Claims:

1. An isolated antibody which is capable of binding to CLDN6, preferably CLDN6 associated with the surface of a cell that expresses CLDN6, wherein the antibody comprises

a) an antibody heavy chain comprising the CDR1 sequence GYSFTGYT (SEQ ID NO: 47) identified within SEQ ID NO: 34, the CDR2 sequence INPYNGGT (SEQ ID NO: 54) identified within SEQ ID NO: 34, and the CDR3 sequence ARDYGYVLDY (SEQ ID NO: 55) identified within SEQ ID NO: 34, and an antibody light chain comprising the CDR1 sequence SSVSY (SEQ ID NO: 56) identified within SEQ ID NO: 35, the CDR2 sequence STS (SEQ ID NO: 53) identified within SEQ ID NO: 35, and the CDR3 sequence QQRSIYPPWT (SEQ ID NO: 57) identified within SEQ ID NO: 35;

b) an antibody heavy chain comprising the CDR1 sequence GYSFTGYT (SEQ ID NO: 47) identified within SEQ ID NO: 36, the CDR2 sequence INPYNGGT (SEQ ID NO: 54) identified within SEQ ID NO: 36, and the CDR3 sequence ARDYGFVLDY (SEQ ID NO: 58) identified within SEQ ID NO: 36, and an antibody light chain comprising the CDR1 sequence SSVSY (SEQ ID NO: 56) identified within SEQ ID NO: 37, the CDR2 sequence STS (SEQ ID NO: 53) identified within SEQ ID NO: 37, and the CDR3 sequence QQRSNYPPWT (SEQ ID NO: 59) identified within SEQ ID NO: 37;

c) an antibody heavy chain comprising the CDR1 sequence GYSFTGYT (SEQ ID NO: 47) identified within SEQ ID NO: 38, the CDR2 sequence INPYNGGI (SEQ ID NO: 60) identified within SEQ ID NO: 38, and the CDR3 sequence ARDFGYVLDY (SEQ ID NO: 61) identified within SEQ ID NO: 38, and an antibody light chain comprising the CDR1 sequence SSVSY (SEQ ID NO: 56) identified within SEQ ID NO: 39, the CDR2 sequence STS (SEQ ID NO: 53) identified within SEQ ID NO: 39, and the CDR3 sequence QQRSTYPPWT (SEQ ID NO: 62) identified within SEQ ID NO: 39; or

d) an antibody heavy chain comprising the CDR1 sequence GYSFTGYT (SEQ ID NO: 47) identified within SEQ ID NO: 40, the CDR2 sequence INPYNGGS (SEQ ID NO: 63) identified within SEQ ID NO: 40, and the CDR3 sequence ARDYGYVFDY (SEQ ID NO: 64) identified within SEQ ID NO: 40, and an antibody light chain comprising the CDR1 sequence SSVNY (SEQ ID NO: 65) identified within SEQ ID NO: 41, the CDR2 sequence STS (SEQ ID NO: 53) identified within SEQ ID NO: 41, and the CDR3 sequence QQRNNYPPWT (SEQ ID NO: 66) identified within SEQ ID NO: 41.

2. The antibody of claim 1, which is not capable of detectably binding to CLDN9 associated with the surface of a cell that expresses CLDN9.

3. The antibody of claim 1 or 2, which is not substantially capable of binding to CLDN4 associated with the surface of a cell that expresses CLDN4 and/or is not substantially capable of binding to CLDN3 associated with the surface of a cell that expresses CLDN3.

4. The antibody of any one of claims 1-3, which is specific for CLDN6.

5. The antibody of any one of claims 1-4, wherein said cell is an intact cell, in particular a non-permeabilized cell.

6. The antibody of any one of claims 1-5, which is capable of binding to an epitope loacted within an extracellular portion of CLDN6.

7. The antibody of any one of claims 1-6, wherein said extracellular portion of CLDN6 comprises the amino acid sequence of SEQ ID NO: 6 or SEQ ID NO: 7.

8. The antibody of any one of claims 1-7, wherein binding of the antibody to CLDN6 comprises binding to an epitope located within the amino acid sequence of SEQ ID NO: 6 or SEQ ID NO: 7.

9. The antibody of any one of claims 1-8, which is obtainable by a method comprising the step of immunizing an animal with a peptide having the amino acid sequence of SEQ ID NO: 6 or SEQ ID NO: 7 or an immunologically equivalent peptide, or a nucleic acid or host cell expressing said peptide.

10. The antibody of any one of claims 1-9, wherein CLDN6 has the amino acid sequence of SEQ ID NO: 2 or the amino acid sequence of SEQ ID NO: 8.

11. The antibody of any one of claims 1-10, which is capable of binding to CLDN6 having the amino acid sequence of SEQ ID NO: 2 and capable of binding to CLDN6 having the amino acid sequence of SEQ ID NO: 8.

12. The antibody of any one of claims 1-11, which has one or more of the following activities:
(i) killing of a cell expressing CLDN6,
(ii) inhibition of proliferation of a cell expressing CLDN6,
(iii) inhibition of colony formation of a cell expressing CLDN6,
(iv) mediating remission of established tumors,
(v) preventing formation or re-formation of tumors, and
(vi) inhibition of metastasis of a cell expressing CLDN6.

13. The antibody of any one of claims 1-11, which exhibits one or more immune effector functions against a cell carrying CLDN6 in its native conformation.

14. The antibody of claim 13, wherein the one or more immune effector functions are selected from the group consisting of complement dependent cytotoxicity (CDC), antibody-dependent cell-mediated cytotoxicity (ADCC), induction of apoptosis, and inhibition of proliferation, preferably the effector functions are ADCC and/or CDC.

15. The antibody of any one of claims 12-14, wherein said one or more activities or one or more immune effector functions are induced by binding of said antibody to an epitope located within an extracellular portion of CLDN6.

16. The antibody of claim 15, wherein said extracellular portion of CLDN6 comprises the amino acid sequence of SEQ ID NO: 6 or SEQ ID NO: 7.

17. The antibody of any one of claims 1-16, wherein said cell expressing CLDN6 or cell carrying CLDN6 in its native conformation is a tumor cell.

18. The antibody of any one of claims 1-17, wherein said cell expressing CLDN6 or cell carrying CLDN6 in its native conformation is a cancer cell.

19. The antibody of claim 18, wherein the cancer cell is from a cancer selected from the group consisting of ovarian cancer, in particular ovarian adenocarcinoma and ovarian teratocarcinoma, lung cancer, including small cell lung cancer (SCLC) and non-small cell

lung cancer (NSCLC), in particular squamous cell lung carcinoma and adenocarcinoma, gastric cancer, breast cancer, hepatic cancer, pancreatic cancer, skin cancer, in particular basal cell carcinoma and squamous cell carcinoma, malignant melanoma, head and neck cancer, in particular malignant pleomorphic adenoma, sarcoma, in particular synovial sarcoma and carcinosarcoma, bile duct cancer, cancer of the urinary bladder, in particular transitional cell carcinoma and papillary carcinoma, kidney cancer, in particular renal cell carcinoma including clear cell renal cell carcinoma and papillary renal cell carcinoma, colon cancer, small bowel cancer, including cancer of the ileum, in particular small bowel adenocarcinoma and adenocarcinoma of the ileum, testicular embryonal carcinoma, placental choriocarcinoma, cervical cancer, testicular cancer, in particular testicular seminoma, testicular teratoma and embryonic testicular cancer, uterine cancer, a germ cell tumor such as a teratocarcinoma or an embryonal carcinoma, in particular a germ cell tumor of the testis, and the metastatic forms thereof.

20. The antibody of any one of claims 1-19, which is a monoclonal, chimeric, human or humanized antibody, or a fragment of an antibody.

21. The antibody of any one of claims 1-20, which is capable of binding to one or more epitopes of CLDN6 in their native conformation.

22. An antibody selected from the group consisting of (i) an antibody produced by or obtainable from a clone deposited under the accession no. DSM ACC3067 (GT512muMAB 59A), DSM ACC3068 (GT512muMAB 60A), DSM ACC3069 (GT512muMAB 61D), DSM ACC3070 (GT512muMAB 64A), DSM ACC3071 (GT512muMAB 65A), DSM ACC3072 (GT512muMAB 66B), DSM ACC3073 (GT512muMAB 67A), DSM ACC3089 (GT512muMAB 55A), or DSM ACC3090 (GT512muMAB 89A), (ii) an antibody which is a chimerized or humanized form of the antibody under (i), and (iii) an antibody comprising the antigen binding portion or antigen binding site of the antibody under (i).

23. A hybridoma capable of producing the antibody of any one of claims 1-22.

24. A hybridoma deposited under the accession no. DSM ACC3067 (GT512muMAB 59A), DSM ACC3068 (GT512muMAB 60A), DSM ACC3069 (GT512muMAB 61D), DSM

ACC3070 (GT512muMAB 64A), DSM ACC3071 (GT512muMAB 65A), DSM ACC3072 (GT512muMAB 66B), DSM ACC3073 (GT512muMAB 67A), DSM ACC3089 (GT512muMAB 55A), or DSM ACC3090 (GT512muMAB 89A).

25. A conjugate comprising an antibody of any one of claims 1-22 coupled to a therapeutic agent.

26. The conjugate of claim 25, wherein the therapeutic agent is a toxin, a radioisotope, a drug or a cytotoxic agent.

27. A pharmaceutical composition comprising the antibody of any one of claims 1-22 and/or a conjugate of claim 25 or 26, and a pharmaceutically acceptable carrier.

28. An *in vitro* method of inhibiting growth of a cell expressing CLDN6 and being characterized by association of CLDN6 with its cell surface, comprising contacting the cell with an antibody of any one of claims 1-22 and/or a conjugate of claim 25 or 26.

29. An *in vitro* method of killing a cell expressing CLDN6 and being characterized by association of CLDN6 with its cell surface, comprising contacting the cell with an antibody of any one of claims 1-22 and/or a conjugate of claim 25 or 26.

30. An *in vitro* method of inhibiting metastatic spread of a cell expressing CLDN6 and being characterized by association of CLDN6 with its cell surface, comprising contacting the cell with an antibody of any one of claims 1-22 and/or a conjugate of claim 25 or 26.