

CLAIMS

What is claimed is:

1. An antibody comprising a heavy chain variable region comprising a heavy chain CDR1 (HCDR1), CDR2 (HCDR2), and CDR3 (HCDR3), and a light chain variable region comprising a light chain CDR1 (LCDR1), CDR2 (LCDR2), and CDR3 (LCDR3), and wherein the antibody has:
 - a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 66, a LCDR1 of SEQ ID NO: 64; a LCDR2 of SEQ ID NO: 59; and a LCDR3 of SEQ ID NO: 60;
 - a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 65, a LCDR1 of SEQ ID NO: 64; a LCDR2 of SEQ ID NO: 59; and a LCDR3 of SEQ ID NO: 60;
 - a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 67, a LCDR1 of SEQ ID NO: 64; a LCDR2 of SEQ ID NO: 59; and a LCDR3 of SEQ ID NO: 60;
 - a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 69, a LCDR1 of SEQ ID NO: 58; a LCDR2 of SEQ ID NO: 68; and a LCDR3 of SEQ ID NO: 60;
 - a HCDR1 of SEQ ID NO: 53, HCDR2 of SEQ ID NO: 54, and HCDR3 of SEQ ID NO: 33, a LCDR1 of SEQ ID NO: 50; a LCDR2 of SEQ ID NO: 51; and a LCDR3 of SEQ ID NO: 52;
 - a HCDR1 of SEQ ID NO: 25, HCDR2 of SEQ ID NO: 26, and HCDR3 of SEQ ID NO: 27, a LCDR1 of SEQ ID NO: 22; a LCDR2 of SEQ ID NO: 23; and a LCDR3 of SEQ ID NO: 24;
 - a HCDR1 of SEQ ID NO: 31, HCDR2 of SEQ ID NO: 32, and HCDR3 of SEQ ID NO: 33, a LCDR1 of SEQ ID NO: 28; a LCDR2 of SEQ ID NO: 29; and a LCDR3 of SEQ ID NO: 30;
 - a HCDR1 of SEQ ID NO: 37, HCDR2 of SEQ ID NO: 38, and HCDR3 of SEQ ID NO: 39, a LCDR1 of SEQ ID NO: 34; a LCDR2 of SEQ ID NO: 29; and a LCDR3 of SEQ ID NO: 36; or

- a HCDR1 of SEQ ID NO: 43, HCDR2 of SEQ ID NO: 44, and HCDR3 of SEQ ID NO: 45, a LCDR1 of SEQ ID NO: 40; a LCDR2 of SEQ ID NO: 41; and a LCDR3 of SEQ ID NO: 43
- , and wherein the antibody specifically binds to claudin 6 with greater affinity than claudin 9, claudin 3, and/or claudin 4.
2. A bi-specific antibody comprising a first antigen binding region that binds to Claudin 6 and second antigen binding region that binds to a different antigen, wherein the first antigen binding region comprises:
- a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 66, a LCDR1 of SEQ ID NO: 64; a LCDR2 of SEQ ID NO: 59; and a LCDR3 of SEQ ID NO: 60;
- a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 65, a LCDR1 of SEQ ID NO: 64; a LCDR2 of SEQ ID NO: 59; and a LCDR3 of SEQ ID NO: 60;
- a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 67, a LCDR1 of SEQ ID NO: 64; a LCDR2 of SEQ ID NO: 59; and a LCDR3 of SEQ ID NO: 60;
- a HCDR1 of SEQ ID NO: 62, HCDR2 of SEQ ID NO: 125, and HCDR3 of SEQ ID NO: 69, a LCDR1 of SEQ ID NO: 58; a LCDR2 of SEQ ID NO: 68; and a LCDR3 of SEQ ID NO: 60;
- a HCDR1 of SEQ ID NO: 53, HCDR2 of SEQ ID NO: 54, and HCDR3 of SEQ ID NO: 33, a LCDR1 of SEQ ID NO: 50; a LCDR2 of SEQ ID NO: 51; and a LCDR3 of SEQ ID NO: 52;
- a HCDR1 of SEQ ID NO: 25, HCDR2 of SEQ ID NO: 26, and HCDR3 of SEQ ID NO: 27, a LCDR1 of SEQ ID NO: 22; a LCDR2 of SEQ ID NO: 23; and a LCDR3 of SEQ ID NO: 24;
- a HCDR1 of SEQ ID NO: 31, HCDR2 of SEQ ID NO: 32, and HCDR3 of SEQ ID NO: 33, a LCDR1 of SEQ ID NO: 28; a LCDR2 of SEQ ID NO: 29; and a LCDR3 of SEQ ID NO: 30;

- a HCDR1 of SEQ ID NO: 37, HCDR2 of SEQ ID NO: 38, and HCDR3 of SEQ ID NO: 39, a LCDR1 of SEQ ID NO: 34; a LCDR2 of SEQ ID NO: 29; and a LCDR3 of SEQ ID NO: 36; or
- a HCDR1 of SEQ ID NO: 43, HCDR2 of SEQ ID NO: 44, and HCDR3 of SEQ ID NO: 45, a LCDR1 of SEQ ID NO: 40; a LCDR2 of SEQ ID NO: 41; and a LCDR3 of SEQ ID NO: 43.
3. A nucleic acid molecule encoding an antibody of claim 1 or a bi-specific antibody of claim 2.
 4. A vector comprising the nucleic acid molecule of claim 3.
 5. A cell comprising the nucleic acid molecule of claim 3, or the vector of claim 4.
 6. A pharmaceutical composition comprising the antibody, or bi-specific antibody of claim 1 or 2.
 7. Use of a Claudin 6 antibody in the manufacture of a medicament for the treatment of a Claudin 6 mediated disorder, wherein the Claudin 6 antibody is an antibody of claim 1 or 2, wherein the Claudin 6 mediated disorder is benign or metastatic cancer, ovarian cancer, ovarian carcinoma, reproductive cancer, breast cancer, cervical cancer, testicular cancer, uterine cancer, placental cancer, lung cancer, gastric cancer, hepatic cancer, pancreatic cancer, bile duct cancer, cancer of the urinary bladder, kidney cancer, colon cancer, small bowel cancer, skin cancer, head and neck cancer, sarcoma, or germ cell tumor.
 8. The antibody of claim 1, wherein the antibody comprises a light chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 110, and a heavy chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 109.

9. The antibody of claim 1, wherein the antibody comprises a light chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 108, and a heavy chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 107.
10. The antibody of claim 1, wherein the antibody comprises a light chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 118, and a heavy chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 117.
11. The antibody of claim 1, wherein the antibody comprises a light chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 112, and a heavy chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 111.
12. The antibody of claim 1, wherein the antibody comprises a light chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 19, and a heavy chain variable region having at least 95% identity to the amino acid sequence of SEQ ID NO: 18.
13. A method of making the antibody of claim 1, the method comprising culturing a cell comprising a nucleic acid molecule encoding the antibody of claim 1 under conditions to produce the antibody.
14. An antibody or bi-specific antibody of claim 1 or 2 for use as a medicament.
15. An antibody or bi-specific antibody of claim 1 or 2 for use in the treatment of a Claudin 6 mediated disorder, wherein the Claudin 6 mediated disorder is benign or metastatic cancer, ovarian cancer, ovarian carcinoma, reproductive cancer, breast cancer, cervical cancer, testicular cancer, uterine cancer, placental cancer, lung cancer, gastric cancer, hepatic cancer, pancreatic cancer, bile duct cancer, cancer of the urinary bladder, kidney cancer, colon cancer, small bowel cancer, skin cancer, head and neck cancer, sarcoma, or germ cell tumor.

16. The antibody of claim 1, wherein the antibody specifically binds to claudin 6 with an affinity of less than 10 nM and with at least a 100-fold greater EC_{50} than claudin 9, claudin 3, and/or claudin 4, as measured by flow cytometry.