

Claims

1. An antibody binding to Claudin 18 splice variant 2 (CLDN18.2), or an antigen-binding fragment thereof, wherein the antibody comprises
(A)
an antibody heavy chain comprising:
a CDR1 sequence according to SEQ ID NO: 8,
a CDR2 sequence according to SEQ ID NO: 9, and
a CDR3 sequence according to SEQ ID NO: 10,
and
an antibody light chain comprising:
a CDR1 sequence according to SEQ ID NO: 12,
a CDR2 sequence according to SEQ ID NO: 13, and
a CDR3 sequence according to SEQ ID NO: 14,
or
(B)
an antibody heavy chain comprising:
a CDR1 sequence according to SEQ ID NO: 16,
a CDR2 sequence according to SEQ ID NO: 17, and
a CDR3 sequence according to SEQ ID NO: 18,
and
an antibody light chain comprising:
a CDR1 sequence according to SEQ ID NO: 20,
a CDR2 sequence according to SEQ ID NO: 21, and
a CDR3 sequence according to SEQ ID NO: 22.
2. The antibody or antigen-binding fragment thereof of claim 1, wherein the CLDN18.2 is cell surface membrane-bound CLDN18.2.
3. The antibody or antigen-binding fragment thereof of claim 1 or 2, wherein the CLDN18.2 is present on cancer cells.
4. The antibody or antigen-binding fragment thereof of claim 3, wherein the cancer cells

are CLDN18.2 expressing cancer cells.

5. The antibody or antigen-binding fragment thereof of claim 4, wherein the cancer cells are selected from the group consisting of gastric, esophageal, pancreatic, lung, ovarian, colon, hepatic, head-neck, and gallbladder cancer cells.
6. The antibody or antigen-binding fragment thereof of any one of claims 1 to 5 which does not bind detectably to non-cancerous cells except stomach epithelial cells, wherein binding is tested under conditions of an immunohistochemistry analysis at an antibody concentration of 0.5 μ g/ml or 0.2 μ g/ml.
7. The antibody or antigen-binding fragment thereof of any one of claims 1 to 5 which does not bind detectably to non-cancerous lung cells, wherein binding is tested under conditions of an immunohistochemistry analysis at an antibody concentration of 0.5 μ g/ml or 0.2 μ g/ml.
8. The antibody of any one of claims 1 to 7 which is a monoclonal, chimeric, or humanized antibody.
9. The antibody of any one of claims 1 to 8, wherein the antibody (A) comprises the variable region of SEQ ID NO: 7 or 11, or the antibody (B) comprises the variable region of SEQ ID NO: 15 or 19.
10. The antibody of any one of claims 1 to 9, wherein the antibody (A) comprises the amino acid sequence of SEQ ID NO: 7 or 11, or the antibody (B) comprises the amino acid sequence of SEQ ID NO: 15 or 19.
11. The antibody or antigen-binding fragment thereof of any one of claims 1 to 10, wherein the antibody is an antibody binding specifically to CLDN18.2.
12. A conjugate comprising an antibody or antigen-binding fragment of any one of claims 1 to 11 coupled to at least one detectable label.

13. A cell capable of producing the antibody of any one of claims 1 to 11.
14. A method for detecting CLDN18.2 or determining the quantity of CLDN18.2 in a sample comprising the steps of:
 - (i) contacting a sample with the antibody or antigen-binding fragment of any one of claims 1 to 11 or the conjugate of claim 12 and
 - (ii) detecting the formation of a complex or determining the quantity of a complex between the antibody, the antigen-binding fragment or the conjugate and CLDN18.2.
15. A method for determining whether cells express CLDN18.2 comprising the steps of:
 - (i) contacting a cellular sample with the antibody or antigen-binding fragment of any one of claims 1 to 11 or the conjugate of claim 12 and
 - (ii) detecting the formation of a complex between the antibody, the antigen-binding fragment or the conjugate and CLDN18.2 expressed by cells in the sample.
16. A method for diagnosis, detection or monitoring of cancer (excluding medical behavior to human) comprising the steps of:
 - (i) contacting a biological sample with the antibody or antigen-binding fragment of any one of claims 1 to 11 or the conjugate of claim 12 and
 - (ii) detecting the formation of a complex and/or determining the quantity of a complex between the antibody, the antigen-binding fragment or the conjugate and CLDN18.2, wherein the cancer is characterized by cancer cells expressing CLDN18.2.
17. A method for determining whether a cancer is treatable by a cancer therapy targeting CLDN18.2 (excluding medical behavior to human) comprising the steps of:
 - (i) contacting a sample comprising cancer cells with the antibody or antigen-binding fragment of any one of claims 1 to 11 or the conjugate of claim 12 and
 - (ii) detecting the formation of a complex between the antibody, the antigen-binding fragment or the conjugate and CLDN18.2wherein the cancer is characterized by cancer cells expressing CLDN18.2.
18. A diagnostic test kit for diagnosing a disease involving cells expressing CLDN18.2 which comprises the antibody or antigen-binding fragment of any one of claims 1 to 11

or the conjugate of claim 12.

19. The antibody or antigen-binding fragment of any one of claims 1 to 11, the conjugate of claim 12, the method of claim 16 or 17 or the diagnostic test kit of claim 18, wherein the CLDN18.2 comprises the amino acid sequence according to SEQ ID NO: 2 of the sequence listing.
20. The method of any one of claims 14 to 17, wherein the method is an immunohistochemistry analysis and the antibody concentration is up to 0.5µg/ml or up to 0.2µg/ml.
21. Nucleic acid comprising a nucleic acid sequence encoding the antibody heavy chain and the antibody light chain of the antibody of any one of claims 1 to 11 or of an antigen-binding fragment of the antibody.
22. Vector comprising the nucleic acid of claim 21.
23. Host cell comprising the nucleic acid of claim 21 or the vector of claim 22.
24. Method of expressing an antibody, comprising the step of:
 - (a) obtaining the host cell of claim 23; and
 - (b) isolating from the host cell of (a) an antibody.
25. Antibody obtained from the host cell of claim 23 or the method of claim 24.