SUMMARY

[0007] In one example, there is provided an antigen-binding protein, or an antigen-binding fragment thereof, comprising (i) a heavy chain variable domain comprising a VHCDR1 having the amino acid sequence GFTFTSYYMY (SEQ ID NO: 3); a VHCDR2 having the amino acid sequence GVSPSNGGANFNEKFKT (SEQ ID NO: 4), and a VHCDR3 having the amino acid sequence FLYGPRYFDV (SEQ ID NO: 5); and (ii) a light chain variable domain comprising a VLCDR1 having the amino acid sequence RASESVDNYGISFMN (SEQ ID NO: 6), a VLCDR2 having the amino acid sequence GASNQGS (SEQ ID NO: 7), and a VLCDR3 having the amino acid sequence QQSKEVP YT (SEQ ID NO: 8).

[0007a] In one aspect, there is provided an antigen-binding protein, or an antigen-binding fragment thereof, comprising (i) a heavy chain variable domain comprising a VHCDR1 having the amino acid sequence GFTFTSYYMY (SEQ ID NO: 3); a VHCDR2 having the amino acid sequence GVSPSNGGANFNEKFKT (SEQ ID NO: 4), and a VHCDR3 having the amino acid sequence FLYGPRYFDV (SEQ ID NO: 5); and (ii) a light chain variable domain comprising a VLCDR1 having the amino acid sequence RASESVDNYGISFMN (SEQ ID NO: 6), a VLCDR2 having the amino acid sequence GASNQGS (SEQ ID NO: 7), and a VLCDR3 having the amino acid sequence QQSKEVP YT (SEQ ID NO: 8), wherein the antigen-binding protein, or antigen-binding fragment thereof, binds to AXL receptor tyrosine kinase, and wherein the antigen-binding protein, or antigen-binding fragment thereof, binds to a glycan on the AXL receptor tyrosine kinase.

[0008] In one example, there is provided an antigen-binding protein, or an antigen-binding fragment thereof that competes with the antigen binding protein as defined herein for binding to AXL receptor tyrosine kinase.

[0009] In one aspect, there is provided an antigen-binding protein, or an antigen-binding fragment thereof, as defined herein, comprising a radioisotope or a cytotoxin conjugated thereto.

[0010] In one aspect, there is provided a composition comprising a physiologically acceptable carrier and a therapeutically effective amount of the antigen-binding protein, or antigen-binding fragment thereof as defined herein.

[0011] In one example, there is provided a use of an antigen-binding protein, or an antigen-binding fragment thereof as defined herein in the manufacture of a medicament for treating cancer.

[0011a] In one aspect, there is provided a use of an antigen-binding protein, or an antigen-binding fragment thereof as described herein in the manufacture of a medicament for treating cancer, wherein the cancer is selected from triple-negative breast cancer, kidney cancer, head and neck cancer, pancreatic cancer and lung cancer.

[0012] In one example, there is provided a method for detecting cancer in a subject, the method comprising: contacting a sample obtained from the subject with an antigen-binding protein, or an antigen-binding fragment thereof as defined herein *in vitro*; detecting the binding of the antigen-binding protein, or antigen-binding fragment thereof in the sample; correlating the binding with a level of binding in a control sample to determine the level of binding in the sample, wherein an increase in the level of binding in the sample relative to the control sample is indicative of cancer.

[0012a] In one aspect, there is provided a method for detecting cancer in a subject, wherein the cancer is selected from triple-negative breast cancer, kidney cancer, head and neck cancer, pancreatic cancer and lung cancer, the method comprising: contacting a sample obtained from the subject with an antigen-binding protein, or an antigen-binding fragment thereof as described herein *in vitro*; detecting the binding of the antigen-binding protein, or antigen-binding fragment thereof in the sample; correlating the binding with a level of binding in a control sample to determine the level of binding in the sample, wherein an increase in the level of binding in the sample relative to the control sample is indicative of cancer.

[0013] In one aspect, there is provided a kit when used in the method as defined herein, comprising an antigen-binding protein, or an antigen-binding fragment thereof as defined herein, together with instructions for use.

CLAIMS

1. An antigen-binding protein, or an antigen-binding fragment thereof, comprising (i) a heavy chain variable domain comprising a VHCDR1 having the amino acid sequence GFTFTSYYMY (SEQ ID NO: 3); a VHCDR2 having the amino acid sequence GVSPSNGGANFNEKFKT (SEQ ID NO: 4), and a VHCDR3 having the amino acid sequence FLYGPRYFDV (SEQ ID NO: 5); and (ii) a light chain variable domain comprising a VLCDR1 having the amino acid sequence RASESVDNYGISFMN (SEQ ID NO: 6), a VLCDR2 having the amino acid sequence GASNQGS (SEQ ID NO: 7), and a VLCDR3 having the amino acid sequence QQSKEVP YT (SEQ ID NO: 8), wherein the antigen-binding protein, or antigen-binding fragment thereof, binds to AXL receptor tyrosine kinase, and wherein the antigen-binding protein, or antigen-binding fragment thereof, binds to a glycan on the AXL receptor tyrosine kinase.

2. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in claim 1, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:1.

3. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in claim 1, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:2.

4. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in any one of claims 1 to 3, wherein the antigen binding protein is selected from the group consisting of monoclonal, recombinant, polyclonal, chimeric, humanised, bispecific and heteroconjugate antibodies; a single variable domain, a domain antibody, antigen binding fragments, immunologically effective fragments, single chain Fv, a single chain antibody, a univalent antibody lacking a hinge region, a minibody, and diabodies.

5. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in claim 4, wherein the binding protein is a monoclonal antibody.

6. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in claim 5, wherein the monoclonal antibody is humanised.

7. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in claim 6, wherein the antigen-binding protein, or antigen-binding fragment thereof binds to an O-linked glycan on the AXL receptor tyrosine kinase.

8. An antigen-binding protein, or an antigen-binding fragment thereof, as claimed in any one of claims 1 to 7, comprising a radioisotope or a cytotoxin conjugated thereto.

9. The antigen-binding protein, or antigen-binding fragment thereof, as claimed in claim 8, wherein the antigen-binding protein, or antigen-binding fragment thereof is conjugated with a cytotoxin selected from the group consisting of monomethyl auristatin E (MMAE), mertansine (DM-1) and saporin.

10. The antigen-binding protein, or antigen-binding fragment thereof as claimed claim 8 or 9, wherein the antigen-binding protein, or antigen-binding fragment comprising a radioisotope or cytotoxin conjugated thereto is internalized into a cell upon binding to AXL receptor tyrosine kinase.

11. A composition comprising a physiologically acceptable carrier and a therapeutically effective amount of the antigen-binding protein, or antigen-binding fragment thereof, as claimed in any one of claims 1 to 10.

12. The composition as claimed in claim 11, wherein the composition comprises a further active pharmaceutical ingredient selected from the group consisting of bevacizumab, carboplatin, paclitaxel or gefitinib.

13. Use of an antigen-binding protein, or an antigen-binding fragment thereof, as claimed in any one of claims 1 to 10, in the manufacture of a medicament for treating cancer, wherein the cancer is selected from triple-negative breast cancer, kidney cancer, head and neck cancer, pancreatic cancer and lung cancer.

14. Use of claim 13, wherein the medicament is to be administered with a further active pharmaceutical ingredient.

15. Use of claim 13, wherein the medicament is to be administered with chemotherapy.

16. Use of claim 14 or 15, wherein the further pharmaceutical agent or chemotherapy is to be administered separately, simultaneously or sequentially.

17. A method for detecting cancer in a subject, wherein the cancer is selected from triple-negative breast cancer, kidney cancer, head and neck cancer, pancreatic cancer and lung cancer, the method comprising: contacting a sample obtained from the subject with an antigen-binding protein, or an antigen-binding fragment thereof as claimed in any one of claims 1 to 10 *in vitro*; detecting the binding of the antigen-binding protein, or antigen-binding fragment thereof in the sample; correlating the binding with a level of binding in a control sample to determine the level of binding in the sample, wherein an increase in the level of binding in the sample relative to the control sample is indicative of cancer.

18. The method according to claim 17, wherein the control sample is from the same subject.

19. The method according to claim 17, wherein the control sample is from a different subject.

20. The method according to any one of claims 17 to 19, wherein the antigen-binding protein, or antigen-binding fragment thereof, comprises a detectable label.

21. The method according to claim 20, wherein the detectable label is selected from biotin, alkaline phosphatase, horseradish peroxidase, FITC, PE or Cy Dyes.

22. The method according to claims 20 or 21, wherein the detectable label is detected in an assay selected from flow cytometry, tissue section or immunohistochemistry.

23. A kit when used in the method of any one of claims 17 to 22, comprising an antigen-binding protein, or an antigen-binding fragment thereof as claimed in any one of claims 1 to 10, together with instructions for use.

5