

CLAIMS

1. An antibody having specificity for human Nectin-4 characterized in that it has at least one of the following functions:
 - i. it binds to the human Nectin-4 of SEQ ID NO:1 with a K_D of less than 10 $\mu\text{g/mL}$;
 - 5 ii. it selectively binds to Nectin-4 in a biological sample in an immunohistochemistry (IHC) assay.
2. The anti-nectin-4 antibody of Claim 1, which competes for binding to Nectin-4 with the reference murine antibody mAb 5A12.2 as obtainable by the hybridoma deposited at the CNCM under deposit number **CNCM I-5407**.
- 10 3. The anti-Nectin-4 antibody of any one of claim 1 or 2, which comprises:
 - a HCDR1 of SEQ ID NO:2, a HCDR2 of SEQ ID NO:3, a HCDR3 of SEQ ID NO:4, a LCDR1 of SEQ ID NO:5, a LCDR2 of SEQ ID NO:6 and a LCDR3 of SEQ ID NO:7;
 - a variable heavy chain (VH) domain and a variable light chain domain having at least 90 % identity with the heavy chain and light chain of SEQ ID NO:8 and 9 respectively;
 - 15 and/or
 - a variable heavy chain (VH) domain and a variable light chain of SEQ ID NO:8 and 9 respectively.
4. The anti-Nectin-4 antibody of any one of the preceding claims, which is a human, chimeric or humanized antibody.
- 20 5. The anti-Nectin-4 antibody of any one of claims 1-4, which is conjugated to a cytotoxic moiety.
6. A nucleic acid molecule, which encodes a heavy chain and/or a light chain of the anti-Nectin-4 antibody of any one of Claims 1-4.
7. A host cell comprising the nucleic acid of claim 6.
8. The anti-Nectin-4 antibody of any one of claims 1-5, for use in therapy.
- 25 9. The anti-Nectin-4 antibody of any one of claims 1-5, for use in treating cancer.
10. The anti-Nectin-4 antibody for use according to claim 9, wherein cancer is selected from breast cancer, ovarian cancer, bladder, urothelial, pancreatic or lung cancer treatment.
11. The anti-Nectin-4 antibody for use according to claim 9 or 10, wherein cancer is metastatic cancer.

12. A pharmaceutical composition comprising the anti-Nectin-4 antibody of any one of Claims 1-5, and at least a pharmaceutically acceptable carrier.
13. An *in vitro* method for diagnosing cancer in a subject comprising the detection of the presence or expression level of Nectin-4 in a biological sample wherein the detection is performed by
5 using an anti-Nectin-4 antibody according to any one of claims 1 to 4 in an immunohistochemistry (IHC) assay.
14. An *in vitro* method for determining the eligibility of a subject to a treatment with an anti-Nectin-4 antibody according to any one of claims 1 to 4, wherein the method comprises performing an immunohistochemistry (IHC) assay on a biological sample from said subject using said anti-
10 Nectin-4 antibody.
15. The antibody of claim 1 or the *in vitro* method of claim 13 or 14, wherein the biological sample section is a fixed tissue, optionally a formalin-fixed paraffin-embedded (FFPE) tissue.
16. A method of treatment of a subject suffering from cancer or suspected of suffering from cancer comprising
15 a step 1) of assessing responsiveness of said cancer patient to an anti-cancer therapeutic agent comprising:
- (1a) contacting said tissue sample with the antibody or antigen binding fragment thereof of any one of claims 1-5;
- (1b) detecting the binding of said antibody or antigen binding fragment thereof to said
20 tissue sample; and
- (1c) determining the expression of Nectin-4 in the tissue sample, wherein the expression level of Nectin-4 in the tissue sample is compared with a reference expression level of Nectin-4; and
- a step 2) of administering said anti-cancer therapeutic agent to said subject when an increased
25 expression level of Nectin-4 compared to the reference is observed;
- optionally wherein, the expression level of Nectin-4 is detected using an immunohistochemistry (IHC) approach, an immunoblotting assay, a fluorescence activated cell sorting (FACS) assay, or an Enzyme-Linked Immunosorbent Assay (ELISA)
- optionally wherein, the anti-cancer therapeutic agent comprises an anti-Nectin-4 antibody or
30 an antibody drug conjugate of an anti-Nectin-4 antibody, typically an antibody according to any one of claims 1-5.