

CLAIMS

1. An antibody or antigen binding fragment thereof specifically binding to L1CAM comprising a light chain variable region comprising light chain complementarity determining regions LCDR1, LCDR2 and LCDR3 and/or a heavy chain variable region comprising heavy chain complementarity determining regions HCDR1, HCDR2 and HCDR3, wherein the antibody or antigen binding fragment thereof can specifically bind to the Ig1 or FN-4 domain of L1-CAM and does not have the same or equivalent combination of CDRs as antibody L1-9. 3 or UJ127.

2. The antibody or antigen binding fragment according to claim 1, wherein the heavy chain variable region that comprises HCDR1, HCDR2 and HCDR3 comprising at least 80%, 90% or 100% identity to the HCDR1, HCDR2 and HCDR3 of the heavy chain variable region sequences selected from the group comprising SEQ ID NOs: 43, 45, 47, 49 and 51, and the light chain variable region that comprises LCDR1, LCDR2 and LCDR3 comprising at least 80% identity to the LCDR1, LCDR2 and LCDR3 of the light chain variable region sequences selected from the group comprising SEQ ID NOs: 44, 46, 48, 50 and 52.

3. The antibody or antigen binding fragment according to claim 1 or 2, comprising a heavy chain variable region and a light chain variable region, wherein the heavy chain variable region and the light chain variable region comprise a combination of CDRs selected from the group comprising of:

(1) HCDR1, HCDR2 and HCDR3 comprising at least 80% identity to HCDR1, HCDR2 and HCDR3 of the heavy chain variable region sequence of SEQ ID NO: 43, LCDR1, LCDR2 and LCDR3 comprising at least 80% identity to LCDR1, LCDR2 and LCDR3 of the light chain variable region sequence of SEQ ID NO: 44;

(2) HCDR1, HCDR2 and HCDR3 comprising at least 80% identity to HCDR1, HCDR2 and HCDR3 of the heavy chain variable region sequence of SEQ ID NO: 45, LCDR1, LCDR2 and LCDR3 comprising at least 80% identity to LCDR1, LCDR2 and LCDR3 of the light chain variable region sequence of SEQ ID NO: 46;

(3) HCDR1, HCDR2 and HCDR3 comprising at least 80% identity to HCDR1, HCDR2 and HCDR3 of the heavy chain variable region sequence of SEQ ID NO: 47, LCDR1, LCDR2 and LCDR3 comprising at least 80% identity to LCDR1, LCDR2 and LCDR3 of the light chain variable region sequence of SEQ ID NO: 48;

(4) HCDR1, HCDR2 and HCDR3 comprising at least 80% identity to HCDR1, HCDR2 and HCDR3 of the heavy chain variable region sequence of SEQ ID NO: 49, LCDR1, LCDR2 and LCDR3 comprising at least 80% identity to LCDR1, LCDR2 and LCDR3 of the light chain variable region sequence of SEQ ID NO: 50; And

(5) HCDR1, HCDR2 and HCDR3 comprising at least 80% identity to HCDR1, HCDR2 and HCDR3 of the heavy chain variable region sequence of SEQ ID NO: 51, LCDR1, LCDR2 and LCDR3 comprising at least 80% identity to LCDR1, LCDR2 and LCDR3 of the light chain variable region sequence of SEQ ID NO: 52.

4. The antibody or antigen-binding fragment according to any one of claims 1 to 3, wherein:

(1) the HCDR1 comprises at least 80% identity to a sequence selected from SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 13, SEQ ID NO: 19, SEQ ID NO: 25, SEQ ID NO: 31, SEQ ID NO: 37;

(2) the HCDR2 comprises at least 80% identity to a sequence selected from SEQ ID NO: 2, SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 20, SEQ ID NO: 26, SEQ ID NO: 32, SEQ ID NO: 38;

(3) the HCDR3 comprises at least 80% identity to a sequence selected from SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, SEQ ID NO: 21, SEQ ID NO: 27, SEQ ID NO: 33, SEQ ID NO: 39;

(4) the LCDR1 comprises at least 80% identity to a sequence selected from SEQ ID NO: 4, SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 22, SEQ ID NO: 28, SEQ ID NO: 34, SEQ ID NO: 40;

(5) the LCDR2 comprises at least 80% identity to a sequence selected from SEQ ID NO: 5, SEQ ID NO: 11, SEQ ID NO: 17, SEQ ID NO: 23, SEQ ID NO: 29, SEQ ID NO: 35, SEQ ID NO: 41;

(6) the LCDR3 comprises at least 80% identity to a sequence selected from SEQ ID NO: 6, SEQ ID NO: 12, SEQ ID NO: 18, SEQ ID NO: 24, SEQ ID NO: 30, SEQ ID NO: 36, SEQ ID NO: 42.

5. The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:

(1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 1;

(2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 2;

(3) the HCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 3;

- (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 4;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 5;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 6.
- 6.** The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:
- (1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 7;
 - (2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 8;
 - (3) the HCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 9;
 - (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 10;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 11;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 12.
- 7.** The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:
- (1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 13;
 - (2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 14;
 - (3) the HCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 15;
 - (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 16;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 17;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 18.
- 8.** The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:
- (1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 19;
 - (2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 20;
 - (3) the HCDR3 comprises an amino acid sequence as set forth in SEQ ID NO: 21;
 - (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 22;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 23;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 24.
- 9.** The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:
- (1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 25;
 - (2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 26;
 - (3) the HCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 27;

- (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 28;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 29;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 30.
- 10.** The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:
- (1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 31;
 - (2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 32;
 - (3) the HCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 33;
 - (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 34;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 35;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 36.
- 11.** The antibody or antigen-binding fragment according to any one of claims 1 to 4, wherein:
- (1) the HCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 37;
 - (2) the HCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 38;
 - (3) the HCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 39;
 - (4) the LCDR1 comprises the amino acid sequence set forth in SEQ ID NO: 40;
 - (5) the LCDR2 comprises the amino acid sequence set forth in SEQ ID NO: 41;
 - (6) the LCDR3 comprises the amino acid sequence set forth in SEQ ID NO: 42.
- 12.** The antibody or antigen-binding fragment of any one of claims 1 to 11, wherein the heavy chain variable region comprises an amino acid sequence set forth in SEQ ID NO: 43 or an amino acid sequence comprising at least 90%, at least 95%, or 100% sequence identity to SEQ ID NO: 43.
- 13.** The antibody or antigen-binding fragment of any one of claims 1 to 11, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 44 or an amino acid sequence comprising at least 90%, at least 95%, or 100% sequence identity to SEQ ID NO: 44.
- 14.** The antibody or antigen-binding fragment of any one of claims 1 to 11, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 45 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 45.
- 15.** The antibody or antigen-binding fragment of any one of claims 1 to 11, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID

NO: 46 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 46.

16. The antibody or antigen-binding fragment of any one of claims 1 to 11, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 47 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 47.

17. The antibody or antigen-binding fragment of any one of claims 1 to 11, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 48 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 48.

18. The antibody or antigen-binding fragment of any one of claims 1 to 9, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 49 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 49.

19. The antibody or antigen-binding fragment according to any one of claims 1 to 11, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 50 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 50.

20. The antibody or antigen-binding fragment according to any one of claims 1 to 11, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 51 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 51.

21. The antibody or antigen-binding fragment according to any one of claims 1 to 11, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 52 or an amino acid sequence comprising at least 90%, at least 95% or more sequence identity to SEQ ID NO: 52.

22. The antibody or antigen-binding fragment according to any one of claims 1-21, wherein the antibody is a humanized antibody.

23. The antibody or antigen-binding fragment according to claim 22, comprising a heavy chain variable region and/or a light chain variable region, wherein the heavy chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 53 or SEQ ID NO: 54 or SEQ ID NO: 55 or SEQ ID NO: 56, and the light chain

variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 57 or SEQ ID NO: 58 or SEQ ID NO: 59.

24. The antibody or antigen-binding fragment according to claim 23, which comprises a heavy chain variable region and/or a light chain variable region, wherein:

1) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 53, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 57; or

2) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 53, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 58; or

3) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 53, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 59; or

4) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 54, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 57; or

5) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 54, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 58; or

6) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 54, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 59; or

7) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 55, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 57; or

8) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 55, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 58; or

9) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 55, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 59; or

10) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 56, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 57; or

11) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 56, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 58; or

12) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 56, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 59.

25. The antibody or antigen-binding fragment according to claim 23, wherein the heavy chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 60 or SEQ ID NO: 61 or SEQ ID NO: 62 or SEQ ID NO: 63, and the light chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 64 or SEQ ID NO: 65 or SEQ ID NO: 66.

26. The antibody or antigen binding fragment according to claim 25, comprising a heavy chain variable region and/or a light chain variable region, wherein,

1) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 60, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 64; or

2) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 60, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 65; or

3) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 60, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 66; or

4) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 61, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 64; or

5) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 61, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 65; or

6) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 61, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 66; or

7) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 62, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 64; or

8) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 62, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 65; or

9) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 62, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 66; or

10) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 63, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 64; or

11) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 63, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 65; or

12) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 63, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 66.

27. The antibody or antigen-binding fragment according to claim 22, wherein the heavy chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 67 or SEQ ID NO: 68 or SEQ ID NO: 69 or SEQ ID NO: 70 or SEQ ID NO: 71 or SEQ ID NO: 72 or SEQ ID NO: 73 or SEQ ID NO: 74 and the light chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 75 or SEQ ID NO: 76 or SEQ ID NO: 77 or SEQ ID NO: 78 or SEQ ID NO: 79 or SEQ ID NO: 80 or SEQ ID NO: 81.

28. The antibody or antigen binding fragment according to claim 27, comprising a heavy chain variable region and/or a light chain variable region, wherein,

1) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

2) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

3) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

4) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

5) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67 and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

6) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

7) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 67, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

8) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68 and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

9) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

10) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

11) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

12) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

13) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

14) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 68, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

15) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

16) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

17) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

18) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

19) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

20) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

21) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

22) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

23) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

24) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

25) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

26) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

27) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

28) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 70, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

29) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

30) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

31) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

32) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

33) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

34) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

35) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 71, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

36) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

37) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

38) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72 and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

39) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

40) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

41) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

42) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 72, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

43) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

44) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

45) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

46) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

47) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

48) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

49) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81; or

50) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 75; or

51) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 76; or

52) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 77; or

53) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 78; or

54) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 79; or

55) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 80; or

56) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 74, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 81.

29. The antibody or antigen-binding fragment according to claim 22, wherein the heavy chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 82 or SEQ ID NO: 83 or SEQ ID NO: 84 or SEQ ID NO: 85 or SEQ ID NO: 86 or SEQ ID NO: 87 or SEQ ID NO: 88 or SEQ ID NO: 89 or SEQ ID NO: 90, and the light chain variable region comprises one of the amino acid sequences set forth in SEQ ID NO: 91 or SEQ ID NO: 92 or SEQ ID NO: 93 or SEQ ID NO: 94 or SEQ ID NO: 95 or SEQ ID NO: 96.

30. The antibody or antigen-binding fragment according to claim 29, which comprises a heavy chain variable region and/or a light chain variable region, wherein,

1) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 82, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

2) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 82, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

3) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 82, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

4) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 82, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

5) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 82, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

6) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 82, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

7) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 83, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

8) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 83, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

9) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 83, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

10) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 83, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

11) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 83, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

12) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 83, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

13) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 84, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

14) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 84, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

15) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 84, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

16) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 84, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

17) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 84, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

18) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 84, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

19) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

20) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

21) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

22) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

23) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

24) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

25) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 86, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

26) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 86, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

27) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 86, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

28) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 86, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

29) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 86, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

30) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 86, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

31) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 87, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

32) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 87, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

33) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 87, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

34) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 87, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

35) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 87, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

36) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 87, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

37) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 88, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

38) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 88, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

39) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 88, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

40) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 88, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

41) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 88, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

42) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 88, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

43) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

44) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

45) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

46) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

47) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

48) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96; or

49) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 90, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 91; or

50) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 90, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 92; or

51) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 90, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 93; or

52) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 90, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 94; or

53) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 90, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 95; or

54) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 90, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO: 96.

31. The antibody or antigen-binding fragment according to any one of claims 1-30, further comprising an Fc region, optionally that of a human immunoglobulin (Ig), or optionally that of a human IgG, whereas the Fc region is derived from human IgG1, IgG2, IgG3, IgG4, IgA1, IgA2 or IgM.

32. The antibody or antigen-binding fragment according to any one of claims 1-31, wherein the antigen-binding fragment is a scFv, scFv-Fc, Fv, Fab, Fab', F(ab)₂ or F(ab')₂.

33. The antibody or antigen-binding fragment according to any one of claims 1-32 which is a monoclonal antibody, a bispecific antibody, a multi-specific antibody, a recombinant antibody, a chimeric antibody, a divalent antibody, an anti-idiotypic antibody, or a fusion protein.

34. An antibody-drug conjugate comprising the antibody or antigen-binding fragment according to any one of claims 1-33, and an additional effector molecule conjugate.

35. A nucleic acid molecule encoding the antibody or antigen-binding fragment of any one of claims 1-33.

36. The nucleic acid molecule according to claim 35, operably linked to a promoter.

37. A recombinant expression vector comprising the nucleic acid molecule of claim 35 or 36.

38. A plasmid comprising the nucleic acid molecule of claim 35 or 36.

39. A host cell comprising the nucleic acid molecule of claim 35 or 36, the recombinant expression vector of claim 37 or the plasmid of claim 38.

40. A method for detecting the expression of L1CAM in a biological sample comprising the steps of contacting said biological sample with the antibody or antigen-binding fragment thereof of any one of claims 1-33 and detecting the presence or absence of an immune complex, wherein the presence of an immune complex indicates the presence of L1CAM in the biological sample.

- 41.** A pharmaceutical composition comprising, as an active substance, the antibody or the antigen-binding fragment thereof of any one of claims 1 to 33, the antibody-drug conjugate of any one of claims 34 to 38, and a pharmaceutically acceptable carrier.
- 42.** A kit comprising the antibody or antigen-binding fragment thereof according to any one of claims 1 to 33, the antibody-drug conjugate according to claim 34 and/or the pharmaceutical composition according to claim 41.
- 43.** Use of the antibody or antigen-binding fragment thereof of any one of claims 1-33, the antibody-drug conjugate of claim 34, or the pharmaceutical composition of claim 41 in the manufacture of a medicament for treating cancer in a subject.
- 44.** The use according to claim 43, further comprising detecting the presence of L1-CAM in a cancer sample prior to administration of the medicament.