

**CLAIMS:**

1. An isolated anti-CEACAM6 antibody or antigen-binding fragment thereof comprising:
  - i. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:48, an H-CDR2 comprising SEQ ID NO:49, and an H-CDR3 comprising SEQ ID NO:50 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:52, a L-CDR2 comprising SEQ ID NO:53, and a L-CDR3 comprising SEQ ID NO:54, or
  - ii. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:106, an H-CDR2 comprising SEQ ID NO:107, and an H-CDR3 comprising SEQ ID NO:108 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:110, a L-CDR2 comprising SEQ ID NO:111, and a L-CDR3 comprising SEQ ID NO:112, or
  - iii. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:4, an H-CDR2 comprising SEQ ID NO:5, and an H-CDR3 comprising SEQ ID NO:6 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:8, a L-CDR2 comprising SEQ ID NO:9, and a L-CDR3 comprising SEQ ID NO:10, or
  - iv. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:34, an H-CDR2 comprising SEQ ID NO:35, and an H-CDR3 comprising SEQ ID NO:36 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:38, a L-CDR2 comprising SEQ ID NO:39, and a L-CDR3 comprising SEQ ID NO:40, or
  - v. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:120, an H-CDR2 comprising SEQ ID NO:121, and an H-CDR3 comprising SEQ ID NO:122 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:124, a L-CDR2 comprising SEQ ID NO:125, and a L-CDR3 comprising SEQ ID NO:126, or
  - vi. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:24, an H-CDR2 comprising SEQ ID NO:25, and an H-CDR3 comprising SEQ ID NO:26 and a light chain antigen-binding region that

- comprises a L-CDR1 comprising SEQ ID NO:28, a L-CDR2 comprising SEQ ID NO:29, and a L-CDR3 comprising SEQ ID NO:30, or
- vii. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:76, an H-CDR2 comprising SEQ ID NO:77, and an H-CDR3 comprising SEQ ID NO:78 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:80, a L-CDR2 comprising SEQ ID NO:81, and a L-CDR3 comprising SEQ ID NO:82, or
  - viii. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:134, an H-CDR2 comprising SEQ ID NO:135, and an H-CDR3 comprising SEQ ID NO:136 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:138, a L-CDR2 comprising SEQ ID NO:139, and a L-CDR3 comprising SEQ ID NO:140, or
  - ix. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:148, an H-CDR2 comprising SEQ ID NO:149, and an H-CDR3 comprising SEQ ID NO:150 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:152, a L-CDR2 comprising SEQ ID NO:153, and a L-CDR3 comprising SEQ ID NO:154, or
  - x. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:14, an H-CDR2 comprising SEQ ID NO:15, and an H-CDR3 comprising SEQ ID NO:16 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:18, a L-CDR2 comprising SEQ ID NO:19, and a L-CDR3 comprising SEQ ID NO:20, or
  - xi. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:62, an H-CDR2 comprising SEQ ID NO:63, and an H-CDR3 comprising SEQ ID NO:64 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:66, a L-CDR2 comprising SEQ ID NO:67, and a L-CDR3 comprising SEQ ID NO:68, or
  - xii. a heavy chain antigen-binding region that comprises an H-CDR1 comprising SEQ ID NO:92, an H-CDR2 comprising SEQ ID NO:93, and an H-CDR3 comprising SEQ ID NO:94 and a light chain antigen-binding region that comprises a L-CDR1 comprising SEQ ID NO:96, a L-CDR2 comprising SEQ ID NO:97, and a L-CDR3 comprising SEQ ID NO:98.

2. The antibody or antigen-binding fragment thereof according to claim 1 comprising:

- i. a variable heavy chain sequence as presented by SEQ ID NO: 47 and a variable light chain sequence as presented by SEQ ID NO: 51, or
  - ii. a variable heavy chain sequence as presented by SEQ ID NO: 105 and a variable light chain sequence as presented by SEQ ID NO: 109, or
  - iii. a variable heavy chain sequence as presented by SEQ ID NO: 3 and a variable light chain sequence as presented by SEQ ID NO: 7, or
  - iv. a variable heavy chain sequence as presented by SEQ ID NO: 33 and a variable light chain sequence as presented by SEQ ID NO: 37, or
  - v. a variable heavy chain sequence as presented by SEQ ID NO: 119 and a variable light chain sequence as presented by SEQ ID NO: 123, or
  - vi. a variable heavy chain sequence as presented by SEQ ID NO: 23 and a variable light chain sequence as presented by SEQ ID NO: 27, or
  - vii. a variable heavy chain sequence as presented by SEQ ID NO: 75 and a variable light chain sequence as presented by SEQ ID NO: 79, or
  - viii. a variable heavy chain sequence as presented by SEQ ID NO: 133 and a variable light chain sequence as presented by SEQ ID NO: 137, or
  - ix. a variable heavy chain sequence as presented by SEQ ID NO: 147 and a variable light chain sequence as presented by SEQ ID NO: 151, or
  - x. a variable heavy chain sequence as presented by SEQ ID NO: 13 and a variable light chain sequence as presented by SEQ ID NO: 17, or
  - xi. a variable heavy chain sequence as presented by SEQ ID NO: 61 and a variable light chain sequence as presented by SEQ ID NO: 65, or
  - xii. a variable heavy chain sequence as presented by SEQ ID NO: 91 and a variable light chain sequence as presented by SEQ ID NO: 95.
3. The antibody according to any one of the preceding claims, which is an IgG antibody.
4. The antibody according to any one of the preceding claims comprising:
- i. a heavy chain region corresponding to SEQ ID NO: 57 and a light chain region corresponding to SEQ ID NO: 58, or
  - ii. a heavy chain region corresponding to SEQ ID NO: 115 and a light chain region corresponding to SEQ ID NO: 116, or

- iii. a heavy chain region corresponding to SEQ ID NO: 43 and a light chain region corresponding to SEQ ID NO: 44, or
  - iv. a heavy chain region corresponding to SEQ ID NO: 129 and a light chain region corresponding to SEQ ID NO: 130, or
  - v. a heavy chain region corresponding to SEQ ID NO: 85 and a light chain region corresponding to SEQ ID NO: 86, or
  - vi. a heavy chain region corresponding to SEQ ID NO: 143 and a light chain region corresponding to SEQ ID NO: 144, or
  - vii. a heavy chain region corresponding to SEQ ID NO: 157 and a light chain region corresponding to SEQ ID NO: 158, or
  - viii. a heavy chain region corresponding to SEQ ID NO: 71 and a light chain region corresponding to SEQ ID NO: 72, or
  - ix. a heavy chain region corresponding to SEQ ID NO: 101 and a light chain region corresponding to SEQ ID NO: 102.
- 5. The antigen-binding fragment according to claims 1 or 2, which is an scFv, Fab, Fab' fragment or a F(ab')<sub>2</sub> fragment.
  - 6. The antibody or antigen-binding fragment according to any one of the preceding claims, which is a monoclonal antibody or antigen-binding fragment.
  - 7. An antibody-drug conjugate, comprising an antibody or antigen binding fragment thereof according to any one of the claims 1 to 6.
  - 8. An isolated nucleic acid sequence that encodes the antibody or antigen-binding fragment according to any one of the claims 1 to 6.
  - 9. A vector comprising a nucleic acid sequence according to claim 8.
  - 10. An isolated cell expressing an antibody or antigen-binding fragment according to any one of the claims 1 to 6 and /or comprising a nucleic acid according to claim 8 or a vector according to claim 9.
  - 11. An isolated cell according to claim 10, wherein said cell is a prokaryotic or a eukaryotic cell.

12. A method of producing an antibody or antigen-binding fragment according to any one of the claims 1 to 6 comprising culturing of a cell according to claim 11 and purification of the antibody or antigen-binding fragment.
13. An antibody or antigen-binding fragment according to any one of the claims 1 to 6 or an antibody-drug conjugate according to claim 7 for use as a medicament.
14. An antibody or antigen-binding fragment according to any one of the claims 1 to 6 or an antibody-drug conjugate according to claim 7 for use as a diagnostic agent.
15. An antibody or antigen-binding fragment according to any one of the claims 1 to 6 or an antibody-drug conjugate according to claim 7 for use as a medicament for the treatment of cancer.
16. A pharmaceutical composition comprising an antibody or antigen-binding fragment according to any one of the claims 1 to 6 or an antibody-drug conjugate according to claim 7.
17. A combination of a pharmaceutical composition according to claim 16 and one or more therapeutically active compounds.