Claims:

1. An antibody which is capable of binding to CLDN6 associated with the surface of a cell that expresses CLDN6 and is not ~~substantially~~ capable of binding to CLDN9 associated with the surface of a cell that expresses CLDN9.

2. An antibody which is capable of binding to CLDN6, preferably CLDN6 associated with the surface of a cell that expresses CLDN6, wherein the antibody comprises an antibody heavy chain comprising the CDR3 sequence Xaa1 Gly Xaa2 Val Xaa3, wherein Xaa1 is any amino acid, preferably an aromatic amino acid, more preferably Phe or Tyr, most preferably Tyr, Xaa2 is any amino acid, preferably an aromatic amino acid, more preferably Phe or Tyr, most preferably Tyr, and Xaa3 is any amino acid, preferably Leu or Phe, more preferably Leu.

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

4. The antibody of any one of claims 1 to 3, 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.

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

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

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

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

9. The antibody of any one of claims 1-8, 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.

10. The antibody of any one of claims 1-9, 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.

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

12. The antibody of any one of claims 1-11, 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.

13. The antibody of any one of claims 1-12, 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.

14. The antibody of any one of claims 1-12, which exhibits one or more immune effector functions against a cell carrying CLDN6 in its native conformation.

15. The antibody of claim 14, 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.

16. The antibody of any one of claims 13-15, 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.

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

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 tumor cell.

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

20. The antibody of claim 19, 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.

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

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

23. 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), (iii) an antibody which has the specificity of the antibody under (i), and (iv) an antibody comprising the antigen binding portion or antigen binding site of the antibody under (i).

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

25. 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).

26. A conjugate comprising an antibody of any one of claims 1-23 coupled to a therapeutic agent.

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

28. A pharmaceutical composition comprising the antibody of any one of claims 1-23 and/or a conjugate of claim 26 or 27, and a pharmaceutically acceptable carrier.

~~29. A 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 1-23 and/or a conjugate of claim 26 or 27.~~

~~30~~29. The antibody of any one of claims 1-23 and/or the conjugate of claim 26 or 27 for use in a method of inhibiting growth of a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, wherein said method comprises contacting said cell with said antibody and/or conjugate.

~~31~~30. Use of the antibody of any one of claims 1-23 and/or the conjugate of claim 26 or 27 in the preparation of a composition for use in a method of inhibiting growth of a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, wherein said method comprises contacting said cell with the composition comprising said antibody and/or conjugate.

~~32. A 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 1-23 and/or a conjugate of claim 26 or 27.~~

~~33~~31. The antibody of any one of claims 1-23 and/or the conjugate of claim 26 or 27 for use in a method of killing a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, wherein the method comprises contacting said cell with said antibody and/or conjugate.

~~34~~32. Use of the antibody of any one of claims 1-23 and/or the conjugate of claim 26 or 27 in the preparation of a composition for use in a method of killing a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, wherein said method comprises contacting said cell with the composition comprising said antibody and/or conjugate.

~~35~~33. The antibody of any one of claims 1-23, the conjugate of claim 26 or 27 or the pharmaceutical composition of claim 28 for use in a method of treating or preventing a disease or disorder involving a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, in a subject, wherein said antibody, conjugate or pharmaceutical composition is for administering to said subject.

~~36~~34. The antibody, conjugate or pharmaceutical composition according to claim ~~35~~ 33, wherein the disease or disorder is a tumor-related disease.

~~37~~35. The antibody, conjugate or pharmaceutical composition according to claim ~~36~~ 34, wherein the tumor-related disease is cancer.

~~38~~36. The antibody, conjugate or pharmaceutical composition according to claim ~~37~~ 35, wherein the cancer is 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.

~~39~~37. Use of the antibody of any one of claims 1-23, the conjugate of claim 26 or 27 or the pharmaceutical composition of claim 28 in the preparation of a medicament for use in a method of treating or preventing a disease or disorder involving a cell expressing CLDN6 and being characterized by association of CLDN6 with its cell surface in a subject, wherein the medicament comprising said antibody, conjugate or pharmaceutical composition is for administering to said subject.

~~40~~38. The use of claim ~~39~~ 37, wherein the disease or disorder is a tumor-related disease.

~~41~~39. The use of claim ~~40~~ 38, wherein the tumor-related disease is cancer.

4240. The use of claim ~~41~~ 39, wherein the cancer is 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.

4341. The antibody according to any one of claims 1-23 and/or the conjugate according to claim 26 or 27 for use in a method of inhibiting metastatic spread of a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, wherein the method comprises contacting the cell with said antibody and/or conjugate.

4442. Use of the antibody according to any one of claims 1-23 and/or the conjugate according to claim 26 or 27 in the preparation of a composition for use in a method of inhibiting metastatic spread of a cell expressing CLDN6 with said cell being characterized by association of CLDN6 with its cell surface, wherein the method comprises contacting the cell with said antibody and/or conjugate.