 9,
5 a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 10, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 11, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 12, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 13 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 14;
10 a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 15, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 16, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 17, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 18, a light chain CDR2
15 comprising an amino acid sequence of SEQ ID NO: 19 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 20;
a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 21, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 22, and a heavy chain CDR3 comprising an amino acid
20 sequence of SEQ ID NO: 23, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 24, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 25 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 26;
a heavy chain variable region comprising a heavy chain CDR1 comprising an amino
25 acid sequence of SEQ ID NO: 27, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 28, and a heavy chain CDR3 comprising an amino acid

sequence of SEQ ID NO: 29, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 30, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 25 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 26,

5 a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 60, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 61, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 62, a light chain CDR2
10 comprising an amino acid sequence of SEQ ID NO: 63 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 64,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid
15 sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 69,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino
20 acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 70, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3
25 comprising an amino acid sequence of SEQ ID NO: 69,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 117, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 118,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 119,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 117, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 120,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 71, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 72, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 62, a light chain CDR2

comprising an amino acid sequence of SEQ ID NO: 73 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 74,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 75, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 76, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 77, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 78 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 79,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 80, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 81, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 62, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 82 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 83,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 84, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 85, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 86, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 78 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 87,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 121, and a heavy chain CDR3 comprising an amino acid

sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 69,

5 a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 122, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2
10 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 69,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 122, and a heavy chain CDR3 comprising an amino acid
15 sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 119,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino
20 acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 122, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3
25 comprising an amino acid sequence of SEQ ID NO: 120,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 123, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 124, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 69,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 123, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 124, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 120,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 125, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 69,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 125, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 66, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2

comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 119,

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 126, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 69; or

a heavy chain variable region comprising a heavy chain CDR1 comprising an amino acid sequence of SEQ ID NO: 59, a heavy chain CDR2 comprising an amino acid sequence of SEQ ID NO: 65, and a heavy chain CDR3 comprising an amino acid sequence of SEQ ID NO: 126, a light chain variable region comprising a light chain CDR1 comprising an amino acid sequence of SEQ ID NO: 67, a light chain CDR2 comprising an amino acid sequence of SEQ ID NO: 68 and a light chain CDR3 comprising an amino acid sequence of SEQ ID NO: 119.

2. The antibody of claim 1, wherein the antibody comprises the heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 1, 3, 5, 7, 46, 48, 51, 53, 55, 57, 112, 113, 114, 115 or 116.

3. The antibody of claim 1, wherein the light chain variable region comprises an amino acid sequence of SEQ ID NO: 2, 4, 6, 8, 47, 49, 50, 52, 54, 56, 58, 109, 110 or 111.

4. The antibody of claim 1,

- a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 1, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 2;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 3, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 4;
- 5 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 5, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 6;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 7, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 8;
- 10 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 46, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 47;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 48, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 49;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 48, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 50;
- 15 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 51, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 52;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 53, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 54;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 55, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 56;
- 20 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 57, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 58;
a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 48, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 109;
- 25 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 48, a
light chain variable region comprising an amino acid sequence of SEQ ID NO: 110;

- a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 48, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 111;
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 112, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 49;
 5 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 113, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 49;
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 114, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 49;
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 115,
 10 a light chain variable region comprising an amino acid sequence of SEQ ID NO: 49;
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 116, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 49;
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 113, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 110;
 15 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 114, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 110;
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 115, a light chain variable region comprising an amino acid sequence of SEQ ID NO: 110; or
 a heavy chain variable region comprising an amino acid sequence of SEQ ID NO: 116,
 20 a light chain variable region comprising an amino acid sequence of SEQ ID NO: 110.

5. A nucleic acid encoding the antibody according to any one of claims 1 to 4.

6. A vector comprising the nucleic acid according to claim 5.

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7. A host cell comprising the vector according to claim 6.

8. A method of preparing the antibody binding to mesothelin comprising expressing the antibody by culturing host cell according to claim 7.