

CLAIMS

1. An anti-tyrosine kinase-like orphan receptor 2 (ROR2) antibody comprising a heavy chain variable domain and a light chain variable domain, wherein said heavy chain variable domain comprises:
a CDR H1 as set forth in SEQ ID NO:25, a CDR H2 as set forth in SEQ ID NO:26 and a CDR H3 as set forth in SEQ ID NO:27; and
wherein said light chain variable domain comprises:
a CDR L1 as set forth in SEQ ID NO:28, a CDR L2 as set forth in SEQ ID NO:29, and a CDR L3 as set forth in SEQ ID NO:30.
2. The antibody of claim 1, wherein said heavy chain variable domain comprises the sequence of SEQ ID NO:2.
3. The antibody of claim 1 or 2, wherein said light chain variable domain comprises the sequence of SEQ ID NO:4.
4. The antibody of any one of claims 1-3, wherein said antibody is a humanized antibody, a Fab' fragment, a single chain antibody (scFv) or a chimeric antibody.
5. The antibody of any one of the preceding claims, wherein said antibody is an IgG1 or an IgG2.
6. The antibody of claim 1, wherein said antibody is attached to a therapeutic agent.
7. The antibody of claim 1, wherein said antibody is attached to a diagnostic agent.
8. Use of the antibody of claim 1 in the manufacture of a medicament for the treatment of an ROR2-expressing cancer in a subject in need thereof.
9. Use of the antibody of claim 1 in the manufacture of a medicament for inhibiting metastasis of an ROR2-expressing cancer in a subject in need thereof.

10. The use of claim 8 or 9, wherein said an ROR2-expressing cancer is breast cancer, ovarian cancer, pancreatic cancer, cervical cancer, gastric cancer, renal cancer, head and neck cancer, bone cancer, skin cancer or prostate cancer.

11. A method of detecting a ROR2-expressing cell, said method comprising
(i) contacting a ROR2-expressing cell with an antibody of any one of claims 1 - 7 and
(ii) detecting binding of said antibody to a ROR2 protein expressed by said cell.

12. The method of claim 11, wherein said antibody is attached to a detectable moiety.

13. The method of claim 11 or 12, wherein said ROR2-expressing cell is in a subject having cancer.

14. An anti-ROR2 chimeric antigen receptor comprising:
(i) an antibody region comprising:
(a) a light chain variable domain comprising a CDR L1 as set forth in SEQ ID NO: 28, a CDR L2 as set forth in SEQ ID NO:29 and a CDR L3 as set forth in SEQ ID NO:30; and
(b) a heavy chain variable region domain comprising a CDR H1 as set forth in SEQ ID NO:25, a CDR H2 as set forth in SEQ ID NO:26, and a CDR H3 as set forth in SEQ ID NO:27; and
(ii) a transmembrane domain.

15. The anti-ROR2 chimeric antigen receptor of claim 14 further comprising an intracellular T-cell signaling domain.

16. The anti-ROR2 chimeric antigen receptor of claim 15, wherein the intracellular T-cell signaling domain is a CD3 ζ intracellular T-cell signaling domain.

17. The anti-ROR2 chimeric antigen receptor of claim 15, further comprising an intracellular co-stimulatory T-cell signaling domain.

18. The anti-ROR2 chimeric antigen receptor of claim 17, wherein said intracellular co-stimulatory signaling domain is a CD28 intracellular co-stimulatory signaling domain, a 4-1BB intracellular co-stimulatory signaling domain, a ICOS intracellular co-stimulatory signaling domain, or an OX-40 intracellular co-stimulatory signaling domain.

19. Use of the anti-ROR2 chimeric antigen receptor of any one of claims 14 – 18 in the manufacture of a medicament for the treatment of an ROR2-expressing cancer in a subject in need thereof.

20. The use of claim 19, wherein said ROR2-expressing cancer is breast cancer, ovarian cancer, pancreatic cancer, cervical cancer, gastric cancer, renal cancer, head and neck cancer, bone cancer, skin cancer or prostate cancer.